JAVA MULTITHREADING ASSIGNMENT
- Submitted by (Kavita Goodwani INT 438)

Design a BlockingQueue of your own

- A blocking queue is a queue that blocks when you try to dequeue from it and the queue is empty, or if you try to enqueue items to it and the queue is already full.
- A thread trying to dequeue from an empty queue is blocked until some other thread inserts an item into the queue.
- A thread trying to enqueue an item in a full queue is blocked until some other thread makes space in the queue, either by dequeuing one or more items or clearing the queue completely.

Requirements

- The queue should have two methods put() and take().
- There should be one thread who is producing but the number of consuming threads will vary on situation and it should be configurable.
- If the thread wants to take something from the queue and the queue is empty, then it should print "Queue is empty. There is no task present in the Queue."
- If the thread wants to add a task to the queue and the queue is already full then it should print an exception saying "Queue is full. No task is already taken by any of the consumer."

Solution: Zip File attached for project

Screenshot:

```
Thread produced 0
Thread produced 1
Thread produced 2
Thread produced 3
Thread produced 4
Queue is full. No task is taken by any of the consumer.
Thread consumed 4
Thread consumed 3
Thread consumed 2
Thread consumed 1
Thread consumed 0
Queue is empty. There is no task present in the Queue.
Queue is empty. There is no task present in the Queue.
Thread produced 0
Thread produced 1
Thread produced 2
Thread produced 3
Thread produced 4
Queue is full. No task is taken by any of the consumer.
Thread consumed 4
Thread consumed 3
Thread consumed 2
Thread consumed 1
Thread consumed 0
Queue is empty. There is no task present in the Queue.
Queue is empty. There is no task present in the Queue.
Thread produced 0
Thread produced 1
Thread produced 2
Thread produced 3
Thread produced 4
Queue is full. No task is taken by any of the consumer.
```

```
Queue is empty. There is no task present in the Queue.
Queue is empty. There is no task present in the Queue.
Thread produced 0
Thread produced 1
Thread produced 2
Thread produced 3
Thread produced 4
Queue is full. No task is taken by any of the consumer.
Thread consumed 4
Thread consumed 3
Thread consumed 2
Thread consumed 1
Thread consumed 0
Queue is empty. There is no task present in the Queue.
Queue is empty. There is no task present in the Queue.
Thread produced 0
Thread produced 1
Thread produced 2
Thread produced 3
Thread produced 4
Queue is full. No task is taken by any of the consumer.
Thread consumed 4
Thread consumed 3
Thread consumed 2
Thread consumed 1
Thread consumed 0
Queue is empty. There is no task present in the Queue.
```