Faculty of Computers & Information
First Year
Programming (2) C.H
Year 2019/ 2020

Sheet 1 - 2D Array: Due Date (The next Lab 4/Mar/2020)

(1) Puzzle, in this game the board (4x4) contains 15 random values (from 1 to15), and only one empty cell.

8	3	11	2
10	6	14	15
12	1	5	9
7	13		4

The user can only move the cell which is the right, left, up, or down of the empty cell.
Then this movement automatically replaces the selected cell by the empty cell.

8	3	11	2
10	6	14	15
12	1	5	9
7	13		4

Selected swap (LEFT) ⟹

8	3	11	2
10	6	14	15
12	1	5	9
7		13	4

The user repeats this step till the puzzle becomes sorted.

(2) Write a program that multiplies 2 matrices and print the result matrix.

(3) Write a program that takes a matrix with size 2x3 and performs matrix transpose.

(4) Write a program that implements a transposition encryption technique that acts as following: Write your message in a rectangle, row by row, and read it off, column by column, but permute the order of columns, the columns order is the algorithm key.

Ex.
Enter your message (maximum allowed length is 36 characters):
FCI is established since 14 years
Enter your key: 2 0 5 3 1 4

F	C	I		i	s
e	s	t	a	b	l
i	s	h	e	d	
s	i	n	c	e	
1	4		y	e	a
r	s	-	-	-	-

Cipher Text:
Ithn -Feis1rs1 a- aecy-Cssi4sibdee-

(5) Write a C++ program to check whether two matrices are equal or not.