Generalised Data Structures Library

Technology: : C++ Programming

Project Overview

This project is a **C++ library of generic data structures** that provides **object-oriented implementations** of both **linear and non-linear data structures**.

It offers **ready-to-use functionalities** for fundamental as well as advanced operations, designed in a **generic way** using templates so that they can be reused with **any data type**.

The library is designed to support **clean OOP principles**, modularity, and extensibility— making it suitable for both academic learning and real-world application development.

Key Features

- **Linear Data Structures**
  - **Singly Linear Linked List**
  - **Singly Circular Linked List**
  - **Doubly Linear Linked List**
  - **Doubly Circular Linked List**
  - **Stack (LIFO)**
  - **Queue (FIFO)**
- **Non-Linear Data Structures**
  - **Binary Search Tree (BST) with insert, delete, traversal operations**
- **Algorithms**
  - **Searching (Linear Search, Binary Search etc)**
  - **Sorting (Bubble Sort, Selection Sort, Insertion Sort etc)**
- **Generic Implementation**
  - **Uses C++ templates for data type independence.**
  - **Same implementation works for integers, floats, strings, and custom objects.**
- **Library Format**
  - **Designed as a reusable C++ library that can be linked with client applications.**

Skills Highlighted

- **Mastery of** C++ Object-Oriented Programming (OOP) principles**.**
- Strong foundation in **linear and non-linear data structures**.
- Implementation of **generic programming with templates**.
- Practical knowledge of **searching and sorting algorithms**.
- Experience in designing **reusable libraries** for software development.
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GitHub Repository