

Walchand College of Engineering, Sangli
Computer Science & Engineering
Third Year
Course: Computer Algorithm Lab

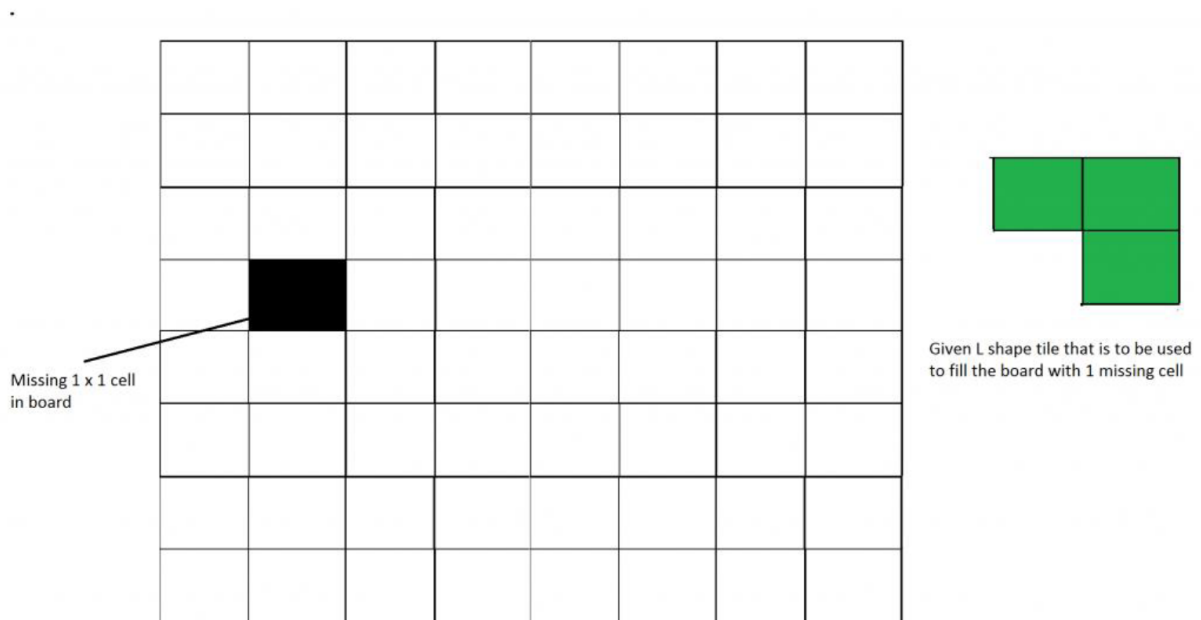
Week 4 Assignment

Part: 1

Divide and conquer strategy

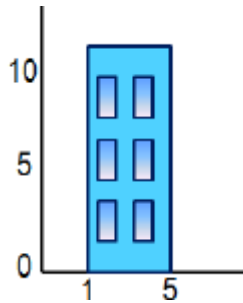
Q1) Implement algorithm to Find the maximum element in an array which is first increasing and then decreasing, with Time Complexity $O(\log n)$.

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



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 $O(n \log n)$

