

Lab 1-7 Practice Tasks

1. Arrays

- Write a program to initialize an array of integers and print all the elements.
- Create a program that finds the maximum and minimum values in an array.
- Write a program that reverses the elements of an array.

2. Lists

- Implement a program to add, remove, and display elements in a linked list.
- Write a program that searches for an element in a linked list.
- Create a program to insert an element at the beginning, middle, and end of a linked list.

3. Stacks

- Implement a stack using an array and perform push and pop operations.
- Write a program to check if a given string of parentheses is balanced (e.g., “(())” is balanced, but “(())” is not).
- Create a stack-based program to reverse a string (push each character and pop to reverse).

4. Queues

- Write a program to check if the elements in a queue form a palindrome. A palindrome reads the same forwards and backwards (e.g., `{1, 2, 3, 2, 1}`).
- Implement a simple program that counts the total number of elements in a queue without modifying the queue's order.
- Write a program to simulate a basic ticket queue, where people enter and leave the line in the order they joined.

5. Vectors

- Write a program to add elements to a vector and display its size and capacity after each insertion.
- Implement a program that removes duplicate values from a vector.
- Create a program to sort a vector of integers in ascending order.