PRINT Name: _____ **LAB Section:** ☐☐☐

Test Version: 275   **One-Answer Multiple Choice**   **891 Questions – 35 of 35%**

☞ Read **all** the words of these instructions and **both** sides (back and front) of all pages.
☞ Use your full, unabbreviated name on the mark-sense form. Do not abbreviate your name.
☞ Put the three-digit **Test Version** above into **NO. OF QUESTIONS** and **NO. OF STUDENTS**
☞ Fill in the bubbles with pencil only, no pen. Enter your NAME, Test Version, and answers.
☞ Manage your time. Answer questions you know, first. One Answer per question.
☞ The answer to the questions below about reading all these test instructions is: **Sim**
_____

1. If directory **cow** contains only these four three-character file names: **.AA**, **.A1**, **.BB**, **.B.**, then what is the output on your screen of this command line:
     echo cow/*
   a. **cow/***
   b. **cow/.B.**
   c. **cow/.AA cow/.A1 cow/.BB**
   d. no output
   e. **cow/.AA cow/.A1 cow/.BB cow/.B.**

2. How many arguments does the shell pass to this **echo** command:
     echo 'And it's not hard, it's just logical.'
   a. **6**   b. **5**   c. **4**   d. **7**   e. **3**

3. Which command below removes *only* this four-character file name containing a special character (and no others): **?abc**
   a. **rm ""?abc""**   b. **rm ''?abc''**   c. **rm -r ?abc**
   d. **rm /?abc**   e. **rm "?abc"**

4. If I have a directory named **c/d**, which action would increase its *link count* by exactly one?
   a. create a file named **c/d/e**
   b. create a directory named **c/d/e**
   c. create a directory named **c/d2**
   d. create a hard link to directory **d** named **d2**
   e. create a file named **c/d2**

5. Given the following, can user **bird** in group **sesame** modify **./foo**?
   dr-xr-xr-x 2 root sesame 4096 Oct 7 14:00 .
   -r-xrwxrwx 1 bird sesame 123 Oct 4 14:05 foo
   a. Yes; permissions don't apply because **bird** owns **foo**
   b. No, because **bird** has no write permission on the directory
   c. No, because the directory is not accessible to **bird**
   d. No, because **bird** has no write permissions on **foo**
   e. No, because execute permissions are not set for **bird** on **foo**

6. What is the output on your screen of this command line:
     echo wc >wc ; wc wc >wc ; sort wc
   a. **wc**   b. **1 1 2 wc**   c. no output
   d. **0 0 0 wc**   e. **1 1 3 wc**

7. If I am in directory **/home/me** and **mt** is an empty sub-directory, what is true after this command line:
     touch ./mt/foo ; mv mt/./foo mt/../../me/./y
   a. the directory **mt** is still empty
   b. the directory **mt** now contains only a file named **y**
   c. the command fails because the path **mt/../../me** does not exist
   d. there is a second copy of the file **foo** in the file named **y**
   e. the command fails because the path **mt/./foo** does not exist

8. If file **one** occupies one disk block, how many disk blocks are in use after this sequence of commands:
     cp one foo ; ln foo two ; ln two bar ; ln one cow
   a. **4**   b. **2**   c. **5**   d. **1**   e. **3**

9. What command will show the type of file system inside an unmounted *partition*?
   a. **fdisk -l** *partition*   b. **file -s** *partition*
   c. **fdisk -s** *partition*   d. **mount | grep '*partition*'**
   e. **file** *partition*

10. When a user named **bob** runs a command in a **setuid** executable file owned by **foo**, in a directory owned by **root**, the file executes with the permissions of:
   a. **root**   b. **foo**   c. **root and foo**
   d. **root and bob**   e. **bob**

11. If file **a** contains 2 lines, and file **b** contains 3 lines, then how many lines are output on your screen by this command line: **cat a | cat b**
   a. **5**   b. no output   c. **0**
   d. **2**   e. **3**

12. Which of these command line will make **file3** contain all of the content of **file1** followed by all of the content of **file2**?
   a. **mv file1 file2 >file3**
   b. **ln file1 file2 >file3**
   c. **cp file1 file2 >file3**
   d. **echo file1 file2 >file3**
   e. **cat file1 file2 >file3**

13. On a disk with seven partitions, give the correct partition names after you delete partition **sda2**:
   a. **sda1 sda2 sda3 sda4 sda5**
   b. **sda1 sda2 sda3 sda4 sda6 sda7**
   c. **sda1 sda3 sda4 sda5 sda6 sda7**
   d. **sda1 sda2 sda3 sda4 sda6**
   e. **sda1 sda2 sda3 sda4 sda5 sda6**

14. Which command below removes *only* this four-character file name containing a special character (and no others): ***foo**
    - a. **rm .\/*foo**
    - b. **rm *foo**
    - c. **rm ?foo**
    - d. **rm /*foo**
    - e. **rm ./*foo**

15. If directory **/a** contains these seven two-character file names: **aa**, **ab**, **ac**, **ad**, **a?**, **a***, **a.**, then which command below will remove only the single two-character name **a*** from the directory (and no others)?
    - a. **rm /a***
    - b. **rm /a/a***
    - c. **rm /a/a***
    - d. **rm /a/***
    - e. **rm /a/a?**

16. What is the Unix user name for the Super-User account?
    - a. **alterego**
    - b. **master**
    - c. **administrator**
    - d. **superuser**
    - e. **root**

17. What permissions are given to **newfile** after this command line:
    ```
    umask 362 ; touch newfile
    ```
    - a. **r------r--**
    - b. **-wx---r--**
    - c. **-wxrw--w-**
    - d. **r----xr-x**
    - e. **-wxr-x-w-**

18. What is true about this output from **ls -il foo bar**?
    ```
    454 -rwxr-xr-x 3 me me 2 Dec 4 9:12 foo
    454 -rw-r--r-- 3 me me 2 Dec 4 9:12 bar
    ```
    - a. **foo** and **bar** each have three names (six names total)
    - b. this output is not possible
    - c. **foo** and **bar** are two of three names for this file
    - d. **foo** and **bar** are names for different files
    - e. **foo** and **bar** are names for the same file

19. When a user named **bob** runs a command in an executable file owned by **foo**, in a directory owned by **root**, the file executes with the permissions of:
    - a. **foo**
    - b. **root** and **foo**
    - c. **bob**
    - d. **root**
    - e. **root** and **bob**

20. Who is the owner of file **bar** after you execute this sequence of commands in your home directory:
    ```
    ln /etc/passwd x ; ln x y ; cp y z ; ln y bar
    ```
    - a. you cannot execute the given commands; no file will be created
    - b. the file is owned by **root**
    - c. you own the file **bar**
    - d. the file is owned by **home**
    - e. the file is owned by **passwd**

21. The shadow password file is used:
    - a. to allow passwords to exist on partitions other than the ROOT
    - b. to reduce the size of the main password file for faster access
    - c. to keep a back-up of the main password file in case of corruption
    - d. to store secondary passwords for times when you forget your main one
    - e. to hide encrypted passwords from viewing by ordinary users

22. Which of the command lines below can generate a non-empty file?
    - a. **ls foo >foo**
    - b. **tr abc ABC <foo >foo**
    - c. **grep -v foo foo >foo**
    - d. **sort -r foo >foo**
    - e. **tail -5 foo >foo**

23. To change the owner of a file to **me**, type:
    - a. **umask :me file**
    - b. **chown me file**
    - c. **newuser me file**
    - d. **chown :me file**
    - e. **newuser file me**

24. What is the link count of directory **z** after this set of successful commands?
    ```
    mkdir z ; mkdir z/a z/a/b z/a/c z/a/d
    ```
    - a. 5
    - b. 4
    - c. 3
    - d. 1
    - e. 2

25. The option to **ls** that shows hidden names is:
    - a. **-R**
    - b. **-1**
    - c. **-l**
    - d. **-i**
    - e. **-a**

26. What is in the file **bar** after this command line:
    ```
    echo hi >x ; echo ho >x ; mv x y >bar
    ```
    - a. **ho**
    - b. **hi** followed by **ho**
    - c. nothing (empty file)
    - d. no such file (nonexistent)
    - e. **hi**

27. What is the output on your screen of this command line:
    ```
    umask 156 ; mkdir newdir ; ls -ld newdir
    ```
    - a. **dr-x-w-rw- 2 me me 512 Oct 1 1:12 newdir**
    - b. **dr-x--x--- 2 me me 512 Oct 1 1:12 newdir**
    - c. **d--xr-xrw- 2 me me 512 Oct 1 1:12 newdir**
    - d. **drw--w---- 2 me me 512 Oct 1 1:12 newdir**
    - e. **drw--w---x 2 me me 512 Oct 1 1:12 newdir**

28. Given the following, can user **bird** in group **sesame** rename **./foo** to **bar**?
    ```
    d----wx--- 2 root sesame 4096 Oct 7 14:00 .
    ---------- 1 bird sesame 123  Oct 4 14:05 foo
    ```
    - a. No, because **bird** has no permissions on **foo**
    - b. No, because **bird** cannot read the directory
    - c. Yes, because **bird**'s group matches the group writable directory
    - d. No, because the directory has no permissions for other users
    - e. Yes; permissions don't apply because **bird** owns **foo**

29. On a disk with eight partitions, give the correct partition names after you delete partition **sda2**:
    - *a.* **sda1 sda2 sda3 sda4 sda5 sda6**
    - *b.* **sda1 sda2 sda3 sda4 sda6 sda7 sda8**
    - *c.* **sda1 sda3 sda4 sda5 sda6 sda7 sda8**
    - *d.* **sda1 sda2 sda3 sda4 sda5 sda6 sda7**
    - *e.* **sda1 sda2 sda3 sda4 sda5 sda7 sda8**

30. What does *quoting* mean on a shell command line?
    - *a.* using a leading tilde ("˜") on a pathname to mean your HOME directory
    - *b.* typing a "control" character using the [CTRL] key
    - *c.* setting the PS1 variable to be your shell prompt
    - *d.* using more than one pathname argument to a command, e.g. rm a b c
    - *e.* turning off the special meaning of shell meta-characters

31. Which command pipeline outputs the count of the number of manual page titles that contain the keyword "sort"?
    - *a.* **man sort ; wc**
    - *b.* **wc -k sort**
    - *c.* **man -k sort | wc**
    - *d.* **wc man sort**
    - *e.* **man sort | wc**

32. In the output of **ls -a**, the two-character name **..** signifies what?
    - *a.* The parent directory.
    - *b.* A file or directory with double links.
    - *c.* It begins every name that is hidden.
    - *d.* The ROOT directory.
    - *e.* The current directory.

33. Which command pipeline outputs the count of the number of pathnames (including all subdirectories) that lie under the current directory?
    - *a.* **file . | wc**
    - *b.* **find . | wc**
    - *c.* **ls . | wc**
    - *d.* **ls / | wc**
    - *e.* **dir / | wc**

34. What is true about this output from **ls -il foo bar**
    ```
    99 -r-x------ 2 bin bin 3 Jul 31 12:33 foo
    99 -r-x------ 2 bin bin 3 Jul 31 12:33 bar
    ```
    - *a.* this output is not possible
    - *b.* **foo** and **bar** are names for the same file
    - *c.* **foo** and **bar** are names for different files
    - *d.* **foo** and **bar** each have three names (six names total)
    - *e.* **foo** and **bar** are two of three names for the same file

35. What is the output on your screen after this command line:
    ```
    mkdir dir ; touch dir/.aa dir/.bb ; echo dir/*
    ```
    - *a.* **dir/.aa dir/.bb**
    - *b.* **dir/**
    - *c.* **dir/***
    - *d.* no output on screen
    - *e.* **dir/. dir/.. dir/.aa dir/.bb**

36. If my current working directory is **/mnt**, which command copies the group file into existing directory **/mnt/xxx** under the name **yyy**?
    - *a.* **cp ../../etc/./group /xxx/yyy**
    - *b.* **cp ./../etc/group ../xxx/yyy**
    - *c.* **cp ../mnt/./xxx/../etc/group ./xxx/./yyy**
    - *d.* **cp ././xxx/../etc/group ../mnt/xxx/yyy**
    - *e.* **cp xxx/../../etc/group ./xxx/yyy**

37. To change your own account password, use this exact command line:
    - *a.* **$ passwd cst8207.idallen.ca**
    - *b.* **$ passwd options LOGIN**
    - *c.* **$ passwd**
    - *d.* **$ passwd cst8207**
    - *e.* **$ passwd root**

38. What is the output of this successful command sequence?
    ```
    cd /home/dir ; mkdir one ; mkdir two ; pwd
    ```
    - *a.* **/home/dir/two**
    - *b.* **/two**
    - *c.* **/home/dir**
    - *d.* **/home/dir/one**
    - *e.* **/home/dir/one/two**

39. If file **/a** contains 30 lines, and file **/b** contains 50 lines, then how many lines are output on your screen by this command line: **cat /a | sort /b**
    - *a.* **30**
    - *b.* **80**
    - *c.* **20**
    - *d.* **0**
    - *e.* **50**

40. In an empty directory, what is the output on your screen after this command line:
    ```
    touch 1 2 .foo .bar ; echo .*
    ```
    - *a.* **.foo .bar**
    - *b.* **. .. .foo .bar**
    - *c.* **1 2**
    - *d.* an error message from **echo** saying **.*** does not exist
    - *e.* **.***

41. What is the output of this command line if run in an empty directory:
    ```
    touch A a ; echo * ">*"
    ```
    - *a.* No output
    - *b.* *** >***
    - *c.* **A a >***
    - *d.* **A a >A a**
    - *e.* **A a**

42. Which system directory contains all the run level scripts?
    - *a.* `/boot/grub.config`
    - *b.* `/etc/group`
    - *c.* `/var/log`
    - *d.* `/etc/passwd`
    - *e.* `/etc/init.d`

43. What is true about this output from `ls -il foo bar`
    ```
    23 -r-x------ 2 bin bin 3 Jul 31 12:33 foo
    23 -r-x------ 2 bin bin 3 Jul 31 12:33 bar
    ```
    - *a.* `foo` and `bar` are names for the same file
    - *b.* `foo` and `bar` are names for different files
    - *c.* `foo` and `bar` are two of three names for the same file
    - *d.* this output is not possible
    - *e.* `foo` and `bar` each have three names (six names total)

44. What is the link count of directory `z` after this set of successful commands?
    ```
    mkdir z ; mkdir z/a ; touch z/b z/c z/d
    ```
    - *a.* 1
    - *b.* 2
    - *c.* 5
    - *d.* 4
    - *e.* 3

45. If my current directory is `/home`, and my home directory is `/home/me`, which command copies the password file into my home directory under the name `foo`?
    - *a.* `cp me/../etc/passwd ../home/me/foo`
    - *b.* `cp ../etc/passwd ../me/foo`
    - *c.* `cp me/../../etc/passwd me/foo`
    - *d.* `cp ../home/me/../etc/passwd ./me/./foo`
    - *e.* `cp ../../etc/passwd /me/foo`

46. Which command below is the best way to find a line containing a question mark (`?`) in the file `/etc/passwd`?
    - *a.* `grep /etc/passwd '?'`
    - *b.* `grep '?' /etc/passwd`
    - *c.* `find '?' /etc/passwd`
    - *d.* `search '?' /etc/passwd`
    - *e.* `grep './?' /etc/passwd`

47. What is in file `foo` after this command line: `echo 1 2 >foo 3`
    - *a.* nothing (empty file)
    - *b.* `echo 1 2`
    - *c.* `3`
    - *d.* `1 2 3`
    - *e.* `1 2`

48. If file `foo` contains 9 lines, each of which is the one-digit line number of the line in the file (`1` through `9`), what is the output on your screen of this command:
    ```
    sort foo foo | tail -4 | head -1
    ```
    - *a.* `1 1`
    - *b.* `4 4`
    - *c.* `8`
    - *d.* `6`
    - *e.* `6 6`

49. What is true about this output from `ls -il foo bar`
    ```
    23 -rwxrwxrwx 2 bin bin 3 Jul 31 12:33 foo
    99 -rwxrwxrwx 2 bin bin 3 Jul 31 12:33 bar
    ```
    - *a.* `foo` and `bar` are names for different files
    - *b.* `foo` and `bar` each have three names (six names total)
    - *c.* `foo` and `bar` are two of three names for the same file
    - *d.* this output is not possible
    - *e.* `foo` and `bar` are names for the same file

50. If file `foo` contains 9 lines, each of which is the one-digit line number of the line in the file (`1` through `9`), what is the output on your screen of this command:
    ```
    cat foo foo | sort | tail -4 | head -1
    ```
    - *a.* `8`
    - *b.* `1`
    - *c.* `6`
    - *d.* no output
    - *e.* `4`

51. If the file `foo` contained the word `mom`, what would be the output on your screen of this two command sequence:
    ```
    PATH=/etc/passwd:/bin/ls:/bin/cat ; /bin/ls foo
    ```
    - *a.* no output on screen
    - *b.* `bash: /bin/ls: command not found`
    - *c.* `/bin/ls: foo: No such file or directory`
    - *d.* `foo`
    - *e.* `mom`

52. When `fdisk` shows a partition size of 12345678 blocks, approximately how big is it?
    - *a.* `1.2 GB`
    - *b.* `1.2 TB`
    - *c.* `12 MB`
    - *d.* `12 GB`
    - *e.* `12 TB`

53. Which command line would show the index (inode) number of a file?
    - *a.* `ls -l file`
    - *b.* `find -i file`
    - *c.* `ls -i file`
    - *d.* `cat -i file`
    - *e.* `cat -l file`

54. What is the output on your screen after this command line:
    ```
    cd /foo ; touch a ; mkdir 1 ; mkdir 2 ; pwd
    ```
    - *a.* `/foo/a`
    - *b.* `/foo/1/2`
    - *c.* `/1/2`
    - *d.* `/foo`
    - *e.* `/foo/a/1/2`

55. What high-level command fetches and tracks packages for Fedora or Red Hat?
    - *a.* `yum`
    - *b.* `tar`
    - *c.* `wget`
    - *d.* `apt-get`
    - *e.* `rpm`

56. If file `foo` contains 9 lines, each of which is the one-digit line number of the line in the file (`1` through `9`), what is the output on your screen of this command:
    ```
    sort foo foo | tail -5 | head -1
    ```
    - *a.* `1`
    - *b.* `9`
    - *c.* `7`
    - *d.* `5 5`
    - *e.* `1 1`

57. How many lines are in the file `bar` after this command line:
    ```
    echo hi >x ; echo ho >>x ; cat x x >bar
    ```
    - *a.* `1`
    - *b.* `4`
    - *c.* `6`
    - *d.* `0`
    - *e.* `2`

58. What is the output on your screen of this command line:
    umask 457 ; mkdir newdir ; ls -ld newdir
    a. **d-wx-w---- 2 me me 512 Oct 1 1:12 newdir**
    b. **d-wx-w-rwx 2 me me 512 Oct 1 1:12 newdir**
    c. **dr--r-xrwx 2 me me 512 Oct 1 1:12 newdir**
    d. **dr-xr-xrwx 2 me me 512 Oct 1 1:12 newdir**
    e. **d-w--w---- 2 me me 512 Oct 1 1:12 newdir**

59. If the current directory contains 10 visible files and 15 visible sub-directories, what is the output on your screen of this command: **ls -d */.**
    a. ***/.**
    b. an error message because ***/.** does not exist
    c. no output
    d. 15 directory names
    e. 25 pathnames

60. If I am in my home directory named **/home/me** and **dir** is an empty sub-directory, what is true after this command line:
    touch new ; mv ./dir/../new ../me/old
    a. the parent directory of **dir** now has a file named **old** in it
    b. the directory **dir** now contains only a file named **old**
    c. there is a second copy of the file named **new** in the file named **old**
    d. the command fails because the path **./dir/../new** does not exist
    e. the command fails because the path **../me/old** does not exist

61. In an empty directory, what is the output on your screen after this command line:
    touch a b .1 .2 ; echo .??*
    a. **.??***
    b. **a b**
    c. **. .. a b .1 .2**
    d. an error message from **echo** saying **.??*** does not exist
    e. **. .. .1 .2**

62. If I have a directory owned by me named **/x/y/z**, which action would increase its *link count* by exactly one?
    a. create a directory named **/x/y/z/x**
    b. create a directory named **/x/y/z/.**
    c. create a directory named **/x/y/z2**
    d. create one file named **/x/y/z/x**
    e. create one file named **/x/y/z2**

63. If **/etc/passwd** is a file name, which pathname always leads to the same file?
    a. **/./../etc/./passwd**   b. **/etc/../../passwd**
    c. **/etc/passwd/../..**   d. **./././etc/passwd**
    e. **/etc/passwd/./.**

64. If **/etc/shadow** is a file name, which pathname always leads to the same file?
    a. **/etc/shadow/../..**   b. **./././etc/shadow**
    c. **/./../etc/./shadow**   d. **/etc/../../shadow**
    e. **/etc/shadow/./.**

65. What is the link count of file **f** after this set of successful commands?
    rm f ; touch f ; ln f bar
    cp bar x ; ln x y ; ln bar z ; ln z a
    a. 1   b. 4   c. 5   d. 3   e. 2

66. What happens when you try to change to the parent directory of ROOT, e.g.
    cd / ; cd ..
    a. the shell asks you to retype the invalid directory
    b. you go to the parent directory containing your **C:** drive
    c. the shell current directory is still ROOT
    d. the shell issues a warning, but changes to the parent
    e. the shell issues an error message and does not change

67. If you use **ls -l** on a file owned by a deleted user, the user/owner field is:
    a. the name **"deleted"**
    b. the number zero
    c. a number instead of an account name
    d. an account name in parentheses, e.g. **(luke)**
    e. the name **"removed"**

68. What is the result of this exact command line: **cat /foo bar**
    a. the two text strings **/foo** and **bar** will be displayed
    b. all the files under directory **/foo** with the name **bar** will be displayed
    c. file **/foo** will be copied to **bar**
    d. the contents of the files **/foo** and **bar** will be displayed
    e. the names of the pathnames **/foo** and **bar** will be displayed

69. What does *quoting* mean on a shell command line?
    a. typing a "control" character using the **[CTRL]** key
    b. using a leading tilde ("**~**") on a pathname to mean your HOME directory
    c. turning off the special meaning of shell meta-characters
    d. setting the PS1 variable to be your shell prompt
    e. using more than one pathname argument to a command, e.g. **rm a b c**

70. What would you see if you typed this command: **cat /users**
    a. The contents of the file **users** located in the parent directory
    b. The contents of the file **users** located in the root directory
    c. The contents of your subdirectory named **users**
    d. The contents of your directory named **users**
    e. The contents of the file **users** located in your home directory

71. What command powers down the machine safely?
    a. **gpasswd**   b. **shutdown**   c. **passwd**
    d. **fdisk**   e. **chkconfig**

72. What is the final link count of file **a** after this:
    ```
    ln a d ; cp a f ; ln d c ; ln f g ; ln c e
    ```
    a. 1   *b.* 4   *c.* 2   *d.* 3   *e.* 5

73. In an empty directory, what is the output on your screen after this command line:
    ```
    ls 2>/dev/null nosuchfile
    ```
    a. `ls: 2>/dev/null nosuchfile: No such file or directory`
    b. `ls: /dev/null: No such file or directory`
    c. no output
    d. `ls: nosuchfile: No such file or directory`
    e. `nosuchfile`

74. On a disk with eight partitions, give the correct partition names after you delete partition **sda5**:
    a. `sda1 sda2 sda3 sda4 sda5 sda7 sda8`
    b. `sda1 sda2 sda3 sda4 sda6 sda7 sda8`
    c. `sda1 sda2 sda3 sda4 sda5 sda6 sda7`
    d. `sda1 sda2 sda3 sda4 sda5 sda6 sda8`
    e. `sda1 sda2 sda3 sda4 sda5 sda6`

75. When you show the type of file system inside an unmounted partition, what is displayed for a new, empty partition?
    a. `ext2` file system (the default)   *b.* `ntfs` file system
    c. `vfat` file system   *d.* `ext3` file system
    e. data

76. If **/bin/prg** is a program that outputs **hi** and **/usr/bin/prg** is a program that outputs **foo** what would be the output on your screen of this two command sequence: **PATH=/etc:/usr/bin:/bin ; prg**
    a. `hi`
    b. `foo`
    c. `hi` followed by `foo`
    d. `foo` followed by `hi`
    e. `bash: prg: command not found`

77. What is a Unix/Linux "hidden" file name?
    a. begins with a period (dot ".")   *b.* contains a period (dot ".")
    c. has permissions **777**   *d.* ends with a period (dot ".")
    e. has permissions **000**

78. What command changes a user's password?
    a. `chsh`   *b.* `password`   *c.* `chpasswd`
    d. `mkpasswd`   *e.* `passwd`

79. If you are in **/bin** and **ls -l** shows a symbolic link **foo -> dir/bar** then dereference the absolute path of **foo** with no symbolic links:
    a. `/bin/dir/bar/foo`   *b.* `/bin/foo/dir/bar`
    c. `/bin/dir/bar`   *d.* `/foo/dir/bar`
    e. `/dir/bar`

80. GRUB boot menu entries are a paragraph of several lines. The keyword on the first line of the paragraph is always:
    a. `initrd`   *b.* `timeout`   *c.* `kernel`
    d. `title`   *e.* `boot`

81. If directory **/a** contains these seven two-character file names: **aa**, **ab**, **ac**, **ad**, **a?**, **a***, **a.**, then which command below will remove only the single two-character name **a*** from the directory (and no others)?
    a. `rm /a/a*`   *b.* `rm "/a/a*"`   *c.* `rm /a*`
    d. `rm /a/a?`   *e.* `rm /a/*`

82. In a directory containing one file named **dog**, what is the output on your screen after this command line: **1>/dev/null ls ***
    a. `bash: 1>/dev/null: command not found`
    b. `dog`
    c. `ls: *: No such file or directory`
    d. no output
    e. `*`

83. What is the link count of file **f** after this set of successful commands?
    ```
    rm f ; touch f ; cp f x
    ln f a ; ln x y ; ln a z ; ln x b
    ```
    a. 2   *b.* 4   *c.* 6   *d.* 3   *e.* 5

84. What is the correct syntax to redirect both standard output and standard error into the same output file?
    a. `ls 2>1 >out`   *b.* `ls 1>out 2>out`
    c. `ls >out 2>&1`   *d.* `ls 1>out 2>1`
    e. `ls 2>&1 >out`

85. What is the link count of file **f** after this set of successful commands?
    ```
    rm f ; touch f ; ln f bar
    cp bar x ; ln x y ; ln y z
    ```
    a. 1   *b.* 2   *c.* 0   *d.* 4   *e.* 3

86. How many lines are in the file **out** after this command line:
    ```
    echo hi >x ; echo ho >>x ; cat x x x >out
    ```
    a. **2**   *b.* **0**   *c.* **1**   *d.* **3**   *e.* **6**

87. In an empty directory, what permissions are on file **???** after these commands:
    ```
    touch ??? *** ; chmod 111 *
    chmod 222 ??? ; chmod 444 '***'
    ```
    a. `--x--x--x`   *b.* `r--r--r--`   *c.* `rw-rw-rw-`
    d. `-w--w--w-`   *e.* `-wx-wx-wx`

88. What command finds files by name quickly using a database?
    a. `locate`   *b.* `find`   *c.* `wget`
    d. `grep`   *e.* `ls`

89. Which of these is the most secure password?
   a. **`Canada`**   *b.* **`apple15`**   *c.* **`Madonna`**
   d. **`secrets`**   *e.* **`Easy10!`**

90. Which command line displays all the non-hidden names in the current directory that contain the case-insensitive word **`go`** (and no others)?
   a. **`echo *[Gg][Oo]*`**   *b.* **`echo ?[GgOo]?`**
   c. **`echo *[GgOo]*`**   *d.* **`echo *[go][GO]*`**
   e. **`echo *[go]*`**

91. Which of the following will *not* cause **`file1`** to become an empty file?
   a. **`tail file1 > file1`**   *b.* **`wc file1 > file1`**
   c. **`head file1 > file1`**   *d.* **`sort file1 > file1`**
   e. **`cat file1 > file1`**

92. In an empty directory, how many words are in file **`pig`** after this command line:
   `touch pig pig ; ls >pig`
   a. **`4`**   *b.* **`0`**   *c.* **`2`**   *d.* **`3`**   *e.* **`1`**

93. Which of these statements is true?
   a. To make a hard link to file "**`foo`**" named "**`bar`**", file "**`foo`**" must exist.
   b. You only need "**`r--`**" permission on directory "**`foo`**" for "**`ls -l foo`**" to work.
   c. If you give me write permission on a file owned by you, I can then use **`chmod`** to change its permissions.
   d. You can make a hard link to a directory.
   e. The "**`ln`**" command takes two arguments, so the maximum number of hard links a file can have is two.

94. Which pathname almost always leads to the same file named: **`/etc/passwd`**?
   a. **`/etc/../etc/./passwd`**   *b.* **`./etc/passwd`**
   c. **`../etc/passwd`**   *d.* **`/etc/passwd/.`**
   e. **`/etc/./etc/../passwd`**

95. Given this **`ls -il`** long listing:
   `302 drwxr-xr-x 202 bin bin 102 Jul 31 12:33 dir`
   How many subdirectories lie immediately under **`dir`**?
   a. **`202`**   *b.* **`100`**   *c.* **`200`**   *d.* **`300`**   *e.* **`102`**

96. If **`foo`** is a sub-directory that contains only the file **`pig`**, what happens after this command: **`mv foo/pig foo/./../dog`**
   a. the directory **`foo`** is now empty
   b. the command fails because the name **`dog`** does not exist
   c. the command fails because the name **`foo/./../dog`** does not exist
   d. there is a second copy of the file **`pig`** in the file named **`dog`**
   e. the directory **`foo`** now contains only a file named **`dog`**

97. If **`foo`** is a sub-directory that contains only the file **`bar`**, what happens after this command: **`mv ./foo/bar foo/../moo`**
   a. the command fails because the name **`foo/../moo`** does not exist
   b. the command fails because the name **`moo`** does not exist
   c. the directory **`foo`** now contains only a file named **`moo`**
   d. the directory **`foo`** is now empty
   e. there is a second copy of the file **`bar`** in the file named **`moo`**

98. Which of these commands makes a file owned by me, also executable by me?
   a. **`umask 700 f`**   *b.* **`chmod x=u f`**   *c.* **`umask 100 f`**
   d. **`chmod u+x f`**   *e.* **`chmod x+u f`**

99. If my current directory is **`/home`**, and my home directory is **`/home/xx`**, which command copies the password file into my home directory under the name **`foo`**?
   a. **`cp xx/../etc/passwd ../home/xx/foo`**
   b. **`cp ../etc/passwd ../xx/foo`**
   c. **`cp ../home/xx/../etc/passwd ./xx/./foo`**
   d. **`cp xx/../../etc/passwd xx/foo`**
   e. **`cp ../../etc/passwd /xx/foo`**

100. Given the pathname **`a/b/c`**, the *basename* of this pathname is:
   a. **`b`**   *b.* **`a/b`**   *c.* **`b/c`**   *d.* **`a`**   *e.* **`c`**

101. If my current directory is **`/foo`**, which of these pathnames is equivalent to the file name **`/foo/bar`**?
   a. **`/bar`**   *b.* **`../bar`**   *c.* **`./foo/bar`**
   d. **`./bar`**   *e.* **`../foo/bar/.`**

102. What do you notice in the user/owner field if you use **`ls -l`** on a file owned by a deleted user?
   a. the field is the name **`"deleted"`**
   b. the field is the name **`"removed"`**
   c. the field is an account name in parentheses, e.g. **`(luke)`**
   d. the field is a number instead of an account name
   e. the field is the number zero

103. What is the link count of file **`foo`** after this set of successful commands?
   `rm foo ; touch foo ; ln foo bar`
   `cp bar x ; ln x y ; ln bar z`
   a. 2   *b.* 3   *c.* 5   *d.* 4   *e.* 1

104. What would you type to change the permissions on a file to **`r-x-wxrw-`**?
   a. **`chmod 536 file`**   *b.* **`chmod 120 file`**
   c. **`chmod 653 file`**   *d.* **`chmod 241 file`**
   e. **`chmod 365 file`**

105. If a shell GLOB pattern fails to match anything, what happens by default? The shell:
   a. gives an error message and does not execute
   b. returns the closest match to the pattern
   c. removes the pattern and passes nothing
   d. passes the pattern unchanged to the command
   e. gives a warning message but continues

106. If you type the command **sleep 60**, which key sequence will interrupt it and take you back to the command prompt?
   a. **[CTRL-U]**   b. **[CTRL-L]**   c. **[CTRL-D]**
   d. **[CTRL-C]**   e. **[CTRL-R]**

107. Give the GRUB device name for the fourth partition of the third disk:
   a. **(hd2,3)**   b. **(hd4,3)**   c. **(hd3,2)**
   d. **(sdd,3)**   e. **(sd2,3)**

108. If I am in directory **/home/me** and **mt** is an empty sub-directory, what is true after this command line: **touch foo ; mkdir bar ; mv foo bar/mt**
   a. the directory **mt** is still empty
   b. the directory **mt** now contains a file named **foo**
   c. the directory **bar** now contains a file named **foo**
   d. the directory **mt** now contains a directory named **bar**
   e. the command fails because **bar/mt** is not a directory

109. If file **a** contains 2 lines, and file **b** contains 3 lines, then how many lines are in file **c** after this command line:
      cat a a >c ; head b >>a ; cat c b >c a
   a. **8**   b. **12**   c. **10**   d. **7**   e. **0**

110. The option to **ls** that shows which names are directories is:
   a. **-i**   b. **-l**   c. **-a**   d. **-1**   e. **-d**

111. Which command line initializes a swap partition for future use?
   a. **mkswap** *device*   b. **fdisk -s** *device*
   c. **swapon** *device*   d. **mkfs -s** *device*
   e. **swapon -s** *device*

112. Which of these statements is true?
   a. To erase an entire line of typing, type [CTRL]-[D].
   b. To delete a word from the shell command line, type [CTRL]-[D]
   c. Unix commands can be entered in upper-case or lower-case letters; they are equivalent.
   d. Unix commands must be entered in lower-case letters.
   e. To indicate End-of-File (no more input), type [CTRL]-[C].

113. What command shows all partition names and System IDs (types) on the sixth disk:
   a. **df -l /dev/sd6**   b. **fdisk -l /dev/sdf**
   c. **mount -l /dev/sd6**   d. **find -l /dev/sd6**
   e. **find -l /dev/sdf**

114. If I am in my home directory named **/home/idallen** and **empty** is an empty sub-directory, what is true after this command line:
      touch ./pig ; mv ./empty/../pig ../idallen/cow
   a. there is a second copy of the file **pig** in the file named **cow**
   b. the directory **empty** now contains only a file named **cow**
   c. the command fails because path **./empty/../pig** does not exist
   d. the directory **empty/..** now has a file named **cow** in it
   e. the command fails because path **../idallen/cow** does not exist

115. Given the following, can user **kirk** in group **starfleet** copy **./file1** to **file2**?
   drwxr-xrwx 2 root starfleet 4096 Oct 7 14:00 .
   -r-xr-xr-x 1 kirk starfleet 123 Oct 4 14:05 file1
   a. No, because the directory has no write permissions for **kirk**
   b. No, because the directory is not accessible to **kirk**
   c. No, because **file1** has no write permissions for **kirk**
   d. Yes, because **kirk** owns **file1**
   e. Yes, because **kirk** has read permissions on **file1**

116. How many lines are in file **out** after this command line:
      echo hi >dog >out >cat
   a. **1**   b. **0**   c. **3**   d. **4**   e. **2**

117. How many arguments does the shell pass to this **echo** command:
      echo 'It's a bird! No! It's a plane!'
   a. **2**   b. **1**   c. **3**   d. **5**   e. **4**

118. How many arguments does the shell pass to this **echo** command:
      echo ' one two ' three ' four ' 5'6'
   a. **5**   b. **1**   c. **9**   d. **6**   e. **4**

119. The output of the **find** command is:
   a. a recursive list of users logged in to the system
   b. a recursive list of pathnames
   c. finds patterns in a file corresponding to lines
   d. finds lines in a file matching a pattern
   e. account names matching a pattern

120. If **/bin/xxx** is a program that outputs **one** and **/usr/bin/xxx** is a program that outputs **two**, what would be the output on your screen of this two command sequence: **PATH=/etc:/usr/bin:/usr:/bin ; /bin/xxx**
   a. **one**
   b. **one** followed by **two**
   c. **two** followed by **one**
   d. **bash: /bin/xxx: command not found**
   e. **two**

121. Given my directory **dir** and my file **dir/c** owned by me, which permissions
     allow me to access and change or create new content (data) in the file **dir/c** but
     not delete the file?
     a. Permissions **200** on directory **dir** and **200** on file **dir/c**.
     b. Permissions **600** on directory **dir** and **700** on file **dir/c**.
     c. Permissions **100** on directory **dir** and **100** on file **dir/c**.
     d. Permissions **400** on directory **dir** and **400** on file **dir/c**.
     e. Permissions **100** on directory **dir** and **200** on file **dir/c**.

122. If I have a directory named **a/b**, which action would increase its *link count* by
     exactly one?
     a. create a file named **a/b2**
     b. create a file named **a/b/c**
     c. create a directory named **a/b2**
     d. create a hard link to directory **b** named **b2**
     e. create a directory named **a/b/c**

123. What is in the file **cow** after this command line:
     echo a >b ; echo b >a ; mv b a >cow
     a. **a**   *b.* no such file (nonexistent)
     c. **b**   *d.* **a** followed by **b**
     e. nothing (empty file)

124. Which option to **ls** displays the directory itself and not its contents?
     a. **-l**   *b.* **-d**   *c.* **-i**   *d.* **-a**   *e.* **-R**

125. Which command below removes *only* this four-character file name containing a
     special character (and no others): **cat?**
     a. **rm cat/?**   *b.* **rm "cat?"**   *c.* **rm ""cat?""**
     d. **rm \cat?**   *e.* **rm ''cat?''**

126. Which command shows the name of the current computer:
     a. **history**   *b.* **find**   *c.* **hostname**
     d. **whoami**   *e.* **comname**

127. To redirect both standard output and standard error into the same output file, use:
     a. **cmd >out 2>&1**   *b.* **cmd 2>1 >out**
     c. **cmd 2>&1 >out**   *d.* **cmd 1>out 2>out**
     e. **cmd 1>out 2>1**

128. What is the link count of directory **d** after this set of successful commands?
     mkdir d ; mkdir d/a ; touch d/b
     a. 4   *b.* 5   *c.* 1   *d.* 2   *e.* 3

129. In an empty directory, how many words are in file **b** after this:
     echo 1 2 3 >a ; ls >b
     a. 1   *b.* 5   *c.* 4   *d.* 2   *e.* 3

130. If file **/a** contains 20 lines, and file **/b** contains 30 lines, then how many lines are
     in file **/c** after this command line:
     sort /a /b >/c ; cat /a >>/b ; sort /c /b /a >/c
     a. **80**   *b.* **70**   *c.* **120**   *d.* **0**   *e.* **50**

131. Which command below sorts *only* this five-character file name containing a special
     character (and no others): **xx?xx**
     a. **sort "xx?xx"**   *b.* **sort ""xx?xx""**
     c. **sort xx?xx**   *d.* **sort xx/?xx**
     e. **sort ''xx?xx''**

132. The **-v** option to the **grep** command does what?
     a. turns on the translation of unprintable characters
     b. selects lines that do not contain a match for the supplied pattern
     c. prints the version number of the grep command
     d. turns off the translation of unprintable characters
     e. selects lines that do not contain unprintable characters

133. The purpose of the **PS1** shell variable is:
     a. to find patterns inside a text file
     b. to protect your HOME directory from access
     c. to allow access to the ROOT directory
     d. to list your suspended jobs
     e. to set the shell prompt

134. When a user named **foo** runs a command in an executable file owned by **bar**, in a
     directory owned by **root**, the file executes with the permissions of:
     a. **foo**   *b.* **root**   *c.* **bar**
     d. **root and foo**   *e.* **root and bar**

135. Which file contains a list of possible kernels to run after POST?
     a. **/var/log**   *b.* **/etc/fstab**
     c. **/boot/grub/grub.conf**   *d.* **/etc/init.d**
     e. **/etc/inittab**

136. What command will show lines containing the name **root** inside all four account
     files under **/etc**:
     a. **du 'root' /etc/{passwd,shadow,group,gpasswd}**
     b. **fdisk -l 'root' /etc/{passwd,shadow,group,gpasswd}**
     c. **grep 'root' /etc/{passwd,shadow,group,gpasswd}**
     d. **find 'root' /etc/{passwd,shadow,group,gpasswd}**
     e. **ls 'root' /etc/{passwd,shadow,group,gpasswd}**

137. How many arguments and options are there to the command:
     ls -li foobar
     a. Two arguments, one of which is a single option and the other is a pathname.
     b. One argument, no options.
     c. Two options, no arguments.
     d. Two arguments, no options.
     e. Two command line arguments, one of which contains two bundled options.

138. What are **upstart** and **systemd**?
     a. programs to handle UPS back-up power systems
     b. uptime measurement and statistical programs
     c. programs to handle system log messages
     d. time synchronization daemons
     e. replacements for the legacy run levels

139. Other than root, who can change the permissions of the following directory?
     dr-xrwxrwx 17 ian iangrp 4096 Apr 15 16:40 .
     a. user **ian** and any user in group **iangrp**
     b. only root can change the permissions
     c. only user **ian**
     d. only users in group **iangrp**
     e. anyone except user **ian**

140. What command displays the sizes of files in the current directory?
     a. **ps -l**   *b.* **cat -s**   *c.* **ps -s**
     d. **ls -p**   *e.* **ls -l**

141. What is true about this output from **ls -il foo bar**?
     871 -r-------- 2 bin bin 3 Nov 12 12:55 foo
     871 -r-------- 2 bin bin 3 Nov 12 12:55 bar
     a. **foo** and **bar** are names for different files
     b. **foo** and **bar** are two of three names for this file
     c. **foo** and **bar** each have three names (six names total)
     d. this output is not possible
     e. **foo** and **bar** are names for the same file

142. What is the output on your screen of this command line:
     umask 547 ; mkdir newdir ; ls -ld newdir
     a. **d-w--wx--- 1 me me 0 Feb 20 07:55 newdir**
     b. **d-w--wxrwx 1 me me 0 Feb 20 07:55 newdir**
     c. **dr--r--rw- 1 me me 0 Feb 20 07:55 newdir**
     d. **dr-xr--rwx 1 me me 0 Feb 20 07:55 newdir**
     e. **d-w--w---- 1 me me 0 Feb 20 07:55 newdir**

143. In the output of **ls -a**, the one-character name **.** signifies what?
     a. A current file.
     b. A name that is hidden.
     c. The current directory.
     d. A name with an unprintable character.
     e. The parent directory.

144. If my current working directory is **/home**, and my home directory is
     /home/foo, which command copies file **/bin/ls** into my home directory
     under the name **xx**?
     a. **cp ./../bin/ls ../foo/xx**
     b. **cp ./foo/../../bin/ls ./foo/./xx**
     c. **cp ../home/./foo/../bin/ls foo/xx**
     d. **cp ./foo/../bin/ls ../home/foo/xx**
     e. **cp ../../bin/./ls /foo/xx**

145. What command creates an **ext3** file system on *device ?*
     a. **mount -t ext3** *device*   *b.* **fdisk -t ext3** *device*
     c. **file -t ext3** *device*   *d.* **mkfs -t ext3** *device*
     e. **swapon -t ext3** *device*

146. What is the link count of directory **dir** after this set of successful commands?
     mkdir dir ; mkdir dir/foo ; touch dir/bar
     a. 5   *b.* 3   *c.* 2   *d.* 1   *e.* 4

147. If you type the command **sleep 60**, which *CTRL* key will **interrupt** it and take
     you back to the command prompt?
     a. **^I**   *b.* **^U**   *c.* **^C**   *d.* **^R**   *e.* **^D**

148. What is the output on your screen of this command line:
     echo wc >wc ; wc wc >wc ; head wc
     a. **0 0 0 wc**   *b.* no output   *c.* **1 1 3 wc**
     d. **1 1 2 wc**   *e.* **wc**

149. If file **a** contains 20 lines, and file **b** contains 30 lines, then how many lines are in
     file **out** after this command line:
     cat a b >c ; head c >c ; sort a b c >out
     a. **60**   *b.* **30**   *c.* **0**   *d.* **100**   *e.* **50**

150. If file **/a** contains 3 lines, and file **/b** contains 5 lines, then how many lines are
     output on your screen by this command line: **cat /a | sort /b**
     a. **5**   *b.* **0**   *c.* **3**   *d.* **8**   *e.* **2**

151. If **foo** were a readable empty file, what would be the output on your screen of this two command sequence:
    PATH=/etc/passwd:/bin/ls:/bin/cat ; /bin/cat foo
    a. **bash: ls: command not found**
    b. **/bin/cat: foo: No such file or directory**
    c. **bash: /bin/cat: command not found**
    d. **bash: cat: command not found**
    e. no output on screen

152. In the output of the command **ls -a**, a dot (period) that *begins* a name signifies what?
    a. A current file.
    b. A name that is hidden.
    c. The current directory.
    d. The parent directory.
    e. A name with an unprintable character.

153. What is the link count of file **f** after these successful commands?
    rm f ; touch f ; ln f a ; ln a b
    cp f c ; ln c x ; rm b ; mv a b
    a. **1**   *b.* **3**   *c.* **0**   *d.* **4**   *e.* **2**

154. If I have a directory owned by me named **/a/b/c/d**, which action would increase its *link count* by exactly one?
    a. create a directory named **/a/b/c/d/e**
    b. create one file named **/a/b/c/d2**
    c. create a directory named **/a/b/c/d**
    d. create a directory named **/a/b/c/d2**
    e. create one file named **/a/b/c/d/e**

155. If **/bin/bat** is a program that outputs **foo** and **/usr/bin/bat** is a program that outputs **hi** what would be the output on your screen of this two command sequence: **PATH=/usr:/usr/bin:/bin ; bat**
    a. **foo**
    b. **hi** followed by **foo**
    c. **hi**
    d. **foo** followed by **hi**
    e. **bash: bat: command not found**

156. Which signal cannot be caught or ignored by a process and causes an immediate process end?
    a. **END**   *b.* **STOP**   *c.* **TERM**   *d.* **KILL**   *e.* **HUP**

157. The signal sent to a foreground process by typing the **[Ctrl-C]** key is:
    a. **SIGSTOP**   *b.* **SIGHUP**   *c.* **SIGTERM**
    d. **SIGINT**   *e.* **SIGKILL**

158. What is the purpose of the shadow password file?
    a. to store secondary passwords for times when you forget your main one
    b. to keep a back-up of the main password file in case of corruption
    c. to allow passwords to exist on partitions other than the ROOT
    d. to hide encrypted passwords from viewing by ordinary users
    e. to reduce the size of the main password file for faster access

159. The **/etc/fstab** file contains a list of:
    a. file system tables used to identify partition types
    b. currently mounted file systems
    c. file system tables used by the usermod command
    d. file system tables used by the adduser command
    e. file systems to mount when booting the system

160. Which of these commands makes a file owned by me, also executable by me?
    a. **chmod x=u ./myfile**   *b.* **chmod u+x ./myfile**
    c. **umask 111 myfile**   *d.* **umask 777 myfile**
    e. **chmod x+u myfile**

161. What is the possible output on your screen of this command line:
    echo wc >date ; sort date >date ; cat date
    a. **1 6 28 date**
    b. **Fri Mar 16 12:00:00 EST 2012**
    c. no output on screen
    d. **1 6 29 date**
    e. **wc**

162. The output of the **whoami** command is:
    a. a list of users logged in to the system
    b. the current directory
    c. your HOME directory
    d. a list of accounts in the password file
    e. your userid

163. What is the link count of file **foo** after this set of successful commands?
    rm foo ; touch foo ; ln foo bar
    cp bar x ; ln x y ; ln y z
    a. 1   *b.* 0   *c.* 3   *d.* 4   *e.* 2

164. How many arguments are passed to the command by the shell on this command line: **<bat bat -b "-a -r" >bat bat bat**
    a. **7**   *b.* **3**   *c.* **5**   *d.* **4**   *e.* **6**

165. Which of these commands always returns you to your account HOME directory?
    a. **cd**   *b.* **cd ..**   *c.* **cd home**
    d. **cd /home/..**   *e.* **cd /home**

166. Which command is used to change run levels?
    a. `telinit`   *b.* `chsh`   *c.* `chkconfig`
    d. `chmod`   *e.* `runlevel`

167. The basic purpose of a shell is:
    a. to expand pathnames
    b. to find and run commands
    c. to search for strings inside text files
    d. to format hard drives
    e. to program system administration backup procedures

168. Which of the following is true, given this long directory listing:
    `drwxr-x--x 712 bin bin 512 Jul 31 12:33 dir`
    a. The number 512 is the count of links (names) this directory has.
    b. The number 712 is the inode number of this directory.
    c. The number 712 is the count of links (names) this directory has.
    d. The number 512 is the inode number of this directory.
    e. The number 712 is the size of this directory.

169. How do the package managers YUM and RPM differ?
    a. RPM is more high-level than YUM, but cannot handle dependencies
    b. YUM is more high-level than RPM and can handle dependencies
    c. RPM is more high-level than YUM and can handle dependencies
    d. RPM handles RPM files and YUM handles DEB files
    e. YUM is more high-level than RPM, but cannot handle dependencies

170. What GRUB line do you modify to boot a machine single-user?
    a. `grub`   *b.* `boot`   *c.* `kernel`
    d. `timeout`   *e.* `initrd`

171. The option to `ls` that shows which names are directories is:
    a. `-a`   *b.* `-i`   *c.* `-l`   *d.* `-R`   *e.* `-1`

172. Given the following, can user `bird` in group `sesame` copy `./foo` to `bar`?
    `drwxrw-r-x 2 root sesame 4096 Oct 7 14:00 .`
    `-rwx-wx-wx 1 bird sesame 123  Oct 4 14:05 foo`
    a. Yes, because `bird` has write permissions on `foo`
    b. No, because `foo` has no read permissions for `bird`
    c. No, because the directory is not accessible to `bird`
    d. No, because the directory has no write permissions for others
    e. Yes; permissions don't apply because `bird` owns `foo`

173. Which command below removes only this file name containing a special character:
    `?xyz`
    a. `rm ?xyz`   *b.* `rm ''?xyz`   *c.* `rm ?'xyz'`
    d. `rm '?xyz'`   *e.* `rm ''?xyz''`

174. What is true about this output from `ls -il foo bar`?
    `15 -r-x------ 2 bin bin 3 Jul 31 12:33 foo`
    `15 -rwxrwxrwx 2 bin bin 3 Jul 31 12:33 bar`
    a. `foo` and `bar` are names for the same file
    b. this output is not possible
    c. `foo` and `bar` are names for different files
    d. `foo` and `bar` are two of three names for the same file
    e. `foo` and `bar` each have three names (six names total)

175. If file `/a` contains 3 lines, and file `/b` contains 5 lines, then how many lines are in file `/c` after this command line:
    `cat /a /b >/c ; sort /c >/c ; sort /c /a /b >/c`
    a. 8   *b.* 5   *c.* 16   *d.* 0   *e.* 3

176. What is contained in the local variable `$$` ?
    a. the cpu cost of the current session, in dollars
    b. `$$` is not a valid variable name
    c. the command name of the previous command line
    d. the first argument of the previous command line
    e. the process ID of the current shell

177. How many arguments are passed to the command by the shell on this command line: `<foo foo " a 'b c' d " e ' f " g " ' >foo h`
    a. 5   *b.* 6   *c.* 4   *d.* 2   *e.* 3

178. What command displays the groups you are in?
    a. `lstgroups`   *b.* `grouprint`   *c.* `groups`
    d. `mkgroups`   *e.* `gpasswd`

179. What is the output on your screen after this command line:
    `echo hi >ls ; cat ls > wc`
    a. `ls`   *b.* `hi`
    c. `1  1  2`   *d.* `1  1  3`
    e. no output on screen

180. Given the following, can user `bird` in group `sesame` modify `./foo`?
    `dr-xr--r-x 2 root sesame 4096 Oct 7 14:00 .`
    `-rw-rw-r-- 1 bird sesame 123  Oct 4 14:05 foo`
    a. No, because `bird` has no write permission on the directory
    b. No, because the directory is not accessible to `bird`
    c. No, because execute permissions are not set for `bird` on `foo`
    d. Yes, because `bird` has write permissions on `foo`
    e. Yes; permissions don't apply because `bird` owns `foo`

181. What command will recursively find all pathnames (anywhere) owned by UID 99:
    a. `ls -name 99 /`   *b.* `ls -R 99 /`
    c. `grep -name 99 /`   *d.* `find / -user 99`
    e. `usermod -name 99 /`

182. What is the output of this command line if run in an empty directory:
`touch A a ; echo * >"*" ; ls`
a. **`* A a`**   *b.* No output   *c.* **`* >*`**
d. **`A a >*`**   *e.* **`A a >A a`**

183. What is the output on your screen of this command line:
`echo wc >wc ; wc wc >wc ; cat wc`
a. **`0 0 0 wc`**   *b.* **`1 1 3 wc`**   *c.* no output
d. **`wc`**   *e.* **`1 1 2 wc`**

184. Which is the best choice for an extended partition size that will hold exactly two 100MB logical partitions?
a. 130MB   *b.* 200MB   *c.* 330MB
d. 190MB   *e.* 230MB

185. In an empty directory, what is the output on your screen after this command line:
`echo hi >.out ; ls *`
a. **`.     ..     .out`**
b. no output on screen
c. **`.out`**
d. **`*`**
e. an error message from **`ls`** saying **`*`** does not exist

186. What command displays your numerical UID and GID?
a. **`passwd`**   *b.* **`ugprint`**   *c.* **`uidprint`**
d. **`gd`**   *e.* **`id`**

187. Which of these is the Unix/Linux device name of your third disk?
a. **`hd2`**   *b.* **`sd3`**   *c.* **`sdc`**
d. **`hd0,3`**   *e.* **`sda3`**

188. Given my directory **`dir`** and my file **`dir/foo`** owned by me, which permissions allow me to delete the file **`dir/foo`** from the directory, but not change the content (data) in the file?
a. Permissions **`600`** on directory **`dir`** and **`500`** on file **`dir/foo`**.
b. Permissions **`600`** on directory **`dir`** and **`300`** on file **`dir/foo`**.
c. Permissions **`700`** on directory **`dir`** and **`200`** on file **`dir/foo`**.
d. Permissions **`500`** on directory **`dir`** and **`500`** on file **`dir/foo`**.
e. Permissions **`300`** on directory **`dir`** and **`500`** on file **`dir/foo`**.

189. Which of these statements is true?
a. Unix commands must be entered in lower-case letters.
b. Unix commands can be entered in upper-case or lower-case letters; they are equivalent.
c. To erase an entire line of typing, type [CTRL]-[E].
d. To indicate End-of-File (no more input), type [CTRL]-[E].
e. To delete a word from the shell command line, type [CTRL]-[D]

190. A "swap" partition is used:
a. to store extra files when the ROOT disk gets full
b. to keep large user home directories
c. to keep a back-up copy of user home directories
d. to run programs larger than the available memory
e. to allow swapping a new disk for one with bad sectors

191. What numeric **`chmod`** permissions would you use to change the permissions on a file to **`r-xr--rw-`**?
a. **`513`**   *b.* **`212`**   *c.* **`122`**   *d.* **`305`**   *e.* **`546`**

192. If you are in **`/etc`** and **`ls -l`** shows a symbolic link **`bar -> ../you/foo`** then dereference the absolute path of **`bar`** with no symbolic links:
a. **`/etc/you/foo`**   *b.* **`/bar/you/foo`**
c. **`/you/foo`**   *d.* **`/etc/bar/you/foo`**
e. **`/etc/you/foo/bar`**

193. The output of the **`tree`** command is:
a. an recursive list of directories and their contents
b. the tree of files under your HOME directory
c. a recursive list of users logged in to the system
d. the tree of users logged in to the system
e. the tree of files under the ROOT directory

194. If my current directory is **`/etc`**, which of these pathnames is equivalent to the file name **`/etc/passwd`**?
a. **`passwd/.`**   *b.* **`/root/etc/passwd`**
c. **`../etc/passwd/.`**   *d.* **`./../../etc/./passwd`**
e. **`./etc/passwd`**

195. How many arguments are passed to the command by the shell on this command line: **`<cow cow "-x" "-y '-z' >cow cow`**
a. **`7`**   *b.* **`5`**   *c.* **`4`**   *d.* **`6`**   *e.* **`3`**

196. Which of these pathnames is *not* an absolute pathname (after all shell expansions)?
a. **`/../foo`**   *b.* **`~/foo`**   *c.* **`$HOME/foo`**
d. **`/foo`**   *e.* **`foo`**

197. What is the link count of directory **`a`** after this set of successful commands?
`mkdir a ; mkdir a/b ; mkdir a/c ; mkdir a/b/c`
a. 1   *b.* 4   *c.* 5   *d.* 2   *e.* 3

198. Which command line makes pathnames **`/usr/local/bin`** and **`/usr/bin`** lead to the same directory?
a. **`ln . /usr/local`**   *b.* **`touch /usr/local`**
c. **`ln -s . /usr/local`**   *d.* **`mkdir /usr/local`**
e. **`rmdir /usr/local`**

199. If my current directory is **/home**, and my home directory is **/home/me**, which command copies the password file into my home directory under the name **foo**?
    a. **cp ../etc/passwd ../me/foo**
    b. **cp ./me/../etc/passwd ../home/me/foo**
    c. **cp me/../../etc/passwd me/foo**
    d. **cp ../home/me/../etc/passwd ./me/./foo**
    e. **cp ../../etc/passwd /me/foo**

200. Which of these statements is true?
    a. If **/x** is an empty directory, **sort /x/*** produces an error message.
    b. Only double quotes are strong enough to stop glob (wildcard) patterns from expanding.
    c. Only backslashes are strong enough to stop glob (wildcard) patterns from expanding.
    d. If **/y** is an empty directory, **echo /y/*** produces an error message.
    e. Only single quotes are strong enough to stop glob (wildcard) patterns from expanding.

201. If **pig** is a sub-directory that contains only the file **dog**, what happens after this command: **mv pig/dog pig/./../cat**
    a. the command fails because the name **pig/./../cat** does not exist
    b. there is a second copy of the file **dog** in the file named **cat**
    c. the directory **pig** is now empty
    d. the command fails because the name **cat** does not exist
    e. the directory **pig** now contains only a file named **cat**

202. If **foo** is a sub-directory that contains only the file **bar**, what happens after this command: **cp foo/bar ./foo/../me**
    a. the directory **foo** now contains only a file named **me**
    b. there is a second copy of the file **bar** in directory **foo**
    c. the directory **foo** is now empty
    d. the command fails because the name **foo/bar** does not exist
    e. there is a second copy of the file **bar** in the file named **me**

203. Which of the following is true, given this long directory listing:
    drwxr-x--x 512 ian user 712 May 30 12:35 dir
    a. The number 512 is the count of links (names) this directory has.
    b. The number 512 is the inode number of this directory.
    c. The number 512 is the size of this directory.
    d. The number 712 is the inode number of this directory.
    e. The number 712 is the count of links (names) this directory has.

204. Given the following, can user **kirk** in group **starfleet** modify **./file1**?
    dr-xr-xr-x 2 root starfleet 4096 Oct 7 14:00 .
    -rw-r-xr-x 1 kirk starfleet 123 Oct 4 14:05 file1
    a. Yes, because **kirk** has write permissions on **file1**
    b. No, because execute permissions are not set for **kirk** on **file1**
    c. No, because the directory is not accessible to **kirk**
    d. Yes, because **kirk** owns **file1**
    e. No, because **kirk** has no write permission on the directory

205. Which of these commands makes a file owned by me, also readable by me?
    a. **umask 400 myfile**   b. **chmod r+u myfile**
    c. **umask 300 ./myfile**   d. **chmod u+r ./myfile**
    e. **chmod r=u ./myfile**

206. In an empty directory, how many words are in file **out** after this command line:
    touch a ; ls >out
    a. **2**   b. **4**   c. **0**   d. **3**   e. **1**

207. How can you ask the **bash** (Linux) shell to complete commands or file names for you?
    a. Type the first part of the command or file name and press the **[TAB]** key.
    b. Type the first part of the command or file name and press the **[ALT]** key.
    c. Type the first part of the command or file name and press the **[ALT]-[F1]** key.
    d. Type the first part of the command or file name and press the **[CTRL]-[D]** key.
    e. Type the first part of the command or file name and press the **[CTRL]-[C]** key.

208. You enter this **cp a/b c/**
    and get **cp: a: No such file or directory**
    because:
    a. directory **a** does not exist
    b. you forgot to specify the destination file name after **c/**
    c. directory **c** does not exist
    d. pathname **a** exists but is a file, not a directory
    e. the command **cp** is not in your search PATH

209. If I have a directory named **foo/bar**, which action would increase its *link count* by exactly one?
    a. create a directory named **foo/pig**
    b. create a file named **foo/cat**
    c. create a file named **foo/bar/dog**
    d. create a directory named **foo/bar/9**
    e. create a hard link to directory **bar** named **pig**

210. Which command line lists all possible utilities available for compiling programs?
    a. `locate compile`   *b.* `apropos compile`
    c. `find compile`   *d.* `man compile`
    e. `grep compile /etc/`

211. If file **x** contains ten lines, and file **y** contains twenty lines, then how many lines are in file **cat** after this command line:
    `sort x y >z ; tail -5 y >y ; sort x y z >cat`
    a. **50**   *b.* **45**   *c.* **0**   *d.* **40**   *e.* **60**

212. Give the GRUB device name for the third partition of the fourth disk:
    a. `(sd2,3)`   *b.* `(sdd,3)`   *c.* `(hd3,2)`
    d. `(hd4,3)`   *e.* `(hd2,3)`

213. What is in file **out** after this command line:
    `echo me >a ; ln a b ; echo hi >b ; ln a out ; rm a b`
    a. **me**   *b.* **me** followed by **hi**
    c. nothing (empty file)   *d.* no such file (nonexistent)
    e. **hi**

214. How many arguments are passed to the command by the shell on this command line: `<wc wc " 1 '2 3' 4 " 5 6 ' 7 " 8 " ' >wc 9`
    a. **6**   *b.* **5**   *c.* **4**   *d.* **3**   *e.* **2**

215. Which command line lists all possible utilities available for sorting files?
    a. `man sort`   *b.* `man -k sort`
    c. `grep sort /etc/passwd`   *d.* `grep /etc/passwd sort`
    e. `man | grep sort`

216. In an empty directory, what is the output on your screen of this command line:
    `echo hi >foo >bar ; cat foo`
    a. **hi >foo >bar**
    b. **hi >foo**
    c. **hi**
    d. `cat: foo: No such file or directory`
    e. no output

217. What is true about this output from `ls -il foo bar`
    `35 -rw-rw-r-- 2 bin  bin  3 Jan 24 01:03 foo`
    `36 -rw-rw-r-- 2 bin  bin  3 Jan 24 01:03 bar`
    a. **foo** and **bar** are names for the same file
    b. this output is not possible
    c. **foo** and **bar** each have two names (four names total)
    d. **foo** and **bar** each have three names (six names total)
    e. **foo** and **bar** are two of three names for this file

218. In an empty directory, how many arguments are passed to the **wc** command in this command line: `touch xx yy >zz 123 .a b. ; wc ??`
    a. **5**   *b.* **1**   *c.* **2**   *d.* **4**   *e.* **0**

219. The output of the **find** command is:
    a. a recursive list of pathnames
    b. account names matching a pattern
    c. finds patterns inside a file corresponding to lines
    d. a recursive list of users logged in to the system
    e. finds lines inside a file matching a pattern

220. If file **foo** contains 9 lines, each of which is the one-digit line number of the line in the file (**1** through **9**), what is the output on your screen of this command:
    `cat foo foo | sort | uniq | tail -3 | head -1`
    a. **3**   *b.* **8**   *c.* **7**   *d.* **7 7**   *e.* **1**

221. What is the output of this command line in an empty directory:
    `touch 1 2 3 .a .b .c ; echo .??*`
    a. `.??*`
    b. an error message from **echo** saying `.??*` does not exist
    c. `. .. 1 2 3 .a .b .c`
    d. `. .. .a .b .c`
    e. `.a .b .c`

222. When a personal **crontab** job runs, the current working directory is set to:
    a. the system ROOT directory
    b. the current directory that was in use when the **crontab** job was created
    c. the directory `/root`
    d. the HOME directory of the user
    e. the directory `/home`

223. If you are in `/etc` and `ls -l` shows a symbolic link `bar -> ../foo` then dereference the absolute path of **bar** with no symbolic links:
    a. `/foo`   *b.* `/etc/bar/foo`   *c.* `/bar/foo`
    d. `/etc/foo/bar`   *e.* `/etc/foo`

224. In an empty directory, what is the output on your screen after this command line:
    `echo hi >a ; ls | wc -w`
    a. **1**   *b.* no output   *c.* **a**
    d. **0**   *e.* **2**

225. In an empty directory, how many words are in file **out** after this command line:
    `echo hi >a ; ls >out`
    a. **1**   *b.* **2**   *c.* **0**   *d.* **4**   *e.* **3**

226. If you type the command `cat ,`
which key sequence will send an EOF and take you back to the command prompt?
    a. `[CTRL-I]`   *b.* `[CTRL-C]`   *c.* `[CTRL-R]`
    d. `[CTRL-D]`   *e.* `[CTRL-U]`

227. Which of the following is true, given this long directory listing:
     `drwxr-x--x 256 ian user 512 May 30 12:35 dir`
     a. The number 256 is the size of this directory.
     b. The number 512 is the count of links (names) this directory has.
     c. The number 256 is the inode number of this directory.
     d. The number 512 is the size of this directory.
     e. The number 256 is the octal permissions of this directory.

228. In an empty directory, what is the output on your screen after this command line:
     `date >.foo >.bar ; ls *`
     a. **`*`**
     b. **`.  ..  .foo  .bar`**
     c. **`.foo .bar`**
     d. an error message from **`ls`** saying **`*`** does not exist
     e. no output

229. If my curent directory contains these five two-character file names: **`z1`**, **`z2`**, **`z*`**, **`z?`**, **`??`**, then which command below will remove only the single two-character name **`z?`** from the directory (and no others)?
     a. **`rm ?\?`**   *b.* **`rm "z?"`**   *c.* **`rm \?`**
     d. **`rm z?`**   *e.* **`rm \z?`**

230. What is the output on your screen after this command line:
     `echo xx >z ; ls z > wc`
     a. **`1  1  2`**   *b.* no output   *c.* **`1  1  3`**
     d. **`3`**   *e.* **`2`**

231. The password **`:x:`** in **`/etc/passwd`** means:
     a. the encrypted password is **`"x"`**
     b. the encrypted password is stored in the shadow file
     c. the password is locked
     d. the unencrypted password is stored in the group file
     e. the account is locked

232. What is the output on your screen after this command line:
     `echo one >x ; ln x y ; echo two >>y ; sort x`
     a. no output   *b.* **`one`** followed by **`two`**
     c. **`two`** followed by **`one`**   *d.* **`two`**
     e. **`one`**

233. If file **`/a`** contains 40 lines, and file **`/b`** contains 60 lines, then how many lines are output on your screen by this command line:
     `sort /a /b | cat /a | cat /b`
     a. **`100`**   *b.* **`40`**   *c.* **`160`**   *d.* **`60`**   *e.* **`200`**

234. Which command below is the best way to find a line containing an asterisk (**`*`**) in the file named **`foo`**?
     a. **`grep * foo`**   *b.* **`grep foo [*]`**
     c. **`grep '*' foo`**   *d.* **`grep ./* foo`**
     e. **`grep foo "*"`**

235. What command creates an **`ext3`** file system on the third partition of the first disk?
     a. **`mkfs -t ext3 /dev/sda3`**   *b.* **`mkfs -t /dev/sda3 ext3`**
     c. **`mkfs ext3 /dev/sda3`**   *d.* **`mkfs ext3 /dev/sd3a`**
     e. **`mkfs -t /dev/sd1c`**

236. Given this **`ls -il`** long listing:
     `454 drwxr-xr-x 123 me me 456 Dec 4 9:12 dir`
     How many subdirectories lie immediately under **`dir`**?
     a. **`458`**   *b.* **`123`**   *c.* **`454`**   *d.* **`121`**   *e.* **`456`**

237. What is the link count of directory **`dir`** after this set of successful commands?
     `mkdir dir ; cd dir ; touch one ; mkdir two`
     a. 1   *b.* 5   *c.* 4   *d.* 2   *e.* 3

238. In an empty directory, what is in file **`out`** after this command line:
     `ls nosuchfile | wc -l >out`
     a. **`1`**   *b.* **`0`**
     c. **`10`**   *d.* nothing (empty file)
     e. **`11`**

239. If I am in directory **`/home/me`** and **`mt`** is an empty sub-directory, what is true after this command line: **`touch foo ; mv ./mt/../foo ../me/bar`**
     a. the parent directory of **`mt`** now contains a file named **`bar`**
     b. there is a second copy of the file **`foo`** in the file named **`bar`**
     c. the command fails because the path **`./mt/../foo`** does not exist
     d. the directory **`mt`** now contains only a file named **`bar`**
     e. the command fails because the path **`../me/bar`** does not exist

240. If file **`a`** contains 2 lines, and file **`b`** contains 3 lines, then how many lines are output on your screen by this command line: **`sort a | head b`**
     a. no output   *b.* **`0`**   *c.* **`2`**
     d. **`3`**   *e.* **`5`**

241. How many arguments are passed to the command by the shell:
     `<f z " a 'b c' d " 1 2 ' g " h " ' >z`
     a. **`3`**   *b.* **`4`**   *c.* **`6`**   *d.* **`2`**   *e.* **`5`**

242. Which command line always prints just the two characters **`$x`** on the screen?
     a. **`echo "$$x"`**   *b.* **`echo "$x"`**   *c.* **`echo $$x`**
     d. **`echo '$x'`**   *e.* **`echo $x`**

243. If my current working directory is **/bin**, which command copies the passwd file into existing directory **/bin/dir** under the name **bar**?
    a. **cp ../bin/./dir/../etc/passwd ./dir/./bar**
    b. **cp ././../etc/passwd ../dir/bar**
    c. **cp ././dir/../etc/passwd ../bin/dir/bar**
    d. **cp dir/../../etc/passwd ./dir/bar**
    e. **cp ../../etc/./passwd /dir/bar**

244. If you type the command **cat**, which key sequence will send an EOF and take you back to the command prompt?
    a. **[CTRL-U]**   *b.* **[CTRL-R]**   *c.* **[CTRL-D]**
    d. **[CTRL-L]**   *e.* **[CTRL-C]**

245. What is the absolute pathname of the Unix/Linux password (account) file?
    a. **/var/passwd**   *b.* **/lib/passwd**   *c.* **/usr/passwd**
    d. **/bin/passwd**   *e.* **/etc/passwd**

246. In the output of the command **ls -a**, a dot that *begins* a name signifies what?
    a. A name with an unprintable character.
    b. A current file.
    c. The parent directory.
    d. A name that is hidden.
    e. The current directory.

247. In the output of the command **ls -a**, the one-character name **.** signifies what?
    a. A name with an unprintable character.
    b. A current file.
    c. The parent directory.
    d. A name that is hidden.
    e. The current directory.

248. Which of the command lines below can generate a non-empty file?
    a. **grep foo foo >foo**   *b.* **ls -i foo >foo**
    c. **sort -r foo >foo**   *d.* **tail -5 foo >foo**
    e. **cat foo >foo**

249. What command compares files line-by-line?
    a. **tar**   *b.* **diff**   *c.* **compare**
    d. **file**   *e.* **linecmp**

250. Which command line displays the contents of the Unix **passwd** file one page at a time?
    a. **/etc/passwd | more**   *b.* **cat /etc/passwd >more**
    c. **/etc/passwd >more**   *d.* **more | /etc/passwd**
    e. **more < /etc/passwd**

251. What command shows all the lines in file **cow** that contain the string **pig**?
    a. **grep pig <cow**   *b.* **grep pig >cow**
    c. **grep cat cow pig**   *d.* **cat cow > grep pig**
    e. **grep cow pig**

252. Given user **foo** in group **foo** and user **bar** in group **bar**, which command line enables a file to be read by both **foo** and **bar**:
    a. chown bar file ; chown foo file ; chmod 333 file
    b. chown foo:bar file ; chmod 440 file
    c. chown foo:bar file ; chmod 077 file
    d. chown foo:foo file ; chmod bar:bar file
    e. chown foo file ; chown bar file ; chmod 440 file

253. The **minimum** permissions you need to rename a file in a directory are:
    a. **wx** permissions on the directory and **w** permissions on the file
    b. **w** permissions on the directory, no permissions on the file
    c. **wx** permissions on the directory, no permissions on the file
    d. **x** permissions on the directory and **w** permissions on the file
    e. **w** permissions on the directory and **w** permissions on the file

254. If I am in my home directory named **/home/me** and **mt** is an empty sub-directory, what is true after this command line:
    touch ./foo ; mv ./mt/../foo ../me/bar
    a. the directory **mt** now contains only a file named **bar**
    b. the directory **mt/..** now has a file named **bar** in it
    c. the command fails because path **../me/bar** does not exist
    d. the command fails because path **./mt/../foo** does not exist
    e. there is a second copy of the file **foo** in the file named **bar**

255. In a directory that contains only the file **single**, what happens after this command: **mv single double**
    a. the command fails because the name **double** does not exist
    b. the command fails because **single** is not a directory
    c. an empty file named **double** is created
    d. there is only the file named **double** in the directory now
    e. there is a second copy of the file **single** in the file named **double**

256. If I am in directory **/home/me** and **mt** is an empty sub-directory, what is true after this command line: **touch foo ; mkdir bar ; mv foo mt/bar**
    a. the command fails because **mt/bar** is not a directory
    b. the directory **mt** now contains a file named **foo**
    c. the directory **bar** now contains a file named **foo**
    d. the directory **mt** is still empty
    e. the directory **mt** now contains a file named **bar**

257. Pick the correct order of operations:
    a. **fdisk, swapon, mkswap**   *b.* **swapon, fdisk, mkswap**
    c. **fdisk, mkswap, swapon**   *d.* **swapon, mkswap, fdisk**
    e. **mkswap, fdisk, swapon**

258. If file **/a** contains 7 lines, and file **/b** contains 5 lines, then how many lines are in file **/c** after this command line:
    cat /a /b >/c ; sort /c >/c ; sort /c /a /b >/c
    a. **12**   *b.* **0**   *c.* **24**   *d.* **5**   *e.* **7**

259. Which command line displays all the names in the current directory that are exactly three digits long (and no others)?
    a. **echo [?][?][?]**   *b.* **echo ???**
    c. **echo [3][3][3]**   *d.* **echo [1-3][1-3][1-3]**
    e. **echo [0-9][0-9][0-9]**

260. If file **nine** contains 9 lines, each of which is the one-digit line number of the line in the file (**1** through **9**), what is the output on your screen of this command:
    sort nine nine | tail -n 5 | head -n 1
    a. **5 5**   *b.* **8**   *c.* **5**   *d.* **7**   *e.* **9**

261. To "throw away" (hide) standard error output of a command, use:
    a. **date 2>&1**   *b.* **date 1>&2**
    c. **date 2>/dev/sda1**   *d.* **date 2>/dev/null**
    e. **date 1>/dev/sda1**

262. If I am in my home directory named **/home/me** and **mt** is an empty sub-directory, what is true after this command line:
    touch ../me/foo ; cp ./mt/../foo ./mt/../bar
    a. the file named **foo** is now renamed to **bar**
    b. the directory **mt** is still empty
    c. the command fails because the path **./mt/../foo** does not exist
    d. the directory **mt** now has a file named **bar** in it
    e. the directory **mt** now contains two files

263. If directory **dir** contains only these four three-character file names: **.on**, **.tw**, **.th**, **.f.**, then what is the output on your screen of this command line:
    echo dir/*
    a. **dir/***
    b. **dir/.on dir/.tw dir/.th**
    c. **dir/. dir/.. dir/.on dir/.tw dir/.th dir/.f.**
    d. **dir/.f.**
    e. no output

264. Who can change the permissions of the following directory?
    dr-xrwxrwx 17 foo bar 4096 Apr 15 16:40 .
    a. any users
    b. only user **foo**
    c. anyone except user **foo**
    d. user **foo** and any user in group **bar**
    e. only users in group **bar**

265. What command creates a new user account?
    a. **groupmod**   *b.* **passwd**   *c.* **makeuser**
    d. **gpasswd**   *e.* **useradd**

266. If I have a directory named **a/d**, which action would increase its *link count* by exactly one?
    a. create a directory named **a/d/e**
    b. create a directory named **a/d2**
    c. create a file named **a/d/e**
    d. create a file named **a/d2**
    e. create a hard link to directory **d** named **d2**

267. Which of the command lines below can generate a non-empty file?
    a. **sort foo >foo**   *b.* **ls foo >foo**
    c. **grep 'foo' foo >foo**   *d.* **tail foo >foo**
    e. **cat foo >foo**

268. Given the following, can user **bird** in group **sesame** modify **./foo**?
    dr-xr-xr-x 2 root sesame 4096 Oct 7 14:00 .
    -rw-r-xr-x 1 bird sesame 123 Oct 4 14:05 foo
    a. No, because the directory is not accessible to **bird**
    b. Yes; permissions don't apply because **bird** owns **foo**
    c. No, because **bird** has no write permission on the directory
    d. Yes, because **bird** has write permissions on **foo**
    e. No, because execute permissions are not set for **bird** on **foo**

269. What command modifies existing account information (and possibly home directory)?
    a. **makeuser**   *b.* **passwd**   *c.* **adduser**
    d. **usermod**   *e.* **newuser**

270. Which of these statements is true?
    a. To erase an entire line of typing, type [CONTROL]-[E].
    b. Unix commands must be entered in lower-case letters.
    c. To indicate End-of-File (no more input), type [CONTROL]-[E].
    d. Unix commands can be entered in upper-case or lower-case letters; they are equivalent.
    e. To delete a word from the shell command line, type [CONTROL]-[D]

271. What is the output on your screen after these command lines:
echo 1 >x ; ln x y ; echo 2 >y
chmod 077 y ; cat x
a. **1**   *b.* **1** followed by **2**
c. an error message   *d.* no output on screen
e. **2**

272. Give the minimum number of directories in this pathname: **/a/b/c/d**
a. **4**   *b.* **5**   *c.* **1**   *d.* **2**   *e.* **3**

273. What is the output on your screen after this command line:
    mkdir foo ; rmdir foo | wc -c
a. **3**   *b.* **1**   *c.* **4**
d. **0**   *e.* no output

274. If file **/a** contains 30 lines, and file **/b** contains 50 lines, then how many lines are in file **/c** after this command line:
    cat /a /b >/c ; sort /c >/c ; sort /c /a /b >/c
a. **80**   *b.* **30**   *c.* **0**   *d.* **160**   *e.* **50**

275. Which command mounts the second partition of the third disk on directory **foo**?
a. **mount /mnt/sdc2 /dev/foo**
b. **mount /mnt/foo /dev/sdc2**
c. **mount -t ntfs /mnt/sdc2 /dev/foo**
d. **mount /dev/sdc2 /mnt/foo**
e. **mount -t vfat /mnt/foo /dev/sdc2**

276. What is the link count of directory **d** after this set of successful commands?
    mkdir d ; mkdir d/a ; mkdir d/b ; mkdir d/b/c
a. 5   *b.* 3   *c.* 1   *d.* 4   *e.* 2

277. What is usually contained in the environment variable **$PATH**?
a. the absolute path of your login shell
b. a colon-separated list of your **passwd** file fields
c. the absolute path of your login home directory
d. the absolute path of the system **/path** directory
e. a colon-separated list of directories, each containing command files

278. If I am in my home directory named **/home/me** and **dir** is an empty sub-directory, what is true after this command line:
    touch ./foo ; mv dir/../foo ../me/cat
a. the directory **dir/..** now has a file named **cat** in it
b. there is a second copy of the file named **foo** in the file named **cat**
c. the command fails because the path **../me/cat** does not exist
d. the command fails because the path **dir/../foo** does not exist
e. the directory **dir** now contains only a file named **cat**

279. If your **PATH** variable contains **/bin:/usr/bin,** what is the output of this command line: **echo '$PATH'**
a. **'/bin:/usr/bin'**
b. **$PATH**
c. **/bin:/usr/bin**
d. **'$PATH'**
e. **echo: $PATH: No such file or directory**

280. The command that creates a directory and all parent directories is:
a. **mkdir -r a/b/c**   *b.* **touch a/b/c**
c. **rmdir -r a/b/c**   *d.* **rm -r a/b/c**
e. **mkdir -p a/b/c**

281. In an empty directory, what is the output on your screen after this command line:
    touch 1 2 .a .b ; echo .*
a. **.***
b. **1 2**
c. **.a .b**
d. an error message from **echo** saying **.*** does not exist
e. **. .. .a .b**

282. In an empty directory, how many words are in file **cow** after this command line:
    touch dog dog cat ; ls >cow
a. **1**   *b.* **2**   *c.* **3**   *d.* **0**   *e.* **4**

283. What is true about this output from **ls -il foo bar**
15 -r-x-----x 2 bin   bin   3 Oct 30 09:23 foo
15 -r-x-----x 2 bin   bin   3 Oct 30 09:23 bar
a. **foo** and **bar** are names for the same file
b. **foo** and **bar** are two of three names for this file
c. **foo** and **bar** each have three names (six names total)
d. this output is not possible
e. **foo** and **bar** are names for different files

284. In an empty directory, how many words are in file **b** after this:
    echo 1 2 3 b ; ls >b
a. 3   *b.* 0   *c.* 4   *d.* 1   *e.* 2

285. How do I search for the string **xyz** in the text display output from the **man** command?
a. **search xyz**
b. **find xyz**
c. **@xyz**
d. use the mouse to select "Search" in the menu
e. **/xyz**

286. If I am in directory **/home/me** and **mt** is an empty sub-directory, what is true after this command line: **touch ./foo ; mv mt/../foo mt/../bar**
   a. the command fails because the path **mt/../bar** does not exist
   b. the directory **mt** now contains only a file named **bar**
   c. the command fails because the path **mt/../foo** does not exist
   d. there is a second copy of the file **foo** in the file named **bar**
   e. the directory **../me** now contains a file named **bar**

287. If file **foo** contains 99 lines, each of which is the two-digit line number of the line in the file (**01** through **99**), what is the output on your screen of this command:
   sort -r foo foo | tail -4 | head -1
   a. **96**   b. **98**   c. **96 96**
   d. **04 04**   e. **02**

288. If my current directory is **/lib**, which of these pathnames is equivalent to the file name **/lib/foo**?
   a. **./lib/foo**   b. **./foo**   c. **/foo**
   d. **../foo**   e. **../lib/foo/.**

289. Which one of these names is usually a shell environment variable?
   a. **FOOBAR**   b. **foobar**   c. **FooBar**
   d. **Foobar**   e. **fooBar**

290. What is true about this output from **ls -il foo bar**
   23 -rwxr----- 3 root root 2 Jul 31 12:33 foo
   24 -rwxr----- 3 root root 2 Jul 31 12:33 bar
   a. **foo** and **bar** are names for different files
   b. **foo** and **bar** are two of three names for this file
   c. this output is not possible
   d. **foo** and **bar** each have two names (four names total)
   e. **foo** and **bar** are names for the same file

291. If file **twenty** contains twenty lines, and file **thirty** contains thirty lines, then how many lines are output on your screen by this command line:
   tail thirty | cat twenty
   a. **50**   b. **0**   c. **21**   d. **20**   e. **30**

292. Which *CTRL* key will erase a full line of typing in a terminal window?
   a. **^I**   b. **^D**   c. **^U**   d. **^C**   e. **^R**

293. Given this successful command line (note the dot argument):
   cd /home/foo ; mkdir bar ; cd bar ; chmod -x .
   Which of the following subsequent commands will execute without any "permission denied" errors?
   a. **ls /home/foo/bar**   b. **ls .**
   c. **ls ..**   d. **ls /home/foo/bar/..**
   e. **ls /home/foo/bar/.**

294. What would you see if you typed this command: **cat /foo**
   a. The contents of the file **foo** located in the parent directory
   b. The contents of the file **foo** located in your home directory
   c. The contents of the file **foo** located in the ROOT directory
   d. The contents of your subdirectory named **foo**
   e. The contents of your directory named **foo**

295. In an empty directory, what happens after this command line:
   touch a b c ; mv a b c
   a. the files **a**, **b**, and **c** are moved to the current directory
   b. the files **a** and **b** are appended to the file **c**
   c. an error message: **mv: target 'c' is not a directory**
   d. the files **a**, **b**, and **c** are moved to the directory **c**
   e. the files **a** and **b** are moved into the directory **c**

296. What is the output on your screen of this command line:
   umask 674 ; touch newfile ; ls -l newfile
   a. **---x----wx 1 me me 0 Feb 20 07:55 newfile**
   b. **-rw-rwxr-- 1 me me 0 Feb 20 07:55 newfile**
   c. **--------w- 1 me me 0 Feb 20 07:55 newfile**
   d. **--w--wxr-x 1 me me 0 Feb 20 07:55 newfile**
   e. **-rw-rw-r-- 1 me me 0 Feb 20 07:55 newfile**

297. What is the output of this command line in an empty directory:
   touch 1 .1 23 .23 456 ; echo [12]*
   a. **1 .1 23 .23**
   b. an error message from **echo** saying **[ab]*** does not exist
   c. **[12]***
   d. **1 23**
   e. **1 .1 23 .23 456**

298. A "dangling symlink" is a symlink:
   a. to a special device file   b. to the current directory
   c. to a non-existent target   d. to a directory
   e. to a parent directory

299. What will appear on your screen if you execute this sequence of commands in your home directory:
   ln /etc/passwd foo ; ln foo bar
   echo hi >bar ; cat bar
   a. **hi**
   b. an error message and then **hi**
   c. the conents of the password file followed by **hi**
   d. **bar**
   e. an error message and then the contents of the password file

300. What do you do on Linux/Unix to erase an entire line of typing?
   a. select the line with the mouse and use the **DEL** key
   b. select the line with the mouse and use the **BACKSPACE** key
   c. type **[CTRL-U]**
   d. type **[CTRL-D]**
   e. type **[CTRL-W]**

301. If **foo** is a sub-directory that contains only the file **single**, what happens after this command: **mv ./foo/single foo/../double**
   a. the command fails because the name **double** does not exist
   b. the directory **foo** is now empty
   c. the command fails because the name **foo/../double** does not exist
   d. there is a second copy of the file **single** in the file named **double**
   e. the directory **foo** now contains only a file named **double**

302. Which of these statements is true?
   a. If you give me write permission on a file owned by you, I can rename it.
   b. To make a hard link to file "**foo**" named "**bar**", file "**foo**" must exist.
   c. The "**ln**" command takes two arguments, so the maximum number of hard links a file can have is two.
   d. You can make a hard link to a directory.
   e. To erase an entire line of typing, type [CONTROL]-[E].

303. What is the output of this command line in an empty directory:
   touch 1 2 3 .a .ab .abc ; echo [.]*
   a. an error message from **echo** saying **[.]*** does not exist
   b. **.a .ab .abc**
   c. **. .. .a .ab .abc**
   d. no output
   e. **[.]***

304. If you are in **/etc** and **ls -l** shows a symbolic link **bar -> foo** then dereference the absolute path of **bar** with no symbolic links:
   a. **/etc/bar/foo**   *b.* **/foo**   *c.* **/bar/foo**
   d. **/etc/foo/bar**   *e.* **/etc/foo**

305. Which of the command lines below can generate a non-empty file?
   a. **head -1 file >file**
   b. **grep pattern file >file**
   c. **cat file >file**
   d. **sort -r file >file**
   e. **ls -l file >file**

306. If my current directory is **/etc**, which of these pathnames is equivalent to the file name **/etc/group**?
   a. **../../etc/group/.**   *b.* **/root/etc/group**
   c. **./etc/group**   *d.* **../etc/group**
   e. **group/.**

307. The output of the **tree** command is:
   a. a recursive list of users logged in to the system
   b. the tree of users logged in to the system
   c. the tree of files under the ROOT directory
   d. the tree of files under your HOME directory
   e. an indented, recursive list of directories and their contents

308. What is the output of this command line in an empty directory:
   touch x .a .ab .cde .fghi ; echo .??*
   a. **.cde .fghi**
   b. **.ab .cde .fghi**
   c. **.??***
   d. **. .. .a .ab .cde .fghi**
   e. an error message from **echo** saying **.??*** does not exist

309. Which command below removes only this file name containing a special character:
   abc*
   a. **rm abc***   *b.* **rm abc/***   *c.* **rm abc***
   d. **rm abc//***   *e.* **rm abc***

310. What type and permissions result from this command line:
   umask 156 ; mkdir newdir ; ls -ld newdir
   a. **dr-x-w-rw-**   *b.* **drw--w---x**   *c.* **drw--w----**
   d. **d--xr-xrw-**   *e.* **dr-x--x---**

311. Which command line displays the contents of the Unix **passwd** file one page at a time?
   a. **/etc/passwd | less**   *b.* **cat /etc/passwd less**
   c. **/etc/passwd cat less**   *d.* **cat less | /etc/passwd**
   e. **less /etc/passwd**

312. What is the output of this successful command sequence?
   cd /tmp ; mkdir one ; mkdir two ; pwd
   a. **/tmp**   *b.* **/two**   *c.* **/tmp/one**
   d. **/tmp/two**   *e.* **/tmp/one/two**

313. In an empty directory, what is the output on your screen after this command line:
   echo hi >a ; mv a b ; ln b c ; ls >wc -l
   a. no output   *b.* **a**   *c.* **1**
   d. **2**   *e.* **0**

314. What command fetches (downloads) a file given an http URL?
   a. **wget**   *b.* **download**   *c.* **fetch**
   d. **find**   *e.* **ifetch**

315. What is true about this output from **`ls -il foo bar`**?
    `861 -rw-r--r-- 2 root root 3 Jan 24 01:03 foo`
    `861 -rw-r--r-- 2 bin  root 3 Jan 24 01:03 bar`
    a. **`foo`** and **`bar`** are names for different files
    b. **`foo`** and **`bar`** are two of three names for this file
    c. **`foo`** and **`bar`** are names for the same file
    d. this output is not possible
    e. **`foo`** and **`bar`** each have three names (six names total)

316. Which command can unmount a single mounted file system?
    a. **`telinit`**   b. **`umount`**   c. **`unmount`**
    d. **`chkconfig`**   e. **`swapoff`**

317. To make the **`bash`** shell complete commands or file names, you type the first part
    of the command or file name and then press this key:
    a. **`[TAB]`**   b. **`[CTRL]-[D]`**   c. **`[CTRL]-[C]`**
    d. **`[ALT]-[F1]`**   e. **`[ALT]`**

318. If directory **`/a`** contains these seven two-character file names: **`aa`**, **`ab`**, **`ac`**, **`ad`**,
    `a*`, **`a?`**, **`??`**, then which command below will remove only the single two-
    character name **`a?`** from the directory (and no others)?
    a. **`rm /a/a?`**   b. **`rm "/a?"`**   c. **`rm /a/?\?`**
    d. **`rm '/a/a?'`**   e. **`rm /a\?`**

319. Which command removes adjacent duplicate lines from a file?
    a. **`dupl`**   b. **`duplicate`**   c. **`unique`**
    d. **`uniq`**   e. **`dup`**

320. If file **`a`** contains 3 lines, then how many lines are output on your screen by this
    command line: **`cat a | echo hi`**
    a. **`4`**   b. **`1`**   c. **`3`**
    d. **`3`** followed by **`1`**   e. **`1`** followed by **`3`**

321. In a manual page **SYNOPSIS** section, square brackets (**`[ ]`**) mean:
    a. something that is optional   b. something that is repeated
    c. no special meaning   d. an arithmetic expression
    e. a GLOB pattern matching a list

322. Which command line shows the file in **`/bin`** with the largest checksum?
    a. **`cat /bin | sum | sort -nr | head -1`**
    b. **`ls /bin/* | sum | sort -nr | head -1`**
    c. **`sum /bin | sort -nr | head -1`**
    d. **`cat /bin/* | sum | sort -nr | head -1`**
    e. **`sum /bin/* | sort -nr | head -1`**

323. What command shows all the lines in file **`/etc/group`** that contain the string
    `idallen`?
    a. **`grep /etc/group idallen`**
    b. **`grep idallen >/etc/group`**
    c. **`cat /etc/group | wc idallen`**
    d. **`cat /etc/group > grep idallen`**
    e. **`grep idallen </etc/group`**

324. If file **`a`** contains 3 lines, and file **`b`** contains 2 lines, then how many lines are output
    on your screen by this command line: **`cat b | cat a`**
    a. **`3`** followed by **`2`**   b. **`5`**   c. **`2`**
    d. **`2`** followed by **`3`**   e. **`3`**

325. Other than root, who can change the permissions of the following directory?
    `dr-xrwxrwx 17 foo bar 4096 Apr 15 16:40 .`
    a. only users in group **`bar`**
    b. user **`foo`** and any user in group **`bar`**
    c. anyone except user **`foo`**
    d. only user **`foo`**
    e. only root can change the permissions

326. Which command removes adjacent duplicate lines from a file?
    a. **`unique`**   b. **`duplicate`**   c. **`uniq`**
    d. **`uni`**   e. **`dup`**

327. Which command line displays all the non-hidden names in the current directory that
    contain the letter **`a`** (and no others)?
    a. **`echo [a]`**   b. **`echo *a*`**   c. **`echo ?a?`**
    d. **`echo *a`**   e. **`echo a*`**

328. What is the output on your screen after this command line:
    `echo hi >a ; ls a > wc`
    a. no output   b. **`1  1  3`**   c. **`2`**
    d. **`1  1  2`**   e. **`3`**

329. Which command line displays only the non-hidden names in the current directory
    that contain the letter **`a`** (and no others)?
    a. **`echo a*`**   b. **`echo *a`**   c. **`echo ?a?`**
    d. **`echo [a]`**   e. **`echo *a*`**

330. In the output of **`ls -a`**, a dot (period) that *begins* any name signifies what?
    a. the current directory   b. a current file
    c. the parent directory   d. an unprintable character
    e. a name that is hidden

331. If file **`foo`** contains 3 lines, and file **`bar`** contains 4 lines, then how many lines are
    output on your screen by this command line: **`cp foo bar | cat`**
    a. **`3`** followed by **`4`**   b. **`4`**
    c. **`3`**   d. **`4`** followed by **`3`**
    e. no output on screen

332. Rewrite
    /home/me/../you/../../etc/../home/me/../you/../me/../foo
    as a simplified absolute path:
    a. **/home/you/foo**   *b.* **/etc/foo**
    c. **/foo**   *d.* **/home/me/foo**
    e. **/home/foo**

333. In an empty directory, what is the output on your screen after this command line:
    ls 1>/dev/null nosuchfile
    a. **nosuchfile**
    b. **ls: /dev/null: No such file or directory**
    c. **ls: 1>/dev/null nosuchfile: No such file or directory**
    d. **ls: nosuchfile: No such file or directory**
    e. no output

334. How many arguments are passed to the command by the shell on this command
    line: **<foo foo -x " " -z -r" " >foo 'foo foo'**
    a. **7**   *b.* **5**   *c.* **9**   *d.* **6**   *e.* **8**

335. In a directory that contains only the file **foo**, what happens after this command:
    cp foo bar
    a. an empty file named **bar** is created
    b. the command fails because **bar** is not a directory
    c. the command fails because the name **bar** does not exist
    d. there is only the file named **bar** in the directory now
    e. there is a copy of the file named **foo** in the file named **bar**

336. What command shows the kernel "ring buffer" of system messages?
    a. **crontab**   *b.* **dmesg**   *c.* **syslog**
    d. **ringout**   *e.* **pstree**

337. Which command line below does not show any lines from inside the file **out**?
    a. **more out**   *b.* **wc out**   *c.* **sort out**
    d. **tail out**   *e.* **head out**

338. In an empty directory, how many words are in file **c** after this:
    touch a ; echo 1 2 3 >b ; ls >c
    a. 2   *b.* 3   *c.* 1   *d.* 5   *e.* 4

339. What would you see if you typed this command: **cat /users**
    a. The contents of the file **users** located in your home directory
    b. The contents of your subdirectory named **users**
    c. The contents of your directory named **users**
    d. The contents of the file **users** located in the parent directory
    e. The contents of the file **users** located in the ROOT directory

340. The *difference* between the system (**root**) crontab and all the user (personal) crontabs is:
    a. the system crontab also has the userid in it
    b. the personal crontab has the date and time in it
    c. the system crontab has the date and time in it
    d. the personal crontab only runs commands once
    e. the personal crontab also has the userid in it

341. Given this successful command line (note the dot argument):
    cd /tmp ; mkdir foo ; cd foo ; chmod u-x .
    Which of the following subsequent commands will execute without any "permission denied" errors?
    a. **ls .**   *b.* **ls ..**
    c. **ls /tmp/foo**   *d.* **ls /tmp/foo/.**
    e. **ls /tmp/foo/..**

342. If **/bin/ls** is a file name, which pathname always leads to the same file?
    a. **/../././bin/./ls**   *b.* **././bin/ls**
    c. **/bin/ls/./.**   *d.* **/bin/../../ls**
    e. **/bin/ls/../..**

343. What happens when you try to change to the parent directory of ROOT, e.g.
    cd / ; cd ..
    a. the shell issues a warning, but changes to the parent
    b. the shell asks you to retype this invalid directory
    c. you go to the parent directory containing your **C:** drive
    d. the shell current directory is still ROOT; no change
    e. the shell issues an error message and does not change

344. Pick the correct order of operations:
    a. MBR, POST, BIOS, O/S boot   *b.* POST, MBR, BIOS, O/S boot
    c. BIOS, POST, MBR, O/S boot   *d.* BIOS, MBR, POST, O/S boot
    e. POST, BIOS, MBR, O/S boot

345. Which command line displays all the non-hidden names in the current directory that contain the case-insensitive word **me** (and no others)?
    a. **echo *(M,m,E,e)***   *b.* **echo ?[MmEe]?**
    c. **echo *[MmEe]***   *d.* **echo *[Mm][Ee]***
    e. **echo *[me]***

346. What is true about this output from **ls -ild foo bar**?
    816 -rwxr-xr-x 2 root root 3 Jan 24 01:03 foo
    816 drwxr-xr-x 2 root root 3 Jan 24 01:03 bar
    a. **foo** and **bar** are names for different files
    b. **foo** and **bar** each have three names (six names total)
    c. **foo** and **bar** are two of three names for this file
    d. this output is not possible
    e. **foo** and **bar** are names for the same file

347. The option to **ls** that shows hidden names is:
a. **-a**   b. **-l**   c. **-1**   d. **-h**   e. **-i**

348. What is the link count of directory **z** after this set of successful commands?
    mkdir z ; cd z ; touch a b ; mkdir c d e
a. 5   b. 3   c. 4   d. 7   e. 6

349. What is true about this output from **ls -il foo bar**
454 -rwxr-xr-x 3 me me 2 Dec 4 9:12 foo
456 -rwxr-xr-x 3 me me 2 Dec 4 9:12 bar
a. **foo** and **bar** each have two names (four names total)
b. this output is not possible
c. **foo** and **bar** are two of three names for this file
d. **foo** and **bar** are names for different files
e. **foo** and **bar** are names for the same file

350. What minimal permissions must you have on a directory to be able to execute successfully the command **ls .** from *inside* the directory?
a. **--x**   b. **r-x**   c. **-wx**   d. **rw-**   e. **r--**

351. What is the correct syntax to redirect both standard output and standard error into the same output file?
a. **date 2>1 >out**   b. **date 1>out 2>out**
c. **date >out 2>&1**   d. **date 2>&1 >out**
e. **date 1>out 2>1**

352. What is the output on your screen of this command line:
    echo cow >foo ; echo dog | head -1 foo
a. **cow** followed by **dog**   b. **cow**
c. **foo**   d. **dog** followed by **cow**
e. **dog**

353. How many arguments are passed to the command by the shell on this command line: **<foo foo " a 'b c' d " e ' f " g " ' >foo**
a. **2**   b. **6**   c. **5**   d. **4**   e. **3**

354. In an empty directory, how many files are created by this command line:
    touch 1 "2 3" ' 4 ' 5
a. **3**   b. **5**   c. **6**   d. **7**   e. **4**

355. What is in file **c** after this command line:
    echo B >b ; ln b a ; echo A >a ; ln a c ; rm a b
a. **A** followed by **B**   b. **A**
c. nothing (empty file)   d. no such file (nonexistent)
e. **B**

356. Given my directory **dir** and my file **dir/f** owned by me, which permissions allow me to delete the file **dir/f** from the directory, but not change the content (data) in the file?
a. Permissions **300** on directory **dir** and **500** on file **dir/f**.
b. Permissions **600** on directory **dir** and **500** on file **dir/f**.
c. Permissions **600** on directory **dir** and **300** on file **dir/f**.
d. Permissions **500** on directory **dir** and **500** on file **dir/f**.
e. Permissions **700** on directory **dir** and **200** on file **dir/f**.

357. Which of the following is true, given this long directory listing:
    drwxr-x--x 71 user staff 4096 May 30 12:35 dir
a. The number 4096 is the inode number of this directory.
b. The number 71 is the size of this directory.
c. The number 71 is the count of links (names) this directory has.
d. The number 4096 is the count of links (names) this directory has.
e. The number 71 is the inode number of this directory.

358. Which system directory contains the run level scripts only for run level 3?
a. **/etc/init.d3**   b. **/3/grub.d**   c. **/etc/rc3.d**
d. **/3/init.d**   e. **/3/rc.d**

359. What is the output of this command line in an empty directory: **echo ***
a. **.**
b. **.   ..**
c. an error message from **echo** saying ***** does not exist
d. no output on screen
e. *****

360. If **/bin/foo** is a program that outputs **one** and **/usr/bin/foo** is a program that outputs **two**, what would be the output on your screen of this two command sequence: **PATH=/etc:/usr/bin:/usr:/bin:/dev ; foo**
a. **two**
b. **two** followed by **one**
c. **one**
d. **bash: foo: command not found**
e. **one** followed by **two**

361. Which command mounts a disk partition on directory **foo**?
a. **mount /mnt/foo /dev/sda1**
b. **mount /dev/foo /mnt/sda1**
c. **mount /mnt/sda1 /dev/foo**
d. **mount /dev/sda1 /mnt/foo**
e. **mount /mnt/sda1 /foo/dev**

362. To change to the parent directory, do this:
a. **cd ..**   b. **pwd**   c. **cd .**
d. **pwd ..**   e. **cd**

363. Which of these command line will make file **foo** contain all of the content of file **a** followed by all of the content of file **b**?
    a. `echo a b >foo`
    b. `cp a >foo ; cp b >>foo`
    c. `mv a b >foo`
    d. `cp a b >foo`
    e. `cat a >foo ; cat b >>foo`

364. If **ian** is a sub-directory that contains only the file **foo**, what happens after this command: `mv ./ian/./foo ./ian/../bar`
    a. the command fails because the name `./ian/./foo` does not exist
    b. there is a second copy of the file **foo** in the file named **bar**
    c. the command fails because the name `./ian/../bar` does not exist
    d. the directory **ian** is now empty
    e. the directory **ian** now contains only a file named **bar**

365. Name three types of partitions:
    a. basic, extended, logical   *b.* primary, extended, logical
    c. primary, extended, linear   *d.* primary, enhanced, logical
    e. primary, enhanced, linear

366. What is the output of this successful command sequence?
    `cd /home/foo ; touch dir ; mkdir bar ; pwd`
    a. `/home/foo/dir`   *b.* `/home/dir`
    c. `/home/foo`   *d.* `/home/bar`
    e. `/home/foo/bar`

367. If my current directory is **/home**, and my home directory is **/home/me**, which command copies the password file into my home directory under the name **foo**?
    a. `cp ../../etc/passwd /me/foo`
    b. `cp ../home/me/../etc/passwd ./me/./foo`
    c. `cp ../etc/passwd ./me/foo`
    d. `cp ./me/../etc/passwd ../home/me/foo`
    e. `cp ../etc/passwd ../me/foo`

368. How many arguments does the shell pass to this **echo** command:
    `echo " one '2 three' 4 "five 6 ' 7 "8 ' >out`
    a. **4**   *b.* **3**   *c.* **5**   *d.* **2**   *e.* **6**

369. Given my directory **dir** and my file **dir/bar** owned by me, which permissions allow me to delete the file **dir/bar** from the directory, but not change the content (data) in the file?
    a. Permissions **100** on directory **dir** and **300** on file **dir/bar**.
    b. Permissions **500** on directory **dir** and **500** on file **dir/bar**.
    c. Permissions **300** on directory **dir** and **200** on file **dir/bar**.
    d. Permissions **300** on directory **dir** and **400** on file **dir/bar**.
    e. Permissions **100** on directory **dir** and **500** on file **dir/bar**.

370. In an empty directory, how many arguments are passed to the **cat** command in this command line: `touch a1 a2 ba ca ; cat a*`
    a. **1**   *b.* **4**   *c.* **3**   *d.* none   *e.* **2**

371. What can you do to get back (redo) the last command you typed to the **bash** (Linux) shell?
    a. Use the "UpArrow" key.
    b. Use the "PageUp" key.
    c. Type [CONTROL]-[ALT]-[DEL]
    d. Type [ALT]-[F2]
    e. Type [CONTROL]-[BACKSPACE]

372. What GRUB line do you modify to boot a machine single-user?
    a. `grub`   *b.* `kernel`   *c.* `boot`
    d. `title`   *e.* `initrd`

373. How many words are in file **out** after this command line:
    `echo one >two >three >out`
    a. **2**   *b.* **3**   *c.* **4**   *d.* **1**   *e.* **0**

374. If **dir** is a sub-directory that contains only the file **bar**, what happens after this command: `mv dir/bar dir/foo`
    a. there is only the file named **foo** in the directory now
    b. the command fails because **bar** is not a directory
    c. the command fails because the name **foo** does not exist
    d. an empty file named **foo** is created
    e. there is a second copy of the file **bar** in the file named **foo**

375. If I am in my home directory named **/home/myhome** and **dir** is an empty sub-directory, what is true after this command line:
    `touch new ; mv ./dir/../new ../myhome/old`
    a. the command fails because the path `../myhome/old` does not exist
    b. the directory **dir** now contains only a file named **old**
    c. the command fails because the path `./dir/../new` does not exist
    d. the parent directory of **dir** now has a file named **old** in it
    e. there is a second copy of the file **new** in the file named **old**

376. How many arguments does the shell pass to this **echo** command:
    `echo one two three >four five`
    a. **4**   *b.* **5**   *c.* **2**   *d.* **3**   *e.* **6**

377. Which GRUB command line displays the contents of the file **foo**?
    a. `type (hd0,0)/foo`   *b.* `cat (hd0,0)/foo`
    c. `p (hd0,0)/foo`   *d.* `mount (hd0,0)/foo`
    e. `ls (hd0,0)/foo`

378. In an empty directory, how many lines are in file **out** after this command line:
    `ls . .. nosuchfile 2>out`
    a. **0**   *b.* **2**   *c.* **3**   *d.* **4**   *e.* **1**

379. If file **foo** contains 3 lines, and file **bar** contains 4 lines, then how many lines are output on your screen by this command line: **cat foo | echo bar**
   a. **1**   *b.* **3**   *c.* **3** followed by **4**
   d. **3** followed by **1**   *e.* **4**

380. Given an existing file of yours named **foo**, what is the output on your screen of this command line: **echo hi >foo ; sort foo >foo ; wc foo**
   a. **1 1 3 foo**   *b.* no output   *c.* **1 1 2 foo**
   d. **2 2 4 foo**   *e.* **0 0 0 foo**

381. Which command line would show the inode number of a file?
   a. **cat -l file**   *b.* **find -i file**   *c.* **ls -i file**
   d. **ls -l file**   *e.* **cat -i file**

382. Given an existing file of yours named **wc**, what is the output on your screen of this command line: **echo hi >wc ; sort wc >wc ; cat wc**
   a. no output   *b.* **0 0 0 wc**   *c.* **1 1 3 wc**
   d. **2 2 4 wc**   *e.* **1 1 2 wc**

383. What GRUB command will display the partitions on the third disk?
   a. **mount (hd3)**   *b.* **fdisk (hd2)**
   c. **ls (hd3)**   *d.* **cat (hd3)**
   e. **geometry (hd2)**

384. To leave a shell and let the terminal window close, type:
   a. **q**   *b.* **[CTRL-C]**   *c.* **exit**
   d. **quit**   *e.* **bye**

385. What is the link count of directory **d** after these successful commands?
      mkdir d d/a d/b d/c d/c/z ; touch d/x d/y
   a. **2**   *b.* **5**   *c.* **6**   *d.* **3**   *e.* **4**

386. What is the correct syntax to redirect both standard output and standard error into the same output file?
   a. **command >out 2>1**   *b.* **command >out 2>&1**
   c. **command 2>out >out**   *d.* **command 2>1 >out**
   e. **command 2>&1 >out**

387. Which command line below does not show any lines from inside the file **out**?
   a. **sort out**   *b.* **tail out**   *c.* **cat out**
   d. **locate out**   *e.* **head out**

388. In an empty directory, how many files are created by this command line:
      touch a "b c" ' ' d e
   a. **5**   *b.* **3**   *c.* **4**   *d.* **7**   *e.* **6**

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389. Which command correctly mounts a first disk partition on directory *dir*?
   a. **mount -t ext3 /mnt/sda1** *dir*
   b. **mount /dev/sda1** *dir*
   c. **mount** *dir* **/dev/sda1**
   d. **mount -t ext2** *dir* **/dev/sda1**
   e. **mount /mnt/sda1** *dir*

390. What is the link count of file **f** after this set of successful commands?
      cp f x ; ln f a ; ln x y ; ln a z ; ln a b
   a. 2   *b.* 3   *c.* 4   *d.* 6   *e.* 5

391. In an empty directory, what is in file **out** after this command line:
      echo out >out ; ls nosuchfile | wc -l >out
   a. **0**   *b.* **nosuchfile**
   c. nothing (empty file)   *d.* **out**
   e. **1**

392. When doing an **ls -a**, the output pathname that is a double dot (**..**) signifies what?
   a. A file or directory with double links.
   b. A hidden file.
   c. The parent directory.
   d. The current directory.
   e. The ROOT directory.

393. What command sets group administrator users?
   a. **passwd**   *b.* **modgroup**   *c.* **usermod**
   d. **gpasswd**   *e.* **groupedit**

394. In the output of the command **ls -a**, the one-character name **.** signifies what?
   a. The parent directory.
   b. The ROOT directory.
   c. The current directory.
   d. A name with an unprintable character.
   e. A current file.

395. Rewrite
   /usr/./bin/../lib/../../etc/../usr/./lib/../bin/./bar
   as a simplified absolute path:
   a. **/usr/lib/bar**   *b.* **/usr/bar**   *c.* **/bar**
   d. **/usr/bin/bar**   *e.* **/etc/bar**

396. If file **a** occupies one disk block, how many disk blocks are in use after this sequence of commands: **cp a b ; ln b c ; cp c d ; ln c e**
   a. 3 blocks   *b.* 4 blocks   *c.* 1 block
   d. 5 blocks   *e.* 2 blocks

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397. What is in the file **out** after this command line:
     echo hi >x ; echo ho >>x ; cp x y >out
     a. **hi** followed by **ho**   *b.* nothing (empty file)
     c. **ho**   *d.* **hi**
     e. no such file (nonexistent)

398. What command line would create a file system on a disk partition?
     a. **mkfs /dev/sda1**
     b. **file -t ext3 /dev/sda1**
     c. **fdisk -t ext3 /mnt/sda1**
     d. **mkswap -t ext3 /dev/sda1**
     e. **mkfs /mnt/sda1**

399. Which command line shows just the count of words in the file?
     a. **wc file | awk '{print 2}'**
     b. **wc file | awk '[print $2]'**
     c. **wc file | awk '[print #2]'**
     d. **wc file | awk '{print #2}'**
     e. **wc file | awk '{print $2}'**

400. Which command counts the number of Unix permission groups you are in?
     a. **umask | wc**   *b.* **groups | wc**
     c. **echo groups | wc**   *d.* **wc groups**
     e. **id | wc**

401. In an empty directory, what is the output on your screen of this command line:
     echo hi >foo ; cp foo bar | wc -l
     a. **1**   *b.* no output   *c.* **0**
     d. **2**   *e.* **3**

402. What is the output of this command line in an empty directory:
     touch .a .b .c ; echo [.]*
     a. **. .. .a .b .c**
     b. no output
     c. **.a .b .c**
     d. **[.]***
     e. an error message from **echo** saying **[.]*** does not exist

403. What is the link count of directory **d** after this set of successful commands?
     mkdir d ; mkdir d/a d/b ; touch d/c d/e
     a. 1   *b.* 4   *c.* 5   *d.* 2   *e.* 3

404. Which of these command line will make **bar** contain all of the content of **f1** followed by all of the content of **f2**?
     a. **echo f1 f2 >bar**   *b.* **mv f1 f2 >bar**
     c. **cp f1 f2 >bar**   *d.* **ln f1 f2 >bar**
     e. **cat f1 f2 >bar**

405. If directory **dir** contains only these five two-character file names: **a?**, **11**, **?1**, **1***, **.1**, then which command below will remove *only* the single two-character name **?1** from the directory?
     a. **rm dir/?1**   *b.* **rm dir/1***   *c.* **rm dir/\??**
     d. **rm dir/*1**   *e.* **rm dir/??**

406. Pick the correct order of operations:
     a. **mkswap, swapon, fdisk**   *b.* **mkswap, fdisk, swapon**
     c. **fdisk, mkswap, swapon**   *d.* **swapon, fdisk, mkswap**
     e. **swapon, mkswap, fdisk**

407. If I am in my home directory named **/home/me** and **x** is an empty sub-directory, what is true after this command line:
     touch ./x/fil ; mv x/./fil x/../../me/./y
     a. the directory **x** is still empty
     b. the command fails because the path **x/../../me** does not exist
     c. the directory **x** now contains only a file named **y**
     d. there is a second copy of the file **fil** in the file named **y**
     e. the command fails because the path **x/./fil** does not exist

408. What is the result of this exact command line: **ls /foo bar**
     a. file **/foo** will be copied to **bar**
     b. the contents of the files **/foo** and **bar** will be displayed
     c. the names of the pathnames **/foo** and **bar** will be displayed
     d. all the files under directory **/foo** with the name **bar** will be displayed
     e. the two text strings **/foo** and **bar** will be displayed

409. If file **a** contains 2 lines, and file **b** contains 3 lines, then how many lines are in file **c** after this command line:
     sort a b >c ; cat a >>b ; sort c b >c a
     a. **7**   *b.* **5**   *c.* **8**   *d.* **12**   *e.* **0**

410. How many arguments does the shell pass to this **echo** command:
     echo "cow "y " bat 'man x' " pig'a "hop' a b
     a. **5**   *b.* **11**   *c.* **6**   *d.* **7**   *e.* **4**

411. What does the **-v** option to the **grep** command do?
     a. selects lines that do not contain a match for the supplied pattern
     b. prints the version number of the grep command
     c. selects lines that do not contain unprintable characters
     d. turns on the translation of unprintable characters
     e. turns off the translation of unprintable characters

412. What is the output on your screen after these command lines:
     echo one >x ; ln x y ; echo ten >y
     echo two >x ; cat y
     a. **one**   *b.* **two**
     c. **one** followed by **ten** and **two**   *d.* no output on screen
     e. **ten**

413. Given my directory **dir** and my file **dir/foo** owned by me, which permissions allow me to access and change or create new content (data) in the file **dir/foo** but not delete the file?
   - *a.* **500** on directory, **600** on file
   - *b.* **300** on directory, **400** on file
   - *c.* **300** on directory, **600** on file
   - *d.* **500** on directory, **500** on file
   - *e.* **100** on directory, **500** on file

414. Given the following, can user **bird** in group **sesame** copy **./foo** to **bar**?
   ```
   drwx-wx--x 2 root sesame 4096 Oct 7 14:00 .
   --wxrwxrwx 1 bird sesame 123  Oct 4 14:05 foo
   ```
   - *a.* No, because the directory is not readable by **bird**
   - *b.* No, because the directory has no write permissions for **bird**
   - *c.* No, because **foo** has no read permissions for **bird**
   - *d.* Yes, because **bird** has write permissions on **foo**
   - *e.* Yes; permissions don't apply because **bird** owns **foo**

415. Which of these command line will make **foo** contain all of the content of **f1** followed by all of the content of **f2**?
   - *a.* **ln f1 f2 >foo**
   - *b.* **echo f1 f2 >foo**
   - *c.* **cp f1 f2 >foo**
   - *d.* **mv f1 f2 >foo**
   - *e.* **cat f1 f2 >foo**

416. Which command line does a full log-in as the root user?
   - *a.* **su login=root**
   - *b.* **root --login**
   - *c.* **login -root**
   - *d.* **su --login**
   - *e.* **login --root**

417. If you type the command **sleep 60 ,**
   which key sequence will interrupt it and take you back to the command prompt?
   - *a.* **[CTRL-L]**
   - *b.* **[CTRL-D]**
   - *c.* **[CTRL-C]**
   - *d.* **[CTRL-U]**
   - *e.* **[CTRL-R]**

418. What type and permissions result from this command line:
   ```
   umask 362 ; touch newfile ; ls -l newfile
   ```
   - *a.* **--wxr-x-w-**
   - *b.* **-r-----r--**
   - *c.* **--wx---r--**
   - *d.* **--wxrw--w-**
   - *e.* **-r----xr-x**

419. What is the output on your screen of this command line:
   ```
   umask 475 ; mkdir newdir ; ls -ld newdir
   ```
   - *a.* **dr-xrwxr-x 2 it it 400 Jul 3 8:00 newdir**
   - *b.* **dr--rwxr-x 2 it it 400 Jul 3 8:00 newdir**
   - *c.* **d-wx----w- 2 it it 400 Jul 3 8:00 newdir**
   - *d.* **d-wxrwx-w- 2 it it 400 Jul 3 8:00 newdir**
   - *e.* **d-w-----w- 2 it it 400 Jul 3 8:00 newdir**

420. If **pig** is a sub-directory that contains only the file **dog**, what happens after this command: **mv pig/dog pig/./../cat**
   - *a.* the command fails because the name **cat** does not exist
   - *b.* the directory **pig** is now empty
   - *c.* there is a second copy of the file named **dog** in the file named **cat**
   - *d.* the directory **pig** now contains only a file named **cat**
   - *e.* the command fails because the name **pig/./../cat** does not exist

421. If I am in directory named **/home/me** and **mt** is an empty sub-directory, what is true after this command line:
   ```
   touch ../me/foo ; cp ./mt/../foo ./mt/../bar
   ```
   - *a.* the file named **foo** is now renamed to **bar**
   - *b.* the directory **mt** is still empty
   - *c.* the command fails because the path **./mt/../foo** does not exist
   - *d.* the directory **mt** now has a file named **bar** in it
   - *e.* the directory **mt** now contains two files

422. What can you do to get back (redo) the last command you typed to the **bash** (Linux) shell?
   - *a.* Type [CONTROL]-[BACKSPACE]
   - *b.* Use the "BackSpace" key.
   - *c.* Type [CONTROL]-[C]
   - *d.* Use the "UpArrow" key.
   - *e.* Type [ALT]-[F2]

423. Which command line below outputs only lines 6-10 of the file named **foo**?
   - *a.* **tail -15 foo | head -5**
   - *b.* **head -10 foo | tail -5**
   - *c.* **tail -10 foo | head -6**
   - *d.* **head -5 foo | tail -10**
   - *e.* **head -10 foo | tail -6**

424. What is the link count of directory **dir** after this set of successful commands?
   ```
   mkdir dir ; cd dir ; touch a b c ; mkdir d e
   ```
   - *a.* **4**
   - *b.* **3**
   - *c.* **5**
   - *d.* **2**
   - *e.* **7**

425. The command that creates a directory and all parent directories is:
   - *a.* **mkdir -p x/y/z**
   - *b.* **touch x/y/z**
   - *c.* **rmdir -r x/y/z**
   - *d.* **rm -r x/y/z**
   - *e.* **mkdir -r x/y/z**

426. How many arguments are passed to the command by the shell on this command line: **<bar bar -b "-a" '-r' >bar bar bar**
   - *a.* **6**
   - *b.* **3**
   - *c.* **4**
   - *d.* **5**
   - *e.* **7**

427. If I have a directory owned by me named **/1/2**, which action would increase its *link count* by exactly one?
   a. create a directory named **/1/2**
   b. create a directory named **/1/2/3**
   c. create a directory named **/1/22**
   d. create one file named **/1/22**
   e. create one file named **/1/2/3**

428. Which command line below does not show any lines from inside the file **pig**?
   a. **less pig**   b. **tail pig**   c. **head pig**
   d. **more pig**   e. **ls pig**

429. In an empty directory, what is in file **out** after this command line:
   ls nosuchfile | wc -l >out
   a. **out**   b. **0**
   c. **1**   d. nothing (empty file)
   e. **nosuchfile**

430. In an empty directory, what is the output on your screen after this command line:
   touch a ; ls | wc -l
   a. **0**   b. **3**   c. **1**
   d. **2**   e. no output

431. Which of the following is true, given this long directory listing:
   drwxr-x--x 71 ian user 4096 May 30 12:35 dir
   a. The number 71 is the count of links (names) this directory has.
   b. The number 71 is the size of this directory.
   c. The number 4096 is the count of links (names) this directory has.
   d. The number 4096 is the inode number of this directory.
   e. The number 71 is the inode number of this directory.

432. If you type the command **echo 'missing quote**, which key sequence will interrupt it and take you back to the command prompt?
   a. **[CTRL-R]**   b. **[CTRL-C]**   c. **[CTRL-L]**
   d. **[CTRL-D]**   e. **[CTRL-U]**

433. If you are in **/bin** and **ls -l** shows a symbolic link **bar -> ../dir/foo** then dereference the absolute path of **bar** with no symbolic links:
   a. **/bar/../dir/foo**   b. **/bin/dir/foo**
   c. **/bin/bar/dir/foo**   d. **/dir/foo**
   e. **/bin/dir/foo/bar**

434. What is true about this output from **ls -il foo bar**?
   861 -rw-r--r-- 2 root root 3 Jan 24 01:03 foo
   861 -rwxr-xr-x 2 bin bin 3 Nov 12 12:55 bar
   a. **foo** and **bar** are names for the same file
   b. **foo** and **bar** are names for different files
   c. **foo** and **bar** are two of three names for this file
   d. **foo** and **bar** each have three names (six names total)
   e. this output is not possible

435. What does password **:x:** mean in **/etc/passwd**?
   a. the unencrypted password is stored in the group file
   b. the account is locked
   c. the encrypted password is stored in the shadow file
   d. the encrypted password is **"x"**
   e. the password is locked

436. When using the **killall** command, a major risk is:
   a. the signal may not be sent to process started on different terminals
   b. the signal may be sent to unintended processes with the same name
   c. the default signal is the stronger **HUP** signal
   d. the signal may be sent to every process started on in the current terminal
   e. the default signal is the lethal **KILL** signal

437. Which command line below outputs only lines 5-10 of the file named **foo**?
   a. **tail -10 foo | head -6**   b. **head -10 foo | tail -6**
   c. **tail -15 foo | head -5**   d. **head -15 foo | tail -5**
   e. **head -5 foo | tail -10**

438. If I am in directory **/home/me** and **mt** is an empty sub-directory, what is true after this command line:
   touch ./foo bar ; rm mt/../foo ../me/bar
   a. the directory **mt** is still empty
   b. the directory **me** now contains a file named **bar**
   c. the command fails because the path **mt/../foo** does not exist
   d. the command fails because the path **../me/bar** does not exist
   e. the directory **mt** now contains a file named **foo**

439. What would you type to change the permissions on a file to **-wxr-xrw-**?
   a. **chmod 421 file**   b. **chmod 356 file**
   c. **chmod 210 file**   d. **chmod 635 file**
   e. **chmod 563 file**

440. If **/bin/bat** is a program that outputs **foo** and **/usr/bin/bat** is a program that outputs **bar** what would be the output on your screen of this two command sequence: **PATH=/usr:/usr/bin:/bin ; bat**
  a. **bar** followed by **foo**
  b. **foo**
  c. **foo** followed by **bar**
  d. **bash: bat: command not found**
  e. **bar**

441. Which pathname almost always leads to the same file named: **/bin/ls**
  a. **/bin/./bin/../ls**   b. **./bin/ls**
  c. **/bin/../ls**   d. **/./bin/./ls**
  e. **/./bin/./ls/.**

442. How many arguments and options are there to the command:
     wc -wc /sort
  a. Two command line arguments, one of which contains two bundled options.
  b. A three-letter file name and a **/sort** switch option argument.
  c. Two options, no arguments.
  d. Two arguments, no options.
  e. Two arguments, one of which is a single option and the other is a pathname.

443. What is the result of this exact command line: **cat /bin hello**
  a. file "/bin" will be copied to "hello"; the names will be displayed as well
  b. the names of the pathnames "/bin" and "hello" will be displayed, if they exist; otherwise, error messages
  c. the two text strings "/bin" and "hello" will be displayed
  d. all the files under "/bin" with the name "hello" will be displayed
  e. the contents of the files "/bin" and "hello" will be displayed, if possible; otherwise, error messages

444. If file **a** contains 2 lines, and file **b** contains 3 lines, then how many lines are in file **c** after this command line:
     ln a e ; ln b d ; ln d c ; cat e b >c
  a. **4**   b. **3**   c. **5**   d. **0**   e. **2**

445. What is the output on your screen after this command line:
     mkdir dir ; touch dir/.aa dir/.bb ; echo dir/*
  a. **dir/***
  b. **dir/**
  c. no output
  d. **dir/.aa dir/.bb**
  e. **dir/. dir/.. dir/.aa dir/.bb**

446. How do I search for the string **foo** in the text display output from the **man** command?
  a. **@foo**   b. **search foo**
  c. select "**Search**" in the menu   d. **/foo**
  e. **find foo**

447. To prevent disconnections when using the Windows version of **PuTTY**, you should make this configuration change:
  a. your password will not echo on your screen as you type
  b. use your student number as your password
  c. set the seconds between keepalives to 55
  d. use your ACSIS password as your password
  e. log in using your Blackboard userid

448. What is the output on your screen of this two-command sequence if run in a directory containing 8 files with names that are all the numbers from **1** to **8** inclusive: **cow="*" ; echo '$cow'**
  a. **$cow**
  b. *****
  c. **'$cow'**
  d. the file names **1** through **8**
  e. the file names **1** through **8**, surrounded by quotes

449. What is the output on your screen after this command line:
     echo hi >a ; cp a b | wc -c
  a. no output   b. **3**   c. **0**
  d. **1**   e. **2**

450. How many arguments does the shell pass to this **echo** command:
     echo " 1 '2 3' 4 "5 6 ' 7 "8 ' >out
  a. **4**   b. **6**   c. **2**   d. **3**   e. **5**

451. Given the following, can user **kirk** in group **starfleet** remove **./file1**?
  d----wx--- 2 root starfleet 4096 Oct 7 14:00 .
  ---------- 1 kirk starfleet 123 Oct 4 14:05 file1
  a. No, because the directory is not accessible to **kirk**
  b. No, because the directory has no permissions for other users
  c. Yes, because **kirk**'s group matches the group writable directory
  d. Yes, because **kirk** owns **file1**
  e. No, because **kirk** has no permissions on **file1**

452. What is the output of this successful command sequence?
     cd /tmp ; mkdir foo ; mkdir bar ; pwd
  a. **/tmp**   b. **/tmp/bar**   c. **/bar**
  d. **/tmp/foo/bar**   e. **/tmp/foo**

453. What would you type to change the permissions on a file to **r-----rw-**?
    a. **chmod 102 file**   *b.* **chmod 654 file**
    c. **chmod 406 file**   *d.* **chmod 322 file**
    e. **chmod 122 file**

454. If **/bin/xxx** is a program that outputs **one** and **/usr/bin/xxx** is a program that outputs **two**, what would be the output on your screen of this two command sequence: **PATH=/bin/xxx:/usr/bin/xxx:/etc/passwd ; xxx**
    a. **two** followed by **one**
    b. **one** followed by **two**
    c. **bash: xxx: command not found**
    d. **two**
    e. **one**

455. Given this long listing:
    drwxr-xr-x 2048 bin bin 4096 Jan 2 14:22 dir
    How many subdirectories lie immediately under **dir**?
    a. 4096
    b. 2046
    c. there is not enough information shown to answer the question
    d. 2048
    e. 4094

456. Which of these files controls where system log messages get stored?
    a. **/etc/syslog.conf**   *b.* **/etc/group**
    c. **/grub/grub.conf**   *d.* **/boot/grub/grub.conf**
    e. **/etc/passwd**

457. If file **foo** contains 9 lines, each of which is the one-digit line number of the line in the file (**1** through **9**), what is the output on your screen of this command:
    sort foo foo | tail -3 | head -1
    a. **9**   *b.* **3 3**   *c.* **7 7**   *d.* **3**   *e.* **8**

458. A Unix/Linux "tarball" is:
    a. a single compressed file containing one uncompressed file
    b. a multi-file directory containing individual uncompressed files
    c. a multi-file directory containing individual compressed files
    d. a single-file that contains individual uncompressed files
    e. a single-file that contains individual compressed files

459. If **xxx** is a sub-directory that contains only the file **foo**, what happens after this command: **mv ./xxx/./foo ./xxx/../bar**
    a. the command fails because the name **./xxx/../bar** does not exist
    b. there is a second copy of the file **foo** in the file named **bar**
    c. the directory **xxx** now contains only a file named **bar**
    d. the directory **xxx** is now empty
    e. the command fails because the name **./xxx/./foo** does not exist

460. What is the output on your screen after these command lines:
    echo 1 >a ; ln a b ; echo 2 >b
    chmod 266 b ; cat a
    a. **1**   *b.* an error message
    c. **1** followed by **2**   *d.* **2**
    e. no output on screen

461. Which command line displays the contents of the Unix **passwd** file one page at a time?
    a. **/etc/passwd | less**   *b.* **cat /etc/passwd | vim**
    c. **less /etc/passwd**   *d.* **less | /etc/passwd**
    e. **cat less | /etc/passwd**

462. The option to **ls** that shows inode (index) numbers is:
    a. **-x**   *b.* **-l**   *c.* **-1**   *d.* **-a**   *e.* **-i**

463. How many arguments are passed to the command by the shell on this command line: **<cow cow "-x" -y '-z' >cow cow**
    a. **3**   *b.* **5**   *c.* **6**   *d.* **4**   *e.* **2**

464. How many lines are in file **out** after this command line:
    echo hi >dog >cat >out
    a. **4**   *b.* **1**   *c.* **2**   *d.* **3**   *e.* **0**

465. Which command below removes *only* this four-character file name containing a special character (and no others): ***dog**
    a. **rm ?dog**   *b.* **rm .\/*dog**   *c.* **rm *dog**
    d. **rm ./*dog**   *e.* **rm /*dog**

466. Which permissions on a directory mean that anyone can see the names of the files inside it, but nobody can access any of the files?
    a. **111**   *b.* **222**   *c.* **333**   *d.* **555**   *e.* **444**

467. If you type the command **cat**, which key sequence will send an EOF and take you back to the command prompt?
    a. **[CTRL-I]**   *b.* **[CTRL-R]**   *c.* **[CTRL-C]**
    d. **[CTRL-D]**   *e.* **[CTRL-U]**

468. If **/bin/foo** is a program that outputs **one** and **/usr/bin/foo** is a program that outputs **two**, what would be the output on your screen of this two command sequence: **PATH=/bin/ls:/home:/usr/bin/cat:/etc ; foo**
    a. **one** followed by **two**
    b. **bash: foo: command not found**
    c. **two** followed by **one**
    d. **two**
    e. **one**

469. When an **at** job runs, the current working directory is set to:
    - *a.* the HOME directory of the user
    - *b.* the directory **/root**
    - *c.* the current directory that was in use when the **at** job was created
    - *d.* the system ROOT directory
    - *e.* the directory **/home**

470. If I am in my home directory named **/home/me** and **mt** is an empty sub-directory, what is true after this command line:

    touch ../me/foo ; cp ./mt/../foo ./mt/../bar
    - *a.* the command fails because the path **./mt/../foo** does not exist
    - *b.* the directory **mt** now has a file named **bar** in it
    - *c.* the directory **mt** now contains two files
    - *d.* the directory **mt** is still empty
    - *e.* there is a second copy of the file named **foo** in the file **bar**

471. If you are in **/etc** and **ls -l** shows a symbolic link **bar -> dir/foo** then dereference the absolute path of **bar** with no symbolic links:
    - *a.* **/dir/foo**
    - *b.* **/etc/dir/foo/bar**
    - *c.* **/etc/bar/dir/foo**
    - *d.* **/etc/dir/foo**
    - *e.* **/bar/dir/foo**

472. What is true about this output from **ls -il foo bar**
    ```
    72 -rwxrwxrwx 2 bin  bin  3 Oct 30 09:23 foo
    72 -r--r--r-- 2 bin  bin  3 Oct 30 09:23 bar
    ```
    - *a.* **foo** and **bar** each have two names (four names total)
    - *b.* **foo** and **bar** are names for the same file
    - *c.* **foo** and **bar** are two of three names for this file
    - *d.* this output is not possible
    - *e.* **foo** and **bar** are names for different files

473. Which of these commands always returns you to your account home directory?
    - *a.* **cd /home**
    - *b.* **cd /home/..**
    - *c.* **cd home**
    - *d.* **cd ..**
    - *e.* **cd**

474. In an empty directory, what is the output on your screen after this command line:

    echo hi >.out ; ls *
    - *a.* *****
    - *b.* no output
    - *c.* **. .. .out**
    - *d.* **.out**
    - *e.* an error message from **ls** saying ***** does not exist

475. How does system logging work under Unix/Linux?
    - *a.* processes send messages to a central **syslog** program that writes log files
    - *b.* processes send messages to the **init** process that inherits orphan processes
    - *c.* processes write log files into each user's **$HOME** directory
    - *d.* processes write log entries directly into the system log directory
    - *e.* processes copy logs from your **$HOME** directory to the **/var/spool** directory

476. How many arguments and options are there to the command:

    cal -jy 2001
    - *a.* Two command line arguments, one of which contains two options.
    - *b.* Two arguments, no options.
    - *c.* Two options, no arguments.
    - *d.* A single numeric option and a three-letter file name.
    - *e.* Two arguments, one of which is a single option and the other is a pathname.

477. The option to **ls** that shows inode (index) numbers is:
    - *a.* **-1**
    - *b.* **-l**
    - *c.* **-R**
    - *d.* **-a**
    - *e.* **-i**

478. What is the output on your screen of this command line:

    umask 162 ; touch newfile ; ls -l newfile
    - *a.* **-rw---xr-x 1 me me 0 Oct 1 01:12 newfile**
    - *b.* **---xrw--w- 1 me me 0 Oct 1 01:12 newfile**
    - *c.* **-rw---x-w- 1 me me 0 Oct 1 01:12 newfile**
    - *d.* **----rw--w- 1 me me 0 Oct 1 01:12 newfile**
    - *e.* **-rw----r-- 1 me me 0 Oct 1 01:12 newfile**

479. What is in file **out** after this command line: **echo 1 2 >out 3 4**
    - *a.* **echo 1 2**
    - *b.* **3 4**
    - *c.* **1 2 3 4**
    - *d.* nothing (empty file)
    - *e.* **1 2**

480. How many arguments and options are there to the command: **ls -lid /p**
    - *a.* Two arguments, neither of which is an option.
    - *b.* Two arguments, one of which is a single option name and the other is a pathname.
    - *c.* Three arguments, one of which contains options and one is a pathname.
    - *d.* Two arguments: A file name starting with a dash and a **/p** switch option argument.
    - *e.* Two command line arguments, one of which contains three options.

481. Which of these is a Linux/Unix DOS-style **primary** partition name?
    - *a.* **sdb5**
    - *b.* **sdb4**
    - *c.* **sda5**
    - *d.* **sda6**
    - *e.* **sda7**

482. Given my directory **dir** and my file **dir/foo** owned by me, which permissions allow me to access and change or create new content (data) in the file **dir/foo** but not delete the file?
    a. Permissions **500** on directory **dir** and **100** on file **dir/foo**.
    b. Permissions **200** on directory **dir** and **200** on file **dir/foo**.
    c. Permissions **100** on directory **dir** and **200** on file **dir/foo**.
    d. Permissions **600** on directory **dir** and **700** on file **dir/foo**.
    e. Permissions **400** on directory **dir** and **400** on file **dir/foo**.

483. Rewrite **/var/./a/../../var/b/../../etc/./bar/../foo** as a simplified absolute path:
    a. **/etc/foo**   b. **/var/a/foo**   c. **/etc/bar/foo**
    d. **/var/b/foo**   e. **/var/foo**

484. In which section of the manual do you find super-user and admin commands?
    a. 4   b. 2   c. 3   d. 1   e. 8

485. If I am in directory **/home/me** and **mt** is an empty sub-directory, what is true after this command line: **touch ./foo ; mv ./mt/../foo ../me/bar**
    a. the command fails because path **../me/bar** does not exist
    b. the directory **mt/..** now contains a file named **bar**
    c. the directory **mt** now contains only a file named **bar**
    d. there is a second copy of the file **foo** in the file named **bar**
    e. the command fails because path **./mt/../foo** does not exist

486. If file **foo** contains 99 lines, each of which is the two-digit line number of the line in the file (**01** through **99**), what is the output on your screen of this command:
    sort foo foo | tail -4 | head -1
    a. **96**   b. **98**   c. **01 01**
    d. **96 96**   e. **04 04**

487. If **foo** is a sub-directory that contains only the file **bar**, what happens after this command: **mv foo/me foo/bar**
    a. the command fails because **bar** is not a directory
    b. an empty file named **me** is created
    c. there is a second copy of the file **bar** in the file named **me**
    d. the command fails because the name **me** does not exist
    e. there is only the file named **me** in the directory now

488. What command schedules other commands to run just *once* at some future date/time?
    a. **at**   b. **crontab**   c. **run**
    d. **chkconfig**   e. **schedule**

489. If **/bin/foo** is a program that outputs **dad** and **/usr/bin/foo** is a program that outputs **mom** what would be the output on your screen of this two command sequence: **PATH=/usr:/etc:/bin:/usr/bin ; foo**
    a. **mom**
    b. **bash: foo: command not found**
    c. **dad** followed by **mom**
    d. **dad**
    e. **mom** followed by **dad**

490. If my current directory is **/etc**, which of these pathnames is equivalent to the pathname **/etc/x/y**?
    a. **/x/y**   b. **./etc/x/y**   c. **../etc/./y**
    d. **../x/y**   e. **../etc/x/y**

491. Which statement is true, given this long directory listing from **ls**:
    drwxr-x--x 256 ian user 512 May 30 12:35 dir
    a. The number 512 is the count of links (names) this directory has.
    b. The number 256 is the size of this directory.
    c. The number 512 is the size of this directory.
    d. The number 256 is the octal permissions of this directory.
    e. The number 256 is the inode number of this directory.

492. What would you type to change the permissions on a file to **-wxr-xrw-**?
    a. **chmod 563 file**   b. **chmod 210 file**
    c. **chmod 635 file**   d. **chmod 421 file**
    e. **chmod 356 file**

493. When a user named **foo** runs a command in a **setuid** executable file owned by **bar**, in a directory owned by **root**, the file executes with the permissions of:
    a. **root**   b. **foo**   c. **bar**
    d. **root and foo**   e. **root and bar**

494. If my current directory is **/bin**, which of these pathnames is equivalent to the file name **/bin/rm**?
    a. **rm/.**   b. **/root/bin/rm**
    c. **../bin/rm/.**   d. **../../bin/./rm**
    e. **./bin/rm**

495. If my current directory is **/home**, which of these pathnames is equivalent to the pathname **/home/a/b/c**?
    a. **../home/b/c**   b. **./a/b/c**   c. **../a/b/c**
    d. **./home/a/b/c**   e. **/a/b/c**

496. If **/etc/passwd** is a file name, which pathname always leads to the same file?
    a. **/etc/passwd/../..**   b. **./etc/passwd**
    c. **/.../etc/./passwd**   d. **/etc/../../passwd**
    e. **/etc/passwd/.**

497. If file **foo** contains 9 lines, each of which is the one-digit line number of the line in the file (**1** through **9**), what is the output on your screen of this command:
```
cat foo foo | sort | uniq | tail -4 | head -1
```
    a. **6 6**   *b.* **6**   *c.* **4**   *d.* **1**   *e.* **5**

498. What is usually contained in the environment variable **$USER**?
    a. your default user permissions for files
    b. your first and last user name, separated by a space
    c. your default user permissions for directories
    d. a copy of your user mask (umask)
    e. your login account name

499. If file **foo** occupies two disk blocks, how many disk blocks are in use after this sequence of commands:
```
cp foo bar ; ln bar one ; cp one two ; ln one ten
```
    a. 6 blocks   *b.* 8 blocks   *c.* 2 blocks
    d. 10 blocks   *e.* 4 blocks

500. Which is a list of signals in increasing order of strength?
    a. **KILL HUP TERM**   *b.* **TERM HUP KILL**
    c. **TERM KILL HUP**   *d.* **HUP KILL TERM**
    e. **HUP TERM KILL**

501. What command will recursively find all pathnames in your home directory named **foo**:
    a. **grep 'foo' "$HOME"**
    b. **du 'foo' "$HOME"**
    c. **find "$HOME" -name 'foo'**
    d. **grep -user 'foo' "$HOME"**
    e. **ls -R 'foo' "$HOME"**

502. In an empty directory, how many arguments are passed to the **cat** command in this command line: **date >a1 ; touch a2 ba ca ; cat a***
    a. **4**   *b.* **1**   *c.* none   *d.* **3**   *e.* **2**

503. If **/bin/pig** is a program that outputs **hi** and **/usr/bin/pig** is a program that outputs **foo** what would be the output on your screen of this two command sequence: **PATH=/etc:/usr/bin:/bin ; pig**
    a. **hi**
    b. **bash: pig: command not found**
    c. **foo**
    d. **hi** followed by **foo**
    e. **foo** followed by **hi**

504. In the output of **ls -a**, the two-character name **..** signifies what?
    a. The root directory.
    b. A file or directory with double links.
    c. A hidden file.
    d. The current directory.
    e. The parent directory.

505. Which of these statements is true?
    a. you can only remove a file name if the file is owned by you
    b. you can change the permissions of any file to which you can write
    c. you can only make links to files owned by you
    d. you may be able to rename a file even if you do not own the file
    e. you can only remove a file name if the file is writable by you

506. If my current directory is **/bin**, which of these pathnames is equivalent to the file name **/bin/ls**?
    a. **../bin/ls/.**   *b.* **/ls**   *c.* **/root/bin/ls**
    d. **ls**   *e.* **./bin/ls**

507. How many arguments does the shell pass to this **echo** command:
```
echo 'It's a bird! It's a plane!'
```
    a. **2**   *b.* **4**   *c.* **1**   *d.* **3**   *e.* **5**

508. If file **twenty** contains twenty lines, and file **thirty** contains thirty lines then how many lines are output on your screen by this command line:
```
tail twenty | cat thirty
```
    a. **30**   *b.* **0**   *c.* **20**   *d.* **40**   *e.* **50**

509. What is the output of this successful command sequence?
```
cd /home/foo ; touch dir ; mkdir bar ; pwd
```
    a. **/home/foo**   *b.* **/bar**
    c. **/home/foo/dir**   *d.* **/home/foo/bar**
    e. **/home/foo/dir/bar**

510. Which command line outputs inode/filename pairs for names in the current directory, sorted by inode number?
    a. **ls -i * > sort -n**   *b.* **ls ./* | sort -node**
    c. **ls -node * > sort -n**   *d.* **sort -n | ls -ai**
    e. **ls -ai | sort -n**

511. What do you do to erase an entire line of typing in the shell?
    a. select the line with the mouse and use the **DEL** key
    b. type **[CTRL-D]**
    c. type **[CTRL-W]**
    d. select the line with the mouse and use the **BACKSPACE** key
    e. type **[CTRL-U]**

512. Which command line displays all the non-hidden names in the current directory that contain the letter **x** (and no others)?
   a. **echo x***
   b. **echo *x**
   c. **echo [x]**
   d. **echo *x***
   e. **echo ?x?**

513. In the output of **ls -a**, a dot (period) that begins a name signifies what?
   a. The parent directory.
   b. The current directory.
   c. A current file.
   d. A name that is hidden.
   e. A name with an unprintable character.

514. What is the output on your screen of this command line:
   echo hi >hi ; head hi >hi ; wc hi
   a. **1 1 3 hi**
   b. **0 0 0 hi**
   c. no output
   d. **2 2 4 hi**
   e. **1 1 2 hi**

515. How many arguments and options are there to the command: **wc -wc wc**
   a. Two command name arguments and two bundled options.
   b. Two arguments, no options.
   c. Two arguments, one of which is a single option and the other is a pathname.
   d. Two command line arguments, one of which contains two options.
   e. Two options, no arguments.

516. In an empty directory, what is in file **count** after this command line:
   ls ??? | wc -w >count
   a. nothing (empty file)
   b. **1 1 1**
   c. **0**
   d. **1 1 2**
   e. **1**

517. Which command below is the best way to find a line containing a question mark (**?**) in the file **/etc/passwd**?
   a. **grep /etc/passwd ./?**
   b. **grep ? /etc/passwd**
   c. **grep ? >/etc/passwd**
   d. **grep '?' /etc/passwd**
   e. **grep ./? /etc/passwd**

518. What command line modifies and moves (in one command line) the home directory **foo** to **bar** for the existing user **vader**?
   a. **usermod -m -d /home/foo /home/bar**
   b. **usermod -d -m /home/bar vader**
   c. **usermod -dm /home/bar vader**
   d. **usermod -m -d /home/bar vader**
   e. **usermod -d -m /home/vader bar**

519. What would you type to change the permissions on a file to **-wxr-x--x**?
   a. **chmod 214 file**
   b. **chmod 321 file**
   c. **chmod 311 file**
   d. **chmod 351 file**
   e. **chmod 654 file**

520. Which **crontab** line executes at **15:34** every day?
   a. **15 34 * * * command**
   b. *** * * 34 15 command**
   c. **15 * * * 34 command**
   d. *** * * 15 34 command**
   e. **34 15 * * * command**

521. What would you type to change the permissions on a file to **--x-wx-w-**?
   a. **chmod 654 file**
   b. **chmod 121 file**
   c. **chmod 122 file**
   d. **chmod 322 file**
   e. **chmod 132 file**

522. If file **foo** occupies one disk block, how many disk blocks are in use after this sequence of commands:
   cp foo bar ; ln bar one ; cp one two ; ln one xxx
   a. **3**
   b. **1**
   c. **2**
   d. **4**
   e. **5**

523. What can you do to get back (redo) the last command you typed to the **bash** (Linux) shell?
   a. Type [CONTROL]-[BACKSPACE]
   b. Type [CONTROL]-[ALT]-[UP]
   c. Type [ALT]-[F2]
   d. Use the "PageUp" key.
   e. Use the "UpArrow" key.

524. Which command below is the best way to find a line containing an asterisk (*****) in the file named **foo**?
   a. **grep ./* foo**
   b. **grep * foo**
   c. **grep <foo [*]**
   d. **grep foo "*"**
   e. **grep '*' <foo**

525. Which command below removes *only* this four-character file name containing a special character (and no others): **abc***
   a. **rm abc/***
   b. **rm abc***
   c. **rm abc//***
   d. **rm abc***
   e. **rm abc***

526. Which of the following is true, given this long directory listing:
   drwxr-x--x 71 ian user 512 May 30 12:35 dir
   a. The number 71 is the size of this directory.
   b. The number 71 is the count of links (names) this directory has.
   c. The number 71 is the inode number of this directory.
   d. The number 512 is the inode number of this directory.
   e. The number 512 is the count of links (names) this directory has.

527. If my current directory is **/home**, which of these pathnames is equivalent to the pathname **/home/a/b/c**?
   a. **../home/b/c**
   b. **../home/a/b/c**
   c. **/a/b/c**
   d. **../a/b/c**
   e. **./home/a/b/c**

528. What permissions are given to **newdir** after this command line:
    umask 156 ; mkdir newdir

    a. **rw--w----**   *b.* **--xr-xrw-**   *c.* **r-x--x---**

    d. **rw--w---x**   *e.* **r-x-w-rw-**

529. What would you type to find the string **tony** in the file **/etc/passwd**?

    a. **string tony /etc/passwd**
    b. **find tony /etc/passwd**
    c. **find /etc/passwd tony**
    d. **grep /etc/passwd tony**
    e. **grep tony /etc/passwd**

530. How do you search for the word **nongraphic** in the man page for **ls**?

    a. type **man ls** at the shell, then **/nongraphic**
    b. type **man -k nongraphic** at the shell
    c. type **man ls -nongraphic** at the shell
    d. type **man nongraphic | grep ls** at the shell
    e. type **man ls** at the shell, then **^F** (CTRL-F), then **nongraphic**

531. If the file **bat** contained the word **foo**, what would be the output on your screen
    of this two command sequence:
    PATH=/etc/passwd:/bin/ls:/bin/cat ; /bin/ls bat

    a. **bash: /bin/ls: command not found**
    b. no output on screen
    c. **foo**
    d. **/bin/ls: bat: No such file or directory**
    e. **bat**

532. In an empty directory, how many arguments are passed to the **wc** command in this
    command line: **date >o1 ; touch a1 b2 out >o1 ; wc o***

    a. **1**   *b.* **4**   *c.* **2**   *d.* **3**   *e.* **5**

533. If **/bin/bash** is a file name, which pathname always leads to the same file?

    a. **./bin/bash**   *b.* **/bin/bash/.**
    c. **/bin/bash/..**   *d.* **/../../bin/bash**
    e. **/bin/../bash**

534. Under what directory are system log files usually stored?

    a. **/boot/grub**   *b.* **/var/log**   *c.* **/grub/boot**
    d. **/etc/log**   *e.* **/log/var**

535. Which of the following PATH statements makes the most sense?

    a. **PATH=/bin/bash:/usr/bin:/bin**
    b. **PATH=/bin:/etc/group:/usr/bin**
    c. **PATH=/bin:/usr/bin:/etc/shadow**
    d. **PATH=/bin/ls:/etc/passwd:/usr/bin**
    e. **PATH=/bin:/usr/bin**

536. Which of the following is true, given this long directory listing:
    drwxr-x--x 123 ian user 456 May 30 12:35 dir

    a. The number 123 is the size of this directory.
    b. The number 123 is the octal permissions of this directory.
    c. The number 456 is the count of links (names) this directory has.
    d. The number 123 is the inode number of this directory.
    e. The number 456 is the size of this directory.

537. What command will recursively show disk usage in directories?

    a. **ls**   *b.* **du**   *c.* **find**
    d. **df**   *e.* **fdisk**

538. If you type the command **cat**, which *CTRL* key will send an **EOF** and take you
    back to the command prompt?

    a. **^U**   *b.* **^R**   *c.* **^C**   *d.* **^E**   *e.* **^D**

539. If file **foo** occupies one disk block, how many disk blocks are in use after this
    sequence of commands:
    cp foo bar ; ln bar one ; cp one two ; ln one ten

    a. 1 block   *b.* 4 blocks   *c.* 2 blocks
    d. 3 blocks   *e.* 5 blocks

540. What is the link count of directory **foo** after this set of successful commands?
    mkdir foo ; cd foo ; touch a b c

    a. 3   *b.* 4   *c.* 5   *d.* 1   *e.* 2

541. If my current working directory is **/home**, and my home directory is **/home/me**,
    which command copies the password file into my home directory under the name
    foo?

    a. **cp ././me/../etc/passwd ../home/me/foo**
    b. **cp me/../../etc/passwd ./me/foo**
    c. **cp ../home/./me/../etc/passwd ./me/./foo**
    d. **cp ./../etc/passwd ../me/foo**
    e. **cp ../../etc/./passwd /me/foo**

542. If file **nine** contains 9 lines, each of which is the one-digit line number of the line
    in the file (**1** through **9**), what is the output on your screen of this command:
    sort nine nine | tail -3 | head -1

    a. **1**   *b.* **8**   *c.* **2 2**   *d.* **8 8**   *e.* **9**

543. If file **foo** contains 3 lines, and file **bar** contains 4 lines, then how many lines are
    output on your screen by this command line: **head foo | tail bar**

    a. **3** followed by **4**   *b.* **3**   *c.* **4** followed by **3**
    d. **5**   *e.* **4**

544. What is usually contained in the environment variable **$HOME**?
    a. the relative path of the system **/home** directory
    b. the relative path of your login home directory
    c. the absolute path of the system **/home** directory
    d. the absolute path of your login home directory
    e. the relative path of the ROOT directory

545. In an empty directory, what is the output on your screen after this command line:
    ```
    echo hi >a ; ls >wc -l
    ```
    a. **2**   b. **1**   c. **0**
    d. **a**   e. no output

546. What is the link count of file **foo** after this set of successful commands?
    ```
    rm foo ; touch foo ; ln foo bar
    cp bar a ; ln a b ; ln bar c ; cp c a
    ```
    a. 1   b. 5   c. 4   d. 2   e. 3

547. When doing an **ls -a**, the output pathname that is a double dot (**..**) signifies what?
    a. The parent directory.
    b. The root directory.
    c. A file or directory with double links.
    d. A hidden file.
    e. The current directory.

548. To shut down your Fedora system in an orderly fashion:
    a. type the three key **[CONTROL]-[ALT]-[F1]**
    b. select "System|Shut down"
    c. select VMware "VM|Power Off this virtual machine"
    d. type the three key **[CONTROL]-[ALT]-[DEL]**
    e. logout from each terminal and the machine will shut down

549. What command shows all the lines in file **foo** that contain the string **bar**?
    a. **foo | grep bar**   b. **cat foo > grep bar**
    c. **grep bar <foo**   d. **cat foo | wc bar**
    e. **grep foo bar**

550. File **a** contains 2 lines. File **b** contains 3 lines. How many lines are in file **e** after this command line:
    ```
    ln a d ; cp a f ; ln d c ; ln c e ; cat a b d f > e
    ```
    a. 5   b. 6   c. 2   d. 3   e. 9

551. If my current directory is **/bin**, which of these pathnames is equivalent to the file name **/bin/ls**?
    a. **../../bin/ls**   b. **ls/.**   c. **./bin/ls**
    d. **/root/bin/ls**   e. **../bin/ls/.**

552. To make the **bash** shell to complete commands or file names, you type the first part of the command or file name and then press this key:
    a. **[TAB]**   b. **[ALT]**   c. **[CTRL]-[C]**
    d. **[ALT]-[F1]**   e. **[CTRL]-[D]**

553. If the file **pig** contained the word **foo**, what would be the output on your screen of this two command sequence:
    ```
    PATH=/etc/passwd:/bin/ls:/bin/cat ; /bin/ls pig
    ```
    a. no output on screen
    b. **bash: /bin/ls: command not found**
    c. **pig**
    d. **/bin/ls: pig: No such file or directory**
    e. **foo**

554. What is the correct syntax to redirect both standard output and standard error into the same output file?
    a. **sum >out foo 2>&1**   b. **sum 2>&1 foo >out**
    c. **sum 2>1 >out foo**   d. **sum foo 1>out 2>1**
    e. **sum 1>out 2>out foo**

555. In an empty directory, how many words are in file **out** after this command line:
    ```
    echo 1 2 3 >a 4 ; mv a b ; ls >out
    ```
    a. **4**   b. **0**   c. **1**   d. **2**   e. **3**

556. If **foo** is a sub-directory that contains only the file **single**, what happens after this command: **mv foo/single foo/double**
    a. the command fails because the name **double** does not exist
    b. an empty file named **double** is created
    c. there is only the file named **double** in the directory now
    d. there is a second copy of the file **single** in the file named **double**
    e. the command fails because **single** is not a directory

557. What is the output of this successful command sequence?
    ```
    cd /usr/bin ; mkdir dir ; touch bar ; pwd
    ```
    a. **/home/dir**   b. **/usr/bin/dir**   c. **/usr/bin/bar**
    d. **/usr/bin**   e. **/home/bar**

558. Which of the command lines below can generate a non-empty file?
    a. **head -5 foo >foo**   b. **cat foo foo foo >foo**
    c. **sort foo >foo**   d. **tail foo >foo**
    e. **wc -l foo >foo**

559. Fedora 12 has **/boot** on its own, separate, first partition. Which of these is the correct GRUB legacy path to its config file?
    a. **(hd0,1)/boot/grub/grub.conf**
    b. **(hd0,0)/boot/grub/grub.conf**
    c. **(hd0,0)/grub.conf**
    d. **(hd0,1)/grub.conf**
    e. **(hd0,0)/grub/grub.conf**

560. What is the link count of directory **d** after this set of successful commands?
    mkdir d ; touch f ; cd d ; ln ../f x
    a. 1   *b.* 2   *c.* 5   *d.* 3   *e.* 4

561. If you delete an account with **userdel**, does it delete the user's home directory?
    a. no, unless the home directory is under **/home**
    b. yes, only if the home directory is under **/home**
    c. not enough information to answer
    d. yes, if you use a special option
    e. **userdel** cannot delete home directories

562. What command can you use to delete a directory?
    a. **delete**   *b.* **rmdir**   *c.* **deldir**
    d. **mvdir**   *e.* **erase**

563. How many words are in the file **x** after this command line:
    echo 1 2 >x ; echo 3 >x ; echo 4 >>x
    a. **2**   *b.* **4**   *c.* **0**   *d.* **3**   *e.* **1**

564. When you log in, you have the permissions of:
    a. one numeric user UID and no group GIDs
    b. one numeric user UID and one group GID
    c. multiple numeric user UIDs and one group GID
    d. multiple numeric user UIDs and multiple group GIDs
    e. one numeric user UID and multiple group GIDs

565. In an empty directory, what is the output on your screen after this command line:
    ls nosuchfile 2>out
    a. **nosuchfile 2 not found**   *b.* no output
    c. **nosuchfile**   *d.* **2 not found**
    e. **nosuchfile not found**

566. How many arguments are passed to the command by the shell on this command line: **<pig pig -x " " -z -r" " >pig pig pig**
    a. **7**   *b.* **5**   *c.* **9**   *d.* **6**   *e.* **8**

567. What type and permissions result from this command line:
    umask 623 ; touch newfile ; ls -l newfile
    a. **----r---wx**   *b.* **-rw--w--wx**   *c.* **-r-x-w--wx**
    d. **----r--r--**   *e.* **---xr-xr--**

568. To bring a background shell job into the foreground, type:
    a. **[Ctrl-Z]**   *b.* **kill %1**   *c.* **fg**
    d. **bg**   *e.* **[Ctrl-D]**

569. What command line shows you all the partition names on *disk*?
    a. **find /** *disk*   *b.* **file -s** *disk*   *c.* **df** *disk*
    d. **fdisk -l** *disk*   *e.* **du** *disk*

570. Given the following, can user **bird** in group **sesame** remove **./foo**?
    drwxr-xrwx 2 root sesame 4096 Oct 7 14:00 .
    rwxrwxrwx- 1 bird sesame 123 Oct 4 14:05 foo
    a. Yes, because **bird** has full permissions on **foo**
    b. No, because **bird** has no write permission on the directory
    c. Yes; permissions don't apply because **bird** owns **foo**
    d. Yes, because **bird** matches the writable other permissions
    e. No, because the directory is not accessible to **bird**

571. In a directory containing one file named **dog**, what is the output on your screen after this command line: **2>/dev/null ls nosuchfile**
    a. **dog**
    b. **bash: 2>/dev/null: command not found**
    c. **nosuchfile**
    d. **ls: nosuchfile: No such file or directory**
    e. no output

572. What is true about this output from **ls -il foo bar**?
    871 -r-------- 3 bin bin 2 Apr 22 10:15 foo
    872 -r-------- 3 bin bin 2 Apr 22 10:15 bar
    a. **foo** and **bar** each have two names (four names total)
    b. **foo** and **bar** each have three names (six names total)
    c. **foo** and **bar** are two of three names for this file
    d. this output is not possible
    e. **foo** and **bar** are names for the same file

573. If my current working directory is **/var**, which command copies the password file into directory **/var/ian** under the name **bar**?
    a. **cp ../var/./ian/../etc/passwd ./ian/./bar**
    b. **cp ./../etc/passwd ../ian/bar**
    c. **cp ../../etc/./passwd /ian/bar**
    d. **cp ./../ian/../etc/passwd ../var/ian/bar**
    e. **cp ./ian/../../etc/passwd ian/bar**

574. Given this successful command line (note the dot argument):
    cd /tmp ; mkdir dir ; cd dir ; chmod u-x .
    Which of the following subsequent commands will execute without any "permission denied" errors?
    a. **ls ..**   *b.* **ls /tmp/dir/.**
    c. **ls /tmp/dir**   *d.* **ls /tmp/dir/..**
    e. **ls .**

575. In an empty directory, how many words are in file **foo** after this command line:
    date >.bar >.out ; ls >foo
    a. **4**   *b.* **1**   *c.* **2**   *d.* **3**   *e.* **0**

576. What is the link count of directory **dir** after this set of successful commands?
     mkdir dir ; touch foo ; cd dir ; ln ../foo bar
     a. 1   *b.* 3   *c.* 4   *d.* 5   *e.* 2

577. If **foo** is a sub-directory that contains only the file **bar**, what happens after this
     command: **mv ./foo/bar foo/../me**
     a. the command fails because the name **me** does not exist
     b. the directory **foo** is now empty
     c. the command fails because the name **./foo/bar** does not exist
     d. the directory **foo** now contains only a file named **me**
     e. there is a second copy of the file **bar** in the file named **me**

578. If my current directory is **/etc**, which of these pathnames is equivalent to the
     pathname **/etc/x/y**?
     a. **../etc/x/y**   *b.* **../x/y**   *c.* **./etc/x/y**
     d. **/x/y**   *e.* **../etc/y**

579. If the file **pig** contained the word **bar**, what would be the output on your screen
     of this two command sequence:
     PATH=/etc/passwd:/bin/ls:/bin/who ; /bin/cat pig
     a. **/bin/cat: pig: No such file or directory**
     b. **bar**
     c. **bash: /bin/cat: command not found**
     d. **pig**
     e. no output on screen

580. What is the output of this command line in an empty directory:
     touch .a .b .c ; echo .??*
     a. an error message from **echo** saying **.??*** does not exist
     b. **.a .b .c**
     c. **. .. .a .b .c**
     d. no output
     e. **.??***

581. If a shell token with a GLOB pattern contains two slashes, how many slashes can be
     in each matched pathname?
     a. exactly two   *b.* one or two   *c.* zero, one, or two
     d. one, two, or more   *e.* two or more

582. Which of these characters is *not* a shell GLOB meta-character?
     a. **#**   *b.* **]**   *c.* **[**   *d.* **?**   *e.* *****

583. What is in the file **x** after this command line:
     echo foo >a ; rm b ; echo bar >>b ; cp a b >x
     a. **foo** followed by **bar**   *b.* no such file (nonexistent)
     c. nothing (empty file)   *d.* **bar**
     e. **foo**

584. If I mount one file system on directory **/a** and another file system on directory **/b,**
     how can I link the existing file **/a/foo** to the new pathname **/b/new**?
     a. **ln /a/foo /b/new**   *b.* **ln -s /a/foo /b/new**
     c. **ln -s /b/new /a/foo**   *d.* **ln /b/new /a/foo**
     e. **ln /a/new /b/foo**

585. What is the resulting link count of empty directory **dir** after this set of successful
     commands? **cd dir ; touch foo ; ln foo one ; ln foo two**
     a. 1   *b.* 3   *c.* 4   *d.* 2   *e.* 5

586. Why is a journalling file system better than non-journalling?
     a. contains more inodes for files and directories
     b. uses less disk space to store the same files
     c. faster file system check after system crash
     d. allows more than four primary partitions
     e. supports more types of partitions

587. If my current working directory is **/home**, and my home directory is
     /home/ian, which command copies file **/bin/ls** into my home directory
     under the name **me**?
     a. **cp ./../ian/../bin/ls ../home/ian/me**
     b. **cp ./../bin/ls ../ian/me**
     c. **cp ../home/./ian/../bin/ls ./ian/./me**
     d. **cp ian/../../bin/ls ./ian/me**
     e. **cp ../../bin/./ls /ian/me**

588. If directory **dir** contains these four three-character file names: **.aa**, **.ab**, **.a?**,
     .a*, then what is the output on your screen of this command line:
     echo dir/???
     a. **dir/.aa dir/.ab**
     b. **dir/.a?**
     c. no output
     d. **dir/???**
     e. **dir/.aa dir/.ab dir/.a? dir/.a***

589. How many arguments and options are there to the command:
     ls -al /etc
     a. A three-letter file name and an **/etc** switch option.
     b. Two command line arguments, one of which contains two bundled options.
     c. Two options, no arguments.
     d. Two arguments, one of which is a single option and the other is a pathname.
     e. Two arguments, no options.

590. What is the link count of directory **d** after this set of successful commands?
     mkdir d ; cd d ; touch a ; mkdir b c d
     a. 6   *b.* 5   *c.* 4   *d.* 2   *e.* 3

591. If directory **dir** contains these three four-character file names: **.123**, **.124**, **.???**, then what is the output on your screen of this command line:
   echo dir/????
   a. **dir/.123 dir/.124**
   b. **echo: dir/????: No such file or directory**
   c. **dir/????**
   d. **dir/.123 dir/.124 dir/.???**
   e. no output

592. What is the output of this successful command sequence?
   cd /tmp ; touch dir ; mkdir bar ; pwd
   a. **/tmp/bar**   *b.* **/tmp**   *c.* **/bar**
   d. **/tmp/dir**   *e.* **/tmp/dir/bar**

593. Which permissions on a directory mean that anyone can create a new file inside it, but nobody can see the names of the files inside it?
   a. **222**   *b.* **666**   *c.* **333**   *d.* **444**   *e.* **555**

594. To change your own account password, use this exact command line:
   a. **$ passwd cst8207.idallen.ca**
   b. **$ passwd cst8207**
   c. **$ passwd**
   d. **$ passwd idallen-ubuntu**
   e. **$ passwd 10.50.254.150**

595. What is the link count of directory **d** after this set of successful commands?
   mkdir d ; cd d ; touch a ; mkdir b c
   a. 2   *b.* 5   *c.* 6   *d.* 4   *e.* 3

596. If you type the command **cat ,**
   which key sequence will send an EOF and take you back to the command prompt?
   a. **[CTRL-L]**   *b.* **[CTRL-R]**   *c.* **[CTRL-C]**
   d. **[CTRL-D]**   *e.* **[CTRL-U]**

597. What is true about this output from **ls -il foo bar**?
   454 -rwxr-xr-x 3 me me 2 Dec 4 9:12 foo
   456 -rwxr-xr-x 3 me me 2 Dec 4 9:12 bar
   a. **foo** and **bar** are two of three names for this file
   b. **foo** and **bar** each have three names (six names total)
   c. **foo** and **bar** are names for the same file
   d. this output is not possible
   e. **foo** and **bar** each have two names (four names total)

598. Which command line below allows programs in the current directory to execute without preceding the names with **./**?
   a. **PATH=/usr/bin/.:$HOME**   *b.* **$PATH=/usr/bin:./bin**
   c. **PATH=/bin:/usr/bin:.**   *d.* **PATH=./$HOME:/usr/bin**
   e. **$PATH=.:$HOME:/usr/bin**

599. What is your HOME directory?
   a. The directory into which you are placed when you first log in
   b. The directory that your shell is in now
   c. The directory named **/home**
   d. This is where "root" goes when "root" logs in to the system
   e. The top directory of the Unix/Linux/BSD/OSX file system tree

600. Which command shows the name of the current computer:
   a. **hostname**   *b.* **comname**   *c.* **who**
   d. **w**   *e.* **users**

601. If you type the command **echo 'missing quote ,**
   which key sequence will interrupt it and take you back to the command prompt?
   a. **[CTRL-L]**   *b.* **[CTRL-R]**   *c.* **[CTRL-D]**
   d. **[CTRL-C]**   *e.* **[CTRL-U]**

602. Which **fdisk** internal command letter displays the list of all partitions?
   a. **f**   *b.* **L**   *c.* **p**   *d.* **l**   *e.* **q**

603. What is the link count of directory **z** after this set of successful commands?
   mkdir z ; cd z ; touch a ; ln a b ; ln a c
   a. 2   *b.* 3   *c.* 4   *d.* 5   *e.* 1

604. If **/bin/foo** is a program that outputs **one** and **/usr/bin/foo** is a program that outputs **two**, what would be the output on your screen of this two command sequence: **PATH=/dev:/usr/bin:/usr:/bin:/etc ; /bin/foo**
   a. **one** followed by **two**
   b. **bash: /bin/foo: command not found**
   c. **two** followed by **one**
   d. **two**
   e. **one**

605. When the shell exits, what happens to paused ("Stopped") jobs of the shell?
   a. they keep running
   b. they are sent a termination signal
   c. they are made into foreground jobs
   d. they are stopped
   e. they exit

606. If my current directory is **/lib**, which of these pathnames is equivalent to the pathname **/lib/x/y**?
   a. **../lib/y**   *b.* **/x/y**   *c.* **./lib/x/y**
   d. **../x/y**   *e.* **../lib/x/y**

607. If you are in **/etc** and **ls -l** shows a symbolic link **bar -> /foo** then dereference the absolute path of **bar** with no symbolic links:
   a. **/etc/bar/foo**   *b.* **/foo**   *c.* **/bar/foo**
   d. **/etc/foo**   *e.* **/etc/foo/bar**

608. If **foo** is a sub-directory that contains only the file **bar**, what happens after this command: **mv ./foo/bar foo/../moo**
    a. the directory **foo** is now empty
    b. there is a second copy of the file **bar** in the file named **moo**
    c. the directory **foo** now contains only a file named **moo**
    d. the command fails because the name **foo/../moo** does not exist
    e. the command fails because the name **moo** does not exist

609. In the output of the command **ls -a**, a dot that begins a name signifies what?
    a. A name with an unprintable character.
    b. The current directory.
    c. The parent directory.
    d. A current file.
    e. A name that is hidden.

610. Which command line below does not show any lines from inside the file **dog**?
    a. **ls dog**   b. **less dog**   c. **head dog**
    d. **tail dog**   e. **more dog**

611. If file **foo** contains 9 lines, each of which is the one-digit line number of the line in the file (**1** through **9**), what is the output on your screen of this command:
    cat foo foo | cat | tail -4 | head -1
    a. **8**   b. **5**   c. **9**   d. **6**   e. **7**

612. If the file **bat** contained the word **foo**, what would be the output on your screen of this two command sequence:
    PATH=/bin/cat:/bin/who:/bin/ls ; cat bat
    a. **foo**
    b. **cat: bat: No such file or directory**
    c. no output on screen
    d. **bash: cat: command not found**
    e. **bat**

613. Which command line lists all possible utilities available for compiling programs?
    a. **locate compile**   b. **grep 'compile' /etc/**
    c. **find compile**   d. **man compile**
    e. **man -k compile**

614. How many arguments does the shell pass to this **echo** command:
    echo 'It's "1 2" isn't it? I can't decide.
    a. **3**   b. **6**   c. **4**   d. **2**   e. **5**

615. Which of the following is true, given this long directory listing:
    drwxr-x--x 512 bin bin 712 Jul 31 12:33 dir
    a. The number 512 is the inode number of this directory.
    b. The number 712 is the inode number of this directory.
    c. The number 512 is the size of this directory.
    d. The number 712 is the count of links (names) this directory has.
    e. The number 512 is the count of links (names) this directory has.

616. File **a** contains 2 lines. File **b** contains 3 lines. How many lines are in file **a** (not in **c**) after this command line:
    ln a d ; ln d c ; ln c e ; cat a b c d e >c
    a. 2   b. 3   c. 5   d. 11   e. 9

617. What would you type to change the permissions on a file to **rw-r-xr--**?
    a. **chmod 351 file**   b. **chmod 654 file**
    c. **chmod 530 file**   d. **chmod 212 file**
    e. **chmod 221 file**

618. The shell meta-character used to separate multiple separate commands on the same line of typing is:
    a. **@**   b. **:**   c. **+**   d. **;**   e. **,**

619. What is the output on your screen of this command line:
    echo pig >one ; echo bat | tail one
    a. **bat** followed by **pig**   b. **pig**
    c. an error message   d. **pig** followed by **bat**
    e. **bat**

620. If my current working directory is **/bar**, which command copies the password file into directory **/bar/me** under the name **foo**?
    a. **cp ./../etc/passwd ../me/foo**
    b. **cp ../bar/./me/../etc/passwd ./me/./foo**
    c. **cp ./../me/../etc/passwd ../bar/me/foo**
    d. **cp ../../etc/./passwd /me/foo**
    e. **cp me/../../etc/passwd ./me/foo**

621. Given the following, can user **kirk** in group **starfleet** copy **./file1** to **file2**?
    drwx-wx--x 2 root starfleet 4096 Oct 7 14:00 .
    --wxrwxrwx 1 kirk starfleet 123 Oct 4 14:05 file1
    a. Yes, because **kirk** has write permissions on **file1**
    b. No, because **file1** has no read permissions for **kirk**
    c. Yes, because **kirk** owns **file1**
    d. No, because the directory is not readable by **kirk**
    e. No, because the directory has no write permissions for **kirk**

622. What is the output on your screen after this command line:
    cd /home/ian ; mkdir a ; mkdir b ; pwd
    a. **/home/ian/b**   b. **/home/ian**
    c. **/home/ian/a**   d. **/b**
    e. **/home/ian/a/b**

623. In a directory that contains only the file **single**, what happens after this command: **mv single double**
   a. the command fails because the name "double" does not exist
   b. an empty file named "double" is created
   c. the command fails because "single" is not a directory
   d. there is a second copy of the file "single" in the file named "double"
   e. there is only the file named "double" in the directory now

624. Which file contains a list of file systems to mount when booting the system?
   a. **/var/log**
   b. **/etc/init.d**
   c. **/var/spool**
   d. **/etc/grub.conf**
   e. **/etc/fstab**

625. If I am in my home directory named **/home/me** and **mt** is an empty sub-directory, what is true after this command line:
      touch ../me/foo ; cp ./mt/../foo ./mt/../bar
   a. the directory **mt** now has a file named **bar** in it
   b. the directory **mt** now contains two files
   c. the directory **mt** is still empty
   d. the command fails because the path **./mt/../foo** does not exist
   e. there is a second copy of the file named **foo** in the file named **bar**

626. Given the following, can user **bird** in group **sesame** copy **./foo** to **bar**?
   drwxr-xrwx 2 root sesame 4096 Oct 7 14:00 .
   -r-xr-xr-x 1 bird sesame 123 Oct 4 14:05 foo
   a. No, because the directory has no write permissions for **bird**
   b. No, because **foo** has no write permissions for **bird**
   c. Yes; permissions don't apply because **bird** owns **foo**
   d. No, because the directory is not accessible to **bird**
   e. Yes, because **bird** has read permissions on **foo**

627. If file **foo** contains 9 lines, each of which is the one-digit line number of the line in the file (**1** through **9**), what is the output on your screen of this command:
      sort foo foo | tail -2 | head -1
   a. **9**   b. **8**   c. **8 8**   d. **1**   e. **2 2**

628. If **/bin/foo** is a program that outputs **mom** and **/usr/bin/foo** is a program that outputs **dad**, what would be the output on your screen of this two command sequence: **PATH=/dev:/usr/bin:/usr:/bin:/etc ; /bin/foo**
   a. **mom** followed by **dad**
   b. **bash: /bin/foo: command not found**
   c. **mom**
   d. **dad**
   e. **dad** followed by **mom**

629. What command line would create a file system on the second *logical* partition?
   a. **mkfs /dev/sda6**
   b. **mkfs /dev/sda2**
   c. **fdisk /dev/sda6**
   d. **fdisk /dev/sda2**
   e. **mount /dev/sda2**

630. If file **a** contains 2 lines, and file **b** contains 3 lines, then how many lines are in file **c** after this command line: **ln a d ; ln b e ; cp d e >c**
   a. **4**   b. **3**   c. **2**   d. **5**   e. **0**

631. If file **a** contains 2 lines, and file **b** contains 3 lines, then how many lines are in file **c** after this command line:
      cat a b >c ; cat a >>b ; sort c b >c a
   a. **0**   b. **7**   c. **5**   d. **12**   e. **8**

632. Which command line displays the contents of the Unix **passwd** file one page at a time?
   a. **cat /etc/passwd >less**
   b. **less </etc/passwd**
   c. **less | /etc/passwd**
   d. **/etc/passwd >less**
   e. **/etc/passwd | less**

633. In the output of the command **ls -ai**, the one-character name **.** signifies what?
   a. The current directory.
   b. A current file.
   c. A name with an unprintable character.
   d. The parent directory.
   e. A name that is hidden.

634. Which command below removes *only* this five-character file name containing a special character (and no others): **date?**
   a. **rm date/?**   b. **rm ./date\?**   c. **rm date\\?**
   d. **rm date***   e. **rm ./date?**

635. Which command line below outputs only lines 11-15 of the Unix password file?
   a. **head -15 /etc/passwd | tail -5**
   b. **head -10 /etc/passwd | tail -15 /etc/passwd**
   c. **head -15 /etc/passwd | tail -5 /etc/passwd**
   d. **tail -15 /etc/passwd | head -10**
   e. **tail -10 /etc/passwd | head -15 /etc/passwd**

636. If I have a directory owned by me named **me/dir**, which action would increase its *link count* by exactly one?
   a. create a directory named **me/dir/foo**
   b. create a directory named **me/dir/.**
   c. create a directory named **me/dir2**
   d. create one file named **me/dir2**
   e. create one file named **me/dir/bar**

637. Which of these is a likely kernel version number?
     a. **2.6.31.5-127.fc12.i686.PAE**
     b. **Linux**
     c. **83 Linux**
     d. **#1 SMP Sat Nov 7 21:25:57 EST 2009**
     e. **139285**

638. If directory **/a** contains these seven two-character file names: **aa**, **ab**, **ac**, **ad**, **a?**, **a***, **a.**, then which command below will remove only the single two-character name **a?** from the directory (and no others)?
     a. **rm /a/a\?**   b. **rm /a/a?**   c. **rm /a?**
     d. **rm /a/a[*]**   e. **rm /a/a***

639. What command line modifies and moves (in one command line) the home directory **foo** to **bar** for the existing user **bob**?
     a. **usermod -d -m /home/bar bob**
     b. **usermod -m -d /home/foo /home/bar**
     c. **usermod -dm /home/bar bob**
     d. **usermod -m -d /home/bar bob**
     e. **usermod -d -m /home/bob bar**

640. Which command displays the contents of the Unix **passwd** file one page at a time?
     a. **more /etc/passwd**   b. **head /etc/passwd**
     c. **cat /etc/passwd**   d. **info /etc/passwd**
     e. **page /etc/passwd**

641. What is the output on your screen of this command line:
         umask 762 ; touch newfile ; ls -l newfile
     a. **-------r-- 1 me me 0 Oct 1 1:12 newfile**
     b. **-rw-rw--w- 1 me me 0 Oct 1 1:12 newfile**
     c. **------xr-x 1 me me 0 Oct 1 1:12 newfile**
     d. **-rwxrw--w- 1 me me 0 Oct 1 1:12 newfile**
     e. **--------wx 1 me me 0 Oct 1 1:12 newfile**

642. To list your personal crontab, type:
     a. **/var/log/crontab**   b. **cat crontab**
     c. **/etc/crontab**   d. **atq**
     e. **crontab -l**

643. If I am in my home directory named **/home/ian** and **mt** is an empty sub-directory, what is true after this command line:
         touch ../ian/cat ; cp ./mt/../cat ./mt/../dog
     a. the command fails because the path **./mt/../cat** does not exist
     b. the file named **cat** is now renamed to **dog**
     c. the directory **mt** is still empty
     d. the directory **mt** now contains two files
     e. the directory **mt** now has a file named **dog** in it

644. Given the following, can user **ian** in group **iangrp** append to **foobar**?
     drwxrw-rwx 2 root iangrp 4096 Apr 23 11:30 .
     -rw-rw-r-- 1 ian iangrp 1024 Apr 23 11:30 foobar
     a. No, because the directory is not accessible to **ian**
     b. Unable to determine based on the information presented
     c. No, because execute permissions are not set for **ian** on **foobar**
     d. Yes, because **ian** owns **foobar**
     e. Yes, because **ian** has write permissions on **foobar**

645. What is the output of this command line in an empty directory: **ls ***
     a. *****
     b. **.   ..**
     c. **.**
     d. an error message from **ls** saying ***** does not exist
     e. no output on screen

646. What is the output of this command line in an empty directory:
         touch .12 .345 .6789 ; echo .??*
     a. no output
     b. **. .. .12 .345 .6789**
     c. **.??***
     d. an error message from **echo** saying **.??*** does not exist
     e. **.12 .345 .6789**

647. Which of the following is true, given this long directory listing:
         755 drwxr-x--x 256 ian user 512 May 30 12:35 dir
     a. The number 755 is the count of links (names) this directory has.
     b. The number 512 is the count of links (names) this directory has.
     c. The number 256 is the inode number of this directory.
     d. The number 256 is the octal permissions of this directory.
     e. The number 512 is the size of this directory.

648. If my current directory is **/usr**, which of these pathnames is equivalent to the pathname **/usr/x/y/z**?
     a. **./usr/x/y/z**   b. **x/./y/z**   c. **../x/y/z**
     d. **/x/y/z**   e. **../usr/y/z**

649. Which command line below never shows any lines from inside the file **cow**?
     a. **grep pattern cow**   b. **wc cow**
     c. **sort cow**   d. **tail cow**
     e. **head cow**

650. If **foo** is a sub-directory that contains only the file **bar**, what happens after this command: **mv foo/bar foo/moo**
   a. an empty file named **moo** is created
   b. the command fails because **bar** is not a directory
   c. there is a second copy of the file **bar** in the file named **moo**
   d. there is only the file named **moo** in the directory now
   e. the command fails because the name **moo** does not exist

651. If my current working directory is **/home**, and my home directory is **/home/me**, which command copies the password file into my home directory under the name **foo**?
   a. **cp ../home/me/../etc/passwd ./me/./foo**
   b. **cp ./me/../etc/passwd ../home/me/foo**
   c. **cp me/../../etc/passwd me/foo**
   d. **cp ../../etc/passwd /me/foo**
   e. **cp ../etc/passwd ../me/foo**

652. Given my directory **dir** and my file **dir/c** owned by me, which permissions allow me to delete the file **dir/c** from the directory, but not change the content (data) in the file?
   a. Permissions **300** on directory **dir** and **500** on file **dir/c**.
   b. Permissions **100** on directory **dir** and **100** on file **dir/c**.
   c. Permissions **500** on directory **dir** and **400** on file **dir/c**.
   d. Permissions **100** on directory **dir** and **200** on file **dir/c**.
   e. Permissions **300** on directory **dir** and **300** on file **dir/c**.

653. What is the output of this command line in an empty directory:
   touch .a .b .c ; echo .*
   a. **.a .b .c**
   b. no output
   c. **. .. .a .b .c**
   d. **.***
   e. an error message from **echo** saying **.*** does not exist

654. What is the link count of file **f** after these successful commands?
   rm f ; touch f ; ln f b ; cp f g
   cp b a ; ln a d ; ln b c ; cp c g
   a. **1**   *b.* **2**   *c.* **3**   *d.* **5**   *e.* **4**

655. What would you see if you typed this command: **cat /foo**
   a. The contents of your directory named **foo**
   b. The contents of your subdirectory named **foo**
   c. The contents of the file **foo** located in your home directory
   d. The contents of the file **foo** located in the parent directory
   e. The contents of the file **foo** located in the root directory

656. Which command below removes *only* this four-character file name containing a special character (and no others):   ***xyz**
   a. **rm ''*xyz**   *b.* **rm *xyz**   *c.* **rm "*xyz"**
   d. **rm ''*xyz''**   *e.* **rm *"xyz"**

657. When doing an **ls -a**, the output pathname that is a double dot (**..**) signifies what?
   a. The current directory.   *b.* A hidden file.
   c. A pathname with double links.   *d.* The ROOT directory.
   e. The parent directory.

658. Which command pipeline outputs the count of the number of pathnames (including all subdirectories) that lie under the /etc directory?
   a. **ls /etc | wc**   *b.* **dir /etc | count**
   c. **man /etc ; wc**   *d.* **ls /etc ; wc**
   e. **find /etc | wc**

659. What is the output of this command line in an empty directory: **cat ***
   a. **.**
   b. *****
   c. an error message from **cat** saying ***** does not exist
   d. no output on screen
   e. **.   ..**

660. Which pathname almost always leads to the same file named: **/etc/passwd**
   a. **./etc/passwd**   *b.* **/etc/passwd/.**
   c. **/etc/../passwd**   *d.* **/etc/etc/../passwd**
   e. **/./etc/./passwd**

661. What is the result of this exact command line: **ls /bin hello**
   a. the contents of the files "/bin" and "hello" will be displayed, if possible; otherwise, error messages
   b. file "/bin" will be copied to "hello"; the names will be displayed as well
   c. all the files under "/bin" with the name "hello" will be displayed
   d. the two text strings "/bin" and "hello" will be displayed
   e. the names of the pathnames "/bin" and "hello" will be displayed, if they exist; otherwise, error messages

662. What is the link count of file **f** *after* this set of successful commands?
   rm f ; touch f ; ln f bar
   cp bar x ; ln x y ; ln bar z
   a. 5   *b.* 3   *c.* 2   *d.* 1   *e.* 4

663. In an empty directory, what is the output on your screen after this command line:
    `echo hi >a ; sort * 1>/dev/null`
    a. `sort: *: No such file or directory`
    b. `hi`
    c. no output
    d. `sort: 1>/dev/null: No such file or directory`
    e. `a`

664. Which command line creates a directory into which anyone can put a file, but in which nobody can see the names of the files that are there?
    a. `mkdir protected ; chmod 777 .`
    b. `mkdir protected ; chmod 777 protected`
    c. `mkdir protected ; cd protected ; chmod go-x .`
    d. `mkdir protected ; chmod 333 protected`
    e. `mkdir protected ; cd protected ; chmod go+wx .`

665. If my current working directory is `/home`, and my home directory is `/home/xx`, which command copies the password file into my home directory under the name `foo`?
    a. `cp ../../etc/passwd /xx/foo`
    b. `cp xx/../../etc/passwd xx/foo`
    c. `cp ../etc/passwd ../xx/foo`
    d. `cp ../home/xx/../etc/passwd ./xx/./foo`
    e. `cp xx/../etc/passwd ../home/xx/foo`

666. The **minimum** permissions you need to remove a file from a directory are:
    a. `wx` permissions on the directory and `w` permissions on the file
    b. `x` permissions on the directory and `w` permissions on the file
    c. `wx` permissions on the directory, no permissions on the file
    d. `w` permissions on the directory and `w` permissions on the file
    e. `w` permissions on the directory, no permissions on the file

667. Given my directory `dir` and my file `dir/foo` owned by me, which permissions allow me to access and change or create new content (data) in the file `dir/foo` but not delete the file?
    a. Permissions `300` on directory `dir` and `200` on file `dir/foo`.
    b. Permissions `100` on directory `dir` and `100` on file `dir/foo`.
    c. Permissions `600` on directory `dir` and `700` on file `dir/foo`.
    d. Permissions `400` on directory `dir` and `400` on file `dir/foo`.
    e. Permissions `500` on directory `dir` and `600` on file `dir/foo`.

668. If I mount `sda1` on `/one` and `sda2` on `/two,` how can I link the existing file `/one/foo` to the new pathname `/two/bar`?
    a. `ln /two/bar /one/foo`
    b. `ln -s /two/bar /one/foo`
    c. `ln -s /one/foo /two/bar`
    d. `ln /one/foo /two/bar`
    e. `ln /one/bar /two/foo`

669. In an empty directory, how many lines are in file `foo` after this command line:
    `ls  nosuchfile  .  ..  2>foo`
    a. **3**   b. **0**   c. **4**   d. **2**   e. **1**

670. If I am in my home directory named `/home/ian` and `mt` is an empty sub-directory, what is true after this command line:
    `touch ../ian/cat ; cp ./mt/../cat ./mt/../dog`
    a. the directory `mt` now contains two files
    b. there is a second copy of the file named `cat` in the file `dog`
    c. the command fails because the path `./mt/../cat` does not exist
    d. the directory `mt` now has a file named `dog` in it
    e. the directory `mt` is still empty

671. In an empty directory, what permissions are on file `???` after these commands:
    `touch ??? *** ; chmod 111 *`
    `chmod 222 ? ; chmod 444 '*'`
    a. `--x--x--x`   b. `-wx-wx-wx`   c. `r--r--r--`
    d. `rw-rw-rw-`   e. `-w--w--w-`

672. Who is the owner of file `bar` after you execute this sequence of commands in your home directory:
    `ln /etc/passwd foo ; ln foo one`
    `ln one two ; ln two bar`
    a. the file is owned by `home`
    b. the file is owned by `root`
    c. you own the file `bar`
    d. the file is owned by `passwd`
    e. you cannot execute the given commands; no file will be created

673. In a directory that contains only the file `single`, what happens after this command: `mv single double`
    a. there is only the file named `double` in the directory now
    b. the command fails because `single` is not a directory
    c. an empty file named `double` is created
    d. the command fails because the name `double` does not exist
    e. there is a copy of the file named `single` in the file named `double`

674. Which of these statements is true?
    a. To indicate End-of-File (no more input) to a program, type **[CONTROL]-[D]**.
    b. To interrupt a Unix process from the keyboard, type **[CONTROL]-[D]**.
    c. The **file** command creates a new, empty file in the current directory
    d. Command **apropos** is an exact synonym for command **man**.
    e. To erase an entire line of typing, type **[ALT]-[DELETE]**.

675. What is the output on your screen after these command lines:
    echo one >x ; ln x y ; echo two >y
    echo ten >x ; cat y
    a. no output on screen
    b. **one** followed by **two** and **ten**
    c. **one**
    d. **two**
    e. **ten**

676. In a directory that contains only the file **a**, what happens after this command:
    mv a b
    a. there is only the file named **b** in the directory now
    b. the command fails because **a** is not a directory
    c. an empty file named **b** is created
    d. the command fails because the name **b** does not exist
    e. there is a second copy of the file **a** in the file named **b**

677. Which Unix command sequence deletes a directory and everything inside it?
    a. **deltree dir**
    b. **rmdir -all dir**
    c. **rm -r dir**
    d. **erase -r dir**
    e. **erase dir**

678. What is in file **foo** after this command line: **echo 1 2 >foo 3 4**
    a. **1 2**
    b. **3 4**
    c. nothing (empty file)
    d. **1 2 3 4**
    e. **echo 1 2**

679. Which command line outputs inode/filename pairs for names in the current directory, sorted by inode number?
    a. **sort -n | ls -ai**
    b. **ls -i -a | sort -n**
    c. **ls -a | sort -i**
    d. **sort ls -ia**
    e. **ls -ia > sort -n**

680. What is the correct syntax to redirect both standard output and standard error into the same output file?
    a. **sum foo 2>1 >out**
    b. **sum foo 1>out 2>1**
    c. **sum foo >out 2>&1**
    d. **sum foo 1>out 2>out**
    e. **sum foo 2>&1 >out**

681. What is the *current directory*?
    a. The directory named **..** (dot dot)
    b. The directory that your shell (or any Unix process) is in now
    c. The directory named **/current**
    d. The directory into which you are placed when you first log in
    e. This is where "root" goes when "root" logs in to the system

682. Given my directory **dir** and my file **dir/f** owned by me, which permissions allow me to access and change or create new content (data) in the file **dir/f** but not delete the file?
    a. Permissions **600** on directory **dir** and **700** on file **dir/f**.
    b. Permissions **500** on directory **dir** and **100** on file **dir/f**.
    c. Permissions **200** on directory **dir** and **200** on file **dir/f**.
    d. Permissions **100** on directory **dir** and **200** on file **dir/f**.
    e. Permissions **400** on directory **dir** and **400** on file **dir/f**.

683. What is the link count of file **f** after this set of successful commands?
    rm f ; touch f ; cp f x
    ln f a ; ln x y ; ln a z ; ln z q
    a. **5**
    b. **4**
    c. **6**
    d. **3**
    e. **2**

684. What GRUB command will set a partition prefix that will prefix all file names typed without partition prefixes, e,g. **/grub/device.map**?
    a. **root=(hd0,0)**
    b. **default=(hd0,0)**
    c. **kernel (hd0,0)**
    d. **root (hd0,0)**
    e. **title (hd0,0)**

685. If file **foo** occupies one disk block, how many disk blocks are in use after this sequence of commands:
    cp foo bar ; ln bar one ; cp one two ; cp one xxx
    a. **3**
    b. **2**
    c. **1**
    d. **4**
    e. **5**

686. What command can you use to delete a directory that isn't empty?
    a. **del -r dir**
    b. **rmdir -r dir**
    c. **rm -r dir**
    d. **deltree -r dir**
    e. **deldir -r dir**

687. What is in file **c** after this command line:
    echo A >a ; ln a b ; echo B >b ; ln a c ; rm a b
    a. **B**
    b. **A** followed by **B**
    c. nothing (empty file)
    d. no such file (nonexistent)
    e. **A**

688. What command can you use to delete an empty directory?
    a. **delete**
    b. **rmdir**
    c. **deldir**
    d. **mvdir**
    e. **erase**

689. What is the output on your screen of this two command sequence:
>   `PATH=/bin/ls:/bin/cat:/bin/sh ; cat nosuchfile`
- *a.* `bash: /bin/sh: No such file or directory`
- *b.* `bash: cat: command not found`
- *c.* `cat: nosuchfile: No such file or directory`
- *d.* `bash: /bin/ls: command not found`
- *e.* `ls: /bin/cat: command not found`

690. Which of the following is true, given this long directory listing:
>   `755 drwxr-x--x 512 ian user 256 May 30 12:35 dir`
- *a.* The number 256 is the inode number of this directory.
- *b.* The number 512 is the size of this directory.
- *c.* The number 512 is the count of links (names) this directory has.
- *d.* The number 256 is the count of links (names) this directory has.
- *e.* The number 755 is the octal permissions of this directory.

691. What is the output on your screen after these command lines:
>   `echo 1 >x ; cp x y ; echo 2 >>y`
>   `sort x >y ; cat y`
- *a.* `2`
- *b.* `1`
- *c.* `2` followed by `1`
- *d.* no output
- *e.* `1` followed by `2`

692. If `dir` is a sub-directory that contains only the file `foo`, what happens after this command: `mv dir/foo dir/./../bar`
- *a.* the directory `dir` is now empty
- *b.* there is a second copy of the file `foo` in the file named `bar`
- *c.* the command fails because the name `bar` does not exist
- *d.* the directory `dir` now contains only a file named `bar`
- *e.* the command fails because the name `dir/./../bar` does not exist

693. Given the pathname `/etc/passwd`, the *basename* of this pathname is:
- *a.* `/etc`
- *b.* `passwd`
- *c.* `etc`
- *d.* `etc/passwd`
- *e.* `/`

694. What do you do to erase an entire line of typing in the shell?
- *a.* type `[CTRL-W]`
- *b.* type `[CTRL-D]`
- *c.* select the line with the mouse and use the `DEL` key
- *d.* type `[CTRL-U]`
- *e.* type `[CTRL-C]`

695. In the output of the command `ls -i -a`, a dot that *begins* a pathname signifies what?
- *a.* A name with an unprintable character.
- *b.* An inode (index) numbered file.
- *c.* The parent directory.
- *d.* The current directory.
- *e.* A name that is hidden.

696. Which of the command lines below can generate a non-empty file?
- *a.* `sort -r foo >foo`
- *b.* `wc -wc foo >foo`
- *c.* `tail -5 foo >foo`
- *d.* `grep -v foo foo >foo`
- *e.* `tr abc ABC <foo >foo`

697. What is true about this output from `ls -il foo bar`
>   `15 -r-x------ 2 bin bin 3 Jul 31 12:33 foo`
>   `99 -r-x------ 2 bin bin 3 Jul 31 12:33 bar`
- *a.* `foo` and `bar` are two of three names for the same file
- *b.* `foo` and `bar` are names for different files
- *c.* this output is not possible
- *d.* `foo` and `bar` are names for the same file
- *e.* `foo` and `bar` each have three names (six names total)

698. In an empty directory, what is the output on your screen after this command line:
>   `echo hi >.out ; echo .*`
- *a.* `. .. .out`
- *b.* `.*`
- *c.* an error message from `echo` saying `.*` does not exist
- *d.* `hi`
- *e.* `.out`

699. What is a Unix/Linux "tarball"?
- *a.* a single-file that contains individual compressed files
- *b.* a multi-file directory containing individual compressed files
- *c.* a single-file that contains individual uncompressed files
- *d.* a multi-file directory containing individual uncompressed files
- *e.* a single compressed file containing one uncompressed file

700. What is the output of this command line in an empty directory:
>   `touch a .a bc .bc def ; echo [ab]*`
- *a.* an error message from `echo` saying `[ab]*` does not exist
- *b.* no output
- *c.* `[ab]*`
- *d.* `a bc`
- *e.* `a .a bc .bc`

701. In a directory that contains only the file `foo`, what happens after this command:
>   `mv foo bar`
- *a.* the command fails because the name `bar` does not exist
- *b.* an empty file named `bar` is created
- *c.* the command fails because `bar` is not a directory
- *d.* there is only the file named `bar` in the directory now
- *e.* there is a copy of the file named `foo` in the file named `bar`

702. What is the output on your screen of this command line:
     echo hi >out | wc -l
     a. **2**   *b.* no output   *c.* **1**
     d. **0**   *e.* **3**

703. Which of these command line will make file **c** contain all of the content of file **a**
     followed by all of the content of file **b**?
     a. **echo a b >c**   *b.* **mv a b >c**   *c.* **ln a b >c**
     d. **cp a b >c**   *e.* **cat a b >c**

704. What is the output on your screen after these command lines:
     echo 1 >x ; ln x y ; echo 2 >>y
     head -1 x >y ; cat y
     a. **2**   *b.* **2** followed by **1**   *c.* **1** followed by **2**
     d. **1**   *e.* no output

705. What permissions are given to **newdir** after this command line:
     umask 516 ; mkdir newdir
     a. **-w-rw---x**   *b.* **r-x--xrw-**   *c.* **--xr-x---**
     d. **-w-r-xrw-**   *e.* **-w-rw----**

706. In a directory containing one file named **mt**, what is the output on your screen after
     this command line: **ls 2>/dev/null nosuchfile**
     a. **mt**
     b. no output
     c. **ls: nosuchfile: No such file or directory**
     d. **bash: 2>/dev/null: command not found**
     e. **nosuchfile**

707. What command shows all the lines in file **foo** that contain the string **bar**?
     a. **grep bar <foo**   *b.* **grep cat foo bar**
     c. **grep bar >foo**   *d.* **cat foo > grep bar**
     e. **grep foo bar**

708. If you are in **/bin** and **ls -l** shows a symbolic link **foo -> /bar** then
     dereference the absolute path of **foo** with no symbolic links:
     a. **/bin/foo/bar**   *b.* **/bin/bar**   *c.* **/bin/bar/foo**
     d. **/foo/bar**   *e.* **/bar**

709. Which of the following is true, given this long directory listing:
     drwxr-x--x 456 ian user 123 May 30 12:35 dir
     a. The number 456 is the size of this directory.
     b. The number 456 is the inode number of this directory.
     c. The number 456 is the octal permissions of this directory.
     d. The number 123 is the count of links (names) this directory has.
     e. The number 123 is the size in bytes of this directory.

710. Given the following, can user **kirk** in group **starfleet** rename **./file1** to
     file2?
     d----wx--- 2 root starfleet 4096 Oct 7 14:00 .
     ---------- 1 kirk starfleet 123 Oct 4 14:05 file1
     a. No, because **kirk** has no permissions on **file1**
     b. Yes, because **kirk** owns **file1**
     c. Yes, because **kirk**'s group matches the group writable directory
     d. No, because the directory has no permissions for other users
     e. No, because **kirk** cannot read the directory

711. Which of the following command lines removes all the names in the current
     directory that are exactly three letters (alphabetic) long (and nothing else)?
     a. **rm [azAZ][azAZ][azAZ]**
     b. **rm [a-zA-Z][a-zA-Z][a-zA-Z]**
     c. **rm [a-zA-Z,a-zA-Z,a-zA-Z]**
     d. **rm [3][3][3]**
     e. **rm ???**

712. Which of the following statements is true about this command line:
     <dir/c cat dir/d
     a. The command is always invalid.
     b. The command **cat** sees only one argument.
     c. The command **dir/c** sees only one argument
     d. The command **dir/c** sees two arguments.
     e. The command **cat** sees two arguments.

713. If you type the command **grep pattern**, which key sequence will send an EOF
     and take you back to the command prompt?
     a. **[CTRL-C]**   *b.* **[CTRL-D]**   *c.* **[CTRL-L]**
     d. **[CTRL-R]**   *e.* **[CTRL-U]**

714. On a disk with seven partitions, give the correct partition names after you delete
     partition **sda5**:
     a. **sda1 sda2 sda3 sda4 sda5**
     b. **sda1 sda2 sda3 sda4 sda6 sda7**
     c. **sda1 sda2 sda3 sda4 sda6**
     d. **sda1 sda2 sda3 sda4 sda5 sda7**
     e. **sda1 sda2 sda3 sda4 sda5 sda6**

715. If your PATH contained only the file names **/bin/sh**, **/bin/cat**, and
     /bin/ls, then what would be the output on your screen of this command:
     cat /etc/passwd
     a. **bash: /bin/cat: no such file or directory**
     b. **cat: /etc/passwd: command not found**
     c. **cat: bash: no such file or directory**
     d. **bash: /bin/sh: command not found**
     e. **bash: cat: command not found**

716. The **minimum** permissions you need to move a file **foo** from directory **a** to directory **b** are:
  a. **rwx** on **a**, **wx** on **b**, **rw** on **foo**
  b. **wx** on **a**, **wx** on **b**, **r** on **foo**
  c. **wx** on **a**, **wx** on **b**, **w** on **foo**
  d. **wx** on **a**, **wx** on **b**, none on **foo**
  e. **rwx** on **a**, **wx** on **b**, none on **foo**

717. Which command line below allows programs in the current directory to execute without preceding the names with **./**?
  a. **$PATH=/usr/bin:./bin**   *b.* **PATH=/usr/bin/.:$HOME**
  c. **$PATH=.:$HOME:/usr/bin**   *d.* **PATH=/usr/bin:.:/bin**
  e. **PATH=./$HOME:/usr/bin**

718. Given this long listing:
    drwxr-xr-x 296 me me 448 Dec 4 9:12 dir
  How many subdirectories lie immediately under **dir**?
  a. there is not enough information shown to answer the question
  b. **294**
  c. **448**
  d. **446**
  e. **296**

719. How do you execute the program **foo** in the current directory?
  a. **foo/.**   *b.* **./foo**   *c.* **foo/**
  d. **/foo**   *e.* **$HOME/foo**

720. If you want a user-defined alias in all your **bash** shells, what do you do?
  a. put the alias into the **/etc/passwd** file for next log in
  b. define the alias in my file **$HOME/.bashrc**
  c. put the alias into the **/etc/group** file for next log in
  d. put the alias into the **grub.conf** file for next log in
  e. create the alias and then type "save" to save it to all shells

721. Which command line does *not* show any lines from inside the file **bat**?
  a. **sort bat**   *b.* **head bat**   *c.* **less bat**
  d. **ls bat**   *e.* **tail bat**

722. Which of the following statements is true about this command line:
    >dir/c cat dir/d
  a. The command **cat** sees two arguments.
  b. The command **dir/c** sees only one argument
  c. The command **cat** sees only one argument.
  d. The command **dir/c** sees two arguments.
  e. The command is always invalid.

723. If file **x** contains ten lines, and file **y** contains twenty lines, then how many lines are in file **cat** after this command line:
    sort x y >z ; tail -5 x >x ; sort x y z >cat
  a. **60**   *b.* **50**   *c.* **55**   *d.* **0**   *e.* **40**

724. If **foo** is a sub-directory that contains only the file **bar**, what happens after this command: **mv foo/bar foo/././cat**
  a. there is a second copy of the file **bar** in the file named **cat**
  b. the command fails because the name **cat** does not exist
  c. the directory **foo** now contains only a file named **cat**
  d. the directory **foo** is now empty
  e. the command fails because the name **foo/././cat** does not exist

725. If you type the command **grep pattern ,**
  which key sequence will send an EOF and take you back to the command prompt?
  a. **[CTRL-U]**   *b.* **[CTRL-L]**   *c.* **[CTRL-C]**
  d. **[CTRL-R]**   *e.* **[CTRL-D]**

726. If **/etc/passwd** is a file name, which pathname always leads to the same file?
  a. **/./etc/./passwd**   *b.* **./etc/passwd**
  c. **/etc/etc/../passwd**   *d.* **/etc/../passwd**
  e. **/etc/passwd/.**

727. Which of the following statements is true about this command line:
    >foo file bar haven
  a. The command **file** sees two arguments.
  b. The command **file** sees three arguments.
  c. Error: The command name is missing from the command line.
  d. The command **foo** sees only two arguments
  e. The command **foo** sees three arguments.

728. In an empty directory, what is the output on your screen after this command line:
    echo hi >a ; mv a b ; ls | wc -w
  a. **0**   *b.* **1**   *c.* **a**
  d. no output   *e.* **2**

729. When doing an **ls -a**, the output pathname that is a double dot (**..**) signifies what?
  a. The parent directory.   *b.* The current directory.
  c. The root directory.   *d.* A pathname with double links.
  e. A hidden file.

730. What is the output on your screen after these command lines:
    echo one >x ; cp x y ; echo two >>y
    sort x >y ; cat y
  a. **two** followed by **one**   *b.* no output
  c. **one** followed by **two**   *d.* **one**
  e. **two**

731. What syntax puts a command into the "background"?
  a. **command %**   *b.* **command @**   *c.* **command &**
  d. **command #**   *e.* **command $**

732. What is the output on your screen of this two command sequence:
  PATH=/bin/cat:/bin/sh:/bin/ls ; ls nosuchfile
  a. **bash: /bin/ls: command not found**
  b. **ls: nosuchfile: No such file or directory**
  c. **bash: ls: command not found**
  d. **ls: /bin/ls: command not found**
  e. **bash: /bin/sh: No such file or directory**

733. How many arguments are passed to the command by the shell on this command
  line: **<foo foo " a 'b c' d " e f ' g " h " ' >foo**
  a. **5**   *b.* **2**   *c.* **3**   *d.* **4**   *e.* **6**

734. If **/bin/bash** is a file name, which pathname always leads to the same file?
  a. **/bin/bin/../bash**   *b.* **/bin/bash/.**
  c. **./../bin/bash**   *d.* **/../bin/./bash**
  e. **/bin/../bash**

735. What is the result of this exact command line: **echo /bin hello**
  a. all the files under "/bin" with the name "hello" will be displayed
  b. file "/bin" will be copied to "hello"; the names will be displayed as well
  c. the names of the pathnames "/bin" and "hello" will be displayed, if they exist;
     otherwise, error messages
  d. the two text strings "/bin" and "hello" will be displayed
  e. the contents of the files "/bin" and "hello" will be displayed, if possible;
     otherwise, error messages

736. If **/bin/xxx** is a program that outputs **one** and **/usr/bin/xxx** is a program
  that outputs **two**, what would be the output on your screen of this two command
  sequence: **PATH=/usr:/usr/bin:/etc:/bin ; xxx**
  a. **two**
  b. **bash: xxx: command not found**
  c. **one**
  d. **one** followed by **two**
  e. **two** followed by **one**

737. Under what directory are system log files usually stored?
  a. **/var/log/**   *b.* **/boot/grub**   *c.* **/log/var/**
  d. **/grub/boot/**   *e.* **/etc/log/**

738. Which Unix command sequence deletes a directory and everything inside it?
  a. **rm -all dir**   *b.* **rmdir -r dir**
  c. **deltree -all dir**   *d.* **rmdir -all dir**
  e. **rm -r dir**

739. Which pathname almost always leads to the same file named: **/etc/passwd**?
  a. **../etc/passwd**   *b.* **./etc/passwd**
  c. **/etc/./etc/../passwd**   *d.* **/etc/../etc/passwd**
  e. **/etc/passwd/.**

740. Under what directory are system configuration files usually stored?
  a. **/log/var**   *b.* **/boot/grub**   *c.* **/etc**
  d. **/var/log**   *e.* **/grub/boot**

741. What would you type to find the string **tony** in the file **/etc/passwd**?
  a. **file /etc/passwd tony**   *b.* **find tony /etc/passwd**
  c. **grep /etc/passwd tony**   *d.* **file tony /etc/passwd**
  e. **grep tony /etc/passwd**

742. Given this long listing:
  drwxr-xr-x 448 me me 296 Dec 4 9:12 dir
  How many subdirectories lie immediately under **dir**?
  a. 296
  b. 446
  c. 294
  d. there is not enough information shown to answer the question
  e. 448

743. Which is the best choice for an extended partition size that will hold exactly three
  100MB logical partitions?
  a. 300MB   *b.* 100MB   *c.* 320MB
  d. 400MB   *e.* 290MB

744. Which command usually goes in your **.bash_profile** file?
  a. **.bashrc source**   *b.* **.bash_profile source**
  c. **source .bashrc**   *d.* **source .bash_profile**
  e. **cat .bashrc**

745. How many arguments and options are there to the command:
  ls -ls /cat
  a. Two arguments, no options.
  b. Two options, no arguments.
  c. Two arguments, one of which is a single option and the other is a pathname.
  d. Two command line arguments, one of which contains two bundled options.
  e. A three-letter file name and a **/cat** switch option argument.

746. The output of the **whoami** command is:
  a. a list of users logged in to the system
  b. the current directory
  c. your userid
  d. your HOME directory
  e. the name of the current computer

747. What option keyword do you add in GRUB to boot a machine single-user?
   a. `initrd`   *b.* `boot`   *c.* `rhgb`
   d. `kernel`   *e.* `single`

748. Which of the following VI/VIM key sequences will move the entire line on which the cursor resides to after the line that follows it (i.e. it would move line 5 to be line 6 and line 6 would become line 5)?
   a. `DDp`   *b.* `DDP`   *c.* `ddP`   *d.* `ddp`   *e.* `:dp`

749. Which of the command lines below can generate a non-empty file?
   a. `touch file >file`
   b. `ls -ls file >file`
   c. `head -1 file >file`
   d. `sort -r file file >file`
   e. `grep pattern file >file`

750. If `sub` is a sub-directory that contains only the file `foo`, what happens after this command: `mv sub/foo sub/./../bar`
   a. the command fails because the name `sub/./../bar` does not exist
   b. the directory `sub` is now empty
   c. the directory `sub` now contains only a file named `bar`
   d. the command fails because the name `bar` does not exist
   e. there is a second copy of the file `foo` in the file named `bar`

751. If file `foo` contains 9 lines, each of which is the one-digit line number of the line in the file (`1` through `9`), what is the output on your screen of this command:
   `cat foo foo | sort -r | head -4 | tail -1`
   a. `8`   *b.* `5`   *c.* `9`   *d.* `7`   *e.* `6`

752. What is the output on your screen after these command lines:
   `echo one >x ; ln x y ; echo two >>y`
   `sort x >y ; cat y`
   a. `one` followed by `two`   *b.* `two`
   c. `one`   *d.* no output
   e. `two` followed by `one`

753. What is the link count of file `foo` after this set of successful commands?
   `rm foo ; touch foo ; ln foo bar`
   `cp bar x ; ln x y ; ln bar z ; ln z a`
   a. 3   *b.* 1   *c.* 4   *d.* 2   *e.* 5

754. Which Unix command line deletes a directory and everything inside it?
   a. `rm -all dir`   *b.* `rmdir -all dir`
   c. `rm -r dir`   *d.* `deltree -all dir`
   e. `rmdir -r dir`

755. What is the output on your screen of this command line:
   `umask 362 ; touch newfile ; ls -l newfile`
   a. `-r-----r-- 1 me me 0 Oct 1 01:12 newfile`
   b. `--wx---r-- 1 me me 0 Oct 1 01:12 newfile`
   c. `--wxrw--w- 1 me me 0 Oct 1 01:12 newfile`
   d. `--wxr-x-w- 1 me me 0 Oct 1 01:12 newfile`
   e. `-r----xr-x 1 me me 0 Oct 1 01:12 newfile`

756. What is the link count of directory `d` after this set of successful commands?
   `mkdir d ; mkdir d/a ; mkdir d/a/b ; mkdir d/a/c`
   a. 3   *b.* 4   *c.* 1   *d.* 5   *e.* 2

757. What is the output on your screen of this command line:
   `umask 574 ; mkdir newdir ; ls -ld newdir`
   a. `dr--rw-r-- 1 me me 0 Oct 1 07:55 newdir`
   b. `dr-xrwxr-- 1 me me 0 Oct 1 07:55 newdir`
   c. `d-w-----wx 1 me me 0 Oct 1 07:55 newdir`
   d. `d-w-----w- 1 me me 0 Oct 1 07:55 newdir`
   e. `d-w-rwx-wx 1 me me 0 Oct 1 07:55 newdir`

758. Which of these statements is true?
   a. Unix commands must be entered in lower-case letters.
   b. To delete a word from the shell command line, type [CONTROL]-[D]
   c. To erase an entire line of typing, type [CTRL]-[D].
   d. To indicate End-of-File (no more input), type [CTRL]-[C].
   e. Unix commands can be entered in upper-case or lower-case letters; they are equivalent.

759. Which pathname almost always leads to the same file named: `/etc/shadow`
   a. `/etc/../../shadow`   *b.* `././etc/shadow`
   c. `/etc/shadow/./.`   *d.* `/./../etc/./shadow`
   e. `/etc/shadow/../..`

760. If the current directory contains 5 visible files and 10 visible sub-directories, what is the output on your screen of this command: `echo */.`
   a. `*/.`   *b.* 5 file names
   c. 15 pathnames   *d.* 10 directory names
   e. no output

761. What is the link count of directory `d` after this set of successful commands?
   `mkdir d ; cd d ; touch f ; ln f a ; ln f b`
   a. 4   *b.* 2   *c.* 5   *d.* 1   *e.* 3

762. Given an existing file of yours named `cat`, what is the output on your screen of this command line: `echo xx >cat ; head cat >cat ; wc cat`
   a. `2 2 4 cat`   *b.* `1 1 2 cat`   *c.* `1 1 3 cat`
   d. `0 0 0 cat`   *e.* no output

763. If **foo** is a sub-directory that contains only the file **bar**, what happens after this command: **mv foo/./bar foo/././me**
   a. the command fails because the name **foo/./bar** does not exist
   b. the command fails because the name **me** does not exist
   c. the directory **foo** is now empty
   d. there is a second copy of the file **bar** in the file named **me**
   e. the directory **foo** now contains only a file named **me**

764. How many lines are in the file **bar** after this command line:
   echo hi >x ; echo ho >>x ; cat x >bar
   a. **1**   b. **0**   c. **4**   d. **2**   e. **6**

765. Given this **ls -il** long listing:
   123 drwxr-xr-x 456 bin bin 789 Jul 31 12:33 dir
   How many subdirectories lie immediately under **dir**?
   a. **123**   b. **454**   c. **787**   d. **789**   e. **456**

766. Which command below removes *only* this four-character file name containing a special character (and no others): ***foo**
   a. **rm .\/*foo**   b. **rm ?foo**   c. **rm *foo**
   d. **rm /*foo**   e. **rm *foo**

767. Which command line tells you the recursive count of all pathnames under the current directory and all subdirectories?
   a. **wc ***   b. **wc .**   c. **find | wc**
   d. **wc "$PWD"**   e. **ls | wc**

768. If my current working directory is **/home**, and my home directory is **/home/me**, which command copies the password file into my home directory under the name **foo**?
   a. **cp ../etc/passwd ../me/foo**
   b. **cp ../etc/passwd ./me/foo**
   c. **cp ../../etc/passwd /me/foo**
   d. **cp ../home/me/../etc/passwd ./me/./foo**
   e. **cp ./me/../etc/passwd ../home/me/foo**

769. To "throw away" (hide) standard error output of a command, use:
   a. **cmd 1>/dev/sda1**   b. **cmd 2>/dev/sda1**
   c. **cmd 2>&1**   d. **cmd 1>&2**
   e. **cmd 2>/dev/null**

770. If file **ten** contains ten lines, and file **twenty** contains twenty lines, then how many lines are output on your screen by this command line:
   cat twenty | sort ten
   a. **10**   b. **20**   c. **0**   d. **60**   e. **30**

771. What does the term "kernel" (or "nucleus") mean?
   a. software to support more than one program loaded
   b. a method to get the system loaded into memory from disk/CD/tape/cards
   c. applications that are able to share the printer
   d. software to support many users of the same machine
   e. that portion of the operating system that is always memory-resident

772. What happens when you try to change to the parent directory of ROOT, e.g.:
   cd / ; cd ..
   a. you go to the parent directory containing your **C:** drive
   b. the shell issues an error message and does not change
   c. the shell issues a warning, but changes to the parent
   d. the shell current directory is still ROOT; no change
   e. the shell asks you to retype this invalid directory

773. What is the result of this exact command line:
   echo /etc/passwd hello
   a. all the files under "/etc/passwd" with the name "hello" will be displayed
   b. a list of file names matching "/etc/passwd" and "hello" will be displayed
   c. the text "/etc/passwd" and "hello" will be displayed
   d. file "/etc/passwd" will be copied to "hello"; the names will be displayed as well
   e. the contents of the files "/etc/passwd" and "hello" will be displayed

774. If I am in my home directory named **/home/me** and **sub** is an empty sub-directory, what is true after this command line:
   touch ./fil ; mv sub/../fil ../me/cat
   a. there is a second copy of the file **fil** in the file named **cat**
   b. the directory **sub** now contains only a file named **cat**
   c. the command fails because the path **sub/../fil** does not exist
   d. the directory **sub/..** now has a file named **cat** in it
   e. the command fails because the path **../me/cat** does not exist

775. In an empty directory, how many arguments are passed to the **rm** command in this command line: **touch a a1 a2 ba ca ; rm a***
   a. **3**   b. **2**   c. **4**   d. none   e. **1**

776. The shell expands a leading tilde (**~**) in a pathname (e.g. **~/foo**) to be:
   a. the parent directory   b. your HOME directory
   c. the directory **/root**   d. the ROOT directory
   e. the current directory

777. How many lines are in file **out** after this command line:
   date >wc >cat >out
   a. **2**   b. **0**   c. **1**
   d. **1 6 29**   e. **0 0 0**

778. The **minimum** permissions you need to copy a file **foo** from directory **a** to directory **b** are:
    a. **rx** on **a**, **wx** on **b**, **w** on **foo**
    b. **x** on **a**, **wx** on **b**, **r** on **foo**
    c. **wx** on **a**, **wx** on **b**, **rw** on **foo**
    d. **wx** on **a**, **wx** on **b**, none on **foo**
    e. **rwx** on **a**, **wx** on **b**, none on **foo**

779. What is usually contained in the environment variable **$PATH**?
    a. the absolute path of the system **/path** directory
    b. a colon-separated list of directories containing command names
    c. the absolute path of your login home directory
    d. a colon-separated list of your **passwd** file fields
    e. the absolute path of your login shell

780. Which command below removes *only* this four-character file name containing a special character (and no others):   ***xyz**
    a. **rm ''*xyz''**   *b.* **rm *xyz**   *c.* **rm ''*xyz**
    d. **rm '*xyz'**   *e.* **rm *'xyz'**

781. If my current directory is **/etc**, which of these pathnames is equivalent to the file name **/etc/passwd**?
    a. **../passwd**   *b.* **/passwd**
    c. **../etc/passwd/.**   *d.* **./etc/passwd**
    e. **./passwd**

782. If **dir** is a sub-directory that contains only the file **foo**, what happens after this command: **mv ./dir/./foo ./dir/../bar**
    a. the directory **dir** is now empty
    b. the command fails because the name **./dir/./foo** does not exist
    c. there is a second copy of the file **foo** in the file named **bar**
    d. the command fails because the name **./dir/../bar** does not exist
    e. the directory **dir** now contains only a file named **bar**

783. Which of these statements is true?
    a. you can only make links to files owned by you
    b. you may be able to rename a file even if you do not own the file
    c. you can only remove a file name if the file is writable by you
    d. you can only remove a file name if the file is owned by you
    e. you can only rename a file if you are the owner of the file

784. Pick the correct order of operations:
    a. **mount, mkfs, fdisk**   *b.* **mkfs, fdisk, mount**
    c. **fdisk, mount, mkfs**   *d.* **mount, fdisk, mkfs**
    e. **fdisk, mkfs, mount**

785. If file **foo** contains 9 lines, each of which is the one-digit line number of the line in the file (**1** through **9**), what is the output on your screen of this command:
    sort foo foo | tail -3 | head -1
    a. **1**   *b.* **2 2**   *c.* **8**   *d.* **8 8**   *e.* **9**

786. What permissions are given to **newfile** after this command line:
    umask 632 ; touch newfile
    a. **----wxr--**   *b.* **---r--r--**   *c.* **--xr--r-x**
    d. **rw--wx-w-**   *e.* **r-x-wx-w-**

787. In an empty directory, what is the output on your screen after this command line:
    echo hi >a ; ls nosuchfile 2>/dev/null
    a. **a**
    b. **ls: nosuchfile: No such file or directory**
    c. **nosuchfile**
    d. **ls: 2>/dev/null: No such file or directory**
    e. no output

788. In an empty directory, how many arguments are passed to the **rm** command in this command line: **date >a1 ; touch a2 ba ca >all ; rm a***
    a. **2**   *b.* **1**   *c.* **4**   *d.* none   *e.* **3**

789. Which command line displays the mounted **/home** file system?
    a. **grep '/home' mount**   *b.* **mount | grep '/home'**
    c. **mount /home | grep**   *d.* **grep '/home' | mount**
    e. **grep mount '/home'**

790. If **/bin/bash** is a file name, which pathname always leads to the same file?
    a. **/./bin/./bash**   *b.* **/bin/../bash**
    c. **./bin/bash**   *d.* **/bin/bash/.**
    e. **/bin/bin/../bash**

791. If the current directory contains 2 visible files and 3 visible sub-directories, what is the output on your screen of this command: **echo */.**
    a. no output   *b.* ***/.**   *c.* 2 file names
    d. 3 directory names   *e.* 5 pathnames

792. How many arguments does the shell pass to this **echo** command:
    echo " 1 2 "three ' 4 ' five"6"
    a. **3**   *b.* **5**   *c.* **1**   *d.* **9**   *e.* **4**

793. If **/bin/pig** is a program that outputs **xx** and **/usr/bin/pig** is a program that outputs **foo** what would be the output on your screen of this two command sequence: **PATH=/home:/bin:/dev:/usr/bin ; pig**
    a. **xx** followed by **foo**
    b. **foo** followed by **xx**
    c. **bash: pig: command not found**
    d. **xx**
    e. **foo**

794. If file **a** contains 2 lines, and file **b** contains 3 lines, then how many lines are in file **c** after this command line: **ln a d ; ln d e ; ln b f >c**
   a. **2**   *b.* **3**   *c.* **0**   *d.* **4**   *e.* **5**

795. In an empty directory, what is the output on your screen after this command line:
   ls out 2>/dev/null
   a. **ls: out: No such file or directory**
   b. **out**
   c. **ls: /dev/null: No such file or directory**
   d. **ls: out 2>/dev/null: No such file or directory**
   e. no output

796. What would you type to change the permissions on a file to **rw-r--r--**?
   a. **chmod 311 file**   *b.* **chmod 644 file**
   c. **chmod 244 file**   *d.* **chmod 344 file**
   e. **chmod 211 file**

797. What command will show the amount of free disk space in a partition?
   a. **ls**   *b.* **find**   *c.* **fdisk**
   d. **mount**   *e.* **df**

798. In an empty directory, how many words are in file **out** after this command line:
   touch 1 2 3 2 1 ; ls >out
   a. **6**   *b.* **0**   *c.* **4**   *d.* **5**   *e.* **3**

799. Which of these statements is true?
   a. To indicate End-of-File (no more input) to a program, type **[CTRL]-[D]**.
   b. The **file** command creates a new, empty file in the current directory
   c. Command **apropos** is an exact synonym for command **man**.
   d. To interrupt a Unix process from the keyboard, type **[CTRL]-[D]**.
   e. To erase an entire line of typing, type **[ALT]-[DELETE]**.

800. If **foo** is a sub-directory that contains only the file **bar**, what happens after this command: **mv ./foo/bar foo/../moo**
   a. the directory **foo** now contains only a file named **moo**
   b. there is a second copy of the file named **bar** in the file named **moo**
   c. the command fails because the name **moo** does not exist
   d. the directory **foo** is now empty
   e. the command fails because the name **foo/../moo** does not exist

801. Given the following, can user **kirk** in group **starfleet** copy **./file1** to **file2**?
   drwxrw-r-x 2 root starfleet 4096 Oct 7 14:00 .
   -rwx-wx-wx 1 kirk starfleet 123 Oct 4 14:05 file1
   a. No, because **file1** has no read permissions for **kirk**
   b. Yes, because **kirk** owns **file1**
   c. No, because the directory is not accessible to **kirk**
   d. Yes, because **kirk** has write permissions on **file1**
   e. No, because the directory has no write permissions for others

802. What is the output on your screen after this command line:
   echo hi | wc >wc -wc
   a. no output   *b.* **1 3**   *c.* **0 0**
   d. **1 2**   *e.* **hi**

803. If **/bin/foo** is a program that outputs **mom** and **/usr/bin/foo** is a program that outputs **dad** what would be the output on your screen of this two command sequence: **PATH=/bin/foo:/usr/bin/foo:/usr ; foo**
   a. **dad**
   b. **mom** followed by **dad**
   c. **mom**
   d. **dad** followed by **mom**
   e. **bash: foo: command not found**

804. What can you do to get back (redo) the last command you typed to the **bash** (Linux) shell?
   a. Type [CONTROL]-[PREVIOUS]
   b. Use the "PageUp" key.
   c. Type [CONTROL]-[BACKSPACE]
   d. Use the "UpArrow" key.
   e. Type [ALT]-[F2]

805. How many lines are in the file **out** after this command line:
   date >f ; ls f >>f ; cat f f >out
   a. **6**   *b.* **0**   *c.* **4**   *d.* **2**   *e.* **1**

806. Given this **ls -il dir** long listing:
   454 drwxr-xr-x 123 me me 456 Dec 4 9:12 dir
   How many subdirectories lie immediately under **dir**?
   a. 454   *b.* 458   *c.* 121   *d.* 123   *e.* 456

807. What is true about this output from **ls -il foo bar**?
   816 -rw-r--r-- 2 root root 3 Jan 24 01:03 foo
   817 -rw-r--r-- 2 root root 3 Jan 24 01:03 bar
   a. **foo** and **bar** are names for the same file
   b. **foo** and **bar** each have three names (six names total)
   c. **foo** and **bar** are names for different files
   d. this output is not possible
   e. **foo** and **bar** are two of three names for this file

808. In an empty directory, what is the output on your screen after this command line:
   touch .foo .bar ; ls *
   a. **. .. .foo .bar**
   b. **.foo .bar**
   c. *****
   d. an error message from **ls** saying ***** does not exist
   e. no output on screen

809. In an empty directory, what is the output on your screen after this command line:
    `touch a b .1 .2 ; echo .??*`
    a. **a b**
    b. **.??***
    c. **. .. .1 .2**
    d. an error message from **echo** saying **.??*** does not exist
    e. **. .. a b .1 .2**

810. The correct syntax to assign to a shell variable is:
    a. **V=foo bar**   *b.* **V = foo bar**
    c. **"V=foo bar"**   *d.* **V = "foo bar"**
    e. **V="foo bar"**

811. What is the output on your screen of this command line:
    `echo pig >one ; echo cow | head -2 one`
    a. **pig** followed by **cow**   *b.* **cow** followed by **pig**
    c. **pig**   *d.* an error message
    e. **cow**

812. What command will change permissions on a directory to make the names in it readable by group members, but prevent group access to anything in the directory. Do not change any other permissions.
    a. **umask 030** *dir*   *b.* **chmod g=r** *dir*   *c.* **umask 040** *dir*
    d. **chown g=r** *dir*   *e.* **chmod 040** *dir*

813. In an empty directory, what is the output on your screen after this command line:
    `date >.foo >.bar ; ls *`
    a. **. .. .foo .bar**
    b. **.foo .bar**
    c. *****
    d. no output
    e. an error message from **ls** saying ***** does not exist

814. What is the link count of directory **x** after this set of successful commands?
    `mkdir x ; mkdir x/y ; mkdir x/z ; mkdir x/y/z`
    a. 3   *b.* 4   *c.* 1   *d.* 2   *e.* 5

815. What is true about this command line: **date >ls ; ls -ls ls >wc**
    a. The file **wc** has one line in it.
    b. The **wc** command counts the output of the **ls** command.
    c. The **ls** command receives the output of **date** on standard input.
    d. The **ls** command is executed more than once.
    e. The shell finds and executes three different commands.

816. What command can you use to delete a directory that isn't empty?
    a. **rm -r dir**   *b.* **rmdir -r dir**
    c. **deldir -r dir**   *d.* **mv -r dir**
    e. **del -r dir**

817. If file **foo** occupies one disk block, how many disk blocks are in use after this sequence of commands:
    `cp foo bar ; ln bar one ; cp one two ; ln one pig`
    a. 1 block   *b.* 4 blocks   *c.* 3 blocks
    d. 2 blocks   *e.* 5 blocks

818. If I am in my home directory named **/home/me** and **mt** is an empty sub-directory, what is true after this command line:
    `touch ./foo ; mv ./mt/../foo ../me/bar`
    a. the command fails because path **../me/bar** does not exist
    b. there is a second copy of the file named **foo** in the file named **bar**
    c. the directory **mt** now contains only a file named **bar**
    d. the directory **mt/..** now has a file named **bar** in it
    e. the command fails because path **./mt/../foo** does not exist

819. In an empty directory, what is the output on your screen after this command line:
    `touch a ; ls >wc -l`
    a. **2**   *b.* **3**   *c.* no output
    d. **0**   *e.* **1**

820. What is contained in the **/etc/fstab** file?
    a. a list of currently mounted file systems
    b. a list of file system tables used by the usermod command
    c. a list of file system tables used by the adduser command
    d. a list of file systems to mount when booting the system
    e. a list of file system tables used to identify partition types

821. What is true about this output from **ls -il foo bar**?
    `23 -r-x------ 2 bin bin 3 Jul 31 12:33 foo`
    `23 -rwxrwxrwx 2 adm adm 3 Nov  1 00:01 bar`
    a. **foo** and **bar** are names for the same file
    b. **foo** and **bar** are names for different files
    c. **foo** and **bar** each have three names (six names total)
    d. **foo** and **bar** are two of three names for the same file
    e. this output is not possible

822. Pick the correct order of operations:
    a. **mkfs, fdisk, mount**   *b.* **fdisk, mkfs, mount**
    c. **mount, mkfs, fdisk**   *d.* **mount, fdisk, mkfs**
    e. **mkfs, mount, fdisk**

823. If **/bin/foo** is a program that outputs **hi** and **/usr/bin/foo** is a program that outputs **mom** what would be the output on your screen of this two command sequence: **PATH=/etc:/usr/bin:/bin ; foo**
   a. **hi** followed by **mom**
   b. **mom** followed by **hi**
   c. **hi**
   d. **bash: foo: command not found**
   e. **mom**

824. In an empty directory, how many arguments are passed to the **cat** command in this command line: **touch a1 a2 ac ba .a ; cat a***
   a. **3**   b. none   c. **2**   d. **1**   e. **4**

825. What is the output on your screen after this command line:
   mkdir d ; touch d/.aa d/.bb ; echo d/*
   a. no output   b. **d/. d/.. d/.aa d/.bb**
   c. **d/.aa d/.bb**   d. **d/***
   e. **d/**

826. If file **a** contains 2 lines, and file **b** contains 3 lines, then how many lines are output on your screen by this command line: **cat b | sort a**
   a. **3**   b. **2**   c. **5**
   d. **2** followed by **3**   e. **3** followed by **2**

827. If file **a** contains 3 lines, and file **b** contains 2 lines, then how many lines are output on your screen by this command line: **rm a b | cat**
   a. **3** followed by **2**   b. **3**
   c. **5**   d. no output on screen
   e. **2** followed by **3**

828. If my current directory is **/etc**, which of these pathnames is equivalent to the file name **/etc/passwd**?
   a. **../passwd**   b. **passwd**
   c. **../etc/passwd/.**   d. **/passwd**
   e. **./etc/passwd**

829. What is the link count of file **foo** after this set of successful commands?
   rm foo ; touch foo ; ln foo bar ; ln bar x
   cp bar a ; ln a b ; ln x c ; cp c d
   a. 3   b. 4   c. 1   d. 2   e. 5

830. Given the following, can user **kirk** in group **starfleet** modify **./file1**?
   dr-xr--r-x 2 root starfleet 4096 Oct 7 14:00 .
   -rw-rw-r-- 1 kirk starfleet 123 Oct 4 14:05 file1
   a. No, because **kirk** has no write permission on the directory
   b. Yes, because **kirk** has write permissions on **file1**
   c. No, because the directory is not accessible to **kirk**
   d. No, because execute permissions are not set for **kirk** on **file1**
   e. Yes, because **kirk** owns **file1**

831. Which command below removes *only* this four-character file name containing a special character (and no others): **xyz?**
   a. **rm xyz/?**   b. **rm xyz\\?**   c. **rm xyz//?**
   d. **rm -r xyz?**   e. **rm xyz\?**

832. What command line shows only your own processes, not all processes?
   a. **psmine**   b. **ps lxww**   c. **crontab**
   d. **dmesg**   e. **showall**

833. What do you do on Linux/Unix to erase an entire line of typing?
   a. type **[CTRL-W]**
   b. type **[CTRL-C]**
   c. type **[CTRL-U]**
   d. select the line with the mouse and use the **DEL** key
   e. type **[CTRL-D]**

834. What is in file **out** after this command line: **echo a >out b c**
   a. **a b c**   b. **a**
   c. **echo a**   d. **b c**
   e. nothing (empty file)

835. What is the purpose of a "swap" partition?
   a. to store extra files when the ROOT disk gets full
   b. to allow swapping a new disk for one with bad sectors
   c. to keep a back-up copy of user home directories
   d. to keep user home directories
   e. to run programs larger than the available memory

836. What is true about this output from **ls -ild foo bar**
   96 -rwxr-xr-x 2 root root 3 Jan 24 01:03 foo
   96 -rwxr-xr-x 3 root root 3 Jan 24 01:03 bar
   a. this output is not possible
   b. **foo** and **bar** are two of five names for this file
   c. **foo** and **bar** are names for different files
   d. **foo** and **bar** are names for the same file
   e. **foo** and **bar** each have three names (six names total)

837. Regarding the **-t type** option, e.g. **-t ext3**:
   a. you must give the type when using **swapon**
   b. you must give the type when using **mkswap**
   c. you can usually omit the type when using **mount**
   d. you can usually omit the type when using **mkfs**
   e. you must give the type when using **fdisk**

838. What is the result of this exact command line: **echo /foo bar**
    a. all the files under directory **/foo** with the name **bar** will be displayed
    b. the names of the pathnames **/foo** and **bar** will be displayed
    c. the contents of the files **/foo** and **bar** will be displayed
    d. the two text strings **/foo** and **bar** will be displayed
    e. file **/foo** will be copied to **bar**

839. Which command line shows the current date?
    a. **bash date**   b. **echo date | bash**
    c. **date | bash**   d. **bash >date ; cat date**
    e. **bash <date**

840. What is true about this output from **ls -il foo bar**
    454 -rwxr-xr-x 2 me me 3 Dec 4 9:12 foo
    454 -rwxr-xr-x 2 me me 3 Dec 4 9:12 bar
    a. this output is not possible
    b. **foo** and **bar** are names for the same file
    c. **foo** and **bar** are names for different files
    d. **foo** and **bar** are two of three names for this file
    e. **foo** and **bar** each have two names (four names total)

841. How many arguments does the shell pass to this **echo** command:
    echo " 1 2 " three ' 4 ' five"6"
    a. **5**   b. **3**   c. **9**   d. **1**   e. **4**

842. Which command line below does not show any lines from inside the file **bat**?
    a. **ls bat**   b. **less bat**   c. **tail bat**
    d. **more bat**   e. **head bat**

843. If I am in my home directory named **/home/me** and **dir** is an empty sub-directory, what is true after this command line:
    touch new ; mv ./dir/../new ../me/old
    a. the command fails because the path **./dir/../new** does not exist
    b. there is a second copy of the file **new** in the file named **old**
    c. the parent directory of **dir** now has a file named **old** in it
    d. the command fails because the path **../me/old** does not exist
    e. the directory **dir** now contains only a file named **old**

844. What command can you use to remove a directory that isn't empty?
    a. **rmdir -r dir**   b. **rm -r dir**
    c. **mv -r dir**   d. **deldir -r dir**
    e. **del -r dir**

845. What is the output on your screen after this command line:
    echo 1 >x ; ln x y ; echo 2 >>y ; sort x
    a. **1**   b. **1** followed by **2**   c. **2**
    d. no output   e. **2** followed by **1**

846. If your terminal type is **xterm**, what is the output of this command line?
    echo '$TERM'
    a. **$TERM**   b. **xterm**
    c. no output on screen   d. **'$TERM'**
    e. **'xterm'**

847. What is the link count of file **f** after these successful commands?
    rm f ; touch f ; ln f b ; cp f c
    cp b x ; ln x y ; ln b z ; ln z a
    a. **4**   b. **1**   c. **5**   d. **3**   e. **2**

848. What would you type to find the string **tony** in the file **/etc/passwd**?
    a. **find /etc/passwd -name tony -print**
    b. **find /etc/passwd -user tony -print**
    c. **grep tony /etc/passwd**
    d. **grep /etc/passwd tony**
    e. **cat tony /etc/passwd**

849. Which command below removes *only* this five-character file name containing a special character (and no others): **yy?yy**
    a. **rm yy//?yy**   b. **rm yy?yy**   c. **rm yy\?yy**
    d. **rm yy/?yy**   e. **rm yy\\?yy**

850. What is the output of this command line in an empty directory:
    touch .1 .2 .3 4 5 6 ; echo .*
    a. **. .. .1 .2 .3**
    b. **.***
    c. an error message from **echo** saying **.*** does not exist
    d. **.1 .2 .3 4 5 6**
    e. **4 5 6**

851. Which of the following commands will leave **file1** non-empty?
    a. **cat file1 > file1**   b. **sort file1 > file1**
    c. **wc file1 > file1**   d. **tail file1 > file1**
    e. **head file1 > file1**

852. Given my directory **dir** and my file **dir/foo** owned by me, which permissions allow me to delete the file **dir/foo** from the directory, but not change the content (data) in the file?
    a. **600** on directory, **500** on file   b. **300** on directory, **300** on file
    c. **600** on directory, **200** on file   d. **500** on directory, **500** on file
    e. **300** on directory, **400** on file

853. What would you see if you typed this command: **cat /users**
    a. The contents of your subdirectory named **users**
    b. The contents of the file **users** located in the root directory
    c. The contents of your directory named **users**
    d. The contents of the file **users** located in the parent directory
    e. The contents of the file **users** located in your home directory

854. To shut down your Fedora system in an orderly fashion:
    a. select "System|Shut down"
    b. select VMware "VM|Stop this virtual machine"
    c. type the three key **[CONTROL]-[ALT]-[DEL]**
    d. type the three key **[CONTROL]-[ALT]-[F1]**
    e. logout from each terminal and the machine will shut down

855. Which command line activates an existing swap partition?
    a. **swapon** *device*   b. **swapon -s** *device*
    c. **mkswap** *device*   d. **mkfs -s** *device*
    e. **mount -s** *device*

856. If **cow** is a sub-directory that contains only the file **dog**, what happens after this command: **mv cow/dog cow/././cat**
    a. there is a second copy of the file **dog** in the file named **cat**
    b. the command fails because the name **cat** does not exist
    c. the command fails because the name **cow/././cat** does not exist
    d. the directory **cow** now contains only a file named **cat**
    e. the directory **cow** is now empty

857. Which Unix command sequence deletes a directory and everything inside it?
    a. **deltree -all dir**   b. **erase -r dir**
    c. **rmdir -all dir**   d. **rm -r dir**
    e. **erase dir**

858. What is the output on your screen of this command line:
    echo bat >pig ; echo one | tail pig
    a. **one** followed by **bat**   b. **one**
    c. **bat** followed by **one**   d. **bat**
    e. an error message

859. What is the output on your screen of this command line:
    echo cat >out ; echo dog | sort out
    a. **out**   b. **dog** followed by **cat**
    c. **cat** followed by **dog**   d. **cat**
    e. **dog**

860. If **foo** is a sub-directory that contains only the file **bar**, what happens after this command: **mv foo/bar foo/moo**
    a. there is a second copy of the file named **bar** in the file named **moo**
    b. an empty file named **moo** is created
    c. there is only the file named **moo** in the directory now
    d. the command fails because the name **moo** does not exist
    e. the command fails because **bar** is not a directory

861. How many arguments are passed to the command by the shell on this command line: **<bar bar -b"-a '-r' >bar" bar >out**
    a. **6**   b. **3**   c. **4**   d. **5**   e. **2**

862. In a manual page **SYNOPSIS** section, ellipsis (three dots) (**...**) mean:
    a. a hidden directory   b. something that is repeated
    c. something that is optional   d. no special meaning
    e. the parent directory

863. What command sends signals to processes using their process numbers?
    a. **kill**   b. **telinit**   c. **init**
    d. **chkconfig**   e. **signal**

864. What is in the file named **file** after this command line:
    echo a >c ; echo b >>c ; mv c d >file
    a. **b**   b. **a**
    c. nothing (empty file)   d. **a** followed by **b**
    e. no such file (nonexistent file)

865. What is the output of this successful command sequence?
    cd /home/myhome ; mkdir foo ; mkdir bar ; pwd
    a. **/home/myhome**   b. **/home/myhome/foo/bar**
    c. **/home/myhome/foo**   d. **/home/myhome/bar**
    e. **/bar**

866. What is the link count (number of names) of an empty directory?
    a. **1**   b. **2**   c. **0**   d. **3**   e. **4**

867. What is the link count of directory **d** after this set of successful commands?
    mkdir d ; cd d ; touch f ; ln f x ; ln f y
    a. 2   b. 3   c. 5   d. 4   e. 1

868. Given the following, can user **kirk** in group **starfleet** remove **./file1**?
    drwxr-xrwx 2 root starfleet 4096 Oct 7 14:00 .
    rwxrwxrwx- 1 kirk starfleet 123 Oct 4 14:05 file1
    a. Yes, because **kirk** matches the writable other permissions
    b. No, because **kirk** has no write permission on the directory
    c. No, because the directory is not accessible to **kirk**
    d. Yes, because **kirk** owns **file1**
    e. Yes, because **kirk** has full permissions on **file1**

869. What is contained in file **c** after this command line:
    echo foo >a ; ln a b ; echo bar >>b ; ln a c ; rm a
    a. **bar**   b. **foo** followed by **bar**
    c. no such file (nonexistent)   d. nothing (empty file)
    e. **foo**

870. File **a** contains 2 lines. File **b** contains 3 lines. How many lines are in file **d** (not in **c**) after this command line:
    ln a d ; ln d c ; ln c e ; cat a a b b c c d d e e >c
    a. 21   b. 18   c. 10   d. 2   e. 6

871. In which section of the manual do you find standard commands?
    a. 8   b. 1   c. 4   d. 2   e. 3

872. What can you do to get back (redo) the last command you typed?
   a. Type **[CTRL]-[BACKSPACE]**   *b.* Type **[ALT]-[F2]**
   c. Use the "**PageUp**" key.   *d.* Type **[CTRL]-[ALT]-[UP]**
   e. Use the "**UpArrow**" key.

873. What type and permissions result from this command line:
   umask 745 ; mkdir newdir ; ls -ld newdir
   a. **drw-r--r--**   *b.* **drwxr--r-x**   *c.* **drwx-wx-w-**
   d. **d----wx-w-**   *e.* **d----w--w-**

874. What command displays the groups you are in?
   a. **gpasswd**   *b.* **groups**   *c.* **lstgroups**
   d. **ps**   *e.* **grouprint**

875. What is the link count of directory **dir** after this set of successful commands?
   mkdir dir ; cd dir ; touch foo ; mkdir a b c
   a. 1   *b.* 5   *c.* 2   *d.* 3   *e.* 4

876. What is in file **foo** after this command line:
   echo hi >a ; ln a b ; echo me >b ; ln a foo ; rm a b
   a. **me**   *b.* **hi**
   c. no such file (nonexistent)   *d.* **hi** followed by **me**
   e. nothing (empty file)

877. If I have a directory owned by me named **/a/b/c/7**, which action would increase its *link count* by exactly one?
   a. create a directory named **/a/b/c/7e**
   b. create a directory named **/a/b/c/d/e**
   c. create one file named **/a/b/c/7de**
   d. create a directory named **/a/b/c/7/d2**
   e. create one file named **/a/b/c/7/d2**

878. Under what directory are system configuration files usually stored?
   a. **/log/var/**   *b.* **/etc**   *c.* **/grub/boot/**
   d. **/var/log/**   *e.* **/boot/grub**

879. What is in file **c** after these successful commands?
   echo A >a ; ln a b ; echo B >b ; ln a c ; rm a b
   a. **A** followed by **B**   *b.* **A**
   c. **B**   *d.* no such file (nonexistent)
   e. nothing (empty file)

880. If I am in directory named **/home/me** and **dir** is an empty sub-directory, what is true after this command line:
   touch new ; mv ./dir/../new ../me/old
   a. the command fails because the path **../me/old** does not exist
   b. the parent directory of **dir** now has a file named **old** in it
   c. the directory **dir** now contains only a file named **old**
   d. the command fails because the path **./dir/../new** does not exist
   e. there is a second copy of the file **new** in the file named **old**

881. What command line shows all processes by all users?
   a. **ps laxww**   *b.* **showall**   *c.* **psall**
   d. **jobs**   *e.* **jobs -l**

882. Given the following, can user **kirk** in group **starfleet** modify **./file1**?
   dr-xr-xr-x 2 root starfleet 4096 Oct 7 14:00 .
   -r-xrwxrwx 1 kirk starfleet 123 Oct 4 14:05 file1
   a. No, because execute permissions are not set for **kirk** on **file1**
   b. No, because the directory is not accessible to **kirk**
   c. No, because **kirk** has no write permission on the directory
   d. Yes, because **kirk** owns **file1**
   e. No, because **kirk** has no write permissions on **file1**

883. What is usually contained in the environment variable **$SHELL**?
   a. the relative path of the **/home/shell** directory
   b. the relative path of your login shell
   c. the absolute path of your login shell
   d. the absolute path of the system **/shell** directory
   e. the relative path of the system **/shell** directory

884. What command shows all partition names and System IDs on the fifth disk:
   a. **mkfs -l /dev/sd5e**   *b.* **find -l /dev/sd5**
   c. **fdisk -l /dev/sde**   *d.* **find -l /dev/sde**
   e. **mount -l /dev/sd5e**

885. In an empty directory, what permissions are on file ******* after these commands:
   touch *** ??? ; chmod 111 *
   chmod 222 *** ; chmod 444 ???
   a. **rw-rw-rw-**   *b.* **--x--x--x**   *c.* **r--r--r--**
   d. **-wx-wx-wx**   *e.* **-w--w--w-**

886. When the shell exits, what happens to background jobs of the shell?
   a. they are stopped
   b. they are sent a termination signal
   c. they keep running
   d. they are made into foreground jobs
   e. they exit

887. If you type the command   **echo 'missing quote**
   which *CTRL* key will **interrupt** it and take you back to the command prompt?
   a. **^D**   *b.* **^R**   *c.* **^I**   *d.* **^C**   *e.* **^U**

888. The correct syntax to assign to a shell variable is:
   a. **x="hello there"**   *b.* **x=hello there**
   c. **x = hello there**   *d.* **"x=hello there"**
   e. **x = "hello there"**

889. If file **a** contains 2 lines, and file **b** contains 3 lines, then how many lines are in file **c** after this command line: **ln a d ; ln d c ; cat a b >c**
   a. **4**   *b.* **5**   *c.* **0**   *d.* **2**   *e.* **3**

890. If I am in my home directory named **/home/myhome** and **sub** is an empty sub-directory, what is true after this command line:

    touch ./fil ; mv sub/../fil ../myhome/cat

   a. there is a second copy of the file **fil** in the file named **cat**
   b. the directory **sub/..** now has a file named **cat** in it
   c. the command fails because the path **../myhome/cat** does not exist
   d. the command fails because the path **sub/../fil** does not exist
   e. the directory **sub** now contains only a file named **cat**

891. In an empty directory, what happens after this command line:

    mkdir a b c ; mv a b c

   a. an error message: **mv: target 'c' is not a directory**
   b. the directories **a**, **b**, and **c** are moved to the directory **c**
   c. the directories **a** and **b** are moved into the directory **c**
   d. the directories **a** and **b** are appended to the directory **c**
   e. the directories **a**, **b**, and **c** are moved to the current directory

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