School of Computer Science Engineering and Technology
Bennett University (The Times Group)

Program- BTech-3rd Semester	Type- Sp. Core-I
Course Code- CSET213	Course Name-Linux and Shell Programming
Year- 2024	Semester- Odd
Date- 14/10/2024	Batch- Cyber Security (B9-16)

Lab Assignment 7

Exp No	Name	CLO Achieved			Marks
		CO1	CO2	CO3	
7	Shell programming loops	√	√		2

Objective: To learn and use shell loops for the development of applications.

Outcomes: After hands-on you will be able to write basic shell scripts using loops for the development of applications.

Hands-on Learning on loops (45 minutes)

1. **For Loops: for loops iterate through a set of values until the list is exhausted**

Example:

Method 1:	Method 2:	Method 3:	Method 4:

for i in 1 2 3 4 5
do
echo " Iteration number $i"
done
	for i in {1..5}
	do
	echo "Iteration $i times"
	done
		echo "Bash version ${BASH_VERSION}..."
		for i in {0..10..2}
		do
		echo "Iteration $i times"
		done
			# set counter 'c' to 1 and condition
			# c is less than or equal to 5
			for ((c=1; c<=5; c++))
			do
			echo "Iteration $c times"
			done

Conditional exit with break

```
    for I in 1 2 3 4 5
    do
     statements1     #Executed for all values of "I", up to a disaster-condition if any.
     statements2
    if (disaster-condition)
    then
    break            #Abandon the loop.
     fi
  statements3        #While good and, no disaster-condition.
done
```

Early continuation with continue statement

```
    for I in 1 2 3 4 5
    do
    statements1     #Executed for all values of "I", up to a disaster-condition if any.
    statements2
    if (condition)
    then
    continue   #Go to next iteration of I in the loop and skip statements3
    fi
    statements3
    done
```

Command substitution

```
    for var in $(command)
    do
    print "$var"
    done
```

2. **while loop:** The bash while loop is a control flow statement that allows code or commands to be executed repeatedly based on a given condition.

while [condition]
do
command1
command2
command3
done
	Example:
	Following while loop will print welcome 5 times on screen:
	#!/bin/bash
	x=1
	while [$x -le 5]
	do
	 echo "Welcome $x times"
	x=$(($x + 1))
	done

3. **until loop:** The until loop is executed as many as times the condition/command evaluates to false. The loop terminates when the condition/command becomes true.

Syntax:

```
until [ expression ]
    do
    code block
    ...
    ...
Done
```

Example: Print and count the number starting with 1 and increment it by 1. When the count is equal to five, skip it. Similarly, the loop breaks when the count is equal to or greater than 10.

Code:

```
count=0
until false
do
  ((count++))
  if [[ $count -eq 5 ]]
  then
    continue
  elif [[ $count -ge 10 ]]
  then
    break
  fi
  echo "Counter = $count"
done
```

Hands-on on Arrays: Create an array that stores the first ten prime numbers. Iterate over the array and print out each element inside it.

```
#!/bin/bash

prime=(2 3 5 7 11 13 17 19 23 29)

for i in "${prime[@]}"; do

echo $i

done
```

Scripting Problems for Assessment (60 Minutes)

1. Write a Shell Bash Script for check if a provided number is Armstrong or not. (15 Minutes) **(Even Batch)**
2. Write a Shell Script to check if a number entered through keyboard is prime or not. Create two arrays named as prime and notPrime. Print the arrays. **(Even Batch)**
3. Write a shell script that counts the number of lines, words, and characters in two input files through command line arguments and lists its size and permissions. **(Odd Batch)**
4. Write a script using for loop to display N asterisks (*), one on each line, where N is a number given as command line arguments. For example, if N is 5, your script should print out: **(Odd Batch)**

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

Submission Instructions:

1. Submission requires the screen shots of all the incurred steps to execute a shell script or a video showing the whole process.
2. All these files are in single zip folder.
3. Use the naming convention: Prog_CourseCode_RollNo_LabNo.docx (Example: BCA3rdSem_CBCA221_ E21BCA002_Lab1.1)
4. Submission is through LMS only