

RIPHAH INTERNATIONAL **UNIVERSITY, ISLAMABAD**



Lab#11

Bachelors of Computer Science – 5th Semester

Subject: Operating System

Submitted to: Ms. Kausar Nasreen Khattak

Submitted by: Tabinda Hassan

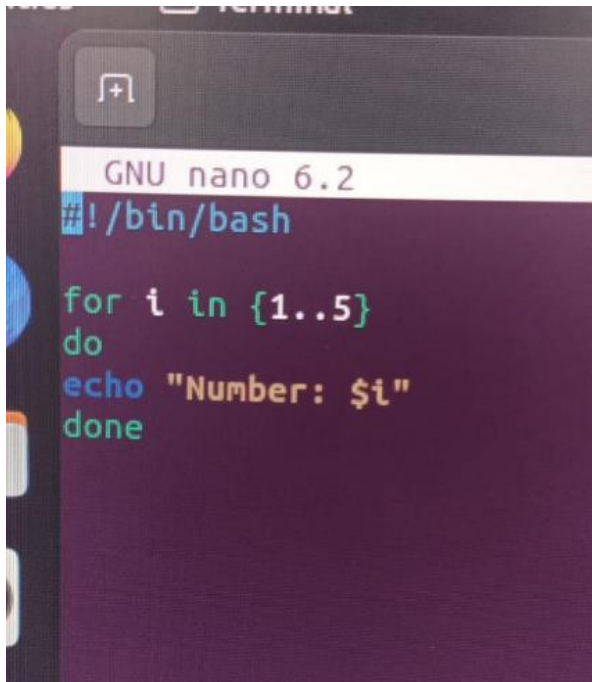
SAP-46374

Date of Submission: 29-10-2024

Lab Task

Note: Include screenshots, where required to illustrate your explanation.

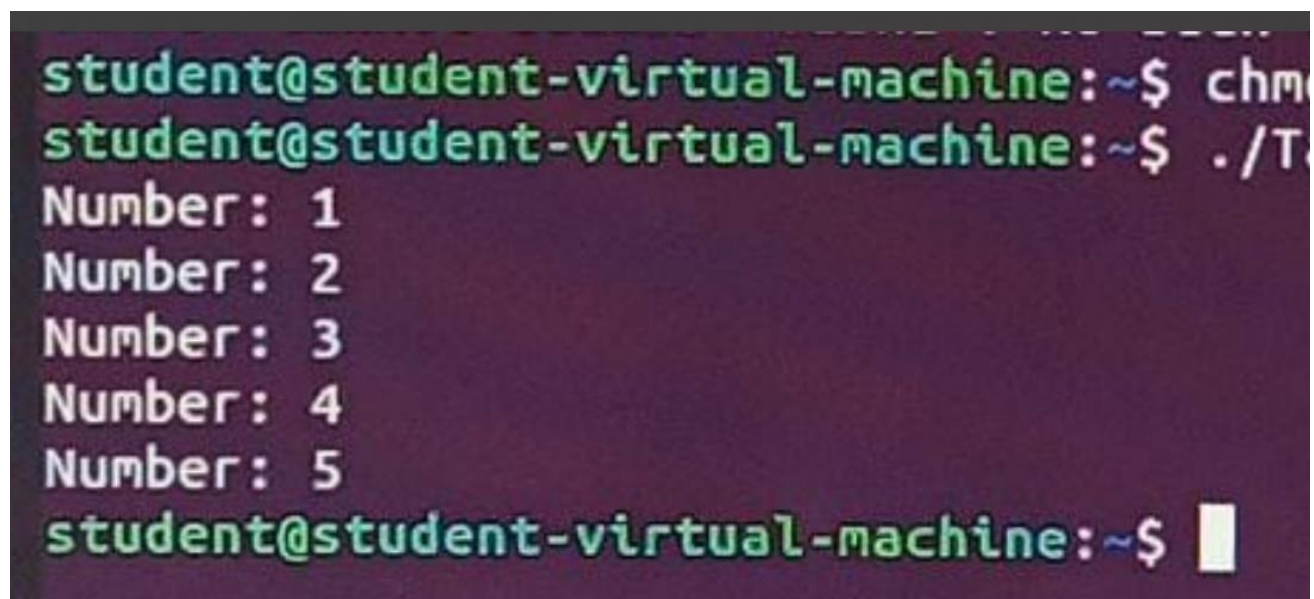
Q1. How do you create a basic for loop in a shell script to iterate over a list of numbers from 1 to 5?

A screenshot of a terminal window showing the GNU nano 6.2 text editor. The editor contains a shell script with a for loop that iterates over the numbers 1 to 5. The script is as follows:

```
#!/bin/bash

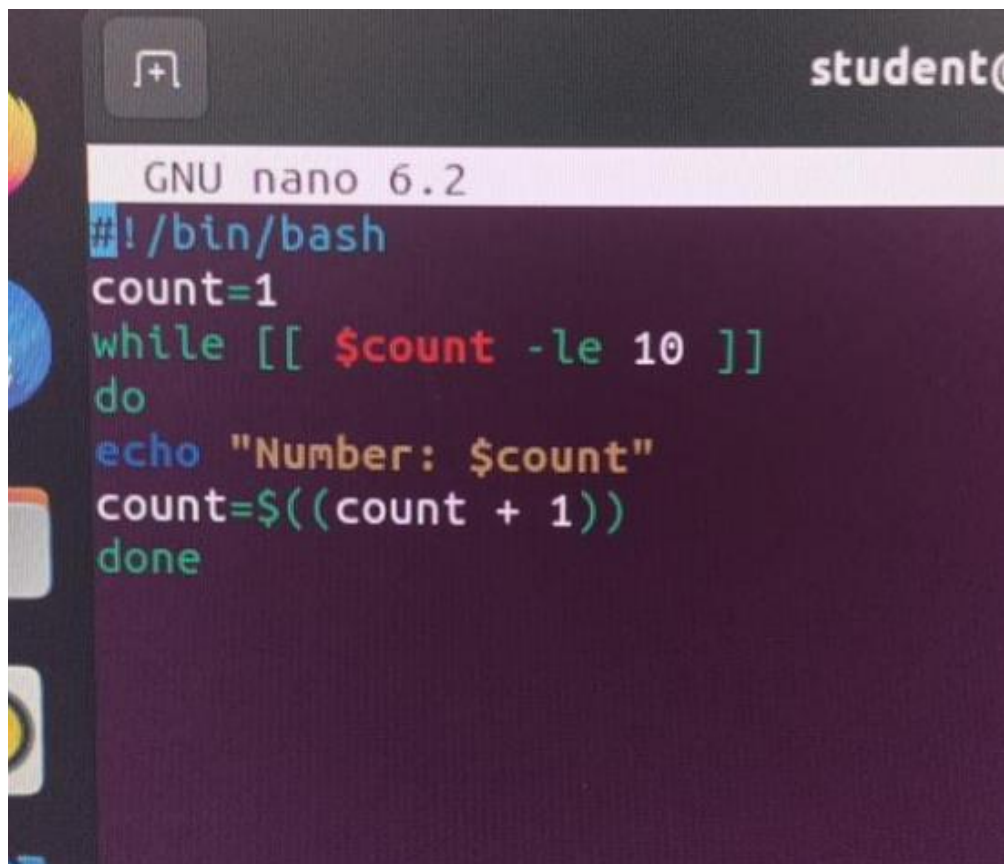
for i in {1..5}
do
echo "Number: $i"
done
```

Output:

A screenshot of a terminal window showing the execution of the shell script. The prompt is 'student@student-virtual-machine:~\$'. The user has run 'chmod' and then './T'. The output of the script is five lines, each displaying 'Number: ' followed by a number from 1 to 5. The prompt is now 'student@student-virtual-machine:~\$' with a cursor.

```
student@student-virtual-machine:~$ chmod
student@student-virtual-machine:~$ ./T
Number: 1
Number: 2
Number: 3
Number: 4
Number: 5
student@student-virtual-machine:~$
```

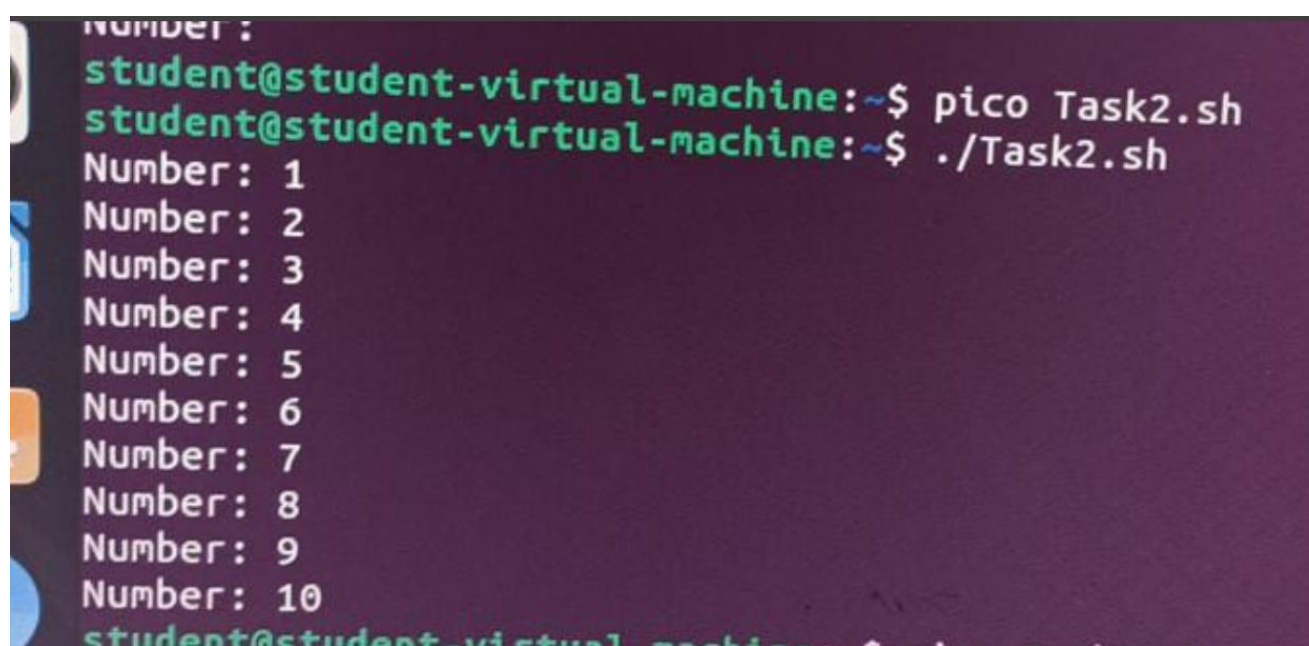
Q2. What is the syntax for a while loop that counts from 1 to 10 and prints each number?



A screenshot of a terminal window with a dark background. At the top, the text "student@" is visible. Below it, a light-colored bar indicates "GNU nano 6.2". The main area shows a script being edited in blue and green text:

```
#!/bin/bash
count=1
while [[ $count -le 10 ]]
do
echo "Number: $count"
count=$((count + 1))
done
```

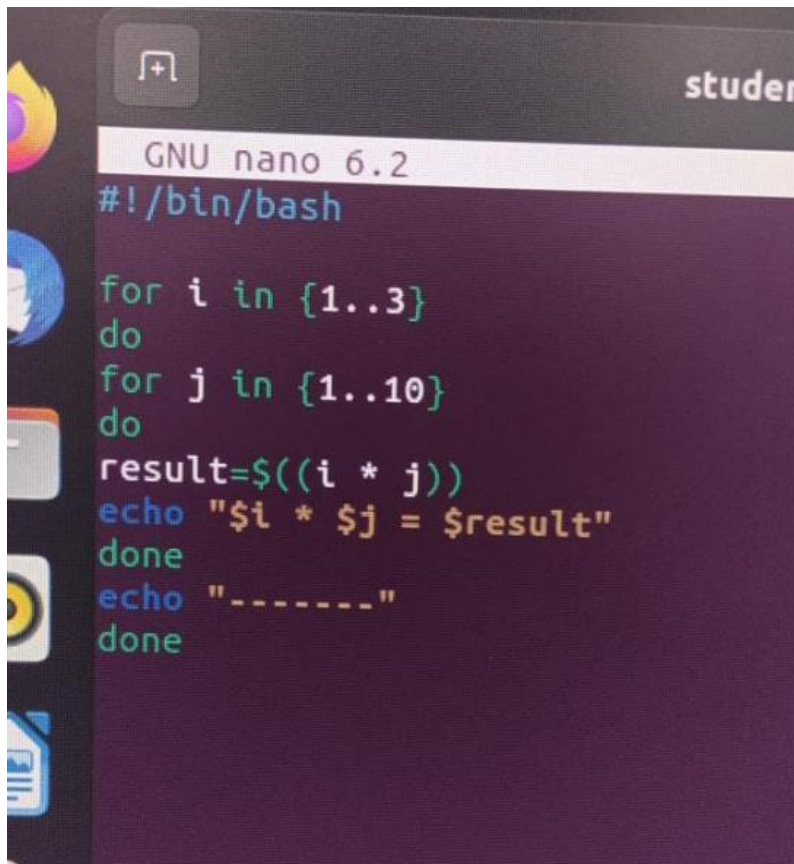
Output:



A screenshot of a terminal window showing the execution of the script. The prompt is "student@student-virtual-machine:~\$". The user enters "pico Task2.sh" and then ". /Task2.sh". The output of the script is displayed as follows:

```
Number: 1
Number: 2
Number: 3
Number: 4
Number: 5
Number: 6
Number: 7
Number: 8
Number: 9
Number: 10
student@student-virtual-machine:~$
```

Q3. How would you write a nested loop in shell scripting to print a multiplication table from 1 to 3?

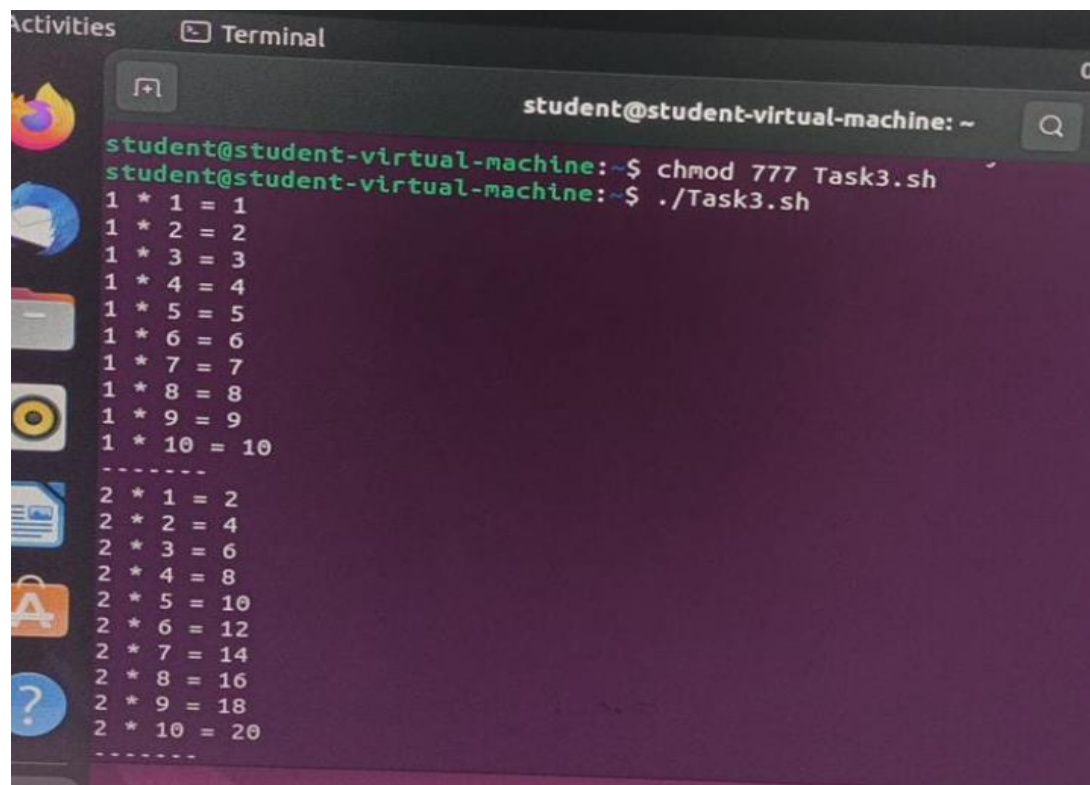


The image shows a terminal window with the GNU nano 6.2 editor open. The script inside is a shell script that uses nested for loops to generate a multiplication table. The first loop iterates over the numbers 1 to 3, and the second loop iterates over the numbers 1 to 10. For each combination of i and j, the script calculates the product and prints it in the format "\$i * \$j = \$result". After each row of calculations, a separator line consisting of ten dashes is printed.

```
GNU nano 6.2
#!/bin/bash

for i in {1..3}
do
  for j in {1..10}
  do
    result=$((i * j))
    echo "$i * $j = $result"
  done
  echo "-----"
done
```

Output:



The image shows a terminal window with the output of the shell script. The user has first run 'chmod 777 Task3.sh' and then './Task3.sh'. The output is a multiplication table for numbers 1 to 3, with each row containing 10 products. The rows are separated by a line of ten dashes.

```
student@student-virtual-machine: ~
student@student-virtual-machine:~$ chmod 777 Task3.sh
student@student-virtual-machine:~$ ./Task3.sh
1 * 1 = 1
1 * 2 = 2
1 * 3 = 3
1 * 4 = 4
1 * 5 = 5
1 * 6 = 6
1 * 7 = 7
1 * 8 = 8
1 * 9 = 9
1 * 10 = 10
-----
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
2 * 9 = 18
2 * 10 = 20
-----
```



```
2 * 8 = 16
2 * 9 = 18
2 * 10 = 20
-----
3 * 1 = 3
3 * 2 = 6
3 * 3 = 9
3 * 4 = 12
3 * 5 = 15
3 * 6 = 18
3 * 7 = 21
3 * 8 = 24
3 * 9 = 27
3 * 10 = 30
-----
student@student-virtual-machine:~$
```

Q4: Write a for-in loop that iterates over the items in an array named fruits containing apple, banana, and cherry.

```
GNU nano 6.2
#!/bin/bash

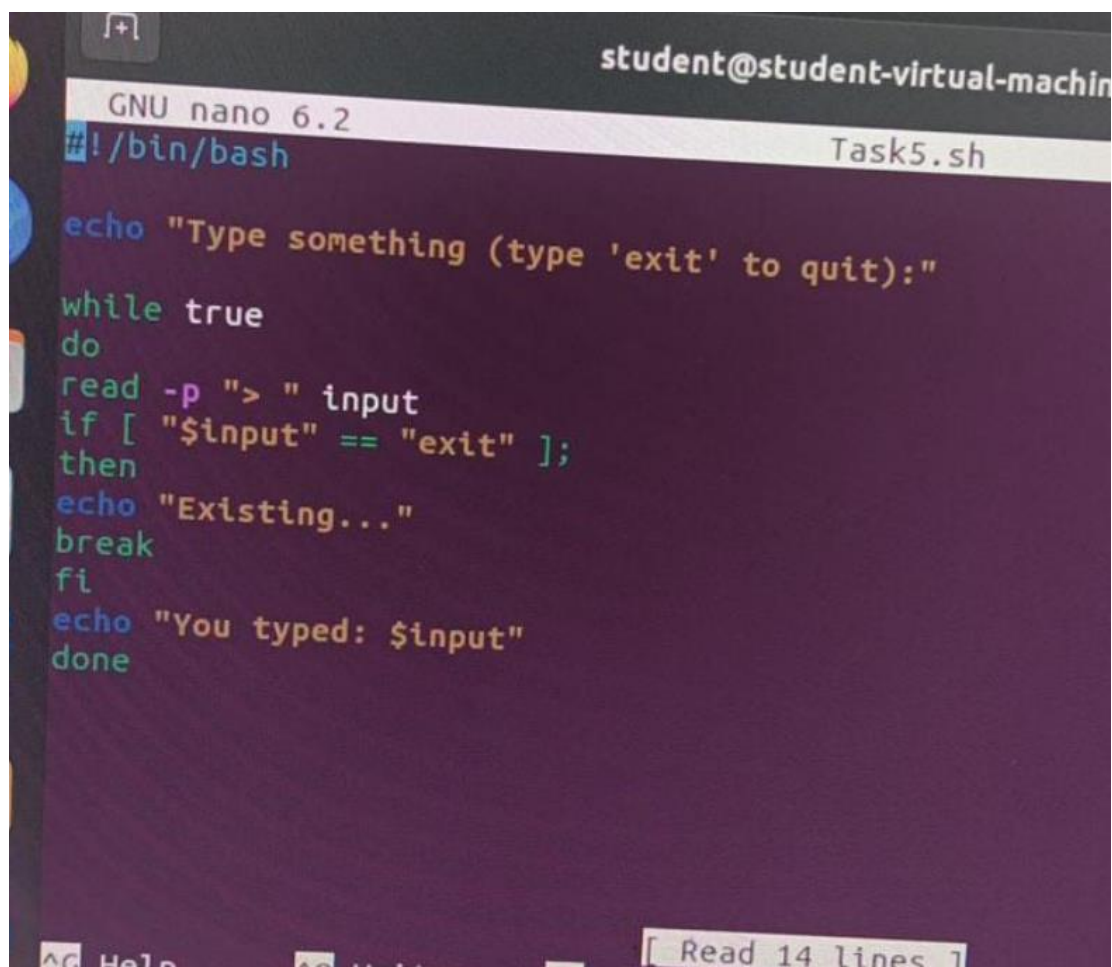
fruits=("apple" "banana" "cherry")

for fruit in "${fruits[@]}"
do
echo "fruit: $fruit"
done
```

Output:

```
student@student-virtual-machine:~$ pico Task4.sh
student@student-virtual-machine:~$ chmod 777 Task4.sh
student@student-virtual-machine:~$ ./Task4.sh
fruit: apple
fruit: banana
fruit: cherry
student@student-virtual-machine:~$ pico Task4.sh
```

Q5: Write a while loop that reads user input until the user types "exit".



The screenshot shows a terminal window with the nano 6.2 editor open. The file being edited is Task5.sh. The code inside the file is a while loop that reads user input until the user types "exit". The code is as follows:

```
#!/bin/bash
echo "Type something (type 'exit' to quit):"
while true
do
read -p "> " input
if [ "$input" == "exit" ];
then
echo "Existing..."
break
fi
echo "You typed: $input"
done
```

At the bottom of the terminal, there is a status bar that says "Read 14 lines".

Output:

```
student@student-virtual-machine:~$ pico Task4.sh
student@student-virtual-machine:~$ pico Task5.sh
student@student-virtual-machine:~$ chmod 777 Task5.sh
student@student-virtual-machine:~$ ./Task5.sh
Type something (type 'exit' to quit):
> Tabinda
You typed: Tabinda
> Hassan
You typed: Hassan
>
You typed:
> exit
Existing...
student@student-virtual-machine:~$ pico Task5.sh
```