CSE 333 - OPERATING SYSTEMS
Programming Assignment # 1
DUE DATE: 26/10/2017 - 23:00 (No extension)

1. (15 pts) Write a shell script that takes a single command line argument which is a file containing one integer per line as the following:

        20
        18
        5
        32
        4

    From this data, your program should print out a row of stars of the given length for each integer. For the input above, your program should print the following:

    Ex:
    ```
    $ ./myprog1.sh filename

    *******************
    *****************
    *****
    ******************************
    ****
    ```

2. (20 pts) Write a shell script that optionally takes a directory name as an argument (default is .), and for each file in the directory that is **not**
    - a c file (i.e., a file matching *.c) or
    - a header file (i.e., a file matching *.h) or
    - a file named "Makefile" or "makefile"

    asks the user if the file should be deleted. If no argument is given, the script should cleanup the current working directory. If the standard input of the command is not a terminal, the command should give an error message. If more than one directory name is given as an argument, or if the directory is not writeable, or if any other error situation occurs, the program should print a suitable error message to the diagnostic output, and exit with a non-zero exit value. This command should not attempt to remove subdirectories of the given directory

    Ex:
    ```
    $ ls
    Makefile   bar     foo     junk    myprog.c       mydir
    $ ./myprog2.sh
    bar: ? (y/n) n
    foo: ? (y/n) y
    junk: ? (y/n) y
    $ ls
    Makefile   bar     myprog.c       mydir
    ```

3. (20 pts) Write a shell script that takes a filename and two words as arguments. Then it searches for the first word in that file and substitute all occurrences of it with the second word and print how many substitutions was made. For example, if the program is executed with a file including the word "apple" 3 times and the second word is "orange", then it should change all 3 "apple" to "orange".

Ex:
```
$ ./myprog3.sh file apple orange
All 3 occurrences of "apple" in "file" has changed with "orange"
```

4. (20 pts) Write a shell script to organize a directory by first creating two sub directories named smallest and largest. Then the script should move the largest file in the current directory to largest directory and the smallest file to smallest directory. It then should print the file names that has been moved.

Ex:
```
$ ls -l
   total 2328
-rw------- 1 std std 152144 Jun 20 2005 alice-in-wonderland.txt
-rw------- 1 std std 82140 Jun 20 2005 barleby-scrivener.txt
-rw------- 1 std std 13421 Jun 20 2005 calaveras-county.txt
-rw------- 1 std std 13107 Jun 20 2005 cask-of-amontillado.txt
-rw------- 1 std std 635 Jun 20 2005 french.txt
-rw------- 1 std std 496769 Jun 20 2005 hawthorne.txt
-rw------- 1 std std 172541 Jun 20 2005 looking-glass.txt
drwx------ 14 std std 476 May 25 2007 shakespeare
-rw------- 1 std std 192710 Jun 20 2005 song-of-hiawatha.txt
-rw------- 1 std std 35238 Jun 20 2005 trees-and-other-poems.txt
$ myprogr4.sh
hawthorne.txt is moved to the directory largest
french.txt is moved to the directory smallest
```

5. (15 pts) Write a shell script that accepts a number as an argument. Then it should find the sum of numbers formed by exchanging consecutive digits. For input 5614, the output should be 65+16+41=122.

Ex:
```
$ ./myprog5.sh 5614
122
```

- **Bonus:** You will get 10% extra credit if your program supports a *Menu* including all questions above. Example:

```
./myprog.sh

Please select an option:

   1. Print asterisks
   2. Delete files
   3. Substitute words
   4. Organize directory
   5. Print sum of numbers
   6. Exit
```

These options must be printed inside a loop until "Exit" option is selected.

Notes:

- You are required to consider all necessary error checking for the programs.
- No late homework will be accepted.
- In case of any form of **copying and cheating** on solutions, all parties will get **ZERO** grade. You should submit your own work. In case of any forms of cheating or copying, both giver and receiver are equally culpable and suffer equal penalties.
- You have to work with a partner. Your partner will not be changed throughout the semester.
- (10 pts) You are required to submit a minimum 2-pages report and commented code (via e-mail: cse333.projects@gmail.com).
- Your report should include explanations about implementations with screenshots of your sample executions. Your implementation detail should be provided in the source code comment.
- Please put your COMMENTED source codes and project report in a zip file and make sure that your zip file contains your student IDs!
  Ex: 150713852_ 150713853_Project1.zip