

Computer Programming

Lab10

May 29, 2025



Submission

- **Submit to server**

At the end of the Lab10, submit your C sources file by typing

`~gs1401/bin/submit Lab10_2 ex10_3.c ex10_extra.c // by Thur 11:50`

You may check that you have submitted your source code correctly by typing

`~gs1401/bin/submit -check`

Ex3

- Write a program that reads two integers N and M , representing the number of rows and columns of a 2D integer array. Then read $N \times M$ integers to fill the array. Your task is to find the maximum value in the array and print this value followed by all positions (row and column indices) where this maximum value appears.
 - Input:
 - ✓ First line contains two integers N and M ($1 \leq N, M \leq 100$).
 - Output:
 - ✓ Row and column indices start at 0.

- Program output

```
[ohyong@cse ~/cp/Lab10]$ vi ex10_3.c
[ohyong@cse ~/cp/Lab10]$ gcc ex10_3.c -o ex10_3
[ohyong@cse ~/cp/Lab10]$ ./ex10_3
Enter dimensions (N M): 2 3
Enter values:
4 9 7
9 2 5
Max value: 9
Positions: (0, 1) (1, 0)
```

```
[ohyong@cse ~/cp/Lab10]$ ./ex10_3
Enter dimensions (N M): 3 4
Enter values:
1 5 9 3
9 7 9 2
4 6 1 9
Max value: 9
Positions: (0, 2) (1, 0) (1, 2)
(2, 3)
```

- Write a program that reads a 3×3 matrix of integers. Determine if this matrix is a magic square: all rows, columns, and both main diagonals must have the same sum.

- Program output

```
[ohyong@cse ~/cp/Lab10]$ vi ex10_extra.c
[ohyong@cse ~/cp/Lab10]$ gcc ex10_extra.c -o ex10_extra
[ohyong@cse ~/cp/Lab10]$ ./ex10_extra
Enter 9 values for 3x3 matrix:
8 1 6
3 5 7
4 9 2
Magic Square

[ohyong@cse ~/cp/Lab10]$ ./ex10_extra
Enter 9 values for 3x3 matrix:
1 2 3
4 5 6
7 8 9
Not a Magic Square
```