

## 2009.1 Midterm Exam : LINUX System

Student Id. : ( \_\_\_\_\_ ) , Name : ( \_\_\_\_\_ )

1. (8points) Explain in detail the meaning of the following characteristics of UNIX System.

(1) Stability : ( \_\_\_\_\_ )

(2) Portability : ( \_\_\_\_\_ )

2. (10points)

(1) \$status is one of C shell built-in variables. Describe what values are stored in this variable. (You may also explain the purpose of using this variable in a shell script.)

( \_\_\_\_\_ )

(2) What is the meaning of the following UNIX command.

```
% chmod 755 a.txt
```

Explain.

( \_\_\_\_\_ )

3. (5 points)

Following command is used for finding every file whose filename ends with .txt from current directory and its subdirectories.

```
% find . -name "*.txt" -print
```

Explain why double quotes (") are necessary in front and back of \*.txt?

(that means, explain why we must use "\*.txt" instead of \*.txt in the command?)

( \_\_\_\_\_ )

4. (7points) Suppose we want to delete every file whose filename ends with .txt from current directory and its subdirectories. Answer to the following questions.

(1) Explain why the shell command below does not work correctly for that purpose.

```
% find . -name "*.txt" -print | rm
```

( \_\_\_\_\_ )

(2) Write a correct shell command by modifying above shell command.

The answer should be just one line.

( \_\_\_\_\_ )

5. (10points) This problem is about UNIX file system and i-node structure. In UNIX, i-node has pointers that are used for pointing to data blocks of a file. Suppose that there are ten direct pointers, one single indirect pointer, one double indirect pointer, and one triple indirect pointer in an i-node of a file. If the size of a pointer is P Byte and the size of one data block is D Byte, then what is the maximum size a file may have? (Assume that D can be divided by P, which means D/P is an integer number. The size of the "file size field" in i-node is ignored. )

(Answer : \_\_\_\_\_ )

6. (10points) Following C shell script prints the number of files and the number of directories in a directory that is given as the first argument(\$argv[1]) of the script. Fill out the blanks (1), (2), and (3) in the script.

```
-----
#!/bin/csh

@ fcount = 0
@ dcount = 0
set file_list = (1) _____
foreach file ($file_list)
    if ( (2) _____ ) then
        @ fcount++
    else if ( (3) _____ ) then
        @ dcount++
    endif
end
echo $fcount files , $dcount dirs
-----
```

7. (15points) Fill out following blanks.

(1) (a. \_\_\_\_\_ ) is a software implementation of a machine (computer) that executes programs like a real machine.

(2) A UNIX file system consists of the following main parts : boot block, (b. \_\_\_\_\_ ), (c. \_\_\_\_\_ ), and directory/data blocks.

(3) New programs and shells inherit (d. \_\_\_\_\_ ) variables from their parent shell. On the other hand, (e. \_\_\_\_\_ ) variables are used only by that shell and are not passed to other processes.