

# 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.

## Learning Outcomes

- 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.

## GitHub Repository

 [Generalised Data Structures Library](#)

(Replace your-username with your actual GitHub ID)

## How to Present in an Interview

*I built a Generalised Data Structures Library in C++ that provides object-oriented, generic implementations of all major data structures like linked lists, stacks, queues, and binary search trees, along with searching and sorting algorithms.*

*I used C++ templates so the library works with any data type.*

*The goal was to design a reusable, modular library that client applications can integrate directly.*

*This project strengthened my knowledge of OOP, generic programming, data structures, and reusable software design.*