5. a. Write a JAVA program to demonstrate Thread Synchronization.

```
package jk;

public class Sample
{
      synchronized void print(int n)           //synchronized method
      {
               for(int i=1;i<=5;i++)
               {
                 System.out.println(n+i);
                 try{  Thread.sleep(500);  }
                 catch(Exception e){ System.out.println(e); }
               }
             }
}
```

```
package jk;

public class Thread1 extends Thread
{
   Sample s;
   Thread1(Sample s)
   {
     this.s=s;
   }
  public void run()
  {
    s.print(10);
  }
}
```

```
package jk;

public class Thread2 extends Thread
{
   Sample s;
   Thread2(Sample s)
   {
     this.s=s;
   }
  public void run()
  {
    s.print(50);
  }
}
```

```
package jk;

public class Test
{
      public static void main(String[] args)
      {
         Sample obj=new Sample();
         Thread1 t1=new Thread1(obj);
         Thread2 t2=new Thread2(obj);

         t1.start();
         t2.start();
      }
}
```

Output:

Without Thread Synchronization (Random output with both threads – we will get different outputs with different runs)

Run1	Run2	Run3
11	51	51
51	11	11
52	52	52
12	12	12
53	13	53
13	53	13
54	54	14
14	14	54
55	55	15
15	15	55

With Thread Synchronization (Always gets same output that is Thread1 followed by Thread2)

11
12
13
14
15
51
52
53
54
55