

# Assignment-7(Loops and decisions)

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## Introduction

Shell scripting allows automation of tasks in Unix/Linux systems. Two key concepts in shell programming are decision-making and loops.

### Decision-making (if-else, case)

Decision-making is used to execute a block of code based on conditions. For example, checking if a number is even or odd.

Example:

```
#!/bin/bash
echo "Enter a number:"
read n
if [ $((n % 2)) -eq 0 ]; then
    echo "$n is Even"
else
    echo "$n is Odd"
fi
```

### Loops (for, while, until)

Loops are used to execute a block of code repeatedly until a condition is met. For example, printing a multiplication table.

Example:

```
#!/bin/bash
echo "Enter a number:"
read n
for i in {1..10}
do
    echo "$n x $i = $((n * i))"
done
```

## **Interactive Programs**

Interactive programs take input from the user during execution using the read command.

Example:

```
#!/bin/bash
echo "Enter your name:"
read name
echo "Hello, $name"
```

**Command Line Argument Programs:** Command Line Argument programs take inputs as arguments at the time of execution. This makes them more flexible for automation.

Example:

```
#!/bin/bash
echo "First argument is: $1"
echo "Second argument is: $2"
```

Run as:

```
vi script.sh arg1 arg2
```

## **Practice Questions:**

### **1: Multiplication Table**

- I. Interactive version: The program should accept an integer n given by the user and should print the multiplication table of that n.
- II. Command line arguments version: The program should take the value of n from the arguments followed by the command.
- III. Redirection version: The value of n must be taken from a file using input redirection.  
Use the commands read, echo, expr, while, or for.

**2: Copy Multiple Files to Directory**

- I. Interactive version
- II. Command line arguments version
- III. Use the commands echo, read, cp, mkdir.

**3: Count Lines and Words in File**

- I. Interactive version
  - II. Command line arguments version
- Use the commands echo, read, wc.

**4: Display Files in a Directory**

- I. Interactive version
  - II. Command line arguments version
- Use the commands echo, read, ls.

**5: Write a shell script to check whether a number is even or odd using if-else.**

**6: Write a shell script to find the largest among three numbers using nested if.**

**7: Write a shell script to check whether a given year is a leap year or not.**

**8: Write a shell script to accept marks and display grade using if-elif-else.**

**9:Write a shell script to perform +, -, \*, / using case statement.**