WEBBIRD®
SOFTWARE INSTITUTE

www.webbirdinstitute.in

Fly Your

CAREER

With

WEBBIRD™

SOFTWARE INSTITUTE



DATA STRUCTURE

DURATION - 45 HOURS

Comprehensive Coverage
All important data structures & algorithms

Hands-on Practice
Solve real-world problems with ease

Strong Foundation
Build logical thinking & problem solving

Efficient Learning
Concepts made simple & practical

Career Oriented
Essential for placements & higher studies

+91 8527362254 | webbirdinstitute@gmail.com | www.webbirdinstitute.in

WEBBIRD
SOFTWARE INSTITUTE

DATA STRUCTURE

CODE TODAY, CREATE TOMORROW, CONQUER YOUR FUTURE.

PREREQUISITES

Knowledge of C Language

- Define Data Structure
- Algorithm
- Primitive data type, Non-primitive data type
- Arrays -1D, 2D, Sparse matrix
- Stack, Application of Stack
- Queue – Linear, Deque, Circular, Priority
- Functions, call-by-value, call-by-reference, Recursion

+91 8527362254 | webbirdinstitute@gmail.com | www.webbirdinstitute.in

WEBBIRD
SOFTWARE INSTITUTE

DATA STRUCTURE

CODE TODAY, CREATE TOMORROW, CONQUER YOUR FUTURE.

- Number System
- Dynamic vs Static Memory
- Stucture, Polynomial
- Linked list - Singly, Doubly, Circular Linked List
- Linked List opeartions: Creation, Insertion, Deletion, Modification, Searching, Sorting, Reversing, Merging.
- Trees – Notations and Terminologies, Memory Representation
- Binary tree, Complete Binary Tree, Strictly binary tree
- Binary search tree, Expression, Tree traversals
- AVL Tree, Heap Tree
- M-Way Tree and B-Tree

+91 8527362254 | webbirdinstitute@gmail.com | www.webbirdinstitute.in

WEBBIRD
SOFTWARE INSTITUTE

DATA STRUCTURE

CODE TODAY, CREATE TOMORROW, CONQUER YOUR FUTURE.

- Graphs, Application of Graphs, Breadth First Search, Depth First Search, Spanning Trees, Minimum Spanning Trees

- Brute-Force Algorithm

- Knuth-Morris-Pratt

- Searching: Sequential Search, Binary Search.

- Sorting – Bubble, Selection, Insertion, Merge, Quick, Heap

- Hash Table

PROJECT WORK



+91 8527362254 | webbirdinstitute@gmail.com | www.webbirdinstitute.in

WEBBIRD
SOFTWARE INSTITUTE

AVL TREE DATA STRUCTURE

BALANCING ACT IN DATA STRUCTURES

SELF-BALANCING BST:
Automatically maintains a minimum height.

BALANCE FACTOR (BF):
BF = Height(Left) - Height(Right).
BF must be -1, 0, or +1.

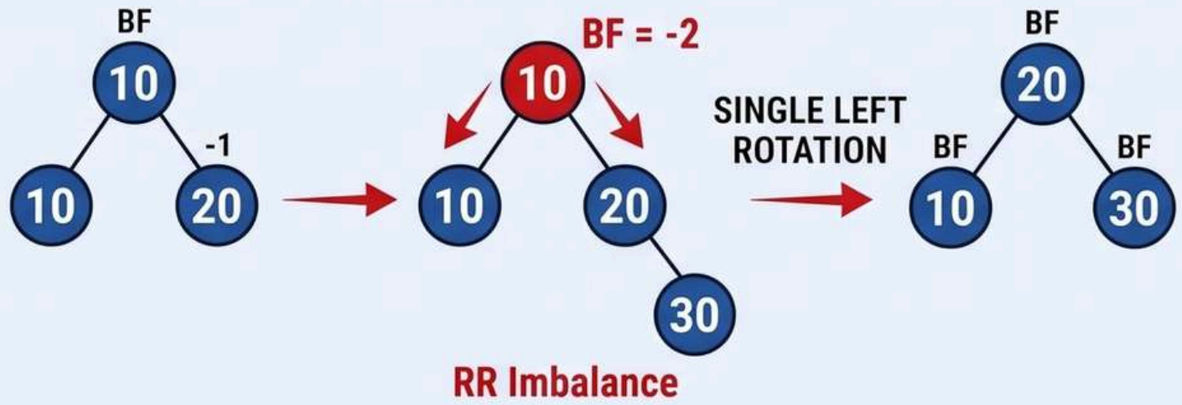
ROTATIONS:
Key operations (LL, LR, RL, RR) to correct imbalance.

EFFICIENT SEARCH:
O(log n) time complexity for search, insert, delete.

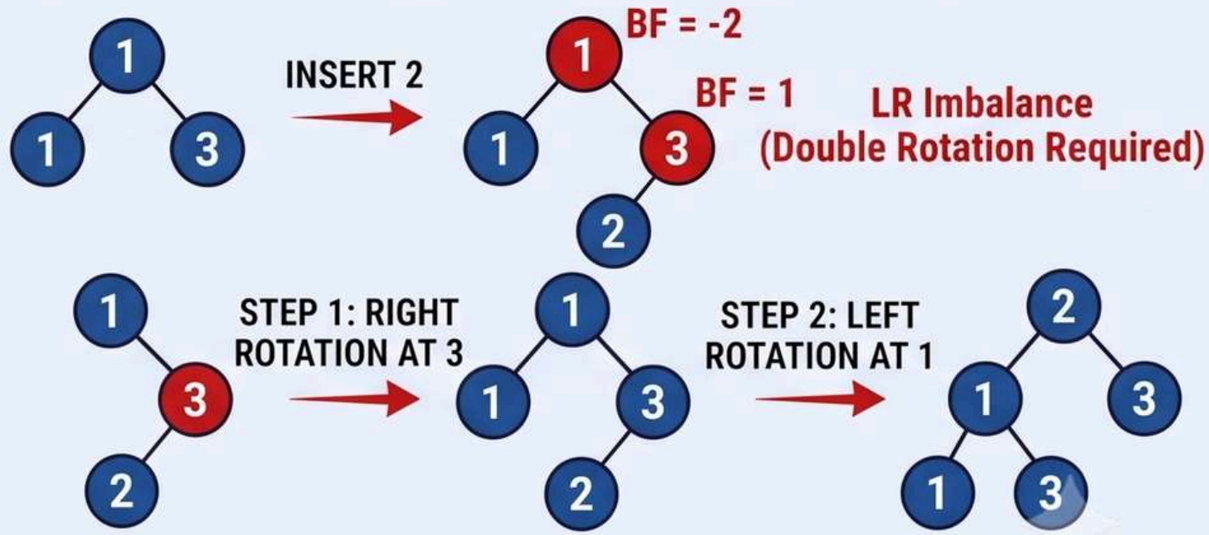
APPLICATIONS:
Fast data lookups, indexed databases.

AVL TREE INSERTION & RE-BALANCING FLOW

EXAMPLE 1: SINGLE LEFT ROTATION (RR CASE)



EXAMPLE 2: DOUBLE ROTATION (LR CASE)



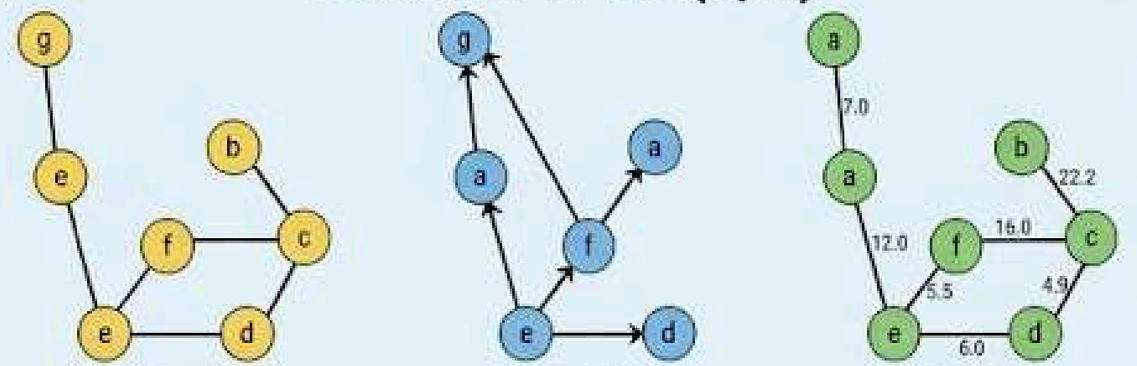
+91 8527362254 | webbirdinstitute@gmail.com | www.webbirdinstitute.in

WEBBIRD
SOFTWARE INSTITUTE

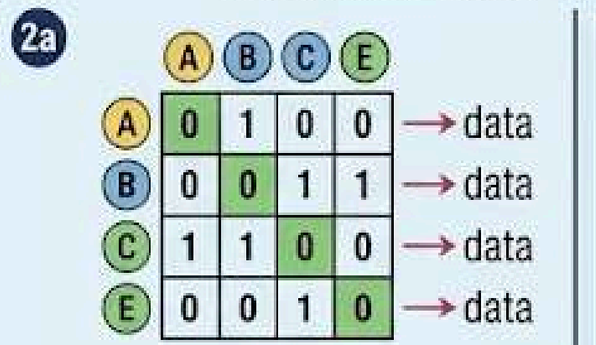
MASTER GRAPH DATA STRUCTURE & TRAVERSALS

TYPES, REPRESENTATIONS & ALGORITHMS

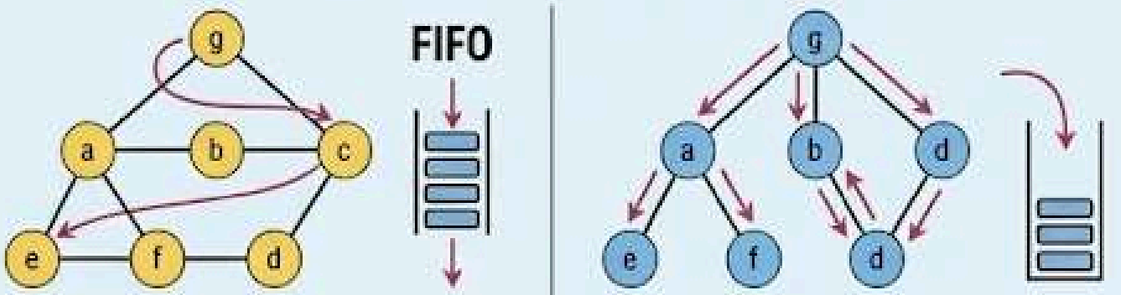
GRAPH TYPES (V, E)



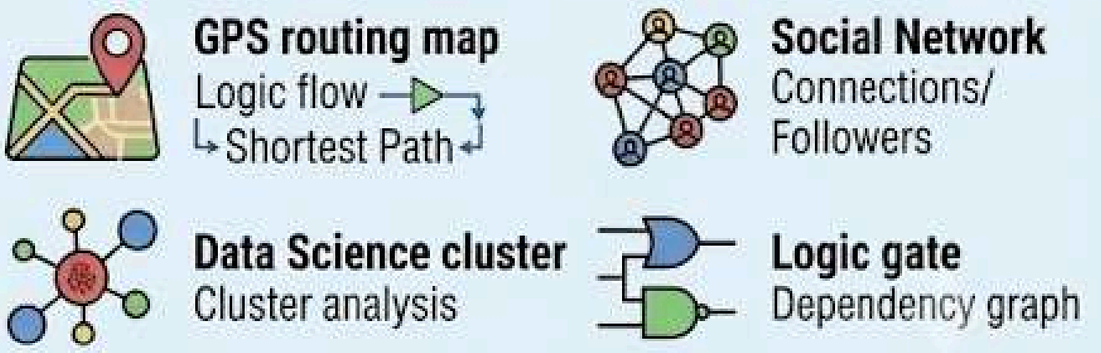
ADJACENCY MATRIX & LIST



TRAVERSAL ALGORITHMS



REAL-WORLD APPLICATIONS

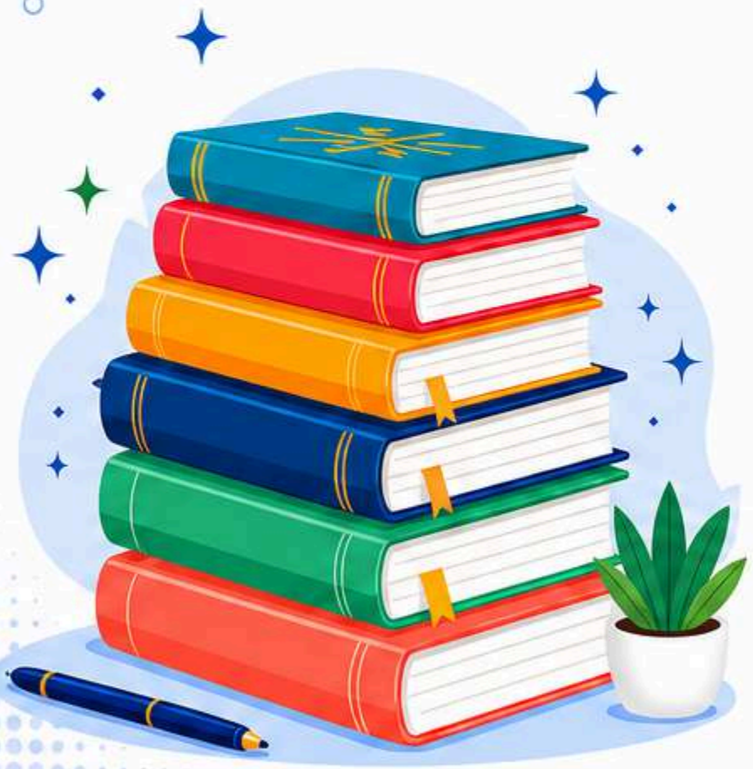


+91 8527362254 | webbirdinstitute@gmail.com | www.webbirdinstitute.in

WEBBIRD
SOFTWARE INSTITUTE

OUR FEATURES

- Study Material
- E-Books
- MCQ
- Assignments
- Tests
- Interview Preparation





+91 8527362254 | webbirdinstitute@gmail.com | www.webbirdinstitute.in

OUR COURSES

- GRAPHIC DESIGNING
- WEBSITE DEVELOPMENT
- SOFTWARE DEVELOPMENT
- DIGITAL MARKETING
- C, C++, JAVA, .NET
  PYTHON with AI
- COMPUTER CLASS
  6th to 12th





+91 8527362254 | webbirdinstitute@gmail.com | www.webbirdinstitute.in

WEBBIRD®
SOFTWARE INSTITUTE

www.webbirdinstitute.in

THANK YOU

FOR YOUR ATTENTION

REFER • EARN • GROW

- **Refer a Friend**
- **Earn Exciting Rewards**
- **Help Someone Build Their Career**

Ask at Reception

+91 8527362254 | webbirdinstitute@gmail.com | www.webbirdinstitute.in