

Algorithm Programming Assignment Report 2
B10910207

Data Structure:

In this assignment, I use a 2D matrix (but cut in half along the diagonal line) M to store the maximum planar subset's number m_{ij} in the region of i, j , where $i \leq j$.(like Fig.1)

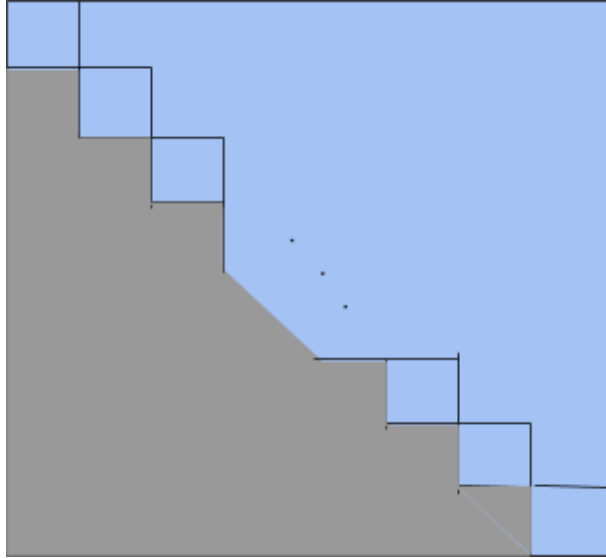


Fig 1. graph of the cut half matrix M

And another 2D matrix to store what type of cases is when calculating m_{ij} , helping us to recover which chords are in the final subset.

Algorithm:

First, use one of the chords that the region ends (i, j) formed.

If the chord is in the region then the maximum number of chords m_{ij} would be the number in the left + right subplanes divided by the chord plus 1, else it would be the same as in the smaller region $(i, j-1)$ contained in region (i, j) .

I tried both bottom up (iteration) and top down (recursion) methods to implement the algorithm, and found out that the top down method is significantly faster than the bottom up method (approx. 0.3s in case 10000, 30s in case 100000), since it only calculates the condition we need. Also, because of the different chords we chose in different methods, two final subsets would be slightly different but have the same number.