Linux Summer Camp 2017

Lab1. Linux commands basic

Coverage

- Tasks 1 to 4: TLCL Ch. 1—4
- Tasks 5 to 8: TLCL Ch. 5—7, 12

Task1

Find a Bash command that answers to each of the following questions:

A. How much main memory does the lab server (peace) have?

B. How many SCSI disks does the lab server has?
What is the capacity of each disk?

C. Which file has the oldest modification time in /usr/bin ?

D. How many users are in the peace server?

Task2

- Find answers of the following three questions:

  A. What is the relative pathname of `/usr/bin` from your home directory?

  B. What are the CPUs does `peace` has?

  C. What is the absolute pathname of a file that `/usr/bin/dh_python3` points to?

Task3

- Complete the followings in sequence:

  1. Find `filedata.tar` somewhere in peace, and copy it to your home directory

  2. Extract `filedata.tar` by executing `tar -xvf filedata.tar`. It will return 10 directories. Many files in the 10 directories have integers as their filename.

  3. Find the number of files in the directories that meet the following two conditions at the same time (i.e., A && B):
     A. the filename should be an integer between 10000 and 99999.
     B. there should be at least two files that have the same file name.

     <u>You must find this number with one or two commands.</u>

  Hint: `filedata.tar` is in a place where any one can store any file for a short period of time.

Task4

- Find a directory whose depth is greater than 4
  - The depth of a directory refers to the number of ancestor (parents) directories in its absolute paths
  - For example, the depth of `/home/guest/survey` is 2 because `survey` has two ancestors `home` and `guest`
  - You must not create any directory for the answer

Task5

Suppose that there is a file students.txt that contains lines of student IDs. For example, as follows:

```
$> cat students.txt
21200246
21200574
21300035
21300492
21300511
$>
```

What is one line command that creates one directory with every student ID in students.txt?

Task6

1. Find a command that back ups C source code files in a certain directory. The requirements for the command are as follows:
   - The command generates an archive of all C files in the working directory*
   - The generated tar file should be a hidden one
   - The name of the generated tar file should be in a form of `YYYYmmDDHHMMSS.tar` where `YYYY` is the year, `mm` is the month (1—12), `DD` is the date in a month (01—31), `HH` is the hour (00—23), `MM` is the minute (00—59) and `SS` is the second (00—59) at the execution**

2. Make this command available as `bkup` whenever you run Bash ***

* Archiving files with Tar. pp. 234—236, Chapter 18, *The Linux Command Lines*

** `man date`

*** Bash start-up file. p. 130 in Ch. 11, *The Linux Command Lines*

Task7

Complete the following tasks

1. Write a C program `len.c` that receives a sequence of lines from standard input and prints the length of each given line to standard output.
   - Assume that no line exceeds 2000 characters
   - Build the program as `len`
   - Example

```
$> len
12345
5
Handong
7
```

2. Find the length of the longest file names in the Peace server
   1. Use `ls -R /` to retrieve all file names from the root directory
   2. Use `len` after a slight modification
      - Hint: `ls -R /` prints out something other than file names

Task8

Suppose that you are debugging `cal`, a calendar program due to faulty memory copy operations. To analyze the fault, you want to check how `cal` calls the `memcpy` library function.

A Linux system tool `ltrace` monitors a program execution and extracts all library calls including `memcpy`. For debugging convenience, you want to see a sequence of `memcpy` calls, excluding all other information (e.g., other library calls, the print out from `cal` itself)

Write a script in one or two Bash commands that prints out only `memcpy` calls from the `ltrace` result of a `cal` execution.

*`ltrace`: man page

Note

- Do google please
  - But try not to do stackoverflow
- Be careful not to disrupt other teams!
  - One who disrupt others will have penalty