

Virtual Internship Program

Java Programming

Module-1

- Overview of Java and its features
- Setting up the development environment (JDK, IDE)
- Basic Java syntax and structure, Writing and executing a simple Java program
- Data types, variables, and operators, Input and output (I/O)
- Simple programs to practice variables, I/O, and basic operators
- Conditional statements (if, else if, else, switch-case), Loops (for, while, do-while)
- Break, continue, and return statements, Programs using conditional statements and loops
- Array manipulation exercises

Module-2

- Introduction to OOP concepts (classes, objects, methods)
- Defining and creating classes and objects, Constructors, Method overloading
- Static methods and variables
- Inheritance and polymorphism
- Method overriding, Abstract classes and interfaces
- Encapsulation and access modifiers, Implementing interfaces and abstract classes
- Exception handling (try, catch, finally, throw, throws)
- Creating custom exceptions, file operations (reading, writing), Handling different file formats

Module-3

- List, Set, and Map interfaces
- Implementations: ArrayList, LinkedList, HashSet, TreeSet, HashMap, TreeMap
- Iterators and enhanced for-loop, Comparable and Comparator interfaces
- Generics and type parameters
- Lambda expressions and functional interfaces
- Stream API for data processing
- Concurrency and multithreading (Thread class, Runnable interface)
- Synchronization and thread safety

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Java Programming

Module-4

- GUI Programming with Swing and JavaFX
- Introduction to Java Swing
- Setting up the development environment (IDE, libraries)
- Creating a simple GUI application
- Swing components and containers (JFrame, JPanel, JButton, JLabel)
- Event handling and listeners (ActionListener, MouseListener, KeyListener)
- Introduction to layout managers, BorderLayout, FlowLayout, GridLayout, BoxLayout
- Custom layout managers, Combining layout managers for complex UIs

Module-5

- Advanced Swing components (JTable, JTree, JTabbedPane, JList, JComboBox)
- Custom rendering and editing of JTable and JList, Dialogs and pop-ups (JOptionPane, JDialog)
- Menus and toolbars (JMenuBar, JMenu, JToolBar), Setting up the JavaFX environment
- Basic JavaFX components and layouts (Stage, Scene, Pane, Button, Label)
- Advanced JavaFX components (TableView, TreeView, ListView, ComboBox, Chart)
- Customizing components and cell factories, JavaFX layout managers
- FXML for declarative UI design, Styling JavaFX applications with CSS
- Applying styles to JavaFX components, Introduction to JavaFX animations, Creating simple animation

Module-6

- Working with the Introduction Chapter Including Objectives, Need for the study and etc
- Working with the Industry Profile and Company Profile Chapter
- Working with the Theoretical Framework Chapter
- Working with the Results and Discussion or Data Analysis Chapter
- Working with the Findings, Suggestions and Conclusion Chapter
- Preparation of the Academic Project Report as per the Guidelines given by the concerned university