C++ Basic to Advanced

Duration: 40 Hours- 10 Days

Each Session Time: 1 & ½ Hour (90 Minutes)

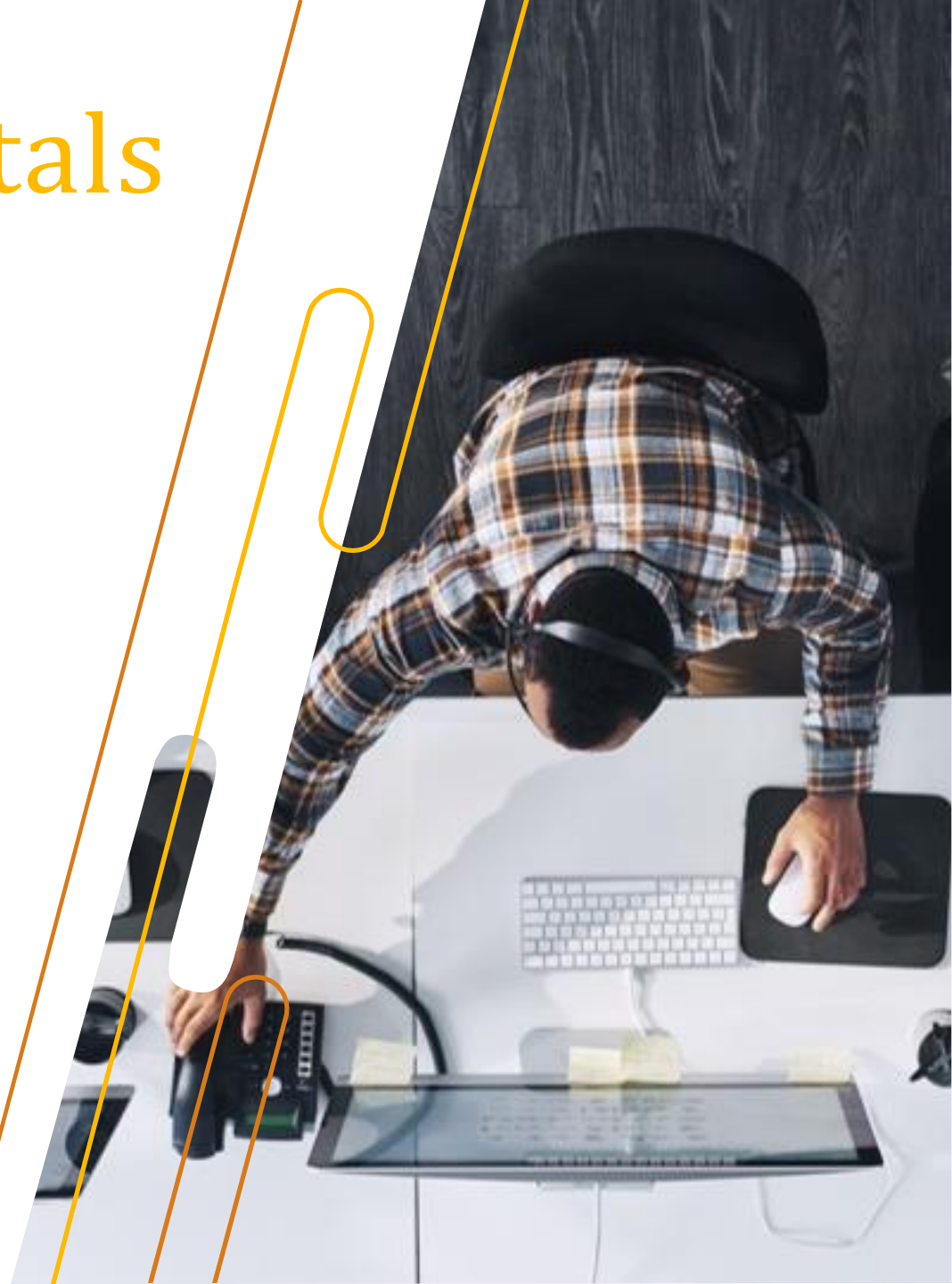
DAY-WISE SCHEDULE &
LEARNING ACTIVITIES

Day 01: Introduction to OOPS

- OOP Paradigm
- Basic Concepts of OOPS
- Benefits of OOPS
- Object Oriented Languages
- Applications of OOPS

Day 02: C++ Fundamentals

- Tokens (keywords, identifiers, constants)
  - Integer, real, character, string constants
  - Backslash constants
- Features of C++ & basic structure
- Simple C++ program
- Compiling and running a C++ program



Day 03: Data Types, I/O, Operators

- Basic Data Types in C++
- Variables and rules for naming var
- Type Cast Operator
  - Implicit, explicit, type casting
- **cout** and **cin** statements
- Operators and Operator Precedence

Day 04: Control Flow & Data Structures

- Decision-making statements
  - if, if…else, switch
- Loops
  - while, do…while, for
- Arrays
  - Types of Arrays
- Strings and String Manipulation

Day 05: Introduction to Classes and Objects

- Introduction to UML and Class Diagrams
- Classes and Objects
- Dot Operator
- Data Members & Member Functions
- Passing Data to Functions
- Scope & Visibility of variables in functions

Day 06: Constructors, Destructors, Objects

- Constructors
  - Default, Parameterized, Copy, Private
- Destructors
- Accessor and Mutator Methods
- Static Data and Static Functions
- Array of Objects

Day 07: Polymorphism & Inheritance

- Polymorphism
  - Static Binding and Overloading
  - Overloading (Constructor, Function, Operator)
  - Overloading unary and binary operators
- Modelling Relationships (Association, Aggregation (Composition))
- Inheritance
  - Defining Base and Derived Class
  - Types of Inheritance
  - Access Specifiers
  - Friend Functions and Friend Classes
  - Constructors in Derived Classes

Day 08: Advanced OOP

- Run-Time Polymorphism
  - Dynamic Binding, Function Overriding
  - Virtual & Pure Virtual Functions
  - Virtual Base Class, Abstract Class
- Pointers
  - Introduction, *,**&** Operators
  - Assigning addresses, Accessing values
  - Pointers to objects, **this** pointer
  - Pointer to derived classes
- File Handling
  - File Stream Classes, open & close files
  - File opening modes, text and binary File Handling

Day 09: OOPs in Practice

- Applying OOPs to solve real-life applications
- Case Studies
  - Library Management
  - Order Management, etc.
- Designing Classes and Incorporating OOP relationships