

Important: This is an open book test. You can use any books, notes, or paper but no electronic device. *Do not log into the computer during the test, or use any electronic or communications device. Change your cell phones to silent mode.* Any calculations and rough work can be done on the back side of the test pages. If there is a syntax error in any program segment, just write it down and you will get full credit for the problem. Please write legibly; if I cannot read what you wrote, I'll give you a zero. You will lose five points for not writing your name.

1. [6 pt] You are editing a file in vi/vim. You are somewhere in the middle of a paragraph when you realize that this paragraph needs to be *after* the following paragraph. Give me the keystrokes to swap the two paragraphs.

2. [6+4 pt] Please indicate what is echoed by the following set of statements:

```
foobar="Hello"  
echo ${foobar} ; ( foobar="Goodbye" ; echo ${foobar} ) ; echo ${foobar}
```

What will be output if I issue the following command after I have issued the above commands:

```
export foobar  
echo ${foobar} ; ( foobar="Goodbye" ; echo ${foobar} ) ; echo ${foobar}
```

3. [6 pt] Suppose I just created a script in my current directory called `runme` using `vi/vim`, and I try to execute it. However, I get a message

```
-bash: ./runme: Permission denied
```

How will you fix it?

4. [6 pt] How will you make sure that your customization of `bash` does not go away when you log out of the system?

5. [6+4 pt] How can you find out all the files in any of your directories that contain a C program?
How can you also list their size at the same time?

6. [6 pt] John wanted to append the file **fb** to the end of the file **fa**, and he typed

```
cat fa fb >| fa
```

What really happened here? How would you do it?

7. [15 pt] You are given a set of text files which has some spelling issues. Effectively, all the vowels have preceded other alphabetical characters when they should have succeeded them. However, if the vowel is not followed by an alphabetical character, it is correct. There are multiple files with the same issue and they are identified in a directory by the extension `.txt`. Your job is to fix all of those files. Give me the exact command (or set of commands) to achieve this. Assume that the files contain only lowercase characters.