Walchand College of Engineering, Sangli
Computer Science & Engineering
Third Year
Course: Design and analysis of algorithm Lab
Lab course coordinator:
Dr. B. F. Momin- Batch: - T6, T7, T8
Mr. Kiran P. Kamble- Batch: - T1, T2, T3, T4, T5

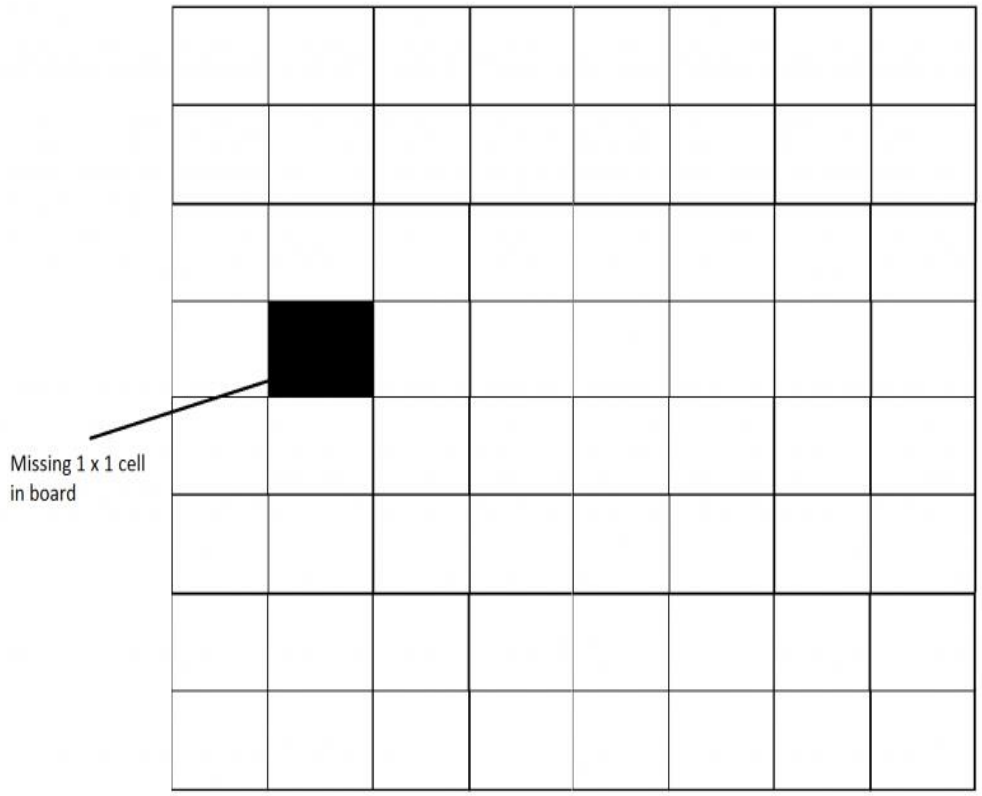
Week 3 Assignment

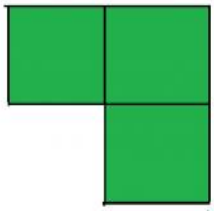
Part: 1

Divide and conquer strategy

Q1) Implement algorithm to Find the maximum element in an array which is first increasing and then decreasing, with Time Complexity *O(Logn).*

Q2) Implement algorithm for Tiling problem: Given an *n by n* board where n is of form 2^k where *k >= 1* (Basically n is a power of *2* with minimum value as *2*). The board has one missing cell (of size *1 x 1*). Fill the board using L shaped tiles. An *L* shaped tile is a *2 x 2* square with one cell of size *1×1* missing



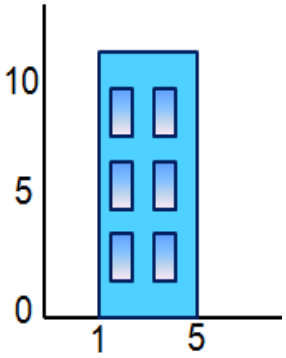


Given L shape tile that is to be used to fill the board with 1 missing cell

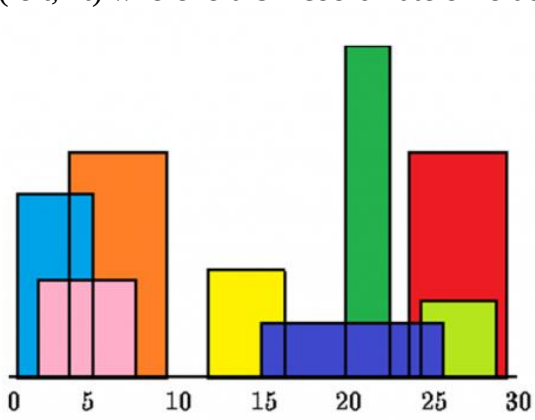
Q3) Implement algorithm for The Skyline Problem: Given n rectangular buildings in a 2-dimensional city, computes the skyline of these buildings, eliminating hidden lines. The main task is to view buildings from a side and remove all sections that are not visible.

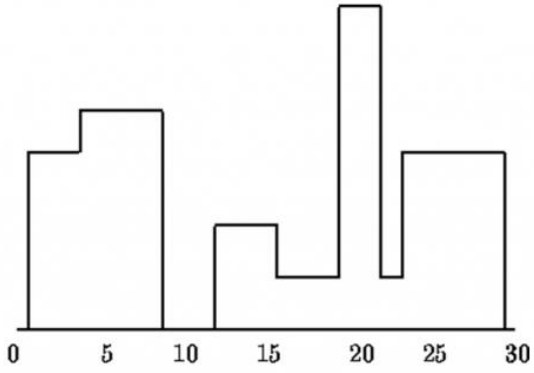
All buildings share common bottom and every **building** is represented by triplet (left, ht, right)
'left': is x coordinated of left side (or wall).
'right': is x coordinate of right side
'ht': is height of building.

For example, the building on right side is represented as *(1, 11, 5)*



A **skyline** is a collection of rectangular strips. A rectangular **strip** is represented as a pair (left, ht) where left is x coordinate of left side of strip and ht is height of strip.





With Time Complexity *O(nLogn)*