SLIIT UNI
THE KNOWLEDGE UNIVERSITY

Faculty of Computing

Year 1 Semester 1 (2024)

IT1120 – Introduction to Programming Lab Sheet 06

Question 1 (Tutorial 5 – Q2)

Write a Java program to display the square and square-root of any number, input by the user.

Save the file inside '**Lab 6**' folder as: **ITxxxxxxxxLab6Q1.java**

Replace 'ITxx xxx xxx' of the filename, with your own Student ID.

Expected Output:

```
Microsoft Windows [Version 10.0.19045.4598]
(c) Microsoft Corporation. All rights reserved.

C:\Users\vidan\Desktop\Lab 6>javac ITxxxxxxxxLab6Q1.java

C:\Users\vidan\Desktop\Lab 6>java ITxxxxxxxxLab6Q1
Enter a number: 25

The square of 25.0 is : 625.0
The square root of 25.0 is : 5.0
```

Question 2 (Tutorial 5 – Q3)

a) Write a Java program to print the result of the following using a while loop.

1 2 3 4 5 6 7 8 9 10

Save the file inside '**Lab 6**' folder as: **ITxxxxxxxxLab6Q2A.java**

Replace 'ITxx xxx xxx' of the filename, with your own Student ID.

Expected Output:

```
Microsoft Windows [Version 10.0.19045.4598]
(c) Microsoft Corporation. All rights reserved.

C:\Users\vidan\Desktop\Lab 6>javac ITxxxxxxxxLab6Q2A.java

C:\Users\vidan\Desktop\Lab 6>java ITxxxxxxxxLab6Q2A
1 2 3 4 5 6 7 8 9 10
```

b) Modify your Java program to enter 10 numbers from the keyboard as user input and print the result.

Save the file inside '**Lab 6**' folder as: **ITxxxxxxxxLab6Q2B.java**

Replace 'ITxx xxx xxx' of the filename, with your own Student ID.

Expected Output:

```
Microsoft Windows [Version 10.0.19045.4598]
(c) Microsoft Corporation. All rights reserved.

C:\Users\vidan\Desktop\Lab 6>javac ITxxxxxxxxLab6Q2B.java

C:\Users\vidan\Desktop\Lab 6>java ITxxxxxxxxLab6Q2B
Please enter 10 numbers:
Enter number 1: 11
Enter number 2: 24
Enter number 3: 36
Enter number 4: 40
Enter number 5: 55
Enter number 6: 61
Enter number 7: 78
Enter number 8: 83
Enter number 9: 92
Enter number 10: 100

The numbers you entered are:
11 24 36 40 55 61 78 83 92 100
```

c) Modify the program again to display the **Sum** and **Average** of the numbers entered.

Save the file inside **'Lab 6**' folder as: **ITxxxxxxxxLab6Q2C.java**
Replace 'ITxx xxx xxx' of the filename, with your own Student ID.
Expected Output:

```
Microsoft Windows [Version 10.0.19045.4598]
(c) Microsoft Corporation. All rights reserved.

C:\Users\vidan\Desktop\Lab 6>javac ITxxxxxxxxLab6Q2C.java

C:\Users\vidan\Desktop\Lab 6>java ITxxxxxxxxLab6Q2C
Please enter 10 numbers:
Enter number 1: 11
Enter number 2: 24
Enter number 3: 36
Enter number 4: 40
Enter number 5: 55
Enter number 6: 61
Enter number 7: 78
Enter number 8: 83
Enter number 9: 92
Enter number 10: 100

The numbers you entered are:
11 24 36 40 55 61 78 83 92 100

Sum of the numbers: 580
Average of the numbers: 58.0
```

Question 3 (Tutorial 5 – Q4)

Write a Java program 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. Validate for negative input.

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

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.

Save the file inside '**Lab 6**' folder as: **ITxxxxxxxxLab6Q3.java**

Replace 'ITxx xxx xxx' of the filename, with your own Student ID.

Expected Output:

```
Microsoft Windows [Version 10.0.19045.4598]
(c) Microsoft Corporation. All rights reserved.

C:\Users\vidan\Desktop\Lab 6>javac ITxxxxxxxxLab6Q3.java

C:\Users\vidan\Desktop\Lab 6>java ITxxxxxxxxLab6Q3
Enter positive integers (terminate input with -99):
Enter a number: 2
Enter a number: 3
Enter a number: 5
Enter a number: 6
Enter a number: 1
Enter a number: 8
Enter a number: -99

The Root Mean Square (RMS) is: 4.813176359397884
```

Ideal Scenario

```
C:\Users\vidan\Desktop\Lab 6>java ITxxxxxxxxLab6Q3
Enter positive integers (terminate input with -99):
Enter a number: 4
Enter a number: -7
Invalid input. Please enter a positive integer or -99 to terminate
Enter a number: -99

The Root Mean Square (RMS) is: 4.0
```

Negative Validation