CSC3320 System Level Programming
Program Challenge 6

Due at 11:59 pm on Wednesday, Oct. 12, 2016

Part 1:

Please complete the tasks in following table step by step and finish the questions below the table.

Step 1: Go to your home directory (cd ~) and create a new file named as **exp1.sh (vi exp1.sh or nano exp1.sh),** then include following lines in your **exp1.sh.**

```
#!/bin/bash
#
#exp1.sh in Part 1 of PC6
#

x=0 # initialize x = 0
i=1
while [ $i -le 5 ]  # while i<=5
do
x=`expr $x + $i`
i=`expr $i + 1`  # i=i+1
done

echo x=$x
```

Step 2: Save your file and exit editor.

Step 3: Try following command to make simple.sh executable.
$chmod a+x exp1.sh

Step 4: Execute this file by invoking its name.
$./ exp1.sh

Note: when type the shell script in your terminal, please be very careful about spaces.

Questions:

1) Attach a screenshot of the output in step 4.

2) Describe what does the shell script **exp1*.sh*** do?

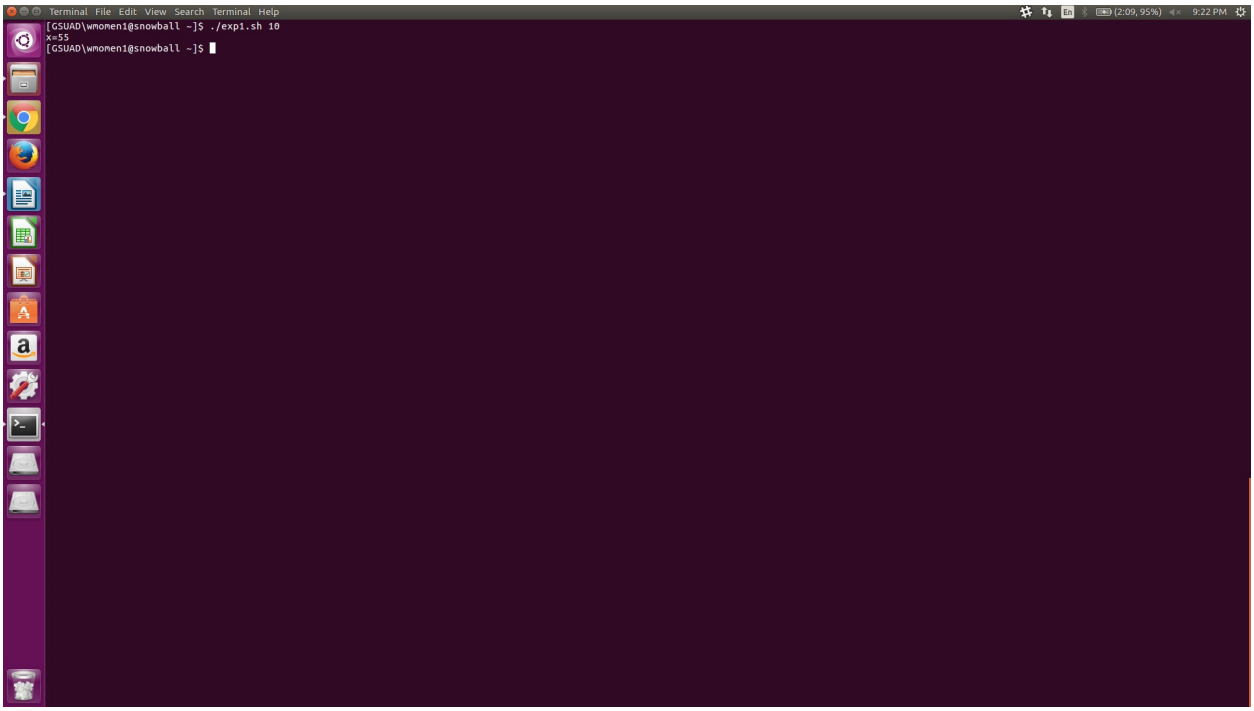
exp1.sh executes a while do loop with a variable x and i. i is added to x and i is incremented by 1 each time the loop executes until x equals 5.

Part 2:

Step 1: Edit your ***exp1.sh*** and change **“ -le 5 ”** to **“ -le $1 ”** .

Step 2: When finished, save the ***exp1.sh*** and exit editor. Then try executing it again by typing following command.
$./ exp1.sh 10

Question:
Attach a screenshot of the output.



Part 3:

Step 1: Edit your ***exp1.sh*** in part2 by making following modifications:

- Add two new lines below between line “**i=1”** and line “**while [$i -le $1]”**
  ```
  echo please input the max number
  read max
  ```
- Change **“ -le $1 ”** to **“ -le $max ”** .

Step 2: When finished, save the ***exp1.sh*** and exit editor. Then try executing it again by typing following command and **type 10** as input of the max number.
$./ exp1.sh

Question:
Attach a screenshot of the output.

Part 4:

Write a shell script to calculate factorial of a given integer number. Please name your shell script as **factorial.sh**. The integer number should be given on command line. The sample outputs are as below:

$ ./factorial.sh 2
the factorial of 2 is 2
$ ./factorial.sh 4
the factorial of 4 is 24
$ ./factorial.sh 5
the factorial of 4 is 120

Question:

Execute your factorial.sh and attach a screenshot of the output when the given number is 10. Then write the source code of ***factorial.sh*** in your answer sheet and also upload your file ***factorial.sh*** to iCollege.

Note: if you do not upload factorial.sh, you would get zero for this assignment.

Submssion:

- Upload an electronic copy (MS word or pdf) of your answer sheet to the folder named "**PC6**" of the dropbox in the iCollege system

- Upload file **factorial.sh** to the folder named "**PC6**" of the dropbox in the iCollege system. Note: if you do not upload factorial.sh, you would get zero for this assignment.

- Please add the program challenge number and your name at the top of your answer sheet.

- Name your file in the format of PC6_FirstnameLastname (eg. PC6_YuanLong.docx, PC6_YuanLong.pdf)