Course Curriculum

Core Java

Week 1:

- Introduction to Java and Setting Up Environment
- Introduction to Java programming language
- Installing Java Development Kit (JDK) and Integrated Development Environment (IDE)
- Writing your first Java program and understanding basic syntax

Week 2:

- Variables, Data Types, and Operators
- Understanding variables and data types in Java
- Working with arithmetic, relational, and logical operators
- Using control structures: if-else, switch statements

Week 3:

- Object-Oriented Programming (OOP) Concepts
- Introduction to Object-Oriented Programming (OOP) paradigm
- Creating classes and objects

- Understanding encapsulation, inheritance, and polymorphism

Week 4:

- Arrays and Strings
- Working with one-dimensional and multi-dimensional arrays
- String manipulation and common string operations

Week 5:

- Exception Handling
- Understanding exceptions and error handling in Java
- Using try-catch blocks and handling different types of exceptions

Week 6:

- File Handling
- Reading from and writing to files in Java
- Working with file streams and handling file-related exceptions

Week 7:

- Java Collections Framework
- Introduction to Java Collections Framework (JCF)
- Working with ArrayList, LinkedList, HashSet, and HashMap

Week 8:

- Introduction to DSA
- Overview of Data Structures and Algorithms (DSA)
- Time and space complexity analysis
- Data Structures and Algorithms (DSA)

Week 9:

- Recursion
- Understanding recursion and its application in problem-solving
- Implementing recursive algorithms

Week 10:

- Searching and Sorting Algorithms
- Linear and binary search
- Bubble, selection, insertion, merge, and quicksort algorithms

Week 11:

- Stacks and Queues
- Implementing stacks and queues using arrays and linked lists
- Solving problems using stack and queue data structures

Week 12:

- Linked Lists and Trees
- Singly and doubly linked lists

- Introduction to binary trees and binary search trees (BST)

Week 13:

- Graphs and Graph Algorithms
- Representation of graphs: adjacency matrix and adjacency list
- Depth-First Search (DFS) and Breadth-First Search (BFS)

Week 14:

- Dynamic Programming
- Understanding dynamic programming principles
- Solving dynamic programming problems