Data Structure Assignment 3

Programming Homework1

Maze

Problem description:

In the input file(in.txt), 0's are available path and 1's are blocked. Help the rat to find the route out of the maze!! The rat has 8 direction choices. Count the number of steps and print in the output file. There are 3 kinds of possible result.

1. No route
2. Just exist one route

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3. Multiple route

If you find all route. List all route will get bonus.

Use read/write file in this homework.

Sample input file (in.txt)

s0010
11010
01011
0110d

Character 's' represent source site.

Character 'd' represent destination.

This maze is a MxN matrix. There is no space character between character.

Warning: The source site and destination are not always on (0,0) and (m-1,n-1).

Sample output file (out.txt)

s**10
11*10
01*11
011*d
6 steps

Character '*' represent the rat passed.

There is no space character between character as well.

1. No route→print "No route" in the output file.
2. Exist route→print the result and the number of steps.

Bonus:

List all route 10% (You could only print the shortest path steps below the route)

out.txt - 記事本

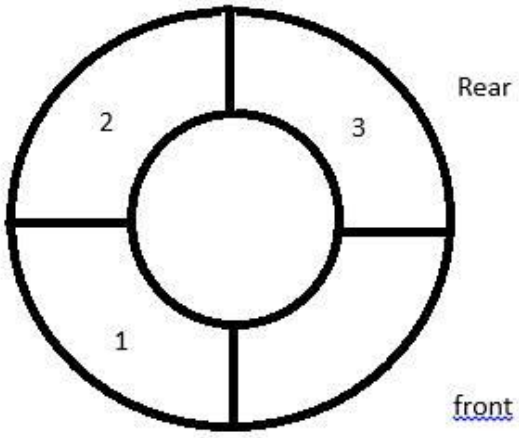
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明(H)

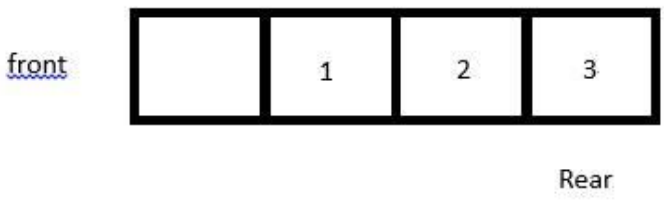
```
s**10
11*10
01*11
011*d

s*010
11*10
01*11
011*d
The shorest path: 5 steps
```

Programming Homework2

1. Implement the *queueFull* and *queueEmpty* functions for the noncircular queue.
2. Implement the *queueFull* and *queueEmpty* functions for the circular queue.

請分別實作出一個大小為 4 的 noncircular queue 和 circular queue(分別放在 2 個程式檔案)，可 insert 字元和 delete 字元，若 Queue 為滿，請顯示出 Queue is full，若 Queue 為空，請顯示出 Queue is empty，並列出 front, rear 和 queue 的內容。





Sample input:

Insert(1)delete(2):1

Insert number:1

Insert(1)delete(2):1

Insert number:2

Insert(1)delete(2):1

Insert number:3

Insert(1)delete(2):1

Insert number:4

Insert(1)delete(2):2

Sample output:

noncircular queue

Front=0,Rear=1

Queue:[ ][1][ ][ ]

Front=0,Rear=2

Queue:[ ][1][2][ ]

Front=0,Rear=3

Queue:[ ][1][2][3]

Queue is full

Front=0,Rear=3

Queue:[ ][1][2][3]

Front=1,Rear=3

delete:1

Queue:[ ][ ][2][3]

circular queue

Front=0,Rear=1

Queue:[ ][1][ ][ ]

Front=0,Rear=2

Queue:[ ][1][2][ ]

Front=0,Rear=3

Queue:[ ][1][2][3]

Queue is full

Front=0,Rear=3

Queue:[ ][1][2][3]

Front=1,Rear=3

delete:1

Queue:[ ][ ][2][3]

General Information:

- Deadline：2016/11/11 23:55.
- Upload your assignment to Moodle system.
- Upload file format: Student-Id_Name.rar , Ex.P76991094_王小明.rar
- Your file should consist of the following items: Source Code & Readme file

  (Program description. Do not copy your code and paste on your readme file)
- Late homework will not be accepted.
- Any copies will be scored as zero. Do not plagiarize