DriveEdumax Academy

Computer Science

Curriculum for Grade XII

Class 12 Computer Science Curriculum

The Class 12 Computer Science curriculum is designed to equip students with advanced programming skills, knowledge of data structures, database management, networking concepts, and cybersecurity. This subject lays the foundation for pursuing further studies in computer science and related fields.

Textbook Content Overview:

Chapter 1: Exception Handling in Python

- Introduction to error handling mechanisms in Python.
- Explanation of exceptions and built-in exceptions.
- Raising and handling exceptions, and using the finally clause for error cleanup.

Chapter 2: File Handling in Python

- Basics of file handling, including types of files.
- Working with text files: opening, reading, writing, and closing files.
- Advanced concepts such as setting file offsets, using the pickle module for object serialization.

Chapter 3: Stack

- Introduction to the stack data structure.
- Implementation of stack operations in Python and working with arithmetic expressions.
- Conversions between infix and postfix notations, and evaluation of postfix expressions.

Chapter 4: Queue

- Overview of queue operations and their implementation in Python.
- Introduction to the deque (double-ended queue) and its practical uses.

Chapter 5: Sorting

- Fundamental sorting algorithms: bubble sort, selection sort, and insertion sort.
- Understanding the time complexity of sorting algorithms.

Chapter 6: Searching

- Linear and binary search algorithms.
- Introduction to searching using hashing.

Chapter 7: Understanding Data

- Overview of data collection, storage, and processing techniques.
- Application of statistical methods for data analysis.

Chapter 8: Database Concepts

- Introduction to database management systems (DBMS) and relational models.
- Understanding keys, data types, and basic operations in relational databases.

Chapter 9: Structured Query Language (SQL)

- Fundamental concepts of SQL, including data definition, manipulation, and query commands.
- Use of SQL functions, GROUP BY clause, and operations involving multiple relations.

Chapter 10: Computer Networks

- Introduction to networking concepts, including types of networks, devices, and topologies.
- Understanding the evolution of networking, domain name systems, and the Internet of Things (IoT).

Chapter 11: Data Communication

- Components and techniques of data communication, including transmission media and switching.
- Exploration of mobile telecommunication technologies and communication protocols.

Chapter 12: Security Aspects

- Overview of security threats such as malware, spam, and hacking.
- Use of antivirus software, firewalls, and cookies.
- Understanding network security threats and prevention strategies.

Chapter 13: Project-Based Learning

- Emphasis on teamwork and practical projects.
- Guidelines for developing and executing programming and network-based projects.

This comprehensive curriculum integrates theoretical concepts with practical programming skills, ensuring students are well-prepared for both academic and real-world challenges in computer science.