Create Eclipse project.

You are simulating queues in a small supermarket. Each cashier machine has a sensor that detects events. Events are:

- A person joining the queue at the back.
- A person finishes paying and exiting the queue (at the front only).

The cashier machine records each event as a CustomerInfo object. Each CustomerInfo object contains a pair data:

- time: the time that the event takes place (stored as integer).
- event type: an integer indication of the event:
  - 1: a person enters the queue.
  - -1: a person finishes paying and leaves the queue.

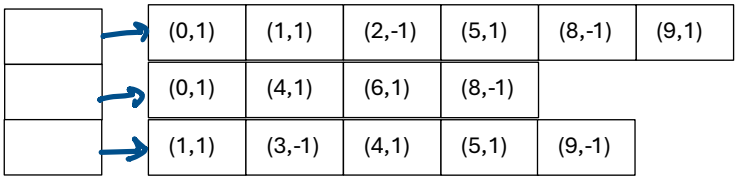
A sequence of events in a queue in this simulation is stored in an **array of CustomerInfo**. For example, events information of a customer queue, q1, maybe stored as:

(0,1)	(1,1)	(2,-1)	(3,1)	(4,1)	(5,1)	(7,-1)	(8,-1)

The events (**time in the array is from small to large, time does not have duplicate value in the same array**) can be described as:

- at time = 0, a customer joins the queue.
- at time = 1, a customer joins the queue.
- at time = 2, a customer finishes and leaves the queue.
- at time = 3, a customer joins the queue.
- at time = 4, a customer joins the queue.
- at time = 5, a customer joins the queue.
- at time = 7, a customer finishes and leaves the queue.
- at time = 8, a customer finishes and leaves the queue.

We have **events** from all queues stored in **an array of array of CustomerInfo. (The example below shows only 3 queues).**



To simulate the queue, we just use MyQueue in class **SimulateQueue**. An integer, 1, is used to represent a person in our queue of integers.

Class **SimulateQueue** has the following variables:

- allEvents: an array of array of CustomerInfo. This array is received from the constructor.
- allQueues: an array of all the customer queues. This array is received from the constructor (all queues are empty but we need this in order to work with both QueueArrays and QueueLinkedLists).

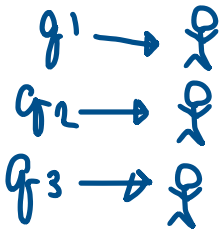
Write method (in class **SimulateQueue.java**):

public void stateBeforeTimeT(int t):

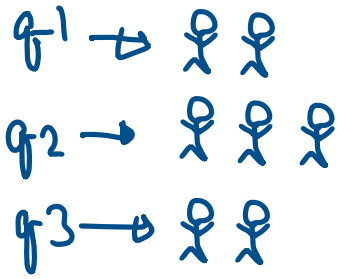
- This method updates the states of all the queues to the ones at time just before t (not including t).

- It always updates queues from the starting time. Thus, this method does not work if the queues are not at their starting states.

For example, the 3 queues of the above example will look like this when t =3 (each has one customer)



- The 3 queues of the above example will look like this when t =7 (and t = 8 too)



Your method must work on both QueueArray and QueueLinkedList.

Each customer queue must be updated properly when **stateBeforeTimeT(int t) is called**.

Scoring Criteria:

The total score is 10.

Run the given JUnit file **TestSimulateQueue** (given in folder Q2) (If you do not write your code, you will not get any marks):

- `testFirstSampleEarly` 1 mark
- `testFirstSampleLate1` 2 marks
- `testFirstSampleLate2` 2 marks
- `testSecondSampleEarly` 1 mark
- `testSecondSampleMid` 2 marks
- `testSecondSampleLate` 2 marks

You cannot create new array or ArrayList. If you create either of them, you get 0 from this question.

How to submit:

Submit only SimulateQueue.java on MyCourseville.