Program 9

Title: "Write a Java program to generate random numbers using multiple threads.

Problem Description: Develop a Java program that implements a multi-threaded application with three threads. Each thread has a specific task as described as follows: First Thread (Random Number Generator): This thread generates a random integer every 1 second. Second Thread (Square Computation): This thread receives the random integer generated by the first thread and computes its square. After computing the square, it prints the result. Third Thread (Cube Computation): This thread receives the random integer generated by the first thread and computes its cube. After computing the cube, it prints the result.

Method: Program should demonstrate the multi-threading capabilities of Java and showcase the asynchronous computation of squares and cubes. Additionally, it should handle synchronization and data sharing effectively to prevent race conditions and ensure thread safety.

Theory Reference: Module 4 Page no:205

Code:

```
import java.util.Random;

class Square extends Thread
{
   int x;
   Square(int n)
   {
      x = n;
   }
   public void run()
   {
      int sqr = x * x;
      System.out.println("Square of " + x + " = " + sqr);
   }
}

class Cube extends Thread
{
   int x;
   Cube(int n)
   {
      x = n;
```

```
    }
    public void run()
    {
        int cub = x * x * x;
        System.out.println("Cube of " + x + " = " + cub);
    }
}
class Rnumber extends Thread
{
    public void run()
    {
        Random random = new Random();
        for (int i = 0; i < 5; i++) {
            int randomInteger = random.nextInt(10);
            System.out.println("Random Integer generated : " + randomInteger);
            Square s = new Square(randomInteger);
            s.start();
            Cube c = new Cube(randomInteger);
            c.start();
            try
            {
                Thread.sleep(1000);
            } catch (InterruptedException ex)
            {
                System.out.println(ex);
            }
        }
    }
}
public class P9_New {
    public static void main(String[] args)
```

```
    {
        Rnumber n = new Rnumber();
        n.start();
    }
}
```