

## QUEUE: SimulationEventQueue Implementation

### BASIC TESTING OF THE SIMULATION EVENT QUEUE

#### TESTING GETSIZE

Checking to see if testEventQueue0 has 0 items  
Passed test

Add 1 item and see if the size is now 1

Checking to see if testEventQueue0 has 1 items  
Passed test

Add 1 item and see if the size is now 2

Checking to see if testEventQueue0 has 2 items  
Passed test

#### TESTING CLEAR

Add 1 item

Add another item

Checking to see if testEventQueue1 has 0 items after clear  
Passed test

#### TESTING ISEMPY

Checking to see if testEventQueue2 is empty to start  
Passed test

Add 1 item and check to see if testEventQueue2 is not empty  
Passed test

Add 1 item and check to see if testEventQueue2 is not empty  
Passed test

Checking to see if testEventQueue2 is empty after clear  
Passed test

#### TESTING PEEK

Add two events to eventQueue1

Checking to see if testEventQueue1 has the item at time 1 at front  
Passed test

Add two events to eventQueue2 in opposite order

Checking to see if testEventQueue2 has the item at time 1 at front  
Passed test

#### TESTING REMOVE

Add two events to eventQueue3

Checking to see if remove gets the item at time 1 at front  
Passed test

Checking to see if the size is now 1

Passed test

Checking to see if the current time is now 1.0

Passed test

Checking to see if remove gets the item at time 2 at front

Passed test

Checking to see if the size is now 0

Passed test

Checking to see if the current time is now 2.0

Passed test

Add an item at time 5, then clear

Checking to see if the size is now 0

Passed test

Checking to see if the current time is still 2.0

Passed test

```
TESTING ADD
Add two events to eventQueue4
Remove the first event at time 1
Add a new event at time 1
Checking to see if first item is at time 1 at front
    Passed test

Checking to see if the size is now 2
    Passed test
Checking to see if the current time is now 1.0
    Passed test

Remove both events
Checking to see if the size is now 0
    Passed test
Checking to see if the current time is now 2.0
    Passed test

Try to add an event to eventQueue1 at time 1 (should fail)
Checking to see if the size is still 0
    Passed test
Checking to see if the current time is still 2.0
    Passed test

Try to add an event to eventQueue1 at time 2 (should work)
Checking to see if the size is now 1
    Passed test
Checking to see if the current time is still 2.0
    Passed test

Remove the item at time 2
    Passed test
```

```
Add 8 events to queue (all but one should get added)
Checking to see if the size is now 7
    Passed test
Checking to see if the current time is still 2.0
    Passed test

Remove events from queue one at a time
Did we remove 7 items?
    Passed test
Checking to see if the size is now 1
    Passed test
Checking to see if the current time is still 2.0
    Passed test

Remove the item at time 2
    Passed test

Add 8 events to queue (all but one should get added)
Checking to see if the size is now 7
    Passed test
Checking to see if the current time is still 2.0
    Passed test

Remove events from queue one at a time
Did we remove 7 items?
    Passed test
    Passed test

Remove the item at time 2
    Passed test

Add 8 events to queue (all but one should get added)
Checking to see if the size is now 7
```

```
    Passed test
Checking to see if the current time is still 2.0
    Passed test

Remove events from queue one at a time
Did we remove 7 items?
    Passed test
Checking to see if the size is now 7
    Passed test
Checking to see if the current time is still 2.0
    Passed test

Remove events from queue one at a time
Did we remove 7 items?
    Passed test
Checking to see if the current time is still 2.0
    Passed test

Remove events from queue one at a time
Did we remove 7 items?
    Passed test

Remove events from queue one at a time
Did we remove 7 items?
    Passed test
    Passed test
Were the items in the corrent order?
    Passed test
Were the items in the corrent order?
    Passed test
```

```
Did the time update correctly?
    Passed test
Did the time update correctly?
Did the time update correctly?
    Passed test
```

## QUEUE: BankLine Implementation

Bank Simulation (Skeleton)

Reset

Go

Pause

Step

Step delay (units of 0.01 second)

Delay is 0.01 seconds: Warning not recommended

Step 870

Generate the next customer

Next event: Check for next customer

129

984.0

130

984.0

1

Fred

Simulation time is: 988.0

Customers waiting: 2

Average time spent waiting: 4.0

Customers served: 128

Average time spent waiting: 1.7890625

Max customer interval (integer > 0):

Max service time (integer > 0):

Max simulation time (integer > 0):

Ending at time 1000

## STACK: STACK SORT

### Checkpoint 1

```
This program sorts an array of integer values.
Original array is: < >
Sorted array is: < >

Original array is: < 6 >
Sorted array is: < 0 >

Original array is: < 1 0 >
Sorted array is: < 0 0 >

Original array is: < 8480 133 163 4515 6191 4084 9788 4231 2716 1567 >
Sorted array is: < 0 0 0 0 0 0 0 0 0 0 >

Original array is: < 1 3 2 1 6 4 4 8 5 1 5 4 1 7 2 2 3 1 8 5 >
Sorted array is: < 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 >

Please enter the number of values to sort
  It should be an integer value greater than or equal to 1.
3
Original array is: < 6 46 88 >
Sorted array is: < 0 0 0 >
```

### Checkpoint 2

```
This program sorts an array of integer values.
Original array is: < >
Sorted array is: < >

Original array is: < 2 >
Sorted array is: < 2 >

Original array is: < 5 4 >
Sorted array is: < 4 5 >

Original array is: < 7015 6083 91 8851 4245 2077 9664 8951 3391 2468 >
Sorted array is: < 2468 3391 8951 9664 2077 4245 8851 91 6083 7015 >

Original array is: < 4 6 6 7 4 2 5 4 8 3 3 2 0 8 0 3 1 5 3 0 >
Sorted array is: < 0 3 5 1 3 0 8 0 2 3 3 8 4 5 2 4 7 6 6 4 >

Please enter the number of values to sort
  It should be an integer value greater than or equal to 1.
3
Original array is: < 86 45 27 >
Sorted array is: < 27 45 86 >
```

### Checkpoint 3

```
This program sorts an array of integer values.
Original array is: < >
Sorted array is: < >

Original array is: < 8 >
Sorted array is: < 8 >

Original array is: < 1 4 >
Sorted array is: < 1 4 >

Original array is: < 1569 7641 4756 6825 7401 8740 209 8723 6577 6778 >
Sorted array is: < 209 1569 4756 6577 6778 6825 7401 7641 8723 8740 >

Original array is: < 8 6 2 8 0 0 8 3 5 1 4 1 5 5 0 3 4 3 2 8 >
Sorted array is: < 0 0 0 1 1 2 2 3 3 3 4 4 5 5 5 6 8 8 8 8 >

Please enter the number of values to sort
    It should be an integer value greater than or equal to 1.
5
Original array is: < 12 65 77 20 21 >
Sorted array is: < 12 20 21 65 77 >
```