Programming Constructs – while Loop Repetitions

# 3. Repetition Statement

A repetition construct causes a group of one or more program statements to be invoked repeatedly until some end condition is met.

# 3. Repetition Statement Types

1.  **Fixed count loops** - repeat a predefine number of times.
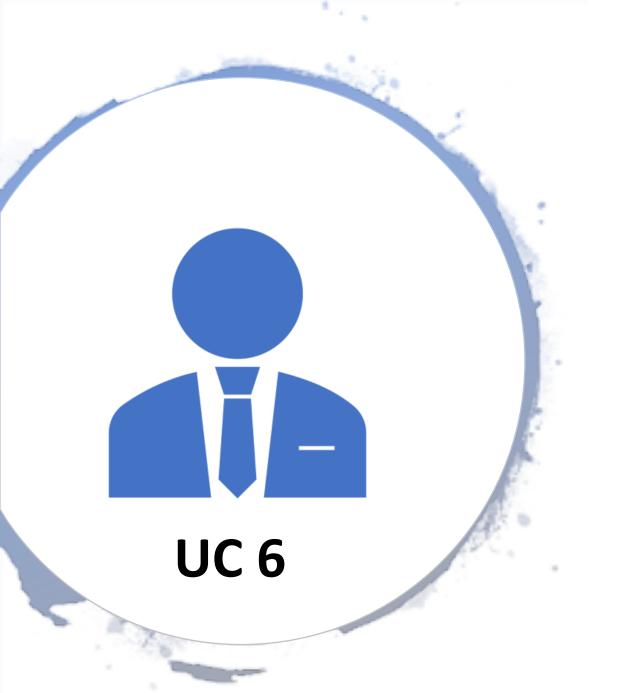
    *for (( … )) do done*

2.  **Variable count loops** - repeat an unspecified number of times.

    *while [ … ] do done*

# while Loop Statement

```
#!/bin/bash -x
count=1
while [ $count != 3 ]
do
        echo $count
        ((count++))
done
whileTest.sh (END)
```

```
+ count=1
+ '[' 1 '!=' 3 ']'
+ echo 1
1
+ (( count++ ))
+ '[' 2 '!=' 3 ']'
+ echo 2
2
+ (( count++ ))
+ '[' 3 '!=' 3 ']'
```

UC 6

Calculate Wages till a condition of total working hours or days is reached for a month

# Calculating Wages till Number of Working Days or Total Working Hours per month is Reached

```bash
#!/bin/bash -x

# CONSTANTS FOR THE PROGRAM
IS_PART_TIME=1;
IS_FULL_TIME=2;
MAX_HRS_IN_MONTH=10;
EMP_RATE_PER_HR=20;
NUM_WORKING_DAYS=20;

# VARIABLES
totalEmpHr=0;
totalWorkingDays=0;

while [[ $totalEmpHrs -lt $MAX_HRS_IN_MONTH &&
        $totalWorkingDays  -lt  $NUM_WORKING_DAYS ]]
do
    ((totalWorkingDays++))
    empCheck=$((RANDOM%3));
    case $empCheck in
        $IS_FULL_TIME)
            empHrs=8
            ;;
        $IS_PART_TIME)
            empHrs=4
            ;;
        *)
            empHrs=0
            ;;
    esac
    totalEmpHrs=$(($totalEmpHrs+$empHrs))

done

totalSalary=$(($totalEmpHrs*$EMP_RATE_PER_HR));
```

```
[Narayans-MacBook-Pro:TerminalCommands narayan$ ./empWageWhile.sh
+ IS_PART_TIME=1
+ IS_FULL_TIME=2
+ MAX_HRS_IN_MONTH=10
+ EMP_RATE_PER_HR=20
+ NUM_WORKING_DAYS=20
+ totalEmpHr=0
+ totalWorkingDays=0
+ [[ 0 -lt 10 ]]
+ [[ 0 -lt 20 ]]
+ (( totalWorkingDays++ ))
+ empCheck=2
+ case $empCheck in
+ empHrs=8
+ totalEmpHr=8
+ [[ 8 -lt 10 ]]
+ [[ 1 -lt 20 ]]
+ (( totalWorkingDays++ ))
+ empCheck=0
+ case $empCheck in
+ empHrs=0
+ totalEmpHr=8
+ [[ 8 -lt 10 ]]
+ [[ 2 -lt 20 ]]
+ (( totalWorkingDays++ ))
+ empCheck=1
+ case $empCheck in
+ empHrs=4
+ totalEmpHr=12
+ [[ 12 -lt 10 ]]
+ salary=80
+ totalSalary=80
Narayans-MacBook-Pro:TerminalCommands narayan$
```

# Repetition Practice Problems with while loop

1. Write a program that takes a command-line argument n and prints a table of the powers of 2 that are less than or equal to 2^n till 256 is reached..

2. Find the Magic Number
   a. Ask the user to think of a number n between 1 to 100
   b. Then check with the user if the number is less then n/2 or greater
   c. Repeat till the Magic Number is reached..

3. Extend the Flip Coin problem till either Heads or Tails wins 11 times.

4. Write a Program where a gambler starts with Rs 100 and places Re 1 bet until he/she goes broke i.e. no more money to gamble or reaches the goal of Rs 200. Keeps track of number of times won and number of bets made.

Thank You