

CSC3320 System Level Programming

Lab Assignment 6 - Part 2 - **Post Lab**

Due at 11:59 pm on Friday, Feb 26, 2021

Purpose: Learn the differences between writing a Bourne shell script and Java program. Learn how to use command argument in a Bourne Shell script. Learn how to compile and run Java and C programs in Unix terminal.

Part A:

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

```
#!/bin/bash
#
#foo.sh in Part A of Lab 6 - Part 1
#

x=0 # initialization x = 0
i=1
while [ $i -le 3 ] # while(i<=3)
do
s=`expr $i \* $i` # s=i*i
x=`expr $s + $x`
i=`expr $i + 1` # i=i+1
done

echo x=$x
```

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

Step 2: Save your file and exit editor.

Step 3: Try following command to make simple.sh executable.

\$chmod a+x foo.sh

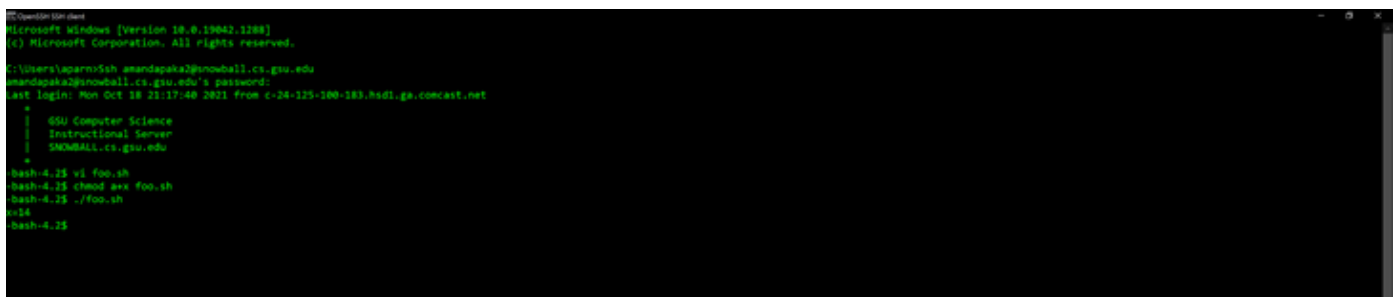
Step 4: Execute this file by invoking its name.

\$/foo.sh

*Note: when typing the shell script in your terminal, please be very careful of the **spaces**.* 1

Questions:

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



```
C:\Question 101>
Microsoft Windows [Version 10.0.19042.1188]
(c) Microsoft Corporation. All rights reserved.

C:\Users\aparna>ssh amandapaka2@snowball.cs.gsu.edu
amandapaka2@snowball.cs.gsu.edu's password:
Last login: Mon Oct 18 22:17:48 2021 from c-24-125-180-183.hsd1.ga.comcast.net

+
|  GSU Computer Science
|  | Instructional Server
|  | SNOWBALL.cs.gsu.edu
+

bash-4.2$ vi foo.sh
bash-4.2$ chmod a+x foo.sh
bash-4.2$ ./foo.sh
Hi!
bash-4.2$
```

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

The code is basically squaring the value and adding that to the x value, and then increasing the value of "i" until it equals to 3. It prints the sum of all squares from 1 to 3

Part B:

Step 1: Edit your **foo.sh** and change "**-le 3**" to "**-le \$1**".

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

\$/foo.sh 5

Question:

Attach a screenshot of the output.

```
-bash-4.2$ vi foo.sh
-bash-4.2$ ./foo.sh 5
x=55
-bash-4.2$
```

OpenSSH SSH client

```
#!/bin/bash
```

```
#foo.sh in Part A of Lab 6 - Part 1
```

```
#
```

```
x=0 # initialization x = 0
```

```
i=1
```

```
while [ $i -le $1 ] # while(i<=3)
```

```
do
```

```
s=`expr $i \* $i` #s=i*i
```

```
x=`expr $s + $x`
```

```
i=`expr $i + 1` # i=i+1
```

```
done
```

```
echo x=$x
```

```
~
```

```
~
```

```
~
```

Part C:

Step 1: Edit your *foo.sh* in part B by making following modifications:

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

Step 2: When finished, save the *foo.sh* and exit editor. Then try executing it again by typing following command and **type 5** as the input of the number.
\$./foo.sh

Question:

Attach a screenshot of the output.

```
-bash-4.2$ vi foo.sh
-bash-4.2$ -bash-4.2$ ./foo.sh
please input a number
5
x=55
-bash-4.2$
```

OpenSSH SSH client

#!/bin/bash

#foo.sh in Part A of Lab 6 - Part 1

#

x=0 # initialization x = 0

i=1

echo please input a number

read num

while [\$i -le \$num] # while(i<=3)

do

s=`expr \$i * \$i` #s=i*i

x=`expr \$s + \$x`

i=`expr \$i + 1` # i=i+1

done

echo x=\$x

~

~

Part D:

Write a Java program named **foo.java** to accomplish the same task as that in foo.sh of Part A.

Note: If you want to run your Java program in terminal,

- to compile foo.java, please try
\$javac foo.java
- To execute it, please try
\$java foo

Question:

```
-bash-4.2$ vi foo.java
-bash-4.2$ -bash-4.2$ javac foo.java
-bash-4.2$ java foo
14-bash-4.2$
```

```
OpenSSH SSH client
public class foo{

    public static void main(String []args){
        int x=0;
        int i=1;

        while (i<=3){
            int s=i*i;
            x= s+x;
            i+=1;
        }

        System.out.print(x);
    }
}
```

Then put the source code of **foo.java** in your answer sheet.

```
public class foo{

    public static void main(String []args){
        int x=0;
        int i=1;

        while (i<=3){
            int s=i*i;
            x = s+x;
            i+=1;
        }

        System.out.print(x);

    }

}
```


Part E:

Create and run Kernighan and Ritchie's famous "hello,world" program. **Step 1:** Go to

your home directory (cd ~) and create a new file named as **hello.c** (**vi hello.c**

or nano hello.c), then include following lines in your **hello.c**.

```
#include <stdio.h>

int main(void)
{
    printf("Hello,world\n");
    return 0;
}
```

Step 2: Save your file and exit editor.

Step 3: Compile and link the hello.c program by following command.

\$cc hello.c

***Note:** after this command, a default executable program named as "a.out" will be generated in current directory if there are no errors with your C program. You can use **ls** to check the existence of a.out.*

Step 4: Run the executable program **a.out**

\$/a.out

Questions:

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

```
-bash-4.2$ cd ~
-bash-4.2$ vi hello.c
-bash-4.2$ -bash-4.2$ cc hello.c
-bash-4.2$ ls
ad-bk.txt      calcPrice.c      calculator.sh      fn.txt      foo.sh      getPhoneNumber.c M-M  Helpme      homeworks      mandatabase      myexamfile.txt  phone.out      Result      test.out
address-book.txt  calcPrice.c.save  calculator.sj      foo.class   foo.sj      hello.c          helpme.sh      Lab3         mandatabase.txt  output.txt      question2.sh   simple.sh
a.out          calculator        checkError.sh     foo.java    getPhoneNumber.c  hello.sh        helpme.sh.txt  Lab4         midterm          phonebook.sh    question.sh    temp_course.txt
-bash-4.2$ ./a.out
Hello,world
-bash-4.2$
```

2) Try following command to compile and link **hello.c** again. And tell what new file is generated after this command?

\$cc -o hello hello.c

A file name hello is generated

3) Try command below and attach a screenshot of the output.

\$/hello

```
-bash-4.2$ cc -o hello hello.c
-bash-4.2$ ./hello
Hello,world
-bash-4.2$
```

4) Now write a new C program named as **myName.c** based on **hello.c**. In this program, print out your first name and last name instead of “Hello,world”. For example, the output could be “My name is Yuan Long”.

Execute your **myName.c** and attach a screenshot of the output. Then write the source code

of **myName.c** in your answer sheet and upload your file **myName.c** to classroom.

```
-bash-4.2$ vi myName.c
-bash-4.2$ -bash-4.2$ cc myName.c
-bash-4.2$ ./a.out
My name is Aparna Mandapaka-bash-4.2$
```

Source code

```
#include <stdio.h>
```

```
int main() {
```

```
    printf("My name is Aparna Mandapaka");
```

```
    return 0;
```

```
}
```

Submission:

Note: Please follow the instructions below step by step, and then write a report by answering the questions and upload the report (named as Lab6_FirstNameLastName.pdf or Lab6_FirstNameLastName.doc) to Google Classroom, under the rubric Lab 6 Out-of-lab Assignment.

Please add the lab assignment NUMBER and your NAME at the top of your file sheet.

