

C & C++ Programming



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1. Principle of Object oriented Programming

- A. Introduction
- B. Basic concept of Object oriented Programming
- C. Features of oops
- D. Uses of oops
- E. C vs C++

2. Beginning with C++

- A. What is C++
- B. A simple C++ program
- C. More c++ statements
- D. An example with class
- E. structure of c++ program
- F. compiling and linking

3. Tokens, Expression and Control statement

- A. Introduction
- B. Tokens
- C. Keywords
- D. Identifiers and constants
- E. Basic data type
- F. Derived data type
- G. variables
- H. Operator
- I. Scope resolution operator
- J. operator overloading
- K. Operator precedence
- L. Control statements



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4. Function

- A. Introduction
- B. Main function
- C. function prototype
- D. call by value
- E. call by reference
- F. Inline function
- G. friend function

5. Classes and Object

- A. Introduction
- B. c structures revisited
- C. Write a c++ program with class
- D. Objects
- E. static data member
- F. static member function

6. Constructor

- A. Introduction
- B. Constructor
- C. parametrized Constructor
- D. copy constructor
- E. Destructor

7. Inheritance

- A. Introduction
- B. Defined Derived class
- C. Single Inheritance
- D. Multilevel Inheritance
- E. Hierarchical Inheritance
- F. Hybrid Inheritance
- G. Multiple Inheritance
- H. Abstract class



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8. Overloading

- A. Introduction
- B. function Overloading
- C. Operator Overloading
- D. function Overriding

9. Virtual Function and Polymorphism

- A. Introduction
- B. this pointer
- C. virtual function
- D. pure virtual function

10. Managing console I/o Operations

- A. Introduction
- B. fstream
- C. ifstream
- D. ofstream

11. Exception Handling

- A. Introduction
- B. Advantage
- C. Exception Classes
- D. Exception Handling Keywords
- E. try/catch
- F. User-Defined Exceptions

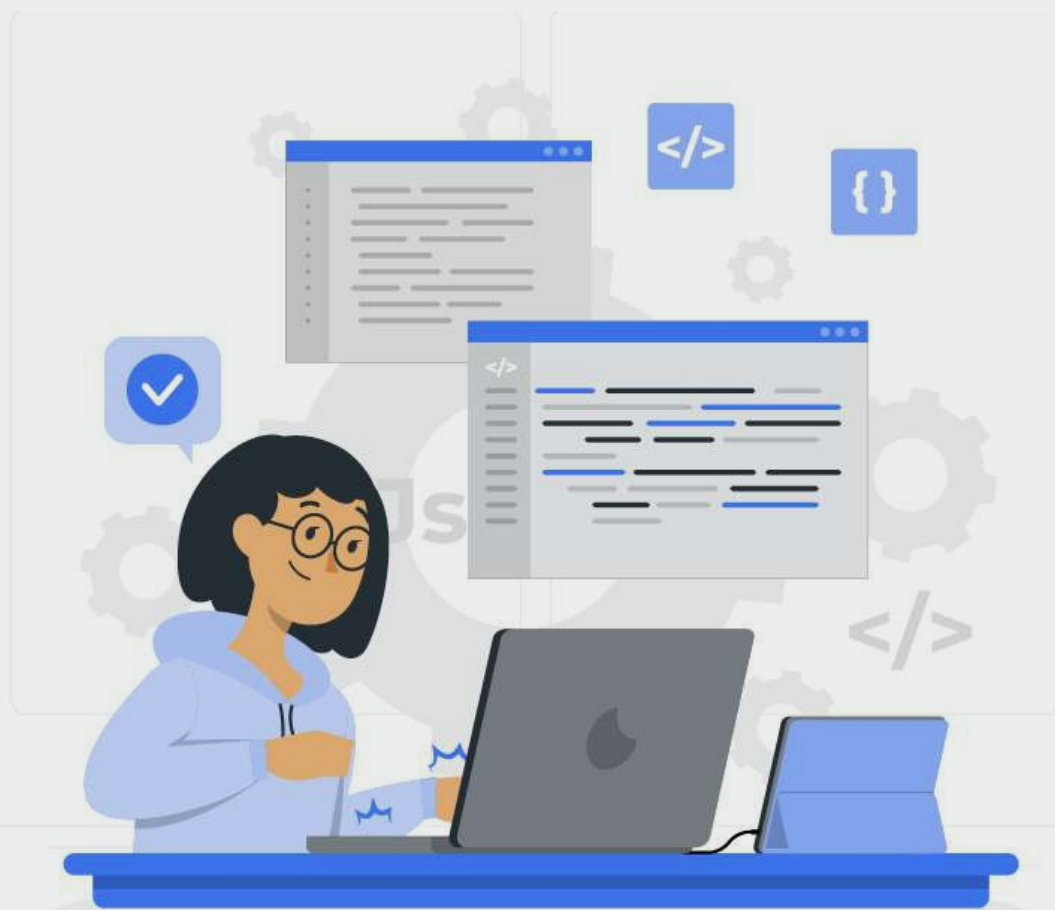
12. Strings

- A. Introduction
- B. string functions



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JAVA



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Core Java Syllabus

- Java Fundamentals
- Java Applications
- JVM Architecture
- How java is platform Independent
- Difference between JDK,JVM and JRE
- Data Types and Variables in Java
- Operators and Expressions
- Control Statements
- Loops in Java
- Arrays
- Command Line Arguments
- Java 8 and Java 9 Features
- OOP'S Concepts
- Overloading and Overriding
- Inheritance with Interface and Abstract Class
- Exception Handling
- Wrapper Classes
- Garbage Collections
- Inner Classes
- Packages
- String Class
- String Buffer and StringBuilder Class in Java
- Multithreading
- Collection and Generics
- File I/O
- Socket Programming
- AWT and Event Handling
- GUI Designing Swing
- JDBC



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Advance Java

1. Basics of Web Application

- What is Web Application
- Client and Server Architecture
- HTTP Protocol
- J2EEWeb Container and Web Server

2. Web Server Setup

- Tomcat Introduction
- Overview, Installation and Configuring Tomcat
- Setup Servlet Project in Eclipse
- Configure Servlet API

3. Servlets

- Introduction
- HTTP Protocol and HTTP Methods
- Servlet Interface
- GenericServlet Interface
- HTTPServlet Interface
- Servlet Life Cycle
- Servlet Config
- Servlet Context
- Session Tracking Mechanisms
- RequestDispatcher Forward and Include method
- Forwarding and Redirection of requests

4. Jsp

- Introduction to JSP
- JSP LifeCycle
- JSP Implicit Objects
- JSP Directives
- JSP Scripting Elements
- JSP Action Tags
- Custom Tags
- JSP with JDBC
- JSTL and Tag Library



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Frameworks

1. Hibernate Framework

- Introduction
- ORM Principle
- Hibernate Architecture
- Persistent Classes
- Setting up Hibernate project
- Configuring JAR and XML file
- Hibernate CRUD
- HQL
- Using SQL with Hibernate
- Mapping Collections
- Hibernate Caching
- Types of Caching mechanisms
- Criteria Queries

2. Spring Framework

- What is Spring
- Setting up Spring Project
- Core Spring
- Dependency Injection
- Spring Bean Factory
- Spring Application Context
- Spring MVC
- Spring ORM
- Spring DAO

3. Spring Boot Framework

- Spring Boot Introduction
- Spring Boot Architecture
- Spring Initializr
- Download and Install STS IDE
- Spring Boot CLI
- Spring Tool Suite
- Annotations
- Spring Boot View
- Spring Boot with Database
- Spring Boot Caching
- Web Services : Rest Api



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Python



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Introduction to Python

What is Python and history of Python?
Unique features of Python
Python-2 and Python-3 differences
Install Python and Environment Setup
First Python Program
Python Identifiers, Keywords and Indentation
Comments and document interlude in Python
Command line arguments
Getting User Input
Python Data Types
What are variables?
Python Core objects and Functions
Number and Maths
Week 1 Assignments

Control Statements

if-else
if-elif-else
while loop
for loop
break
continue
assert
pass
return



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List, Ranges & Tuples in Python

Introduction

Lists in Python

More about Lists

Understanding Iterators

Generators, Comprehensions and Lambda Expressions

Introductio

Generators and Yield

Next and Ranges

Understanding and using Ranges

More About Ranges

Ordered Sets with tuples

Python Dictionaries and Sets

Introduction to the section

Python Dictionaries

More on Dictionaries

Sets

Python Sets Examples

Input and Output in Python

Reading and writing text files

Writing Text Files

Appending to Files and Challenge

Writing Binary Files Manually

Using Pickle to Write Binary Files



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Exceptions

- Errors in Python
 - Compile-Time Errors
 - Runtime Errors
 - Logical Errors
- What is Exception?
- Handling an exception
 - try....except...else
 - try-finally clause
- Argument of an Exception
- Python Standard Exceptions
- Raising an exceptions
- User-Defined Exceptions

Python Regular Expressions

- What are regular expressions?
- The match Function
- The search Function
- Matching vs searching
- Search and Replace
- Extended Regular Expressions
- Wildcard

Python Multithreaded Programming

- What is multithreading?
- Difference between a Process and Thread
- Concurrent Programming and GIL
- Uses of Thread
- Starting a New Thread
- The Threading Module
- Thread Synchronization
- Locks
- Semaphore
- Deadlock of Threads
- Avoiding Deadlocks
- Daemon Threads



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Using Databases in Python

Python MySQL Database Access
Install the MySQLdb and other Packages
Create Database Connection
CREATE, INSERT, READ Operation
DML and DDL Oepration with Database

Graphical User Interface

GUI in Python
Button Widget
Label Widget
Text Widget

Django Web Framework in Python

Introduction to MVC and MVT architecture on web development.
Django folder structure flow of control.

Web scraping in python.

Introduction to Data Science.



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SQL



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Module 1:

Introduction to MySQL. Installation of MySQL server. Download sample database .Load sample database to work.

Module 2:

Writing Basic SQL

Topic:

Basic SELECT Statement

Selecting All Columns

Selecting Specific Columns

Writing SQL Statements

Column Heading Defaults

Arithmetic Expressions

Using Arithmetic Operators

Operator Precedence

Using Parentheses

Defining a Null

Defining a Column Alias

Using Column Aliases

Concatenation Operator

Using the Concatenation Operator

Literal Character Strings

Using Literal Character Strings

Duplicate Rows

Eliminating Duplicate Rows



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Module 3:

Restricting and Sorting Data

Topic :

Limiting Rows Using a Selection

Limiting the Rows Selected

Using the WHERE Clause

Character Strings and Dates

Comparison Conditions

Using Comparison Conditions

Other Comparison Conditions

Using the BETWEEN Condition

Using the IN Condition

Using the LIKE Condition

Using the NULL Conditions

Logical Conditions

Using the AND Operator

Using the OR Operator

Using the NOT Operator

Rules of Precedence

ORDER BY Clause

Sorting in Descending Order

Sorting by Column Alias

Sorting by Multiple Columns

Module 4:

Working on DDL Commands

Topic:

Relational Database Management System (RDBMS)

Normalization

Create Database objects

Data Types in SQL

Alter Table Statements

Drop Table Statements

Various Constraints

Creating Views



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Module 5:

Working on DML statements

Topic:

Data Manipulation Language

Adding a New Row to a Table

The INSERT Statement Syntax 8-5

Inserting New Rows

Inserting Rows with Null Values

Inserting Special Values

Inserting Specific Date Values

Creating a Script

Copying Rows from Another Table

Changing Data in a Table

The UPDATE Statement Syntax

Updating Rows in a Table

Updating Two Columns with a Subquery

Updating Rows Based on Another Table

Updating Rows: Integrity Constraint Error

Removing a Row from a Table

The DELETE Statement

Deleting Rows from a Table

Deleting Rows Based on Another Table

Deleting Rows: Integrity Constraint Error

Using a Subquery in an INSERT Statement

Module 6:

Working on multiple tables and Retrieve records from multiple tables

Topic :

Self-Join

Inner Join

Left Join

Right Join

Cross Join



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Module 7:

Working on subqueries

Topic :

Using a Subquery to Solve a Problem

Subquery Syntax

Using a Subquery

Guidelines for Using Subqueries

Types of Subqueries

Single-Row Subqueries

Executing Single-Row Subqueries

Using Group Functions in a Subquery

The HAVING Clause with Subqueries

Multiple-Row Subqueries

Using the ANY Operator in Multiple-Row Subqueries

Using the ALL Operator in Multiple-Row Subqueries

Null Values in a Subquery

Module 8:

Use of built-in function in SQL

Topics:

Conversion Function

Logical Functions

Math Function

Aggregate Functions

String Functions

Date Functions

Module 9:

Advance functions in SQL

Topics:

Sql Server Trigger

Sql Server Procedure

Sql Server Functions

Sql Server Index

Sql Server Views

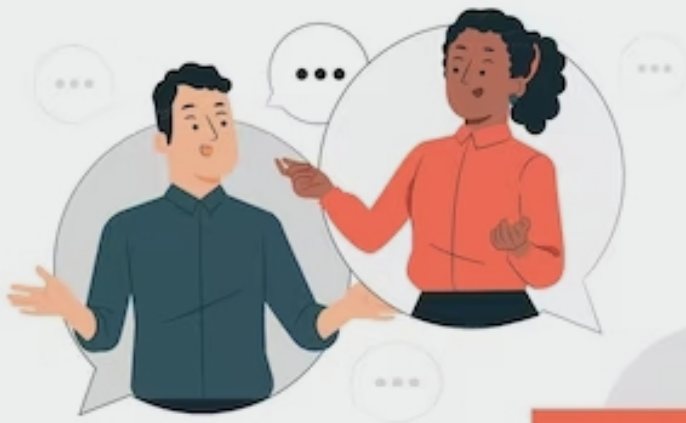
Manage and secure a database

Monitor and optimize performance



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BUSINESS SOFT SKILLS



Soft Skills



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SPOKEN ENGLISH-

- Basic Introduction of oneself
- Parts of speech (Noun/pronoun/verb/adjective/adverbs/conjunctions, etc.)
- Types of speech (active-passive/direct-indirect)
- Homophones/articles/punctuation/conjunctive adverbs
- Synonyms/ antonyms/similes
- Idioms/proverbs/phrases

PERSONALITY DEVELOPMENT-

- Group discussion
- Extempore
- Picture composition
- Sense of dressing up
- Basic body language attributes
- Pronunciation/Enunciation
- Email writing
- Report writing

Other benefits-

- FAQS- HR Round
- Vocabulary building
- Live activities to enhance confidence
- Self-explanatory notes



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