



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

ADVANCED DATA STRUCTURES THROUGH C++ LAB

Course Code: GR15A2066
II Year I Semester

L:0 T:0 P:2 C:2

Prerequisites

- Computer programming language(CPDS)

Course Objectives

- To be familiar with basic programming techniques of object oriented principles.
- Solving moderately complex problems using OOP techniques.
- Implementing advance data structures using OOP techniques.

Course Outcomes

- Ability to enhance analytical and logical skills in problem solving.
- Ability to implement all data structures like stacks, queues, trees, lists and graphs
- Ability to develop solutions for a range of problems using object oriented programming.
- Ability to implement the functions of dictionary using hashing.
- Ability to develop real-time projects using C++

Week-1

Write C++ program to implement the following

- a) Constructors and destructors
- b) Overloading constructors

Week-2

Write C++ program to implement the following variations of Friend Concepts

- a) External Function declared as Friend
- b) Member Function declared as Friend
- c) One Class declared as Friend of another class.

Week-3

Write C++ program to implement the following

- a) Function and Operator Overloading
- b) Function and Operator Overloading using FRIEND concept

Week-4

Write C++ program to implement Function and Class Templates



Week-5

write a C++ program to implement

- a) Single Inheritance
- b) Multiple Inheritance
- c) Multilevel Inheritance
- d) Hybrid Inheritance

Week-6

Write C++ program to implement Runtime Polymorphism.

Week-7

Write C++ program to implement the following using an array.

- a) Stack ADT
- b) Queue ADT

Week-8

Write a C++ program to implement Open addressing collision resolution strategies of Hashing

- a) Linear probing
- b) Quadratic probing
- c) Double Hashing

Week-9

Write a C++ program to perform the following operations:

- a) Insert an element into a binary search tree.
- b) Delete an element from a binary search tree.
- c) Search for a key element in a binary search tree.

Week-10

Write C++ programs to implement Non-Recursive Tree Traversal techniques

- a) Preorder
- b) Inorder
- c) Postorder.

Week-11

Write C++ program to perform the following operations on AVL tree

- a) Insert an element
- b) Delete an element from AVL tree
- c) Search for a key element in an AVL tree

Week-12

Write C++ programs to Implement Graph Traversal Techniques

- a) BFS
- b) DFS.



Teaching Methodologies

1. Power Point presentation
2. White Board

Text Books

1. Data structures, Algorithms and Applications in C++, S.Sahni, University press (India) pvt ltd, 2nd edition, Orient Longman pvt.ltd.