Birla Institute of Technology and Science-Pilani, Hyderabad Campus
First Semester 2020-2021
Lab Sheet-12
CS G526: Advanced Algorithms and Complexity
Date: 20/01/21

General Instructions: Argue logically. Write it in a manner that explains your logic very clearly. Do not miss steps in between.

Problem-1: [50 pts] Suppose you are walking on a matrix and once you move from one cell to the other (either vertically or horizontally) your score in increased/decreased based on the value at the current cell. You cannot move once your score is zero. What is the minimum score you should begin with so that you can reach from $(0,0)$ to $(m-1, n-1)$ so that your score at the last cell should remain positive? The input is in the following format:

Input: First line in the dimension of the matrix and input matrix with scores is from the second line.

3 3
−2 −3 5
−5 −10 1
10 30 −7

Output:
7

Explanation:
starting from $(0,0)$, go over till left end and go down. At $(2,2)$ your score is 1.

Problem-2: [50 pts] Suppose you have to schedule meetings in a day but in your office there is only one meeting room. Your goal is to schedule maximum number of meeting possible in a day.

Input: There are N meeting of the form $S[i]$ and $E[i]$ where $S[i]$ indicates the start time of the meeting and $E[i]$ indicates the end time of the meeting.

Output: Your output will be a single number denoting the maximum number of meeting possible to allocate.

Example:
Input:
3
$\{1, 3, 0\}$
$\{2, 4, 5\}$.

Output:
2

Explanation:
Clearly the interval $(0, 5)$ overlaps the other two meeting intervals $(1, 2)$ and $(3, 4)$.