Assignment 2

1. Space required to store any two-dimensional array is:

   number_of_rows X number_of_columns

   Assuming array is used to store elements of the following matrices, implement an efficient way that reduces the space requirement.

   (a) Diagonal Matrix.
   (b) Tri-diagonal Matrix.
   (c) Lower triangular Matrix.
   (d) Upper triangular Matrix.
   (e) Symmetric Matrix.

2. Write a program to implement the following operations on a Sparse Matrix, assuming the matrix is represented using a triplet.
   (a) Transpose of a matrix.
   (b) Addition of two matrices.
   (c) Multiplication of two matrices.

3. Write a program to find sum of every row and every column in a two-dimensional array.

4. Write a program to find a saddle point in a two-dimensional array. A saddle point in a numerical array is a number that is larger than or equal to every number in its column, and smaller than or equal to every number in its row.

5. Implement the following Sorting Algorithms for a 1-D Array.

   (a) Bubble Sort.
   (b) Insertion Sort.
   (c) Selection Sort.
   (d) Shell Sort.

6. https://www.interviewbit.com/problems/spiral-order-matrix-i/
7. https://www.interviewbit.com/problems/spiral-order-matrix-ii/