St. Francis Institute of Technology, Mumbai-400 103
Department Of Information Technology
A.Y. 2023-24
Class: SE-ITA/B, Semester: III
Subject: Java Labs
Experiment 9

Experiment-9: Java Program to implement Multithreading.

1. **Aim:**

i.Write a Java program to implement multithreading using any three classes that will run concurrenly.

ii. Create two threads such that one thread will print even number and another will print odd number in an ordered fashion.(Use Thread Class)

2. **Prerequisite:** Knowledge of Multithreading in Java.

3. **Requirements:** Personal Computer (PC), Windows Operating System, JDK 1.8 and above, online java compiler/IDE.

4. **Pre-Experiment Exercise:**

Theory:

a. Multithreading:

Java's multithreading support is centered around the java.lang.Thread class. The Thread class provides the capability to create objects of class Thread, each with its own separate flow of control. The Thread class encapsulates the data and methods associated with separate threads of execution and allows multithreading to be integrated within the object-oriented framework. Java provides two approaches to creating threads. In the first approach, you create a subclass of class Thread and override the run() method to provide an entry point into the thread's execution. When you create an instance of your Thread subclass, you invoke its start() method to cause the thread to execute as an independent sequence of instructions. The start() method is inherited from the Thread class. It initializes the Thread object using your operating system's multithreading capabilities and invokes the run() method.

Java's other approach to creating threads does not limit the location of your Thread objects within the class hierarchy. In this approach, your class implements the java.lang.Runnable interface. The Runnable interface consists of a single method, the run() method, which must be overridden by your class. The run() method provides an entry point into your thread's execution. In order to run an

object of your class as an independent thread, you pass it as an argument to a constructor of class Thread.

5. Laboratory Exercise

A. Procedure

i. Open Net beans for Java.

ii. Open File and Create New Java Project.

iii.Inside the Java Project rename give name to your Java Class.

iv.Click on Finish.

v. Type the Java Code in the opened class.

vi. Save the code by pressing Ctrl+S.

vii. Run the code by pressing Shift+F6.

6. Post-Experiments Exercise

A. Extended Theory:

1. Explain with diagram Java Thread Model and Thread Lifecycle Model.
2. Difference between Thread and Process.

B. Questions/Programs:

1. Write java program to print Table of Five, Seven and Thirteen using Multithreading(Use Runnable Interface)

C. Conclusion:

1. Write what was performed in the experiment/program.
2. What is the significance of experiment/program?
3. Mention few applications of what was studied.

D. References

1. Balguruswamy, “Programming with java A primer”, Fifth edition, Tata

McGraw Hill Publication.
2. Let Us Java-Yashwant Kanetkar.
3. Learn to Master JAVA, from Star EDU solutions , by ScriptDemics. 4. Java 8 Programming-Black Book,by-Dreamtech