Data Structures & Algorithms using C++

Certification 2-8 Weeks / 30-40 Hours
Industry ready exhaustive program
Internship & Training Program
Make Projects & Get Trained

About EduVitae Services

EduVitae Services, run by **IITians & industry experts**, is a renowned provider of education, training, research and development programs, with a large presence. We offer a wide range of specific industry ready courses and training opportunities in the areas of computer science and IT, animation and multimedia, as well as engineering, management and advanced technology. Our programs include workshops, training, internships, corporate training, certificate courses, placement training, research, and development programs, all designed to meet the needs of students, professionals, academic institutions, and industry. Our reputation as one of the best technology training providers, is a testament to our commitment to helping our students and clients acquire the skills and knowledge they need to succeed in their careers and goals.

Our Clientele/Collaborations

Top private & government academic institutions, college's fests and corporates where directly/indirectly our presence have been felt:

Indian Institute of Technology, Kanpur
Indian Institute of Technology (Banaras Hindu University), Varanasi
Indian Institute of Technology (ISM), Dhanbad
Indian Institute of Technology, Jodhpur
Indian Institute of Technology, Bhubaneswar
Blithchron, Indian Institute of Technology, Gandhinagar
Indian Institute of Technology, Guwahati
Indian Institute of Technology, Patna
Indian Institute of Management (IIM), Lucknow
Indian Institute of Management (IIM), Indore
National Institute of Technology, Surat
National Institute of Technology, Bhopal
National Institute of Technology, Warangal
National Institute of Technology, Trichy
Chandigarh University
DIC, Department of Applied Arts (Visual Arts), Banaras Hindu University, Varanasi
Madan Mohan Malaviya University of Technology, MMMUT Gorakhpur
Maharaja Agrasen Institute of Technology, Delhi
Thapar Institute of Engineering & Technology, Punjab
Assam Engineering College, Assam
Jaypee University of Engineering & Technology
Shillong College, Meghalaya
SRCC, Delhi University
Kendriya Vidyalaya, India
DAV School, India
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Industry/Corporate/Startups/Government
MapsCrew
Rabbixel
CreativeHatti

Accenture

Capgemini

F1 Digitals

TIH IIT Roorkee, DST, Govt. of India

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and many more tech & non-tech colleges/universities/institutes/schools & organizations/startups/companies across India and globe.

Achievements & Milestones

- ✓ Our alumni / students are working in top notch company of India & MNCs **VMware, Infosys, Cognizant, CGI, Fidelity, Razorpay, EXL, CARS24, Tata Steel, NVIDIA, MyKaarma, Oyo Rooms, Samsung, Walmart Labs, L&T, JIO, Citibank, TCS, Accolite, BNY Mellon**, and many more.

- ✓ Conducted a number of workshop/training/internship programs in many colleges/universities/schools like **IITs, IIMs, NITs, IISc** & other prestigious institutions of India & with the corporates too.

- ✓ Trained many college/university/school students, some of them have created a milestone for **EduVitae Services** by meeting with **Shri Narendra Damodardas Modi** (Prime Minister of India) related to some **robotics projects**.

- ✓ Collaborating with Industries / Corporates / Startups to provide them hiring services (helping them to hire fresh trained talent with us).

- ✓ Signed MOUs / worked with top notch colleges / universities / schools / organizations like **Techkriti IIT Kanpur, Technex IIT (BHU) Varanasi, Wissenaire IIT Bhubaneswar, Techniche IIT Guwahati, Concetto IIT (ISM) Dhanbad, Pravega IISc Bangalore, IGNUS IIT Jodhpur, Ranbhoomi IIM Indore, IIM Lucknow, MMMUT GKP, NIT Surat, NIT Bhopal, NIT Warangal, NIT Trichy, Chandigarh University, Thapar University, SRCC DU, KMC DU, TIH IIT Roorkee DST Govt. of India** and many other academic institutions for professional / industry ready & learning skills training / workshop / internship programs.

Prerequisites

Participants from 1st year/ 2nd year / 3rd year / 4th year of CSE/IT/MCA/BCA/MSc/BSc-IT/ECE/EE/Other branch/stream will get more benefit after joining this program and other interested students / learners can also participate in that as per their requirement.

What is required before joining this training program?

Here's the checklist

1. A laptop with Microsoft Windows (7 or later) configuration along with smartphone as per need/requirement.
2. Laptop Charger/Adapter for charging purpose.
3. USB Mouse for designing purpose (if required).
4. Internet Connectivity (Typically to be able to do video call / conferencing, if the program is in online mode)
5. Notepad & Pen/Pencil for important notes and most important your interest & dedication.

Training Deliverables & Takeaways

Every participant will get

- ✓ Industry Ready Curriculum
- ✓ Interactive & Doubt Session
- ✓ Certification Program
- ✓ Mini & Major Projects

- ✓ Career Guidance
- ✓ Projects/Practical Based Learning

Course & Content

All of the sessions will be theoretical & practical oriented, so it will be really great if participant(s) can look on the syllabus which we are going to cover during training days.

Data Structures & Algorithms using C++

Introduction to Data Structures and Algorithms
- Importance of data structures and algorithms in software development
- Big O notation and analyzing algorithm efficiency
- Basic problem-solving techniques and strategies

Arrays, Strings, and Basic Sorting
- Working with arrays: insertion, deletion, and searching
- Manipulating strings and common string algorithms
- Introduction to basic sorting algorithms: selection sort, insertion sort

Two Pointer
- Common two pointer problems like Two-sum, three-sum, etc.

Linked Lists, Stacks, and Queues
- Implementing and manipulating singly linked lists
- Stack data structure: LIFO principle and applications
- Queue data structure: FIFO principle and use cases

Trees and Binary Search Trees
- Understanding tree structures and hierarchical relationships
- Binary search trees (BST): insertion, deletion, searching
- Tree traversal algorithms: in-order, pre-order, post-order

Heaps, Hashing, and Maps
- Heap data structure: properties, types, and applications
- Hashing fundamentals and hash functions
- Using maps and hash maps in C++

Graphs and Graph Algorithms
- Basics of graph theory and types of graphs
- Depth-First Search (DFS) and Breadth-First Search (BFS)
- Shortest path algorithms: Dijkstra's and Bellman-Ford

Dynamic Programming
- Introduction to dynamic programming (DP) concepts

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Internship & Training Program

- Solving optimization problems using DP
- Memoization and tabulation techniques

Sorting Algorithms and Searching Techniques
- Different sorting algorithms: merge sort, quick sort
- Binary search and its applications
- Searching in rotated and sorted arrays

Advanced Data Structures and Algorithmic Paradigms
- Introduction to advanced structures: Fenwick trees, tries
- Divide and conquer paradigm and applications
- Backtracking: N-Queens, Subset Sum, and more

Algorithm Analysis and Optimization
- Analyzing algorithm complexity: time and space complexity
- Amortized analysis and real-world performance assessment
- Identifying bottlenecks and optimization strategies

Interview Preparation and Coding Practices
- Strategies for technical interviews and whiteboard sessions
- Practicing common coding problems and algorithms
- Mock interviews and constructive feedback

Real-world Applications and Case Studies
- Applying data structures and algorithms in real-world scenarios
- Case studies of algorithmic problem-solving in software development
- Design considerations for efficient and scalable solutions