

1. [4 pt] How can you get the process-id of your current shell?
2. [8 pt] You have written a program in C and have performed excellent documentation in the form of comments. You want to give the algorithm to a friend without sharing the code. Write a command to extract all the comments; they could be anywhere on the line and may be preceded by some code. You can assume that the comment does not go onto next line and is terminated on the same line that it starts. Account for both `//` and `/*` type of comments.
3. [6 pt] You are given a large text file. Give me a command to display all the lines that are duplicated anywhere in the file. The lines may not be one after the other.

4. [6 pt] I suddenly realized that my `ls` command on my Unix system got corrupted. I need to look at all the files in the current directory whose name starts with the character `f`. Since I do not have `ls`, how can I achieve my objective? The solution should not rely on `ls` being available in a different directory.

5. [4 pt] Show the output that appears on `stdout` from executing the following commands in `ksh`:

```
$ fubar=red
$ print $fubar ; ( fubar=red ; print $fubar ) ; print $fubar
$ print $fubar ; { fubar=red ; print $fubar ; } ; print $fubar
```

6. [4 pt] As part of the housekeeping in RCS files, you delete some revisions every once in a while. Are there any revisions that you cannot delete?

7. [6 pt] In your directory, you have a set of files with extension `.c` (C source files) and another set with extension `.C` (C++ source files). You have to copy all the files to a Windows machine and since Windows does not distinguish between upper and lower case letters in file name, you have been asked to change the extension `.C` to `.cpp` for all the files. How will you achieve this?
8. [6 pt] You have a need to print the user name and actual name of all the students in this class from the Unix password file. The students in the class have a group id 2750 in field 4 of the file `/etc/passwd`. The user name is in field 1 and actual name is in field 5. Give a command to list just the username and real name such that the username appears in columns 1-10 and real name appears in columns 11-40. All the data should be left aligned. Do not forget to account for the field separator in password file.