

Lab Assignment 6 - Part 2 Kevin Gallardo

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.

Step 1: Go to your home directory (cd ~) and create a new file named as **foo.sh** (vi **foo.sh**

```
#!/bin/bash
#or nano foo.sh), then include following lines in your foo.sh.
#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 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**.*

Questions:

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

```
kgallardowepster1@gsuad.gsu.edu@snowball:~
login as: kgallardowepster1
kgallardowepster1@snowball.cs.gsu.edu's password:
Last login: Fri Oct 15 22:06:55 2021 from c-73-7-167-165.hsd1.ga.comcast.net
+
| Gsu Computer Science
| Instructional Server
| SNOWBALL.cs.gsu.edu
+
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ ls
ad-bk.txt  calculator.sh  createEntry.sh  deleteEntry.sh  foo.sh  hello.sh  homeworks  Lab4  midterm  phonebook.sh  phone.txt  Result  simple.sh
book.txt  checkError.sh  csc3320  fn.txt  getEntry.sh  helpme.sh  Lab3  mandatabase.txt  phonebookMain.sh  phone.sh  public  showEntry.sh  test.txt
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ vi foo.sh
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ ./foo.sh
x=14
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$
```

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

The script **foo.sh** does a while loop that iterates from 1 to 3 and in the while loop it updates the variables **i** and **x** and performs multiplication and additions.

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.

```
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ vi foo.sh
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ ./foo.sh
./foo.sh: line 5: [: 1: unary operator expected
x=0
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$
```

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.

```
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ vi foo.sh
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ ./foo.sh
please input a number
5
x=55
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$
```

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:

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

```
kgallardowepster1@gsuad.gsu.edu@snowball:~
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ javac foo.java
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ java foo
14
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$
```

```

public class foo {
    public static void main(String[] args) {
        int x = 0, i = 1;
        int s;
        while (i <= 3) {
            s = i * i ;
            x+= s;
            i++;
        }
        System.out.println(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.

```
kgallardowepster1@gsuad.gsu.edu@snowball:~  
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ vi hello.c  
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ cc hello.c  
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ ls  
ad-bk.txt      checkError.sh  fn.txt        getEntry.sh   homeworks     midterm       phone.txt     simple.sh  
a.out          createEntry.sh foo.class     hello.c       Lab3          phonebookMain.sh public        test.txt  
book.txt       csc3320       foo.java     hello.sh      Lab4          phonebook.sh  Result  
calculator.sh  deleteEntry.sh foo.sh        helpme.sh    mandatabase.txt phone.sh      showEntry.sh  
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ ./a.out  
Hello,world  
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$
```

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

The file named hello is generated.

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

\$/hello

```
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ ls  
ad-bk.txt      checkError.sh  fn.txt        getEntry.sh   helpme.sh    mandatabase.txt  phone.sh      showEntry.sh  
a.out          createEntry.sh foo.class     hello         homeworks    midterm         phone.txt     simple.sh  
book.txt       csc3320       foo.java     hello.c       Lab3         phonebookMain.sh public        test.txt  
calculator.sh  deleteEntry.sh foo.sh        hello.sh      Lab4         phonebook.sh    Result  
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ ./hello  
Hello,world  
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$
```

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.

```
hello,world  
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ cc -o myName myName.c  
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$ ./myName  
My name is Kevin Gallardo  
[kgallardowepster1@gsuad.gsu.edu@snowball ~]$
```

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

```
int main(void)  
{  
    printf("My name is Kevin Gallardo\n");  
    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.