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Continuous Assessment Question-8

Name-Ankush Kumar

Registration No-12204834

Roll No- B55

Section-D2212

Group-2

Question set-ODD

Sandbox Link: - https://codehs.com/sandbox/id/reg-no-12204834-RbnSLI

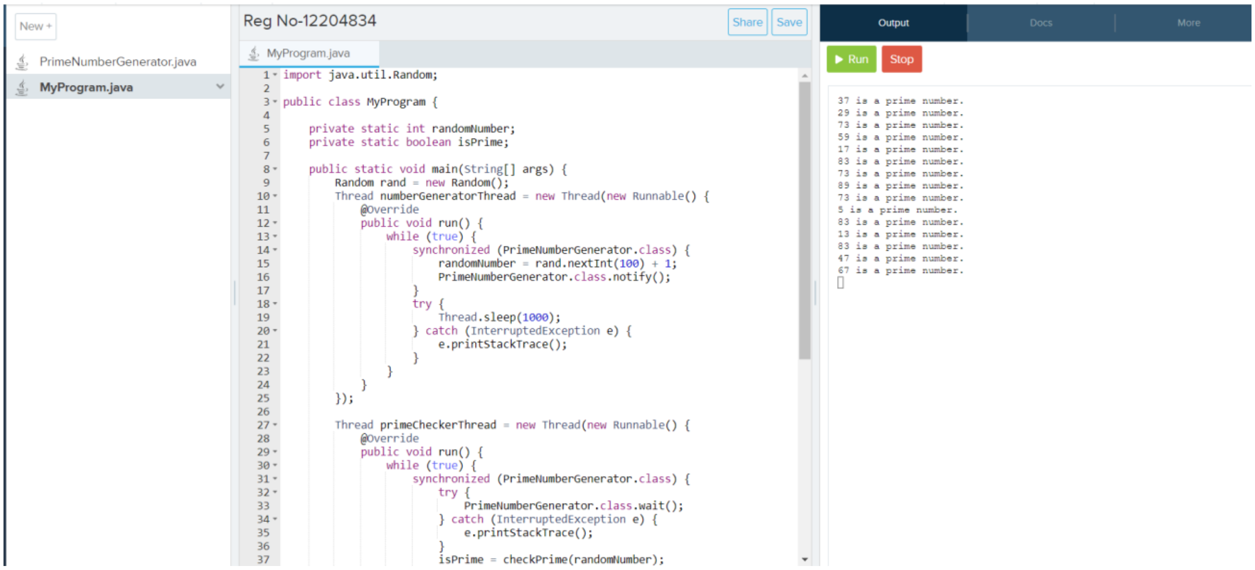
Q-Creates a thread that continuously generates random numbers between 1 and 100. Another thread should continuously check if the generated number is a prime number and print it to the console if it is. Use synchronization to make sure that the two threads do not interfere with each other.

Code

```
import java.util.Random;


public class MyProgram {


    private static int randomNumber;

    private static boolean isPrime;


    public static void main(String[] args) {

        Random rand = new Random();

        Thread numberGeneratorThread = new Thread(new Runnable() {

            @Override

            public void run() {
                while (true) {
                    synchronized (PrimeNumberGenerator.class) {
                        randomNumber = rand.nextInt(100) + 1;
                        PrimeNumberGenerator.class.notify();
                    }
                    try {
                        Thread.sleep(1000);
                    } catch (InterruptedException e) {
                        e.printStackTrace();
                    }
                }
            }
        });

        Thread primeCheckerThread = new Thread(new Runnable() {
            @Override
            public void run() {
                while (true) {
                    synchronized (PrimeNumberGenerator.class) {
                        try {
                            PrimeNumberGenerator.class.wait();
                        } catch (InterruptedException e) {
                            e.printStackTrace();
                        }
                        isPrime = checkPrime(randomNumber);
                        if (isPrime) {
                            System.out.println(randomNumber + " is a prime number.");
                        }
                    }
                }
            }
        });

        numberGeneratorThread.start();
        primeCheckerThread.start();
    }

    private static boolean checkPrime(int n) {
```

```
    if (n <= 1) {
      return false;
    }
    for (int i = 2; i <= Math.sqrt(n); i++) {
      if (n % i == 0) {
        return false;
      }
    }
    return true;
  }

}
```

Output



```java
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                        } catch (InterruptedException e) {
                            e.printStackTrace();
                        }
                        isPrime = checkPrime(randomNumber);
```

```
37 is a prime number.
29 is a prime number.
73 is a prime number.
59 is a prime number.
17 is a prime number.
83 is a prime number.
73 is a prime number.
89 is a prime number.
73 is a prime number.
5 is a prime number.
83 is a prime number.
13 is a prime number.
83 is a prime number.
47 is a prime number.
67 is a prime number.
```