Important: This is an open book test. You can use any books, notes, or paper, but not exchange anything with other students. You are not allowed touse any electronic/communication devices, including a calculator and e-books. *Do not log into the computer during the test. Switch off your cell phones. Any device with an* ON-OFF *switch should have its switch in the*OFF *position*. Any calculations and rough work can be done on the backside of the test pages. You will lose five points for not writing your name.

1. [6 pt] What is the number in parenthesis for the command/function `chmod(2)` refer to? How can you use it in your work in Unix (specify complete command)?

    The number refers to the Section number of the man pages. The command is:

    ```
    man -s 2 chmod
    ```

2. [6 pt] Give the command to swap two characters in vi.

    ```
    xp
    ```

3. [6 pt] When I perform `ls -l`, I get the following output for my file:

    ```
    -rw-r--r--   1 bhatias   sasl     175812 Feb 14 17:51 myfile
    ```

    Give me the command to print only the permissions and file names to `stdout`.

    ```
    ls -l | awk '{print $1, $9}'
    ```

4. [8 pt] An amount of money can be in one of the following formats:

```
$90.82
$1,087.64
$97.00
$0.74
$567.98
```

Give me a regular expression to recognize any of these. Assume that the amount will always be less than 10,000.00.

```
/\$[0-9]\{1,3\}\(,[0-9]\{3\}\)*\.[0-9][0-9]\>/
```

5. [10 pt] I just transferred an entire directory to my Unix box where I have a utility to work with files that have the extension .jpeg. The files I transferred could be anywhere in my directory hierarchy and there are some that have the extension .JPG. Give me the command to change the file extensions of those files from .JPG to .jpeg. The command you give should change all the files, even deep in a subdirectory. [Hint: I am thinking of find(1)]

```
for i in `find . -type f -a -name "*.JPG"`
do
mv $i `echo $i | sed 's/JPG$/jpeg/'`
done
```

6. [15 pt] Write a script in ksh that takes as argument a set of files. For each file, if the file is a plain file, it prints the message Plain file; if it is a directory, it prints the message Directory; if it a symbolic link, it prints the message Symbolic link. If the file is none of those types, it just says Other file type.

```ksh
#!/bin/ksh

for i in $*
do
    ft=`/bin/ls -ld $i | cut -c1`
    case $ft in
    '-') echo "$i Plain file"
        ;;
    'd') echo "$i Directory"
        ;;
    'l') echo "$i Symbolic link"
        ;;
    *)   echo "$i Other file type"
        ;;
    esac
done
```