# COL106 Lab Week 3 Questions

## Problem 1: Queue using 2 Stacks

Create a class Queue which will implement a queue of integers. Instead of keeping a linked list or an array, the queue will instead have two stacks. You need to provide all of the typical queue functionalities such as enqueue, dequeue, etc. For implementing the stack class, you can use the boilerplate code provided in the lectures, or use your Assignment 2 code.

You can submit and check your code here.

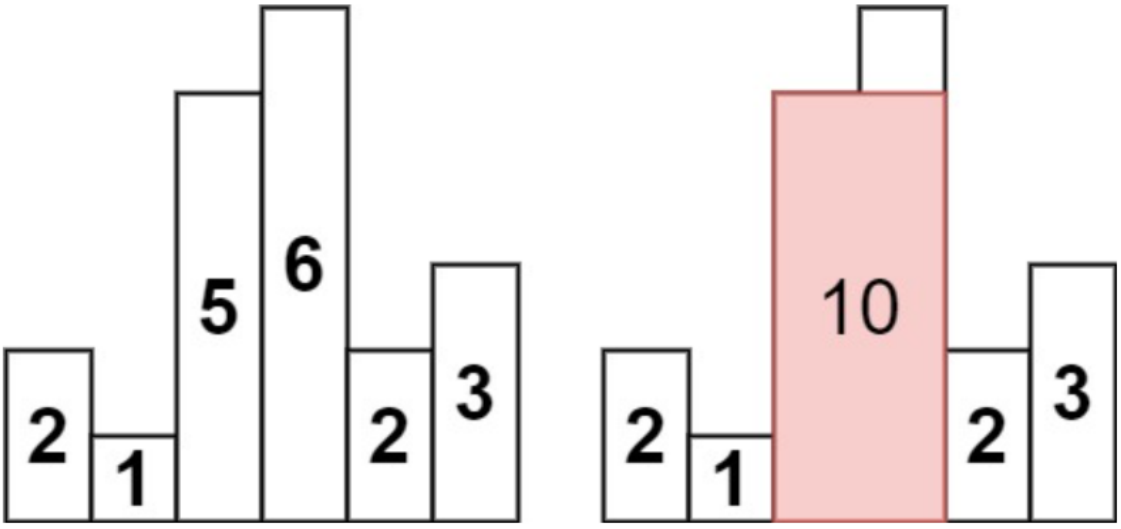
## Problem 2: LRU Cache

A cache is used to store frequently accessed elements for quick access time. An LRU cache evicts elements based on which element was Least Recently Used. Design an LRU cache using linked lists and hashmaps.

You can submit and check your code here.

## Challenge Problem: Largest Area Rectangle

Given an array of integers, each representing the height of a bar in a graph, where the base of each bar is 1, return the area of the *largest rectangle* in the graph. For example,




You can view another version of this question here. Note the constraints given. Your algorithm must be efficient.
*P.S. Try to relate this with a problem you did in Lab Week 2. If you brute-forced it, you will have to think harder this time!*