C++ Programming

Multidimensional Arrays

Homework 1

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Teaching, Training and Coaching since more than a decade!

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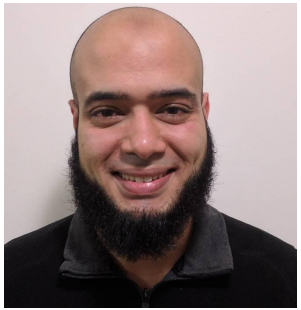


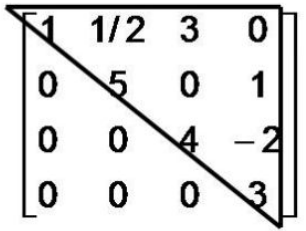
Homework 1: Smaller row?

- Read integers N, M, then Read **matrix** NxM. Then read Q, for q integers. Each query is 2 integers for 2 rows indices
- Compare the 2 rows and print **YES** if first row < 2nd one for all row values
- Input ⇒ Output
  - 3 4
  - 8 16 9 52
  - 3 15 27 6
  - 14 25 29 10
  - 3
  - 1 2 ⇒ NO
  - 2 3 ⇒ YES
  - 1 3 ⇒ NO

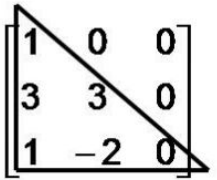
Homework 2: Triangular matrix

- Read integer N, then Read **Square** matrix NxN. Then, print 2 values. The sum of the **upper** triangle matrix and the **lower** triangle.
- Input
  - 3
  - 8 16 9
  - 3 15 27
  - 14 25 29
- Output
  - 94 (8+15+29+3+25+14)
  - 104 (8+15+29+16+27+9)

Upper triangular matrix



Lower triangular matrix



Homework 3: Find mountains

- Read integers N, M, then Read **matrix** NxM. Print all positions that are mountain. Position is mountain if its value > 8 neighbours values
- Input
  - 3 3
  - 8 6 1
  - 3 2 9
  - 1 6 4
- Output
  - 0 0 (8 > 6, 3, 2)
  - 1 2 (9 > 1, 2, 5, 4, 6)

Homework 4 : NxN tic-tac-toe

- Read integer N for the dimension of tic-tac-toe (3 <= N <= 9). Then run a game of 2 users who keep playing till one of them wins or tie. Print the grid after each round. Checkout below

```
3
Player x turn. Enter empty location (r, c): 1 1
x..
...
...
Player o turn. Enter empty location (r, c): 3 1
x..
...
o..
Player x turn. Enter empty location (r, c): 2 2
x..
.x.
o
```

```
Player o turn. Enter empty location (r, c): 2 1
x..
ox.
o..
Player x turn. Enter empty location (r, c): 2 2
Invalid input. Try again
Player x turn. Enter empty location (r, c): 5 5
Invalid input. Try again
Player x turn. Enter empty location (r, c): 3 3
x..
ox.
o.x
Player x won
```

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."