



CSC 1310: LAB 7

Rollar Coaster Queues



You are the manager of Terror Park, the spookiest roller coaster park in the United States located in Cookeville, TN.

You provide your customers with an option to spend more for their daily pass so they don't have to wait in long lines. You call it the InstantRide Pass.

Each roller coaster has two queues – one for regular passes and the other for InstantRide passes.

SPECIFICATIONS

LAB7.CPP

Write a menu based program (**lab7.cpp**) that implements two different Queue data structures, that allows the roller coaster worker do the following:

- 1) Add a rider to the waiting line
- 2) Remove a rider from the queue (they now get to ride the coaster)
- 3) End the Program (done for the day)

For option 1, ask the user for their name & if they are a normal pass holder or an InstantPass holder. Then, add the rider to the appropriate queue.

For option 2, remove a rider from the InstantPass queue if any riders are there and if not, then remove a rider from the normal queue.

Test your program by using the **given testLab7.txt** file as input.

You can do this in the command prompt like this for Windows:

```
lab7 > testLab7.txt
```

And like this for Mac:

```
./lab7 > testLab7.txt
```

Assuming that lab7 is the name of your executable file, this will use the text in testLab7.txt as input.

You can also write all output to a text file if you want like this for Windows:

```
lab7 > testLab7.txt < output.txt
```

And like this for Mac:

```
./lab7 > testLab7.txt < output.txt
```

This will run your program with testLab7.txt as input and write all output to output.txt instead of the screen. Note that output.txt will ONLY contain the output and will not show the input, too.

QUEUE CLASS (QUEUE.H)

You will have a header file (**Queue.h**) that contains a Queue class specification and member function definitions. **The queue should be implemented using a linked list.**

The Queue class should have the following private attributes:

- ☐ Structure declaration of a QueueNode with the following members:
 - string riderName
 - pointer to next QueueNode
- ☐ numNodes – integer representing how many nodes in the queue;
- ☐ head (pointer to first node)
- ☐ tail (pointer to last node)

The Queue class should have the following member functions:

- ☐ Constructor
- ☐ enqueue
- ☐ dequeue
- ☐ isEmpty (should return a bool)
- ☐ Destructor

Print out the following statement for any nodes deleted with the destructor:

```
"Oh shoot, I am sorry, our park is closed so [RIDER'S NAME] will not get to ride today."
```

WHAT TO TURN IN

Zip all the following files and upload to ilearn.

- ☐ Queue.h
- ☐ Lab7.cpp
- ☐ testLab7.txt

SAMPLE OUTPUT

User input is highlighted in yellow.

```
1)      ADD RIDER TO WAIT LINE.
2)      REMOVE RIDER FROM LINE.
3)      DONE FOR THE DAY.
CHOOSE 1-3:      2
                THERE IS NO ONE IN LINE!

1)      ADD RIDER TO WAIT LINE.
2)      REMOVE RIDER FROM LINE.
3)      DONE FOR THE DAY.
CHOOSE 1-3:      1
                What is your name?      Jim Halpert
                Jim Halpert, do you have a(n):
                1)Normal Pass?
                2)InstantPass?
                CHOOSE 1 or 2:      1

1)      ADD RIDER TO WAIT LINE.
2)      REMOVE RIDER FROM LINE.
3)      DONE FOR THE DAY.
CHOOSE 1-3:      1
                What is your name?      Pam Beesly
                Pam Beesly, do you have a(n):
                1)Normal Pass?
                2)InstantPass?
                CHOOSE 1 or 2:      1

1)      ADD RIDER TO WAIT LINE.
2)      REMOVE RIDER FROM LINE.
3)      DONE FOR THE DAY.
CHOOSE 1-3:      1
                What is your name?      Andy Bernard
                Andy Bernard, do you have a(n):
                1)Normal Pass?
                2)InstantPass?
                CHOOSE 1 or 2:      1

1)      ADD RIDER TO WAIT LINE.
2)      REMOVE RIDER FROM LINE.
3)      DONE FOR THE DAY.
CHOOSE 1-3:      1
                What is your name?      Robert California
                Robert California, do you have a(n):
                1)Normal Pass?
                2)InstantPass?
                CHOOSE 1 or 2:      1
```

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 1
What is your name? Dwight Schrute
Dwight Schrute, do you have a(n):
1)Normal Pass?
2)InstantPass?
CHOOSE 1 or 2: 5
OOPS! That ain't right. CHOOSE 1 or 2: 2

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 1
What is your name? Stanley Hudson
Stanley Hudson, do you have a(n):
1)Normal Pass?
2)InstantPass?
CHOOSE 1 or 2: 2

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 1
What is your name? Kevin Malone
Kevin Malone, do you have a(n):
1)Normal Pass?
2)InstantPass?
CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 1
What is your name? Meredith Palmer
Meredith Palmer, do you have a(n):
1)Normal Pass?
2)InstantPass?
CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 1
What is your name? Angela Martin
Angela Martin, do you have a(n):
1)Normal Pass?
2)InstantPass?
CHOOSE 1 or 2: 1

- 1) ADD RIDER TO WAIT LINE.
- 2) REMOVE RIDER FROM LINE.
- 3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Oscar Martinez

Oscar Martinez, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

- 1) ADD RIDER TO WAIT LINE.
- 2) REMOVE RIDER FROM LINE.
- 3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Phyllis Vance

Phyllis Vance, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 2

- 1) ADD RIDER TO WAIT LINE.
- 2) REMOVE RIDER FROM LINE.
- 3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Dwight Schrute, InstantPass holder, YOU ARE RIDING!

- 1) ADD RIDER TO WAIT LINE.
- 2) REMOVE RIDER FROM LINE.
- 3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Stanley Hudson, InstantPass holder, YOU ARE RIDING!

- 1) ADD RIDER TO WAIT LINE.
- 2) REMOVE RIDER FROM LINE.
- 3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Phyllis Vance, InstantPass holder, YOU ARE RIDING!

- 1) ADD RIDER TO WAIT LINE.
- 2) REMOVE RIDER FROM LINE.
- 3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Jim Halpert, normal pass holder, YOU ARE RIDING!

- 1) ADD RIDER TO WAIT LINE.
- 2) REMOVE RIDER FROM LINE.
- 3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Pam Beesly, normal pass holder, YOU ARE RIDING!

- 1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Andy Bernard, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Robert California, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Kevin Malone, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Meredith Palmer, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Angela Martin, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Roy Anderson

Roy Anderson, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Jan Levinson

Jan Levinson, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 2

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Toby Flenderson

Toby Flenderson, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Kelly Kapoor

Kelly Kapoor, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Karen Filipelli

Karen Filipelli, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Creed Bratton

Creed Bratton, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Darryl Philbin

Darryl Philbin, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Erin Hannon

Erin Hannon, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Gabe Lewis

Gabe Lewis, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Holly Flax

Holly Flax, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? Nellie Bertram

Nellie Bertram, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 1

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 1

What is your name? David Wallace

David Wallace, do you have a(n):

1)Normal Pass?

2)InstantPass?

CHOOSE 1 or 2: 2

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 5


```
OOPS! That ain't right. CHOOSE 1-3: 1
    What is your name? Michael Scott
    Michael Scott, do you have a(n):
    1)Normal Pass?
    2)InstantPass?
    CHOOSE 1 or 2: 2

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 2
    Jan Levinson, InstantPass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 2
    David Wallace, InstantPass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 2
    Michael Scott, InstantPass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 2
    Oscar Martinez, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 2
    Roy Anderson, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 2
    Toby Flenderson, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
3) DONE FOR THE DAY.
CHOOSE 1-3: 2
    Kelly Kapoor, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.
2) REMOVE RIDER FROM LINE.
```

3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Karen Filipelli, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Creed Bratton, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 2

Darryl Philbin, normal pass holder, YOU ARE RIDING!

1) ADD RIDER TO WAIT LINE.

2) REMOVE RIDER FROM LINE.

3) DONE FOR THE DAY.

CHOOSE 1-3: 3

IT IS QUITTING TIME!

Oh shoot, I am sorry, our park is closed so Erin Hannon will not get to ride today.

Oh shoot, I am sorry, our park is closed so Gabe Lewis will not get to ride today.

Oh shoot, I am sorry, our park is closed so Holly Flax will not get to ride today.

Oh shoot, I am sorry, our park is closed so Nellie Bertram will not get to ride today.