

## Lab Session 4

9.09.2024

Q1. Implement a Stack class which has the methods push(), top(), pop(). Use this class to find if a given parentheses string is valid. - i.e each opening bracket has a valid corresponding closing bracket. Assume the string only contains the characters '(' or ')'. Ex: (()()) is valid and (()()) is not valid. Check if valid or not valid:

- I.     ((()()()()))
- II.    ()()()()()()()

Q2. Write a Python program that takes a list of integers as input and sorts it in ascending order using the

- a. Merge Sort
- b. Quick Sort

Also print every iterations of sorting

Q3. Write a Python class called Queue which has the following functionality.

- a. An 'enqueue' method that accepts a variable and adds it to the queue. For instance, queue.enqueue(10).
- b. A 'dequeue' method that retrieves and removes the earliest added variable from the queue, adhering to the First Come First Serve (FCFS) principle. For example, queue.dequeue().
- c. The overall queue class should follow the First Come First Serve (FCFS) order.