

## Week 5:

Write a Java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.

### Source code:

```
import java.util.Random;

class RandomNumberThread extends Thread {
    public void run() {
        Random random = new Random();
        for (int i = 0; i < 10; i++) {
            int randomInteger = random.nextInt(100);
            System.out.println("Random Integer generated : " + randomInteger);
            if((randomInteger%2) == 0) {
                SquareThread sThread = new SquareThread(randomInteger);
                sThread.start();
            }
            else {
                CubeThread cThread = new CubeThread(randomInteger);
                cThread.start();
            }
            try {
                Thread.sleep(1000);
            }
            catch (InterruptedException ex) {
                System.out.println(ex);
            }
        }
    }
}

class SquareThread extends Thread {
    int number;

    SquareThread(int randomNumber) {
        number = randomNumber;
    }

    public void run() {
        System.out.println("Square of " + number + " = " + (number * number));
    }
}

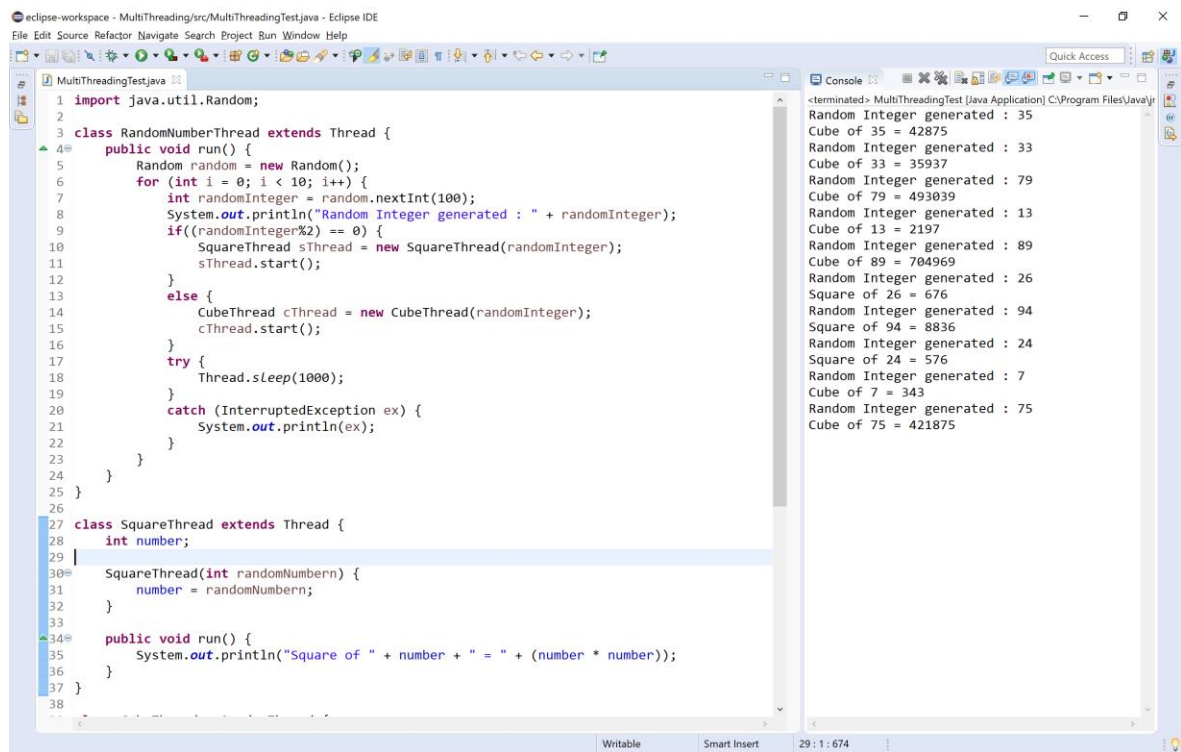
class CubeThread extends Thread {
    int number;

    CubeThread(int randomNumber) {
        number = randomNumber;
    }

    public void run() {
        System.out.println("Cube of " + number + " = " + number * number *
number);
    }
}

public class MultiThreadingTest {
    public static void main(String args[]) {
        RandomNumberThread rnThread = new RandomNumberThread();
        rnThread.start();
    }
}
```

## Output:



The screenshot shows the Eclipse IDE with a Java project named 'MultiThreadingTest'. The main editor displays the source code for 'MultiThreadingTest.java'. The code defines two classes: 'RandomNumberThread' and 'SquareThread'. 'RandomNumberThread' extends 'Thread' and has a 'run()' method that generates random integers and creates 'SquareThread' or 'CubeThread' objects. 'SquareThread' extends 'Thread' and has a 'run()' method that prints the square of a given number. The console on the right shows the output of the program, which includes random integers and their corresponding squares and cubes.

```
1 import java.util.Random;
2
3 class RandomNumberThread extends Thread {
4     public void run() {
5         Random random = new Random();
6         for (int i = 0; i < 10; i++) {
7             int randomInteger = random.nextInt(100);
8             System.out.println("Random Integer generated : " + randomInteger);
9             if((randomInteger%2) == 0) {
10                 SquareThread sThread = new SquareThread(randomInteger);
11                 sThread.start();
12             }
13             else {
14                 CubeThread cThread = new CubeThread(randomInteger);
15                 cThread.start();
16             }
17             try {
18                 Thread.sleep(1000);
19             }
20             catch (InterruptedException ex) {
21                 System.out.println(ex);
22             }
23         }
24     }
25 }
26
27 class SquareThread extends Thread {
28     int number;
29
30     SquareThread(int randomNumber) {
31         number = randomNumber;
32     }
33
34     public void run() {
35         System.out.println("Square of " + number + " = " + (number * number));
36     }
37 }
38
```

Console Output:

```
<terminated> MultiThreadingTest (Java Application) C:\Program Files\Java\j
Random Integer generated : 35
Cube of 35 = 42875
Random Integer generated : 33
Cube of 33 = 35937
Random Integer generated : 79
Cube of 79 = 493039
Random Integer generated : 13
Cube of 13 = 2197
Random Integer generated : 89
Cube of 89 = 704969
Random Integer generated : 26
Square of 26 = 676
Random Integer generated : 94
Square of 94 = 8836
Random Integer generated : 24
Square of 24 = 576
Random Integer generated : 7
Cube of 7 = 343
Random Integer generated : 75
Cube of 75 = 421875
```