

Lab Experiment: 04
Subject: Data Structures Lab
Semester: 1st

Batch: 1 & 2
MCA

Lab Assignment 1: Stack Implementation Using Arrays

Problem Statement: Implement a stack data structure using an array. Your program should support the following stack operations:

1. Push: Add an element to the top of the stack.
2. Pop: Remove an element from the top of the stack.
3. Peek: Display the top element without removing it.
4. IsEmpty: Check if the stack is empty.
5. IsFull: Check if the stack is full (assume a fixed size).

Assignment Tasks:

- Write a C program that defines a stack using arrays.
- Implement the stack operations mentioned above.
- Demonstrate stack overflow and underflow conditions.
- Write a main program to test all stack operations.

Lab Assignment 2: Stack Implementation Using Linked Lists

Problem Statement: Implement a stack data structure using a linked list. The program should support the following operations:

1. Push: Add an element to the top of the stack.
2. Pop: Remove an element from the top of the stack.
3. Peek: Display the top element without removing it.
4. IsEmpty: Check if the stack is empty.

Assignment Tasks:

- Write a C program that defines a stack using a singly linked list.
- Implement the stack operations mentioned above.
- Demonstrate stack operations using linked lists.
- Write a main program to test all stack operations.