**//Dhiraj Neve**

**//Roll no: 3145**

**//Multithreading**

**Prod.java**

import java.util.\*;

class Queue

{

int arr[],F,R,flag=0;

Queue()

{

R=-1;

F=-1;

arr=new int[10];

}

boolean Empty()

{

if(F==R)

return true;

else

return false;

}

boolean Full()

{

if(R==(F-1) || (F==0 && R==9) )

return true;

else

return false;

}

void push(int num)

{

synchronized(this)

{

if(Full())

{

try

{

System.out.println("Consumer Sleeping....");

wait();

}

catch(Exception e){ }

}

else

{

if(flag == 0)

{

F=0;

flag=1;

R=0;

}

arr[R] = num;

R=(R+1) % 10;

System.out.println("Consumer puts order :- "+num);

notify();

}

}

}

int pop()

{

int num;

synchronized(this)

{

num = 0;

if(Empty())

{

try

{

System.out.println("Producer is sleeping ...");

wait();

}

catch(Exception e){ }

}

else

{

num = arr[F];

F=(F+1) % 10;

System.out.println("Producer takes order :- "+num);

try

{

notify();

}

catch(Exception e){ }

}

return num;

}

}

}

class Pro extends Thread

{

Queue q;

Pro(Queue qu)

{

q = qu;

}

public void run()

{

int i=1;

while(true)

{

q.push(i++);

if(i==35)

{

System.out.println("\nClosing.....\n");

System.exit(0);

}

}

}

}

class Cons extends Thread

{

Queue q;

Cons(Queue qu)

{

q = qu;

}

public void run()

{

int i,num;

while(true)

num = q.pop();

}

}

public class Prod

{

public static void main(String args[])

{

Queue q=new Queue();

new Pro(q).start();

new Cons(q).start();

}

}

**OUTPUT**

Consumer puts order :- 1

Consumer puts order :- 2

Consumer puts order :- 3

Consumer puts order :- 4

Consumer puts order :- 5

Consumer puts order :- 6

Consumer puts order :- 7

Consumer puts order :- 8

Consumer puts order :- 9

Consumer Sleeping....

Producer takes order :- 1

Producer takes order :- 2

Producer takes order :- 3

Producer takes order :- 4

Producer takes order :- 5

Producer takes order :- 6

Producer takes order :- 7

Producer takes order :- 8

Producer takes order :- 9

Producer is sleeping ...

Consumer puts order :- 11

Consumer puts order :- 12

Consumer puts order :- 13

Consumer puts order :- 14

Consumer puts order :- 15

Consumer puts order :- 16

Consumer puts order :- 17

Consumer puts order :- 18

Consumer puts order :- 19

Consumer Sleeping....

Producer takes order :- 11

Consumer puts order :- 21

Consumer Sleeping....

Producer takes order :- 12

Consumer puts order :- 23

Consumer Sleeping....

Producer takes order :- 13

Consumer puts order :- 25

Consumer Sleeping....

Producer takes order :- 14

Consumer puts order :- 27

Consumer Sleeping..

Producer takes order :- 15

Consumer puts order :- 29

Consumer Sleeping....

Producer takes order :- 16

Consumer puts order :- 31

Consumer Sleeping....

Producer takes order :- 17

Consumer puts order :- 33

Consumer Sleeping....

Producer takes order :- 18

Producer takes order :- 19

Producer takes order :- 21

Producer takes order :- 23

Producer takes order :- 25

Producer takes order :- 27

Producer takes order :- 29

Producer takes order :- 31

Producer takes order :- 33

Producer is sleeping ...

Closing.....