- Don't forget to set your Eclipse workspace and working set.
- You must submit the JAR file, exported (with source code), from your Eclipse project.
- You must check your JAR file to make sure all the source files (.java files) are present. It can be opened with file compression programs such as 7-zip or Winrar.
- Failure to export properly will result in your work not getting marked.

1) To submit:

- Export your project to a JAR file, with source code.
- Name your JAR file ID_Week07_Q2.jar. For example, 6623110021_Week07_Q2.jar
- Submit the JAR file on MyCourseville.

You are given all classes for coding Double ended queue (DeQ).

You are coding a simulation of a queue in a bank (class BankQueue). A bank can have any number of regular queues, plus one special queue.

```
public class BankQueue { // must work for any implementation of DeQ
    DeQ[] counters;
    DeQ special;

    public BankQueue(DeQ[] counters, DeQ special) {
        super();
        this.counters = counters;
        this.special = special;
    }

    //Write this method
    public void distribute() throws Exception {

    }

}
```

1. (12 marks) Write method

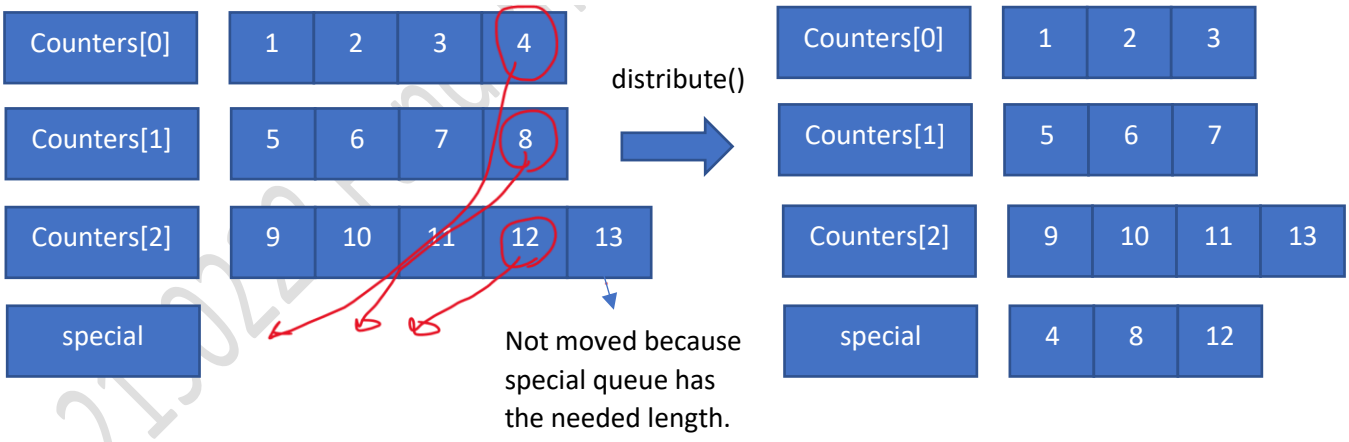
```
public void distribute() throws Exception
```

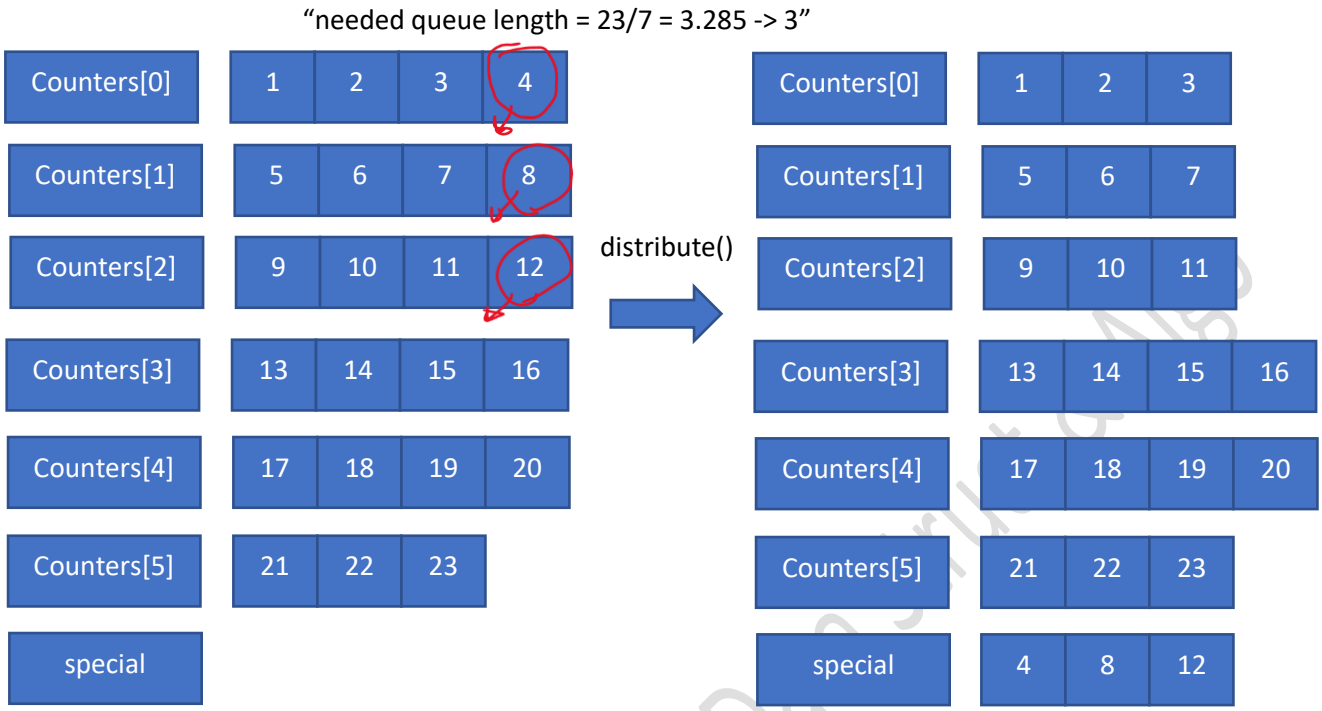
- This method simulates the opening of a special queue. Some people in the regular queues will go to the special queue so that each regular queue becomes shorter.
- This method assumes that:
  - each regular queue has at least one person in it.
  - The special queue is originally empty.
  - If the longest regular queue has n people in it. Each other regular queue will have n or n-1 people.
- To distribute people into the special queue:
  - Calculate the "needed queue length" using the number of people/number of queues, including the special queue.

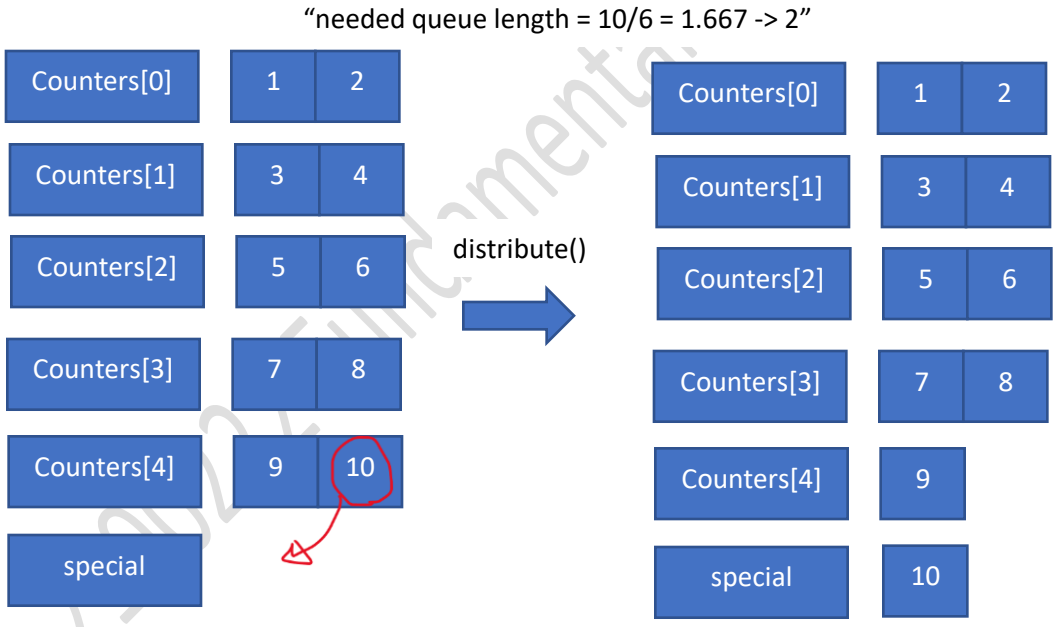
        - Calculate the difference between the “needed queue length” and its integer value.
            - If the difference is less than 0.5 then the “needed queue length” becomes that integer value.
            - Otherwise, the “needed queue length” becomes that integer value +1
    - For each regular queue:
        - Maintain the first “needed queue length” number of data in its original sequence.
        - Move the remaining data (from front to back), one by one, to the special queue.
            - If the special queue has length equal to “needed queue length”, then stop moving data to it.
                - Make sure the regular queue, after all these moves, starts with its original first data.
        - If the above process ends, but the special queue still has no data, move the last data of the last regular queue to the special queue.
- Your code must use DeQ methods from interface DeQ. A queue can be implemented using Array or Linked list. Your code must work on both.
- You must not modify any file except BankQueue. Otherwise, you get 0 mark.
- You must not create a new class. Otherwise, you get 0 mark.
- There is no performance requirement for this question.

Example:

“needed queue length = 13/4 = 3.25 -> 3”







no queue is adjusted so the special queue is empty. Therefore the last data of the last regular queue is taken.

Score Total 12:

3 marks for each test case.