

Gebze Institute of Technology

Introduction to Programming

CSE102 HW07

Fall 2014

Due Date
13.11.2014, 23:59

Implement the following functions;

1. **(20 pts) check_success:** A function that checks whether given tic tac toe board configuration is in win state or not.
Also, write a function **test_part1** which tests check_success function and prints the result.
Input format:
<size><char> <board>
3
X
X O X
X X X
O X O
Output(Win, Lose, Draw):
Win
2. **(20 pts) sort:** Sorts given array in regards of n'th digit.
Also, write a function **test_part2** which tests sort function and prints the result.
Input format:
<n'th digit> <data>
2
4 45 62 1 900 105
Output:
001
004
105
900
045
065

Maximum array size is 100.
3. **(30 pts) Circular Array Based Queue:** Add element to the queue using **enqueue** function. Remove element from the queue using **dequeue** function.
Also, write a function **test_part3** which tests Circular Array Based Queue implementation in a loop.
Input format:
<type> < Data.... >

e 2 32 34 2 4 1

command calls enqueue function and adds given data to the queue.

d

command calls dequeue function and removes data from the queue.

p

command prints the content of the queue.

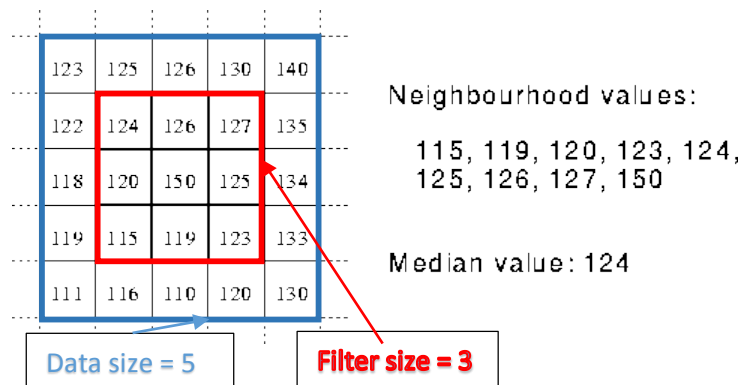
(queue: 2 32 34 2 4 1)

q

command breaks the loop.

Maximum queue size is 10.

4. **(30 pts) 2D Median Filter:** Applies median filter to given 2D integer array.



Also, write a function **test_part4** which tests median filter function and prints the result.

Input format:

<data size><filter size> <data>

8

3

00000000
05006000
00000700
00005000
00056000
00055000
000000450
00000000

Output:

00000000
00000000
00000000
00000000
00055000
00055000
00000000
00000000

Maximum array size is 100.

Your main function must be in following format;

```
int main() {
    //You have to complete the code and correct all kind of errors

    //////////////////////////////////////
    puts("-----");
    printf("testing the function xxx \n");

    ...call test_part1...

    puts("-----");
    //////////////////////////////////////

    //////////////////////////////////////
    puts("-----");
    printf("testing the function xxx \n");

    ...call test_part2...

    puts("-----");
    //////////////////////////////////////

    //////////////////////////////////////
    puts("-----");
    printf("testing the function xxx \n");

    ...call test_part3...

    puts("-----");
    //////////////////////////////////////

    //////////////////////////////////////
    puts("-----");
    printf("testing the function xxx \n");

    ...call test_part4...

    puts("-----");
    //////////////////////////////////////
}
```

Sample Input(Your program should accept whole input data even if you cannot complete some parts of homework):

```
3
X
X O X
X X X
O X O
2
4 45 62 1 900 105
e 2 32 34 2 4 1
d
d
d
e 2 32 34 2 4
p
q
8
3
0 0 0 0 0 0 0 0
0 5 0 0 6 0 0 0
0 0 0 0 0 7 0 0
0 0 0 0 5 0 0 0
0 0 0 5 6 0 0 0
0 0 0 5 5 0 0 0
0 0 0 0 0 0 45 0
0 0 0 0 0 0 0 0
```

Notes:

- You should submit 1 file;
 - main.c
- Add all **files into a folder and compress it** for submission. The folder names will be restricted to the following format:
HW#_studentid_studentname.
 - Example:
HW01_121044001_Abdullah_Akay
- Upload soft copy of your homework to Moodle course web page
- **DON'T submit hard copy of your assignment.**
- Don't forget to test your code in the provided Linux virtual machine.
- Obey good programming rules (Indentation, Documenting, Well Commenting, Avoiding magic numbers, Non-ascii characters etc.)
- **Strictly follow submission and file, folder naming rules.**