PRINT Name: _____ **LAB Section:** | | | |

Test Version: `078` **One-Answer Multiple Choice** **571 Questions − 25 of 25%**

☞ 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`**

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1. **Did you read all the words of the test instructions on page one?**
   a. **`Jes`** *(Yes - Esperanto)* *b.* **`Sim`** *(Yes - Portuguese)*
   c. **`Yes`** *(Yes - English)* *d.* **`Tak`** *(Yes - Polish)*
   e. **`Igen`** *(Yes - Hungarian)*
2. **My three-digit Lab Section number is:**
   a. My lecture section number **`400`**.
   b. The section number of my weekly 2-hour lab period.
   c. The Test Version number printed in the top left corner.
   d. My T-buidling lecture room number **`117`**.
   e. My T-buidling lab room number **`126`**.
3. 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. 4 blocks *b.* 1 block *c.* 3 blocks
   d. 5 blocks *e.* 2 blocks
4. What is in the file **`cow`** after this command line:
   ```
   echo a >b ; echo b >a ; mv b a >cow
   ```
   a. **`b`** *b.* **`a`**
   c. nothing (empty file) *d.* no such file (nonexistent)
   e. **`a`** followed by **`b`**
5. In a manual page **SYNOPSIS** section, ellipsis (three dots) (**`...`**) mean:
   a. something that is repeated *b.* a hidden directory
   c. no special meaning *d.* the parent directory
   e. something that is optional
6. In an empty directory, what is the output on your screen after this command line:
   ```
   echo hi >.out ; ls *
   ```
   a. **`*`**
   b. **`.out`**
   c. an error message from **`ls`** saying **`*`** does not exist
   d. **`.  ..  .out`**
   e. no output

7. How many lines are in the file **`bar`** after this command line:
   ```
   echo hi >x ; echo ho >>x ; cat x >bar
   ```
   a. **`1`** *b.* **`6`** *c.* **`2`** *d.* **`0`** *e.* **`4`**
8. 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. **`../home/a/b/c`** *d.* **`/a/b/c`**
   e. **`../a/b/c`**
9. How many lines are in the file **`out`** after this command line:
   ```
   date >f ; ls f >>f ; cat f f >out
   ```
   a. **`0`** *b.* **`6`** *c.* **`4`** *d.* **`2`** *e.* **`1`**
10. How many arguments does the shell pass to this **`echo`** command:
    ```
    echo ' one two ' three ' four ' 5'6'
    ```
    a. **`1`** *b.* **`6`** *c.* **`5`** *d.* **`9`** *e.* **`4`**
11. What is the correct syntax to redirect both standard output and standard error into the same output file?
    a. **`command 2>out >out`** *b.* **`command 2>1 >out`**
    c. **`command >out 2>1`** *d.* **`command >out 2>&1`**
    e. **`command 2>&1 >out`**
12. 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 two of three names for this file
    b. this output is not possible
    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)
13. Which command line shows the file in **`/bin`** with the largest checksum?
    a. **`ls /bin/* | sum | sort -nr | head -1`**
    b. **`cat /bin | sum | sort -nr | head -1`**
    c. **`sum /bin | sort -nr | head -1`**
    d. **`sum /bin/* | sort -nr | head -1`**
    e. **`cat /bin/* | sum | sort -nr | head -1`**
14. 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. **`10`** *b.* **`0`** *c.* **`7`** *d.* **`8`** *e.* **`12`**

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

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

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

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

19. 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.* no output
c. **two** *d.* **two** followed by **one**
e. **one**

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

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

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

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

24. 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. no output
c. **ls: nosuchfile: No such file or directory**
d. **ls: /dev/null: No such file or directory**
e. **nosuchfile**

25. 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.* **ln f1 f2 >bar**
c. **mv f1 f2 >bar** *d.* **cat f1 f2 >bar**
e. **cp f1 f2 >bar**

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

27. 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. no output
c. *****
d. **ls: *: No such file or directory**
e. **dog**

28. 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. **4** *b.* **2** *c.* none *d.* **1** *e.* **3**

29. Which command line shows the current date?
a. **echo date | bash** *b.* **date | bash**
c. **bash <date** *d.* **bash date**
e. **bash >date ; cat date**

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

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

32. 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 ../../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**

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

34. What type and permissions result from this command line:
    umask 745 ; mkdir newdir ; ls -ld newdir
    a. **d----w--w-** *b.* **drw-r--r--** *c.* **drwxr--r-x**
    d. **d----wx-w-** *e.* **drwx-wx-w-**

35. 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. **foo** and **bar** each have two names (four names total)
    d. **foo** and **bar** are names for the same file
    e. this output is not possible

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

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

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

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

40. 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''**

41. 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/./etc/../passwd**

42. 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. **2** *b.* an error message
    c. **1** *d.* no output on screen
    e. **1** followed by **2**

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

44. 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 directory **c**
    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** and **b** are moved into the directory **c**
    e. the files **a**, **b**, and **c** are moved to the current directory

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

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

47. 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 [*]**

48. 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** now contains only a file named **cat**
c. there is a second copy of the file **dog** in the file named **cat**
d. the directory **pig** is now empty
e. the command fails because the name **pig/./cat** does not exist

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

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

51. 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. the conents of the password file followed by **hi**
b. an error message and then **hi**
c. **bar**
d. **hi**
e. an error message and then the contents of the password file

52. 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. 4 *b.* 1 *c.* 0 *d.* 2 *e.* 3

53. 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**

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

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

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

57. 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**

58. Which of these statements is true?
a. you can only rename a file if you are the owner of the file
b. you can only make links to files owned by you
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 may be able to rename a file even if you do not own the file

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

60. 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.**
b. **cow/.AA cow/.A1 cow/.BB cow/.B.**
c. **cow/***
d. **cow/.AA cow/.A1 cow/.BB**
e. no output

61. 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/.f.**
b. **dir/.on dir/.tw dir/.th**
c. no output
d. **dir/***
e. **dir/. dir/.. dir/.on dir/.tw dir/.th dir/.f.**

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

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

64. 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 **single** is not a directory
b. an empty file named **double** is created
c. the command fails because the name **double** does not exist
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

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

66. 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 a warning, but changes to the parent
c. the shell asks you to retype this invalid directory
d. the shell issues an error message and does not change
e. the shell current directory is still ROOT; no change

67. 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 123 is the size in bytes of this directory.
b. The number 456 is the octal permissions of this directory.
c. The number 456 is the size of this directory.
d. The number 123 is the count of links (names) this directory has.
e. The number 456 is the inode number of this directory.

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

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

70. 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. **4** *b.* **5** *c.* **2** *d.* **0** *e.* **3**

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

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

73. 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 one file named **/a/b/c/d/e**
    b. create a directory named **/a/b/c/d**
    c. create one file named **/a/b/c/d2**
    d. create a directory named **/a/b/c/d2**
    e. create a directory named **/a/b/c/d/e**

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

75. 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 command fails because the name **foo/../double** does not exist
    c. the directory **foo** now contains only a file named **double**
    d. the directory **foo** is now empty
    e. there is a second copy of the file **single** in the file named **double**

76. 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 **100** on directory **dir** and **200** on file **dir/c**.
    b. Permissions **100** on directory **dir** and **100** on file **dir/c**.
    c. Permissions **400** on directory **dir** and **400** on file **dir/c**.
    d. Permissions **600** on directory **dir** and **700** on file **dir/c**.
    e. Permissions **200** on directory **dir** and **200** on file **dir/c**.

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

78. 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. the directory **sub** now contains only a 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. there is a second copy of the file **fil** in the file named **cat**
    e. the command fails because the path **sub/../fil** does not exist

79. 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]

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

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

82. 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

83. 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. **mv a b >foo**
    b. **cp a b >foo**
    c. **cp a >foo ; cp b >>foo**
    d. **echo a b >foo**
    e. **cat a >foo ; cat b >>foo**

84. 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 size of this directory.
    b. The number 71 is the count of links (names) this directory has.
    c. The number 4096 is the count of links (names) this directory has.
    d. The number 71 is the inode number of this directory.
    e. The number 4096 is the inode number of this directory.

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

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

87. 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. **2 2** *b.* **8** *c.* **8 8** *d.* **1** *e.* **9**

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

89. 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***

90. 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 /home/foo/bar/.** *d.* **ls /home/foo/bar**
e. **ls .**

91. What is the result of this exact command line:
```
echo /etc/passwd hello
```
a. a list of file names matching "/etc/passwd" and "hello" will be displayed
b. all the files under "/etc/passwd" with the name "hello" will be displayed
c. the contents of the files "/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 text "/etc/passwd" and "hello" will be displayed

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

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

94. 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.* 1 *d.* 4 *e.* 2

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

96. 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. **30** *b.* **0** *c.* **100** *d.* **50** *e.* **60**

97. How many arguments and options are there to the command:
```
cal -jy 2001
```
a. Two arguments, one of which is a single option and the other is a pathname.
b. Two options, no arguments.
c. Two arguments, no options.
d. Two command line arguments, one of which contains two options.
e. A single numeric option and a three-letter file name.

98. 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. no such file (nonexistent) *d.* **ho**
e. **hi**

99. What would you type to change the permissions on a file to **rw-r--r--**?
a. **chmod 344 file** *b.* **chmod 211 file**
c. **chmod 244 file** *d.* **chmod 311 file**
e. **chmod 644 file**

100. How many arguments does the shell pass to this **echo** command:
```
echo " 1 2 "three ' 4 ' five"6"
```
a. **5** *b.* **1** *c.* **3** *d.* **9** *e.* **4**

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

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

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

104. 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**

105. What is the result of this exact command line: **echo /foo bar**
a. file **/foo** will be copied to **bar**
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. all the files under directory **/foo** with the name **bar** will be displayed

106. 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.* **4** *c.* **2** *d.* **6** *e.* **3**

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

108. 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-L]** *c.* **[CTRL-U]**
d. **[CTRL-C]** *e.* **[CTRL-D]**

109. 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 **700** on directory **dir** and **200** on file **dir/f**.
b. Permissions **300** on directory **dir** and **500** on file **dir/f**.
c. Permissions **600** on directory **dir** and **500** on file **dir/f**.
d. Permissions **500** on directory **dir** and **500** on file **dir/f**.
e. Permissions **600** on directory **dir** and **300** on file **dir/f**.

110. 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. **2** *b.* **1**
c. **1** followed by **2** *d.* an error message
e. no output on screen

111. 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. you go to the parent directory containing your **C:** drive
c. the shell current directory is still ROOT
d. the shell issues an error message and does not change
e. the shell asks you to retype the invalid directory

112. What is the output on your screen of this command line:
```
echo cat >out ; echo dog | sort out
```
a. **dog** followed by **cat** *b.* **cat**
c. **dog** *d.* **cat** followed by **dog**
e. **out**

113. 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/../foo** does not exist
b. the directory **../me** now contains a file named **bar**
c. the command fails because the path **mt/../bar** does not exist
d. the directory **mt** now contains only a file named **bar**
e. there is a second copy of the file **foo** in the file named **bar**

114. 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/bar** *d.* **/home/foo**
e. **/home/foo/bar**

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

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

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

118. If you type the command **cat**, which *CTRL* key will send an **EOF** and take you back to the command prompt?
a. **^C** *b.* **^R** *c.* **^D** *d.* **^E** *e.* **^U**

119. 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 delete a word from the shell command line, type [CTRL]-[D]
d. To indicate End-of-File (no more input), type [CTRL]-[E].
e. To erase an entire line of typing, type [CTRL]-[E].

120. 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. **3** *b.* **5** *c.* **2** *d.* **1** *e.* **4**

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

122. 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.* 4 *c.* 3 *d.* 5 *e.* 2

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

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

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

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

127. 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

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

129. 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. no output
c. **dir/????**
d. **dir/.123 dir/.124 dir/.???**
e. **echo: dir/????: No such file or directory**

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

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

132. 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**

133. How do you search for the word **nongraphic** in the man page for **ls**?
   a. type **man nongraphic | grep ls** at the shell
   b. type **man ls** at the shell, then **^F** (CTRL-F), then **nongraphic**
   c. type **man ls -nongraphic** at the shell
   d. type **man -k nongraphic** at the shell
   e. type **man ls** at the shell, then **/nongraphic**

134. 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 has a file named **bar** in it
   b. there is a second copy of the file **foo** in the file named **bar**
   c. the command fails because path **./mt/../foo** does not exist
   d. the command fails because path **../me/bar** does not exist
   e. the directory **mt** now contains only a file named **bar**

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

136. 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 **200** on file **dir/c**.
   c. Permissions **500** on directory **dir** and **400** on file **dir/c**.
   d. Permissions **300** on directory **dir** and **300** on file **dir/c**.
   e. Permissions **100** on directory **dir** and **100** on file **dir/c**.

137. 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 456 is the size of this directory.
   b. The number 123 is the size 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 123 is the octal permissions of this directory.

138. 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 ../../etc/passwd /xx/foo**
   b. **cp ../etc/passwd ../xx/foo**
   c. **cp xx/../etc/passwd ../home/xx/foo**
   d. **cp xx/../../etc/passwd xx/foo**
   e. **cp ../home/xx/../etc/passwd ./xx/./foo**

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

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

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

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

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

144. What is the output of this command line in an empty directory:
```
touch .1 .2 .3 4 5 6 ; echo .*
```
   a. **.1 .2 .3 4 5 6**
   b. **. .. .1 .2 .3**
   c. an error message from **echo** saying **.*** does not exist
   d. **4 5 6**
   e. **.***

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

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

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

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

149. 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. **160** *b.* **200** *c.* **60** *d.* **40** *e.* **100**

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

151. 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 command fails because path **../idallen/cow** does not exist
c. the directory **empty/..** now has a file named **cow** in it
d. the command fails because path **./empty/../pig** does not exist
e. the directory **empty** now contains only a file named **cow**

152. 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 directory **mt** is still empty
c. there is a second copy of the file named **who** in the file **dog**
d. the directory **mt** now contains two files
e. the directory **mt** now has a file named **dog** in it

153. 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.* **0** *c.* no output
d. **2** *e.* **3**

154. 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. 4 *b.* 5 *c.* 1 *d.* 3 *e.* 2

155. 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. 3 *b.* 1 *c.* 4 *d.* 2 *e.* 5

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

157. 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. **[ALT]-[F1]** *b.* **[CTRL]-[D]** *c.* **[CTRL]-[C]**
d. **[ALT]** *e.* **[TAB]**

158. 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. **8** *b.* **3** *c.* **5** *d.* **2** *e.* **0**

159. 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. there is a second copy of the file named **new** in the file named **old**
b. the command fails because the path **../me/old** does not exist
c. the directory **dir** now contains only a file named **old**
d. the command fails because the path **./dir/../new** does not exist
e. the parent directory of **dir** now has a file named **old** in it

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

161. 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 **/1/2/3**
b. create one file named **/1/22**
c. create one file named **/1/2/3**
d. create a directory named **/1/2**
e. create a directory named **/1/22**

162. What is true about this command line: **`date >ls ; ls -ls ls >wc`**
   a. The **`ls`** command receives the output of **`date`** on standard input.
   b. The **`ls`** command is executed more than once.
   c. The shell finds and executes three different commands.
   d. The **`wc`** command counts the output of the **`ls`** command.
   e. The file **`wc`** has one line in it.

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

164. 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 me/foo`**
   c. **`cp ./me/../etc/passwd ../home/me/foo`**
   d. **`cp ../etc/passwd ../me/foo`**
   e. **`cp ../../etc/passwd /me/foo`**

165. 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.* 5 *c.* 4 *d.* 3 *e.* 6

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

167. 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 -r xyz?`**

168. 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’’`**

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

170. 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`**

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

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

173. 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 **`root`**
   b. you own the file **`bar`**
   c. the file is owned by **`home`**
   d. you cannot execute the given commands; no file will be created
   e. the file is owned by **`passwd`**

174. 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. an error message from **`echo`** saying **`.??*`** does not exist
   d. **`.??*`**
   e. **`.a .b .c`**

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

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

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

178. 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 ../home/xx/../etc/passwd ./xx/./foo**
c. **cp xx/../etc/passwd ../home/xx/foo**
d. **cp xx/../../etc/passwd xx/foo**
e. **cp ../../etc/passwd /xx/foo**

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

180. 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. **1 1 2 cat** *b.* **2 2 4 cat** *c.* no output
d. **0 0 0 cat** *e.* **1 1 3 cat**

181. 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 indicate End-of-File (no more input), type [CONTROL]-[E].
d. To erase an entire line of typing, type [CONTROL]-[E].
e. To delete a word from the shell command line, type [CONTROL]-[D]

182. 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?"** *b.* **rm /a/a?** *c.* **rm /a/?\?**
d. **rm '/a/a?'** *e.* **rm /a\?**

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

184. 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. no output *b.* ***/.**
c. 5 file names *d.* 15 pathnames
e. 10 directory names

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

186. 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. the directory **foo** now contains only a file named **moo**
c. the command fails because the name **moo** does not exist
d. there is a second copy of the file **bar** in the file named **moo**
e. the command fails because the name **foo/../moo** does not exist

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

188. 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 "*"**

189. 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. **d-wxrwx-w- 2 it it 400 Jul 3 8:00 newdir**
c. **d-wx----w- 2 it it 400 Jul 3 8:00 newdir**
d. **d-w-----w- 2 it it 400 Jul 3 8:00 newdir**
e. **dr--rwxr-x 2 it it 400 Jul 3 8:00 newdir**

190. 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.* **6** *c.* **7** *d.* **9** *e.* **5**

191. 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. no output
b. **dir/.aa dir/.ab dir/.a? dir/.a***
c. **dir/???**
d. **dir/.a?**
e. **dir/.aa dir/.ab**

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

193. 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 command fails because **bar/mt** is not a directory
e. the directory **mt** now contains a directory named **bar**

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

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

196. 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. this output is not possible
d. **foo** and **bar** are two of three names for this file
e. **foo** and **bar** are names for different files

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

198. 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. 2 blocks *b.* 10 blocks *c.* 8 blocks
d. 6 blocks *e.* 4 blocks

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

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

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

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

203. 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.* **5** *c.* **4** *d.* **3** *e.* **2**

204. 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. there is only the file named **double** in the directory now
d. an empty file named **double** is created
e. there is a copy of the file named **single** in the file named **double**

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

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

207. 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-C]** *c.* **[CTRL-L]**
d. **[CTRL-D]** *e.* **[CTRL-R]**

208. 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. 5 *b.* 4 *c.* 2 *d.* 3 *e.* 1

209. 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 **./dir/../new** does not exist
b. the directory **dir** now contains only a file named **old**
c. the command fails because the path **../myhome/old** does not exist
d. there is a second copy of the file **new** in the file named **old**
e. the parent directory of **dir** now has a file named **old** in it

210. 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.* **2**
d. **0** *e.* **1**

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

212. 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 512 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 256 is the octal permissions of this directory.
e. The number 755 is the count of links (names) this directory has.

213. 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 directory **dir** now contains only a file named **old**
b. the command fails because the path **../me/old** does not exist
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**

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

215. 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 only the file named **moo** in the directory now
b. the command fails because the name **moo** does not exist
c. an empty file named **moo** is created
d. there is a second copy of the file **bar** in the file named **moo**
e. the command fails because **bar** is not a directory

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

217. 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. **ten** *b.* no output on screen
c. **one** followed by **ten** and **two** *d.* **one**
e. **two**

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

219. 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. **50** *b.* **55** *c.* **0** *d.* **40** *e.* **60**

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

221. 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/etc/../passwd**
e. **/etc/passwd/.**

222. 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-C]** *c.* **[CTRL-R]**
d. **[CTRL-I]** *e.* **[CTRL-D]**

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

224. 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. 5 *b.* 3 *c.* 1 *d.* 2 *e.* 4

225. What does *quoting* mean on a shell command line?
a. using more than one pathname argument to a command, e.g. rm a b c
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. typing a "control" character using the [CTRL] key

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

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

228. 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. **1** followed by **2** *b.* no output *c.* **2**
d. **2** followed by **1** *e.* **1**

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

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

231. 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. **5 5** *b.* **7** *c.* **9** *d.* **1** *e.* **1 1**

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

233. 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 directory **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 path **./mt/../foo** does not exist
d. the directory **mt** now contains only a file named **bar**
e. the command fails because path **../me/bar** does not exist

234. 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**

235. 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.* 5 *c.* 1 *d.* 4 *e.* 2

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

237. Which of the following statements is true about this command line:
```
>foo file bar haven
```
a. The command **foo** sees only 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 three arguments.
e. The command **file** sees two arguments.

238. 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 -6`
c. `head -5 foo | tail -10` *d.* `head -10 foo | tail -5`
e. `tail -10 foo | head -6`

239. 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 **500** on directory **dir** and **600** on file **dir/foo**.
c. Permissions **400** on directory **dir** and **400** on file **dir/foo**.
d. Permissions **600** on directory **dir** and **700** on file **dir/foo**.
e. Permissions **100** on directory **dir** and **100** on file **dir/foo**.

240. In which section of the manual do you find standard commands?
a. 4 *b.* 2 *c.* 1 *d.* 8 *e.* 3

241. 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. **1** *b.* **2** *c.* **3** *d.* **4** *e.* **5**

242. 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/?`

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

244. 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 count of links (names) this directory has.
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 71 is the inode number of this directory.
e. The number 4096 is the inode number of this directory.

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

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

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

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

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

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

251. 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 ; cd protected ; chmod go+wx .**
   b. **mkdir protected ; chmod 333 protected**
   c. **mkdir protected ; chmod 777 protected**
   d. **mkdir protected ; chmod 777 .**
   e. **mkdir protected ; cd protected ; chmod go-x .**

252. 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. 5 *b.* 3 *c.* 2 *d.* 4 *e.* 1

253. 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 size of this directory.
   b. The number 256 is the inode number of this directory.
   c. The number 256 is the octal permissions of this directory.
   d. The number 256 is the size of this directory.
   e. The number 512 is the count of links (names) this directory has.

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

255. What is the link count (number of names) of an empty directory?
   a. **0** *b.* **3** *c.* **2** *d.* **1** *e.* **4**

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

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

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

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

260. 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. 2 blocks *b.* 3 blocks *c.* 4 blocks
   d. 1 block *e.* 5 blocks

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

262. 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 **300** on directory **dir** and **400** on file **dir/bar**.
   b. Permissions **300** on directory **dir** and **200** on file **dir/bar**.
   c. Permissions **100** on directory **dir** and **500** on file **dir/bar**.
   d. Permissions **100** on directory **dir** and **300** on file **dir/bar**.
   e. Permissions **500** on directory **dir** and **500** on file **dir/bar**.

263. 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 -r ?abc**

264. 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. 25 pathnames
   b. an error message because ***/.** does not exist
   c. ***/.**
   d. no output
   e. 15 directory names

265. 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. this output is not possible
b. **`foo`** and **`bar`** are two of three names for this file
c. **`foo`** and **`bar`** each have three names (six names total)
d. **`foo`** and **`bar`** are names for the same file
e. **`foo`** and **`bar`** each have two names (four names total)

266. 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`**

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

268. 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. **`20`** *b.* **`0`** *c.* **`30`** *d.* **`10`** *e.* **`60`**

269. The output of the **`tree`** command is:
a. an recursive list of directories and their contents
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. a recursive list of users logged in to the system

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

271. 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 hard link to directory **`d`** named **`d2`**
c. create a file named **`c/d2`**
d. create a directory named **`c/d/e`**
e. create a directory named **`c/d2`**

272. How many arguments does the shell pass to this **`echo`** command:
```
echo " 1 2 " three ' 4 ' five"6"
```
a. **`3`** *b.* **`4`** *c.* **`9`** *d.* **`5`** *e.* **`1`**

273. 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. **`3`** *b.* **`0`** *c.* **`5`** *d.* **`4`** *e.* **`2`**

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

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

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

277. 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 *[me]*`** *d.* **`echo *[Mm][Ee]*`**
e. **`echo ?[MmEe]?`**

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

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

280. 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. **`60`** *b.* **`50`** *c.* **`45`** *d.* **`40`** *e.* **`0`**

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

282. 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**

283. 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.* 3 *e.* 4

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

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

286. If **foo** is a sub-directory that contains only the file **pig**, what happens after this command: **mv foo/pig foo/./dog**
a. the command fails because the name **foo/./dog** does not exist
b. the directory **foo** is now empty
c. the command fails because the name **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**

287. 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.* **3**
d. **2** *e.* **0**

288. In an empty directory, how many words are in file **out** after this command line:
```
touch 1 2 3 2 1 ; ls >out
```
a. **4** *b.* **5** *c.* **6** *d.* **0** *e.* **3**

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

290. 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**

291. 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**

292. 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.* **6** *c.* **4** *d.* **7** *e.* **5**

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

294. 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. **4** *b.* **2** *c.* **1** *d.* none *e.* **3**

295. 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 two of three names for this file
b. **foo** and **bar** are names for different files
c. this output is not possible
d. **foo** and **bar** each have three names (six names total)
e. **foo** and **bar** are names for the same file

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

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

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

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

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

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

302. What would you type to find the string **tony** in the file **/etc/passwd**?
a. **cat tony /etc/passwd**
b. **grep /etc/passwd tony**
c. **grep tony /etc/passwd**
d. **find /etc/passwd -user tony -print**
e. **find /etc/passwd -name tony -print**

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

304. 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/.**
b. create one file named **/x/y/z2**
c. create one file named **/x/y/z/x**
d. create a directory named **/x/y/z/x**
e. create a directory named **/x/y/z2**

305. 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 **200** on directory **dir** and **200** on file **dir/foo**.
b. Permissions **600** on directory **dir** and **700** on file **dir/foo**.
c. Permissions **100** on directory **dir** and **200** on file **dir/foo**.
d. Permissions **400** on directory **dir** and **400** on file **dir/foo**.
e. Permissions **500** on directory **dir** and **100** on file **dir/foo**.

306. 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. **12** *b.* **7** *c.* **0** *d.* **8** *e.* **5**

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

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

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

310. 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-U]** *e.* **[CTRL-D]**

311. 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.* **2** *c.* **4** *d.* **5** *e.* **3**

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

313. 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. **A** *b.* **B**
c. **A** followed by **B** *d.* nothing (empty file)
e. no such file (nonexistent)

314. What is the output on your screen of this command line:
```
umask 162 ; touch newfile ; ls -l newfile
```
a. **-rw---x-w- 1 me me 0 Oct 1 01:12 newfile**
b. **----rw--w- 1 me me 0 Oct 1 01:12 newfile**
c. **-rw----r-- 1 me me 0 Oct 1 01:12 newfile**
d. **-rw---xr-x 1 me me 0 Oct 1 01:12 newfile**
e. **---xrw--w- 1 me me 0 Oct 1 01:12 newfile**

315. 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. none *b.* **1** *c.* **2** *d.* **3** *e.* **4**

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

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

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

319. 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*`**

320. 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. 2 *b.* 5 *c.* 4 *d.* 3 *e.* 1

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

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

323. 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 [CONTROL]-[D]
   c. Unix commands can be entered in upper-case or lower-case letters; they are equivalent.
   d. To indicate End-of-File (no more input), type [CTRL]-[C].
   e. Unix commands must be entered in lower-case letters.

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

325. 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. **`foo`** and **`bar`** are names for different files
   b. **`foo`** and **`bar`** are two of five 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)

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

327. 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. the command fails because the path **`../me/cat`** does not exist
   b. there is a second copy of the file **`fil`** in the file named **`cat`**
   c. the directory **`sub/..`** now has a file named **`cat`** in it
   d. the directory **`sub`** now contains only a file named **`cat`**
   e. the command fails because the path **`sub/../fil`** does not exist

328. 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 inode number of this directory.
   b. The number 71 is the count of links (names) this directory has.
   c. The number 512 is the inode number of this directory.
   d. The number 71 is the size of this directory.
   e. The number 512 is the count of links (names) this directory has.

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

330. 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** is now empty
   b. there is a second copy of the file **bar** in directory **foo**
   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**

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

332. 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/*** *c.* **rm /a***
   d. **rm "/a/a*"** *e.* **rm /a/a***

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

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

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

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

337. 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 one file named **/a/b/c/7de**
   b. create one file named **/a/b/c/7/d2**
   c. create a directory named **/a/b/c/d/e**
   d. create a directory named **/a/b/c/7e**
   e. create a directory named **/a/b/c/7/d2**

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

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

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

341. 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. an error message from **echo** saying **.??*** does not exist
   e. **. .. .a .ab .cde .fghi**

342. 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 **me** now contains a file named **bar**
   b. the directory **mt** now contains a file named **foo**
   c. the command fails because the path **../me/bar** does not exist
   d. the directory **mt** is still empty
   e. the command fails because the path **mt/../foo** does not exist

343. 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.* **3** followed by **2**
   d. **2** followed by **3** *e.* **5**

344. 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. there is a second copy of the file "single" in the file named "double"
   c. an empty file named "double" is created
   d. the command fails because the name "double" does not exist
   e. the command fails because "single" is not a directory

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

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

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

348. 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. **one** followed by **two** and **ten** *b.* **ten**
   c. no output on screen *d.* **two**
   e. **one**

349. 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** are two of three names for this file
   b. **foo** and **bar** are names for the same file
   c. **foo** and **bar** each have two names (four names total)
   d. **foo** and **bar** are names for different files
   e. this output is not possible

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

351. 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 octal permissions of this directory.
   b. The number 512 is the count of links (names) this directory has.
   c. The number 512 is the size of this directory.
   d. The number 256 is the inode number of this directory.
   e. The number 256 is the size of this directory.

352. 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.* 123 *c.* 121 *d.* 456 *e.* 458

353. 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.* **8** *d.* **9** *e.* **6**

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

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** *b.* nothing (empty file)
   c. **B** *d.* **A** followed by **B**
   e. no such file (nonexistent)

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

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

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

359. 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**

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

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

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

363. 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 two of three names for this file
b. this output is not possible
c. **foo** and **bar** are names for the same file
d. **foo** and **bar** each have three names (six names total)
e. **foo** and **bar** are names for different files

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

365. 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. ***/.** *b.* 5 pathnames *c.* 3 directory names
d. no output *e.* 2 file names

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

367. 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. **foo** followed by **bar** *b.* **bar**
c. no such file (nonexistent) *d.* nothing (empty file)
e. **foo**

368. 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. **20** *b.* **30** *c.* **50** *d.* **40** *e.* **0**

369. 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-C]** *c.* **[CTRL-R]**
d. **[CTRL-L]** *e.* **[CTRL-D]**

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

371. 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/\??** *b.* **rm dir/*1** *c.* **rm dir/?1**
d. **rm dir/1*** *e.* **rm dir/??**

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

373. 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. **4** *b.* **6** *c.* no output
d. **8** *e.* **1**

374. 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 256 is the count of links (names) this directory has.
c. The number 512 is the count of links (names) this directory has.
d. The number 755 is the octal permissions of this directory.
e. The number 512 is the size of this directory.

375. 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 [3][3][3]**
b. **rm [a-zA-Z][a-zA-Z][a-zA-Z]**
c. **rm [a-zA-Z,a-zA-Z,a-zA-Z]**
d. **rm [azAZ][azAZ][azAZ]**
e. **rm ???**

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

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

378. If you type the command **echo 'missing quote** which *CTRL* key will **interrupt** it and take you back to the command prompt?
a. **^R** *b.* **^I** *c.* **^D** *d.* **^C** *e.* **^U**

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

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

381. 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/a?**
d. **rm /a?** *e.* **rm /a/a***

382. 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. **20** *b.* **0** *c.* **50** *d.* **21** *e.* **30**

383. 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. **4** *b.* **2** *c.* **1** *d.* **3** *e.* none

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

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

386. What is in file **out** after this command line: **echo a >out b c**
a. nothing (empty file) *b.* **a b c**
c. **echo a** *d.* **a**
e. **b c**

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

388. 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. **0** *b.* **5** *c.* **24** *d.* **7** *e.* **12**

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

390. 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. an error message
c. **cow** followed by **pig**
d. **cow**
e. **pig**

391. 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 name that is hidden.
c. The current directory.
d. A current file.
e. The parent directory.

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

393. 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.* **3** *d.* **2** *e.* **1**

394. 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 2 foo** *b.* **1 1 3 foo** *c.* no output
d. **0 0 0 foo** *e.* **2 2 4 foo**

395. 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 the path **./mt/../foo** does not exist
b. the directory **mt** now contains only a file named **bar**
c. there is a second copy of the file **foo** in the file named **bar**
d. the parent directory of **mt** now contains a file named **bar**
e. the command fails because the path **../me/bar** does not exist

396. 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 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 different files
d. this output is not possible
e. **foo** and **bar** are names for the same file

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

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

399. 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***

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

401. 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. **70** *b.* **80** *c.* **50** *d.* **120** *e.* **0**

402. 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 command fails because the path **dir/../foo** does not exist
b. the command fails because the path **../me/cat** does not exist
c. the directory **dir/..** now has a file named **cat** in it
d. the directory **dir** now contains only a file named **cat**
e. there is a second copy of the file named **foo** in the file named **cat**

403. 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**

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

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

406. How many lines are in file **out** after this command line:
```
date >wc >cat >out
```
a. **0 0 0** *b.* **1** *c.* **0**
d. **2** *e.* **1 6 29**

407. 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]**

408. 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 directory **foo** is now empty
c. the directory **foo** now contains only a file named **me**
d. there is a second copy of the file **bar** in the file named **me**
e. the command fails because the name **me** does not exist

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

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

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

412. 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** is still empty
c. the directory **mt** now contains two files
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**

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

414. 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 ../home/./foo/../bin/ls foo/xx**
b. **cp ././foo/../bin/ls ../home/foo/xx**
c. **cp ./foo/../../bin/ls ./foo/./xx**
d. **cp ./../bin/ls ../foo/xx**
e. **cp ../../bin/./ls /foo/xx**

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

416. What is the result of this exact command line: **cat /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 two text strings **/foo** and **bar** will be displayed
d. file **/foo** will be copied to **bar**
e. the contents of the files **/foo** and **bar** will be displayed

417. 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. **6** *b.* **2** *c.* **4** *d.* **3** *e.* **5**

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

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

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

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

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

423. 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. **04 04** *b.* **96 96** *c.* **96**
d. **01 01** *e.* **98**

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

425. 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** *b.* **1** *c.* **4** *d.* **5** *e.* **6 6**

426. 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.* **2** *d.* none *e.* **3**

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

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

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

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

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

432. 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. the directory **mt** is still empty
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. there is a second copy of the file named **cat** in the file **dog**

433. 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. **7** *b.* **4** *c.* **3** *d.* **5** *e.* **2**

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

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

436. 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. **1** *b.* **4** *c.* **2** *d.* **5** *e.* **0**

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

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

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

440. 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. **6** *b.* **7** *c.* **5** *d.* **8** *e.* **9**

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

442. 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 directory **foo** now contains only a file named **me**
   c. the command fails because the name **me** does not exist
   d. the directory **foo** is now empty
   e. there is a second copy of the file **bar** in the file named **me**

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

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

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

446. 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. **0** *b.* **50** *c.* **20** *d.* **30** *e.* **80**

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

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

449. 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. the command fails because **bar** is not a directory
   c. an empty file named **moo** is created
   d. there is only the file named **moo** in the directory now
   e. the command fails because the name **moo** does not exist

450. 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. no output
   b. **mt**
   c. **nosuchfile**
   d. **bash: 2>/dev/null: command not found**
   e. **ls: nosuchfile: No such file or directory**

451. 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. **.***
   c. **.a .b .c**
   d. no output
   e. **. .. .a .b .c**

452. 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.* **4** *d.* **6** *e.* **5**

453. 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. **2** *b.* **5** *c.* **4** *d.* **0** *e.* **3**

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

455. 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. there is a second copy of the file named **foo** in the file named **bar**
   c. the command fails because path **./mt/../foo** does not exist
   d. the directory **mt/..** now has a file named **bar** in it
   e. the command fails because path **../me/bar** does not exist

456. 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 directory **mt** now contains a file named **bar**
   b. the directory **bar** now contains a file named **foo**
   c. the directory **mt** is still empty
   d. the command fails because **mt/bar** is not a directory
   e. the directory **mt** now contains a file named **foo**

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

458. 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 "z?"** *b.* **rm z?** *c.* **rm \?**
   d. **rm \z?** *e.* **rm ?\?**

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

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

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

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

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

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

465. 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*** *e.* **rm /a/a?**

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

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

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

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

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

471. 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.* 5 *c.* 4 *d.* 3 *e.* 2

472. 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. **0** *b.* **2** *c.* **5** *d.* **4** *e.* **3**

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

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

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

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

477. 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 **400** on directory **dir** and **400** on file **dir/f**.
   b. Permissions **200** on directory **dir** and **200** on file **dir/f**.
   c. Permissions **100** on directory **dir** and **200** on file **dir/f**.
   d. Permissions **500** on directory **dir** and **100** on file **dir/f**.
   e. Permissions **600** on directory **dir** and **700** on file **dir/f**.

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

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

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

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

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

483. 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.* **wc** *c.* **1 1 3 wc**
d. no output *e.* **1 1 2 wc**

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

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

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

487. 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. **bash: 2>/dev/null: command not found**
b. **dog**
c. **ls: nosuchfile: No such file or directory**
d. no output
e. **nosuchfile**

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

489. 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. **[CTRL]-[C]** *b.* **[ALT]** *c.* **[CTRL]-[D]**
d. **[ALT]-[F1]** *e.* **[TAB]**

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

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

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

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

494. 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. 2 *b.* 1 *c.* 4 *d.* 5 *e.* 3

495. 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. **3** *b.* **8** *c.* **5** *d.* **16** *e.* **0**

496. 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-W]**
c. type **[CTRL-U]**
d. select the line with the mouse and use the **BACKSPACE** key
e. type **[CTRL-D]**

497. 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 96** *b.* **02** *c.* **98**
d. **96** *e.* **04 04**

498. Which of the following commands will leave **file1** non-empty?
   a. **wc file1 > file1**
   b. **head file1 > file1**
   c. **cat file1 > file1**
   d. **sort file1 > file1**
   e. **tail file1 > file1**

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

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

501. 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**
   b. **one**
   c. no output
   d. **two** followed by **one**
   e. **one** followed by **two**

502. 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. **1 1 2 wc**
   b. **0 0 0 wc**
   c. **2 2 4 wc**
   d. no output
   e. **1 1 3 wc**

503. 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/.**

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

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

506. 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 three names (six names total)
   b. this output is not possible
   c. **foo** and **bar** each have two names (four names total)
   d. **foo** and **bar** are names for the same file
   e. **foo** and **bar** are two of three names for this file

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

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

509. 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. no output
   b. **1** followed by **2**
   c. **2**
   d. **1**
   e. **2** followed by **1**

510. 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. **2 2** *b.* **1** *c.* **8** *d.* **8 8** *e.* **9**

511. 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

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

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

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

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

516. 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***

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

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

519. 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. **0** *b.* **30** *c.* **50** *d.* **80** *e.* **160**

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

521. 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/./fil** 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/../../me** does not exist

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

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

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

525. 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. the directory **foo** now contains only a file named **moo**
   c. the directory **foo** is now empty
   d. the command fails because the name **moo** does not exist
   e. the command fails because the name **foo/../moo** does not exist

526. 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 **[CTRL]-[C]** 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 **[TAB]** key.

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

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

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

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

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

532. 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. the file is owned by **root**
   b. you cannot execute the given commands; no file will be created
   c. the file is owned by **home**
   d. you own the file **bar**
   e. the file is owned by **passwd**

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

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

535. 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. **3** *e.* **1 1 2**

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

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

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

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

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

541. 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.* **rw-** *c.* **-wx** *d.* **r--** *e.* **r-x**

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

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

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

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

546. 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 ../../bin/./ls /ian/me`
b. `cp ../home/./ian/../bin/ls ./ian/./me`
c. `cp ./../bin/ls ../ian/me`
d. `cp ././ian/../bin/ls ../home/ian/me`
e. `cp ian/../../bin/ls ./ian/me`

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

548. 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 712 is the inode number of this directory.
b. The number 512 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 count of links (names) this directory has.
e. The number 512 is the size of this directory.

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

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

551. 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.* **:dp** *e.* **DDP**

552. 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 **300** 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 **600** on directory **dir** and **500** on file **dir/foo**.

553. 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'`

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

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

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

557. 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. 3 *b.* 6 *c.* 2 *d.* 5 *e.* 4

558. 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 /tmp/dir/..` *b.* **ls .**
c. `ls /tmp/dir/.` *d.* `ls /tmp/dir`
e. **ls ..**

559. 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. **4 4** *b.* **8** *c.* **6** *d.* **6 6** *e.* **1 1**

560. 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 names for the same file
c. **foo** and **bar** each have three names (six names total)
d. **foo** and **bar** are two of three names for this file
e. this output is not possible

561. The **-v** option to the **grep** command does what?

a. selects lines that do not contain a match for the supplied pattern
b. selects lines that do not contain unprintable characters
c. turns on the translation of unprintable characters
d. turns off the translation of unprintable characters
e. prints the version number of the grep command

562. The option to **ls** that shows inode (index) numbers is:

a. **-1** *b.* **-x** *c.* **-i** *d.* **-l** *e.* **-a**

563. 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 command fails because the path **mt/../../me** does not exist
b. the directory **mt** is still empty
c. there is a second copy of the file **foo** in the file named **y**
d. the directory **mt** now contains only a file named **y**
e. the command fails because the path **mt/./foo** does not exist

564. What command shows all the lines in file **foo** that contain the string **bar**?

a. **grep bar <foo** *b.* **cat foo > grep bar**
c. **grep foo bar** *d.* **cat foo | wc bar**
e. **foo | grep bar**

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

566. Which of these statements is true?

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

567. What is the correct syntax to redirect both standard output and standard error into the same output file?

a. **sum 2>1 >out foo** *b.* **sum >out foo 2>&1**
c. **sum foo 1>out 2>1** *d.* **sum 2>&1 foo >out**
e. **sum 1>out 2>out foo**

568. What is the output on your screen after this command line:

```
echo 1 >x ; ln x y ; echo 2 >>y ; sort x
```

a. no output *b.* **2** *c.* **1** followed by **2**
d. **1** *e.* **2** followed by **1**

569. 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.* **search '?' /etc/passwd**
c. **find '?' /etc/passwd** *d.* **grep /etc/passwd '?'**
e. **grep '?' /etc/passwd**

570. 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. 2 *b.* 5 *c.* 1 *d.* 3 *e.* 4

571. **Did you read all the words of the test instructions on page one?**

a. **Sim** *(Yes - Portuguese)* *b.* **Jes** *(Yes - Esperanto)*
c. **Yes** *(Yes - English)* *d.* **Tak** *(Yes - Polish)*
e. **Igen** *(Yes - Hungarian)*