BCSE-506L (Performance Analysis of Programming Languages Lab)

EXPERIMENT NO. W9A1

Aim : Write a program to provide the solution for Producer Consumer Problem using wait() and notify() .

Source Code :

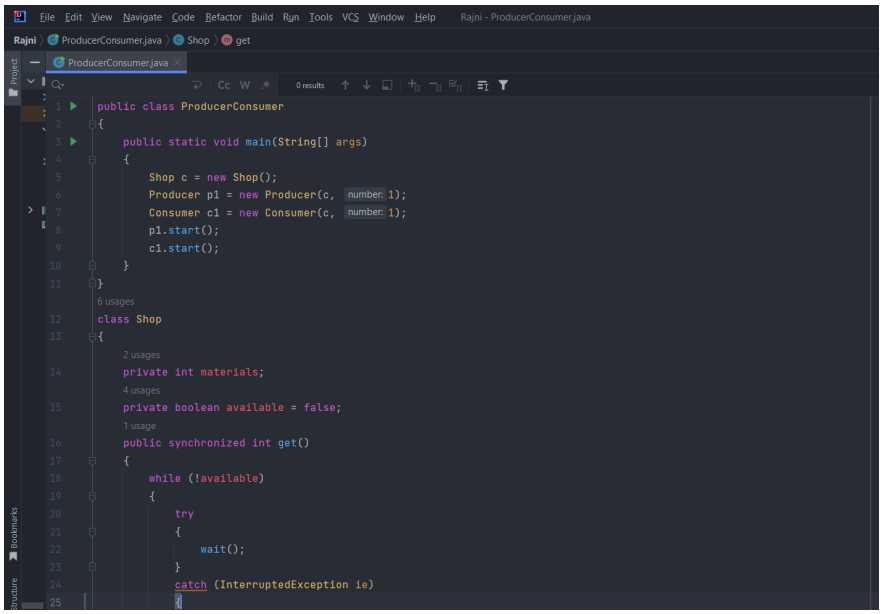
```
public class ProducerConsumer {
    public static void main(String[] args) {
        Shop c = new Shop();
        Producer p1 = new Producer(c, 1);
        Consumer c1 = new Consumer(c, 1);
        p1.start();
        c1.start();
    }
}
class Shop {
    private int materials;
    private boolean available = false;
    public synchronized int get() {
        while (!available) {
            try {
                wait();
            } catch (InterruptedException ie) {}
        }
        available = false;
        notifyAll();
        return materials;
    }
    public synchronized void put(int value) {
        while (available) {
            try {
                wait();
            } catch (InterruptedException ie) {
                ie.printStackTrace();
            }
        }
        materials = value;
        available = true;
        notifyAll();
    }
}
class Consumer extends Thread {
    private Shop Shop;
    private int number;
    public Consumer(Shop c, int number) {
        Shop = c;
        this.number = number;
    }
    public void run() {
        int value = 0;
```

```
        for (int i = 0; i < 10; i++) {
            value = Shop.get();
            System.out.println("Consumed value " + this.number +
" got: " + value);
        }
    }
}
class Producer extends Thread {
    private Shop Shop;
    private final int number;

    public Producer(Shop c, int number) {
        Shop = c;
        this.number = number;
    }
    public void run() {
        for (int i = 0; i < 10; i++) {
            Shop.put(i);
            System.out.println("Produced value " + this.number +
" put: " + i);
            try {
                sleep((int)(Math.random() * 100));
            } catch (InterruptedException ie) {
                ie.printStackTrace();
            }
        }
    }
}
```

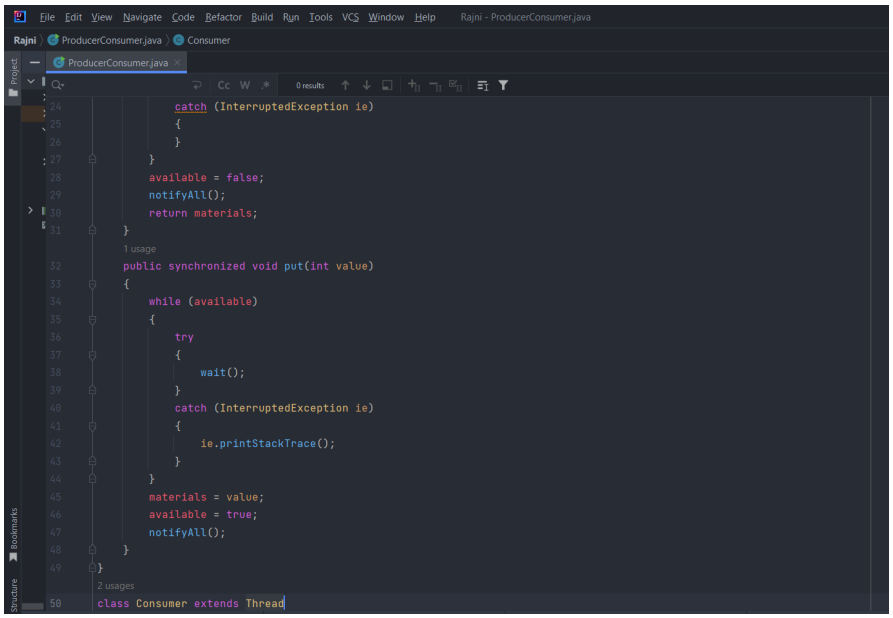
Output :

```
"C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program
Files\JetBrains\....\

Consumed value 1 got: 0
Produced value 1 put: 0
Consumed value 1 got: 1
Produced value 1 put: 1
Consumed value 1 got: 2
Produced value 1 put: 2
Produced value 1 put: 3
Consumed value 1 got: 3
Produced value 1 put: 4
Consumed value 1 got: 4
Produced value 1 put: 5
Consumed value 1 got: 5
Produced value 1 put: 6
Consumed value 1 got: 6
Consumed value 1 got: 7
Produced value 1 put: 7
Produced value 1 put: 8
Consumed value 1 got: 8
Produced value 1 put: 9
Consumed value 1 got: 9

Process finished with exit code 0
```

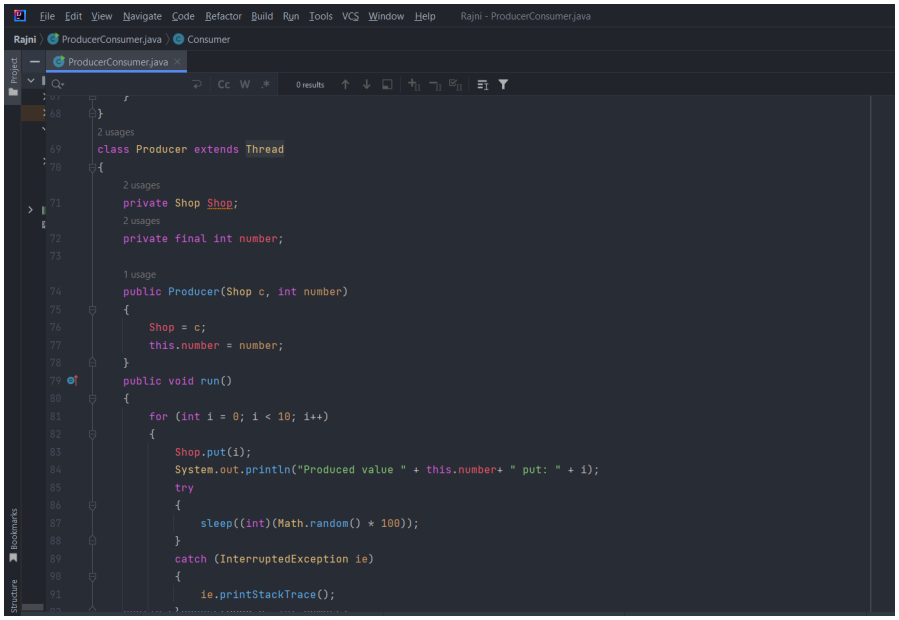
Input From IDE :



```
public class ProducerConsumer
{
    public static void main(String[] args)
    {
        Shop c = new Shop();
        Producer p1 = new Producer(c,  number: 1);
        Consumer c1 = new Consumer(c,  number: 1);
        p1.start();
        c1.start();
    }
}
6 usages
class Shop
{
    2 usages
    private int materials;
    4 usages
    private boolean available = false;
    1 usage
    public synchronized int get()
    {
        while (!available)
        {
            try
            {
                wait();
            }
            catch (InterruptedException ie)
            {
```

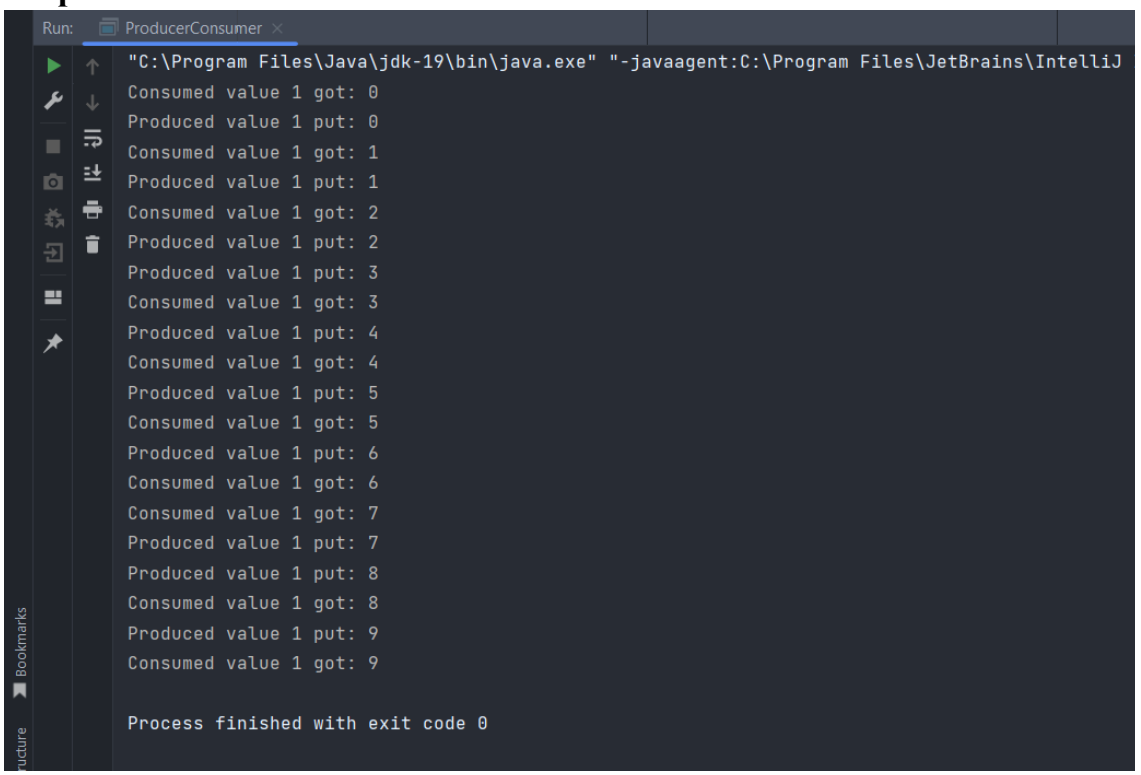


```
            catch (InterruptedException ie)
            {
            }
        }
        available = false;
        notifyAll();
        return materials;
    }
    1 usage
    public synchronized void put(int value)
    {
        while (available)
        {
            try
            {
                wait();
            }
            catch (InterruptedException ie)
            {
                ie.printStackTrace();
            }
        }
        materials = value;
        available = true;
        notifyAll();
    }
}
2 usages
class Consumer extends Thread
```



```
}
2 usages
class Producer extends Thread
{
    2 usages
    private Shop Shop;
    2 usages
    private final int number;

    1 usage
    public Producer(Shop c, int number)
    {
        Shop = c;
        this.number = number;
    }
    public void run()
    {
        for (int i = 0; i < 10; i++)
        {
            Shop.put(i);
            System.out.println("Produced value " + this.number+ " put: " + i);
            try
            {
                sleep((int)(Math.random() * 100));
            }
            catch (InterruptedException ie)
            {
                ie.printStackTrace();
```

Output IDE :



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SECTION B3