CS170 SP2019 Final Exam

This is a close book, close note exam. Total points are 100. You have 50 minutes.

Name:

1. Briefly answer the following questions: [10]
   (a) What is a shell? What is a shell script.

   (b) What is vim? What are the two major modes of vim?

   (c) What is Git? What is its difference with GitHub?

   (d) What are three stages in the compilation?

   (e) How does the makefiles and make improve compilation?

2. The shell script can work with command-line arguments. Explain the following symbols appear in the shell script. [5]
   (a) $0
   (b) $1
   (c) $2
   (d) $*
   (e) $#

3. Briefly explain the two commands in each pair: [12]

   (a) `pwd` VS `ps`

   (b) `mkdir` VS `rmdir`

   (c) `less` VS `more`

   (d) `head` VS `tail`

   (e) `cd ..` VS `cd .`

   (f) `mv` VS `cp`

4. What do the following commands do? [22]

   (a) `chmod u+x file1.txt`

   (b) `chmod go-w file2.txt`

   (c) `./program1`

   (d) `cat part2 part3 >> book`

   (e) `who > whoson`

(f) `command1 < someFile`

(g) `cat file1 | sort | less`

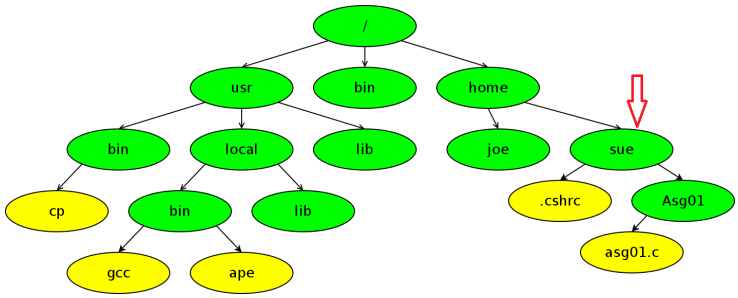
(h) `ps | grep bash`

(i) `ls -l | lpr`

(j) `kill 7324`

(k) `echo $$`

5. File system in Unix. Suppose the current working directory is `sue`. What are the absolute path and relative path for the `gcc` and `asg01.c` in the following diagram? [6]



6. Shell script coding problems:[45]

   (a) Write a script that displays (sends to standard output) the name of the calling program, the number of positional parameters, and a list of positional parameters. [6]

   (b) Write a shell that prompt the user with ">>" and read a string of text from the user. If the user enters a nonnull string, the scirpt displays "You entered: " followed by the string; otherwise it displays "Where is your input?". [6]

(c) Write a short script that tells you whether the permissions for two files, whose names are given as arguments to the script, are identical. If the permissions for the two files are identical, output the common permission field. Otherwise, output each filename followed by its permission field. [12]
(Hint: Using ls -l to display permission and cut utility.)

```
$ ls -l dog
-rw-r--r-- 1 max max 0 2012-10-15 12:20 dog
```

(d) Write a shell script that prompt the user for a file name then check if this file exists in the current directory. If file exists, copies the file named to a file with the same name with the filename extension of **.bak**. Otherwise a file is created in the current directory and a corresponding message is displayed. [8]

(e) Write a shell script that can provide following **a, b, c, d** menus for the user. If user enter other than **a, b, c, d**, the program exit. [13]

- **a.** Display user currently logged in
- **b.** List current running processes
- **c.** List only the permission of all the files and directories under current directory
- **d.** Go back to its parent's directory