Assignment - 2

Consider an n x n matrix. Take the matrix elements as input from the user and perform the following.

1. Find the row whose average is maximum/minimum.
2. Find the column whose average is maximum/minimum.
3. Swap the maximum number with the minimum number in the matrix (assuming all elements are distinct).
4. Take two integers as input less than n (say x and y). Swap the x^{th} row with y^{th} row. Also, swap the x^{th} column with y^{th} column.
5. Obtain the address of the first element of the matrix.
6. Check whether the matrix is stored in row-major representation or column-major representation.
7. Create a one-dimensional array of size n*n and store the matrix elements in this array in row-major and column-major representation.
8. Consider a new representation to store the matrix (say diagonal representation) which works as follows.

Matrix

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

Diagonal representation

A	F	K	P	B	G	L	E	J	O	C	H	H	I	N	D	M

Matrix

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y

Diagonal representation

A	G	M	S	Y	B	H	N	T	F	L	R	X	C	I	O	K	Q	W	D	J	P	V	E	U

Use separate functions to perform the different functionalities. The name of the program should be **assign21_<ROLL_NO>.c**.

Store two polynomials in the form of a linked list. User input will be the following.

- Number of terms in the polynomial
- For each term: coefficient and exponent. For example, if the terms is -4x^2 then coefficient = -4 and exponent = 2

Perform the following operations.

1. Add these two polynomial and print the resultant polynomial.
2. Subtract the first polynomial from the second and print the resultant polynomial.
3. Subtract the second polynomial from the first and print the resultant polynomial.
4. Find the term in both the polynomial with the highest coefficient/exponent.

Use separate functions to perform the different functionalities. The name of the program should be **assign22_<ROLL_NO>.c**.

Store two large numbers (20 <= no. of digits <= 100) in the arrays. You can ask the number of digits as a user input. Perform the following.

1. Add these two numbers
2. Subtract the second number from the first
3. Multiply these numbers.

Use separate functions to perform the different functionalities. The name of the program should be **assign23_<ROLL_NO>.c**.