Ex.No: 8	**Java Application for Multithreading**
Date:	

Aim:

To create a Java console application the uses the multithreading concepts in java. The Application has 3 threads one creates random number, one thread computes square of that number and another one computes the cube of that number.

Algorithm:

```
Step 1    Start the Process
Step 2    Create a thread that generates random number
Step 3    Obtain one random number and check is odd or even
          Step 3.1    If number is even then create and start thread that computes square of a
                      number
          Step 3.2    Compute number * number and display the answer
          Step 3.3    Notify to Random number thread and goto step 4
          Step 3.4    If number is odd then create and start thread that computes cube of a number
          Step 3.4    Compute number * number * number and display the answer
          Step 3.5    Notify to Random number thread and goto step 4
Step 4    Wait for 1 Second and Continue to Step 3 until user wants to exits.
Step 5    Stop the Process
```

Coding:

RandomNumberThread.java

```
package com.raja.oopslab.threading;

import java.util.Random;

public class RandomNumberThread extends Thread{
        Random num = new Random();
        int value;
        @Override
        public void run(){
                while(true){
                        try {
                                this.sleep(1000);
                        } catch (InterruptedException e) {

                        }
                        value = num.nextInt(1000);
                        System.out.println("RandomNumberThread generated a number "+value);
                        if(value % 2 == 0)
                                new SquareGenThread(value).start();
                        else
                                new CubeGenThread(value).start();
                }

        }
}
```

SquareGenThread.java

```
package com.raja.oopslab.threading;

public class SquareGenThread extends Thread{
        int number;
        int squre;
        public SquareGenThread(int number) {
                this.number = number;
        }
        @Override
        public void run(){
                try {
                        this.sleep(3000);
                } catch (InterruptedException e) {

                }
                this.squre = this.number * this.number;
                System.out.println("SquareGenThread--> Square of "+number+" is "+squre);
         }
}
```

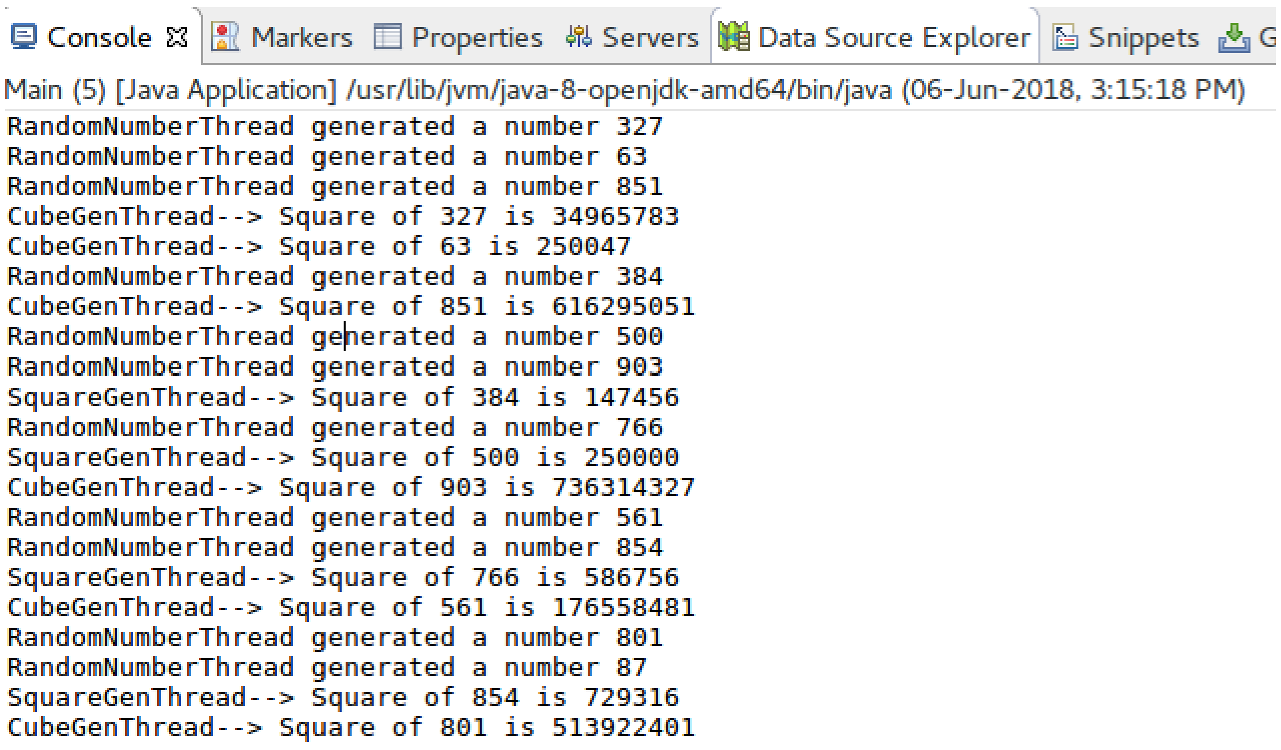
CubeGenThread.java

```
package com.raja.oopslab.threading;

public class CubeGenThread extends Thread{
        int number;
        int squre;
        public CubeGenThread(int number) {
                this.number = number;
        }
        @Override
        public void run(){
                try {
                        this.sleep(2000);
                } catch (InterruptedException e) {

                }
                this.squre = this.number * this.number * this.number;
                System.out.println("CubeGenThread--> Square of "+number+" is "+squre);
         }
}
```

Main.java

```
import java.util.Random;
import com.raja.oopslab.threading.RandomNumberThread;
public class Main {
        public static void main(String[] args) {
                new RandomNumberThread().start();
        }
}
```

Output:



```
Main (5) [Java Application] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (06-Jun-2018, 3:15:18 PM)
RandomNumberThread generated a number 327
RandomNumberThread generated a number 63
RandomNumberThread generated a number 851
CubeGenThread--> Square of 327 is 34965783
CubeGenThread--> Square of 63 is 250047
RandomNumberThread generated a number 384
CubeGenThread--> Square of 851 is 616295051
RandomNumberThread generated a number 500
RandomNumberThread generated a number 903
SquareGenThread--> Square of 384 is 147456
RandomNumberThread generated a number 766
SquareGenThread--> Square of 500 is 250000
CubeGenThread--> Square of 903 is 736314327
RandomNumberThread generated a number 561
RandomNumberThread generated a number 854
SquareGenThread--> Square of 766 is 586756
CubeGenThread--> Square of 561 is 176558481
RandomNumberThread generated a number 801
RandomNumberThread generated a number 87
SquareGenThread--> Square of 854 is 729316
CubeGenThread--> Square of 801 is 513922401
```

Result:

The java console application for multithreading was developed and tested successfully.