

13/2/24
D ~~Java~~ ~~program~~ implementation of a
producer & consumer

class Q

{

int n;

synchronized int get()

{

System.out.println("Get : " + n);

return n;

}

synchronized void put(int n)

{

this.n = n;

System.out.println("Put : " + n);

}

}

class Producer implements Runnable

{

Q q;

Producer(Q q)

{

this.q = q;

new Thread(this, "Producer").start();

}

public void run() {

int i = 0;

while(i < 15) {

q.put(i++);

}

}

}

class Consumer implements Runnable

{

Q q;

Consumer(Q q)

{

this.q = q;

new Thread(this, "Consumer").start();

```
public void run()
```

```
{
    int i = 0;
```

```
while (i < 15)
```

```
{
    int x = q.get();
```

```
    i++;
```

```
}
```

```
}
```

```
}
```

```
class PCS
```

```
{
```

```
    public static void main (String args[])
```

```
{
    Q q = new Q();
```

```
    new Producer(q);
```

```
    new Consumer(q);
```

```
    System.out.println("Press Control - C to stop");
```

```
}
```

```
}
```

O/p

put: 0

put: 1

put: 2

put: 3

put: 4

put: 5

put: 6

put: 7

put: 8

put: 9

put: 10

put: 11

put: 12

put: 13

put: 14

put: 15

put: 16

put: 17

put: 18

put: 19

put: 20

put: 21

put: 22

put: 23

```
C:\Users\Admin\Desktop\rachana>javac consumer.java
```

```
C:\Users\Admin\Desktop\rachana>java PC
```

```
Press Control-C to stop.
```

```
Put: 0
```

```
Put: 1
```

```
Put: 2
```

```
Put: 3
```

```
Put: 4
```

```
Put: 5
```

```
Put: 6
```

```
Put: 7
```

```
Put: 8
```

```
Put: 9
```

```
Put: 10
```

```
Put: 11
```

```
Put: 12
```

```
Put: 13
```

```
Put: 14
```

```
Got: 14
```

```
Got: 14
```

```
Got: 14
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Got: 14
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Got: 14
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Got: 14
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Got: 14
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Got: 14
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Got: 14
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Got: 14
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Got: 14
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Got: 14
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Got: 14
```

```
Got: 14
```

```
Got: 14
```

```
Got: 14
```


2)

class Q
{

int n;
boolean valueSet = false;
synchronized int get()
{

while(!valueSet)

{

try {
System.out.println("Consumer waiting\n");
wait();

}
catch (InterruptedException e)

{
System.out.println("InterruptedException caught");

}
System.out.println("Got:" + n);

valueSet = false;

System.out.println("Intimate Producer");

notify();

return n;

}

synchronized void put(int n)

{

while(valueSet)

{

try {
System.out.println("Producer waiting");
wait();

}

catch (InterruptedException e)

{

System.out.println("InterruptedException caught");

}

this.n = n;

valueSet = true;

```
System.out.println("I am Consumer");  
notify();  
}
```

```
class Producer implements Runnable {
```

```
Q q;
```

```
Producer(Q q)
```

```
{  
    this.q = q;
```

```
    new Thread(this, "Producer").start();
```

```
}
```

```
public void run()
```

```
{
```

```
    int i = 0;
```

```
    while(i < 15)
```

```
    {  
        q.put(i++);
```

```
    }
```

```
}
```

```
}
```

```
class Consumer implements Runnable
```

```
{
```

```
Q q;
```

```
Consumer(Q q)
```

```
{
```

```
    this.q = q;
```

```
    new Thread(this, "Consumer").start();
```

```
}
```

```
public void run()
```

```
{
```

```
    int i = 0;
```

```
    while(i < 15)
```

```

    {
        int x=q.get();
        System.out.println("Consumed:" + x);
        it++;
    }
}

class PCFixed
{
    public static void main(String args[])
    {
        Q q = new Q();
        new Producers(q);
        new Consumers(q);
        System.out.println("Press Control-C to stop.");
    }
}

```

o/p :

Press Control-C to stop.

Put: 0
 Intimate Consumer
 Producer waiting
 Got: 0
 Intimate Producer

put: 14
 Intimate Consumer
 Got: 14
 Intimate Producer
 Consumed : 14


```
C:\Users\Admin\Desktop\rachana>java PCFixed
Press Control-C to stop.
Put: 0

Intimate Consumer

Producer waiting

Got: 0

Intimate Producer

Put: 1

Intimate Consumer

Producer waiting

consumed:0
Got: 1

Intimate Producer

consumed:1
Put: 2

Intimate Consumer

Producer waiting

Got: 2

Intimate Producer

consumed:2
Put: 3

Intimate Consumer

Producer waiting

Got: 3

Intimate Producer

consumed:3
Put: 4

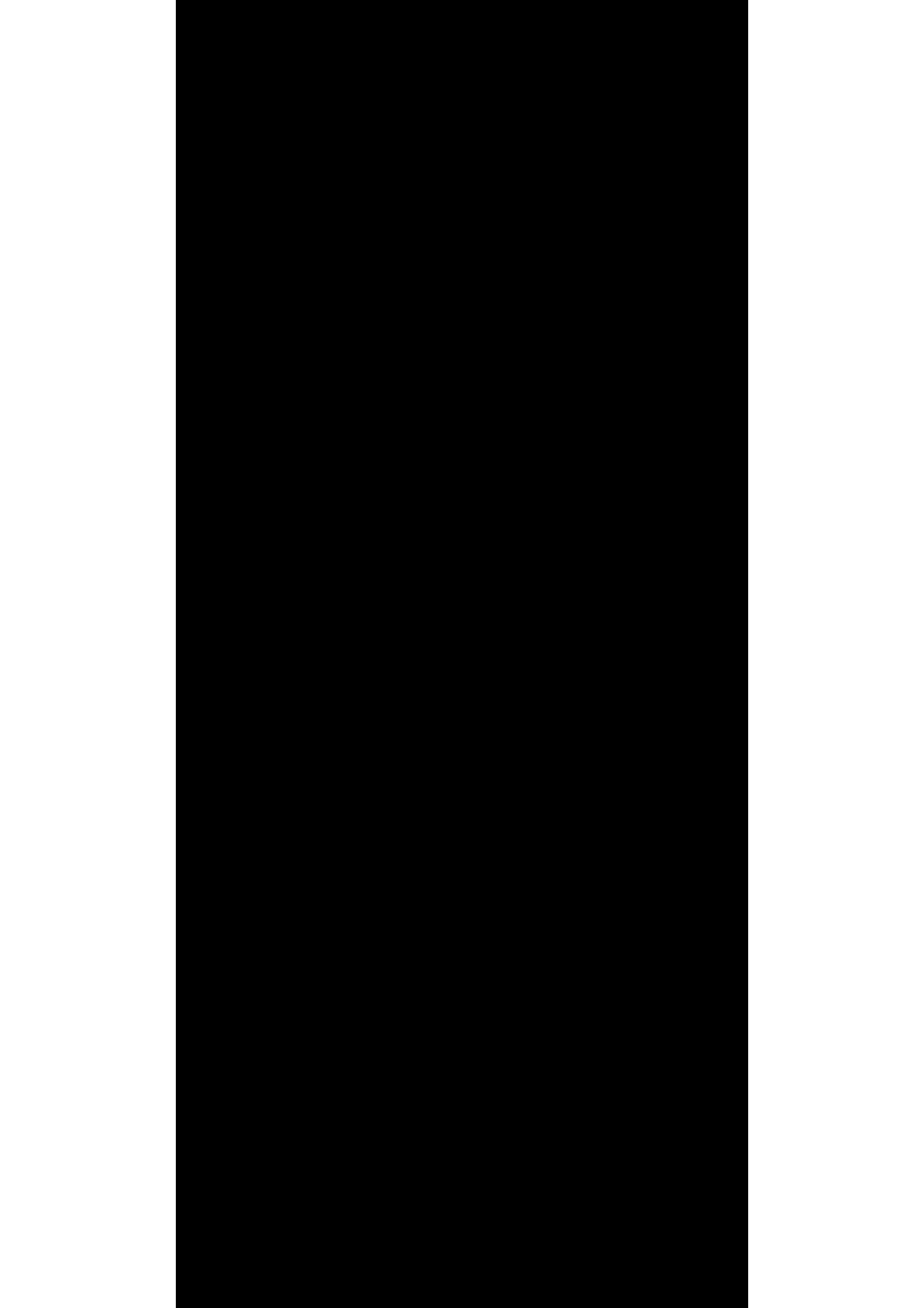
Intimate Consumer

Producer waiting

Got: 4

Intimate Producer

consumed:4
Put: 5
```




```
Got: 9
Intimate Producer
consumed:9
Put: 10
Intimate Consumer
Producer waiting
Got: 10
Intimate Producer
consumed:10
Put: 11
Intimate Consumer
Producer waiting
Got: 11
Intimate Producer
consumed:11
Put: 12
Intimate Consumer
Producer waiting
Got: 12
Intimate Producer
consumed:12
Put: 13
Intimate Consumer
Producer waiting
Got: 13
Intimate Producer
consumed:13
Put: 14
Intimate Consumer
Got: 14
Intimate Producer
consumed:14
```

3) Deadlock :-

class A

{

synchronized void foo(B b)

{

String name = Thread.currentThread().getName();

System.out.println(name + " entered A.foo");

try {

Thread.sleep(1000);

}

catch (Exception e)

{

System.out.println("A Interrupted");

try {

System.out.println(name + " trying to call B.last()");

b.last();

}
}

void last() {

System.out.println("Inside A.last");

}

class B {

synchronized void bar(A a)

{

String name = Thread.currentThread().getName();

System.out.println(name + " entered B.bar");

try {

Thread.sleep(1000);

}

catch (Exception e)

{

System.out.println("B interrupted");

}

System.out.println(name + " trying to call A.last()");

a.last();

```
3  
void last()  
{
```

System.out.println("Inside A.last()");

```
3  
class Deadlock implements Runnable  
{
```

A a = new A();

B b = new B();

Deadlock()

{

Thread.currentThread().setName("MainThread");

Thread t = new Thread(this, "RacingThread");

t.start();

a.foo(b);

System.out.println("Back in main thread");

```
3  
public void run()  
{
```

b.bar(a);

System.out.println("Back in other thread");

```
3  
public static void main(String args[])  
{
```

~~new Deadlock();~~

```
3  
}
```

4

O/P:

Racing Thread entered B.shv

Main Thread entered A.foo

Main Thread trying to call B.last()

Inside A.last

Back in Main thread

Racing Thread trying to call A.last()

Inside A.last

Back in other thread.

~~JS~~
13.02.24

C:\Windows\System32\cmd.exe

```
C:\Users\Admin\Desktop\rachana>javac dlock.java
dlock.java:96: error: class, interface, enum, or record expected
MainThread entered A.foo
^
1 error
```

```
C:\Users\Admin\Desktop\rachana>javac dlock.java
```

```
C:\Users\Admin\Desktop\rachana>java Deadlock
```

```
RacingThread entered B.bar
MainThread entered A.foo
MainThread trying to call B.last()
Inside A.last
Back in main thread
RacingThread trying to call A.last()
Inside A.last
Back in other thread
```

```
C:\Users\Admin\Desktop\rachana>_
```