

Sabancı University
Faculty of Engineering and Natural Sciences**CS301 – Algorithms****Recit 8**

April 24, 2024

Question 1

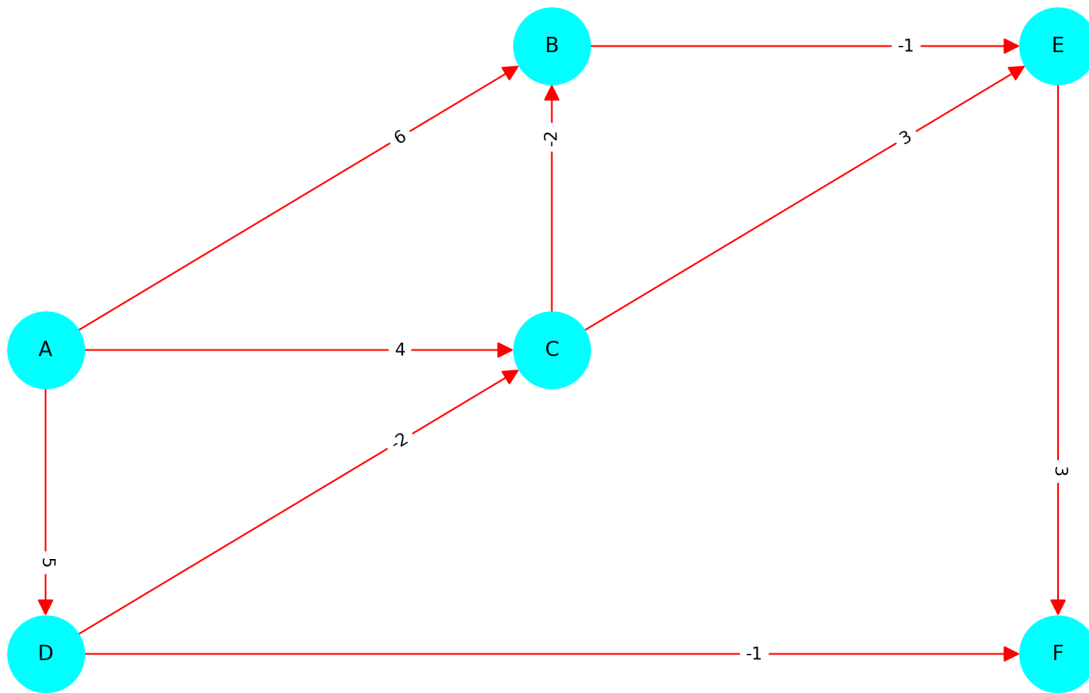
Describe an algorithm to solve the following problem. Given a 2D binary matrix A (0-based index) of dimensions $N \times M$. Find the minimum number of steps required to reach from $(0,0)$ to (X, Y) . Note: You can only move left, right, up and down, and only through cells that contain 1.

Illustrate the working of your algorithm over the following example input:

$$A = \begin{bmatrix} 1 & 1 & 1 & 0 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & 1 \end{bmatrix}$$

Question 2

For the following graph, find the shortest distance from A to all other nodes.



Question 3

What is the Minimum Spanning Tree for the following graph?

