

Open Ended Question 2 Inter Thread Communication 1:

Demonstrate Inter process Communication and deadlock

SOURCE CODE:

```
class Q {
    int n;
    boolean valueSet = false;

    synchronized int get() {
        while (!valueSet)
            try {
                wait();
            } catch (InterruptedException e) {
                System.out.println("InterruptedException caught");
            }
        System.out.println("Got: " + n);
        valueSet = false;
        notify();
        return n;
    }

    synchronized void put(int n) {
        while (valueSet)
            try {
                wait();
            } catch (InterruptedException e) {
                System.out.println("InterruptedException caught");
            }
        this.n = n;
        valueSet = true;
        System.out.println("Put: " + n);
        notify();
    }
} // end of class Q

class Producer implements Runnable {
    Q q;

    Producer(Q q) {
        this.q = q;
    }
}
```

```

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

    public void run() {
        int i = 0;
        while (true) {
            q.put(i++);
        }
    }
}

class Consumer implements Runnable {
    Q q;

    Consumer(Q q) {
        this.q = q;
        new Thread(this, "Consumer").start();
    }

    public void run() {
        while (true) {
            q.get();
        }
    }
}

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

```

OUTPUT (including test cases):

Visual Studio Code interface showing the output of a Java program. The Explorer pane on the left lists files in a 'LAB' folder, including 'OpenEnded1.java'. The Output pane on the right shows a series of 'Got' and 'Put' messages with values ranging from 2422 to 2437. The status bar at the bottom indicates the current line is 19, column 25, with 4 spaces, in UTF-8 encoding, using CRLF line endings.

```
OpenEnded1.java > Q > put(int)
19 while (kvalueSet) {
    Got: 2422
    Put: 2423
    Got: 2423
    Put: 2424
    Got: 2424
    Put: 2425
    Got: 2425
    Put: 2426
    Got: 2426
    Put: 2427
    Got: 2427
    Put: 2428
    Got: 2428
    Put: 2429
    Got: 2429
    Put: 2430
    Got: 2430
    Put: 2431
    Got: 2431
    Put: 2432
    Got: 2432
    Put: 2433
    Got: 2433
    Put: 2434
    Got: 2434
    Put: 2435
    Got: 2435
    Put: 2436
    Got: 2436
    Put: 2437
    Got: 2437
```