SLIIT UNI
THE KNOWLEDGE UNIVERSITY

Faculty of Computing

IT1120 – Introduction to Programming

Year 1 Semester 1 (2024)

Tutorial 05

1. Write a Java program to display the below sequences

   (a) 2 3 4 5 6 7 8 9 10

```
public class DTute5Q1A
{

   public static void main(String[] args)
   {

      // Declare and initialise the counter variable to 2
      int count = 2;

      while(count <= 10)
           {

         System.out.print(count);
         count++;    //Increment the counter by 1
      }
   }
}
```

(b) 3 5 7 9

```
public class ETute5Q1B
{

    public static void main(String[] args)
   {

        // Declare and initialise the counter variable to 3
        int count = 3;

        while(count <= 9)
              {

            System.out.print(count + " ");
            count += 2; //Increment the counter by 2
        }
    }
}
```

(c) 2 4 6 8 10 12 14 16 18

```
public class FTute5Q1C
{

    public static void main(String[] args)
   {

        // Declare and initialise the counter variable to 2
        int count = 2;

        while(count <= 18)
              {

            System.out.print(count + " ");
            count += 2; //Increment the counter by 2
        }
    }
}
```

2. Write a pseudocode to display the square of the numbers as shown below:

1- - - -1
2- - - -4
3- - - -9
4- - - -16
5- - - -25

```
MAIN
  DEFINE i, square AS INTEGER

  i = 1
  WHILE i <= 5
    square = i * i
    PRINT i, " - - - ", square
    i = i + 1
  ENDWHILE

ENDMAIN
```

3. (a) Write a pseudocode to print the result of the following expression using a while loop.

$$1+ 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10$$

```
MAIN
  DEFINE i, sum AS INTEGER

  i = 1
  sum = 0

  WHILE i <= 10
    sum = sum + i
    i = i + 1
  ENDWHILE

  PRINT "The sum is: ", sum

ENDMAIN
```

(b) Modify your pseudocode to enter the last number of the above series from the keyboard and print the result.

Ex: 1 + 2 + 3+ 4 + .. + ...+ n
Input n from the keyboard.

```
MAIN
  DEFINE i, sum, n AS INTEGER

  PRINT "Enter the last number : "
  INPUT n
  i = 1
  sum = 0

  WHILE i <= n
    sum = sum + i
    i = i + 1
  ENDWHILE

  PRINT "The sum is: ", sum

ENDMAIN
```

(c) Modify the pseudocode again to display the average of the numbers entered.

```
MAIN
   DEFINE i, sum, n AS INTEGER
   DEFINE average AS FLOAT

   PRINT “Enter the last number : “
   INPUT n
   i = 1
   sum = 0

   WHILE i <= n
      sum = sum + i
      i = i + 1
   ENDWHILE

   average = sum / n

   PRINT "The sum is: ", sum
   PRINT "The average is: ", average

ENDMAIN
```

4. Write a pseudocode to find the Root Mean Square of a series of numbers.

   You are required to enter a set of positive numbers (integers) terminated by -99. Use the following formula to find the Root Mean Square of the numbers entered.

$$\text{Root Mean Square} = \sqrt{\frac{\sum X^2}{N}}$$

   $\sum X^2$ is the Summation of X^2 for each individual X.

$$\text{Eg : } \sum X^2 = X_1^2 + X_2^2 + X_3^2 + \ldots\ldots\ldots\ldots + X_N^2$$

   N is the number of numbers entered.

```
MAIN
  DEFINE number, sumOfSquares, n AS INTEGER
  DEFINE rootMeanSquare AS FLOAT
  sumOfSquares = 0
  n = 0

  PRINT "Enter positive integers, terminated by -99:"
  INPUT number

  WHILE number != -99
    sumOfSquares = sumOfSquares + (number * number)
    n = n + 1
    PRINT "Enter positive integers, terminated by -99:"
    INPUT number
  ENDWHILE

  IF n > 0 THEN
    rootMeanSquare = SQRT(sumOfSquares / n)
    PRINT "The Root Mean Square (RMS) is: ", rootMeanSquare
  ELSE
    PRINT "No valid numbers were entered."
  ENDIF

ENDMAIN
```