Core Java Syllabus

Overview:

Java programming language is developed by Sun Microsystems. Java is object oriented, platform independent, simple, secure, architectural–neutral, portable, robust, multi-threaded, high performance, distributed and dynamic. It can be used to develop software and also applets. A java program can run on various operating systems without rewriting the code. And this is possible because of java run-time environment which tells the operating system what to do by interpreting the java code.

Objective:

- To become familiar with the features of Java Language
- To discover how to write Java code according to Object-Oriented Programming principles.
- To become comfortable with concepts such as Classes, Objects, Inheritance, Polymorphism and Interfaces
- To learn Java APIs for Collections, I/O Streams
- To design GUI applications and Applets using AWT and Swing.
- To develop Multithreaded and Networking applications.

Pre-requisite / Target Audience:

- C language skills (Good to Have)
- This course is designed to meet the needs of those who want to be professional Java developers.
- This will also help the audience to get through the Java Programmer Certification.

Module 1: Java Language Environment

In this Module you will learn what is a java, and its features, and why it is popular? Means by comparing the below of its features with other programming language's you will understand.

- Object Oriented
- Platform Independent
- Automatic Memory Management
- Compiled / Interpreted approach
- Robust
- Secure
- Dynamic Linking
- Multi-Threaded

- Built-in Networking

Model 2: Java Fundamentals

In this module you will learn the basic structure of the programming and how to create your own structural code, and where to use it.

- Data types
- Operators
- Control Statements
- Arrays
- Enhanced for-loop
- Enumerated types,
- Static import
- Auto boxing
- C-style formatted I/O
- Variable arguments

Module 3: Essentials of Object-Oriented Programming

In this module you will learn the basic definitions and uses and how to make our code in more structure way,so that anyone can understand our code, how to make it more easier.

- Object and Class Definition
- Using encapsulation to combine methods and data in a single class
- Inheritance and Polymorphism

Module 4: Writing Java Classes

In this module you will learn all the concepts Oops where we will use all these concepts in our daily way life by knowingly or unknowingly. By learning this module you can able to create a code in a standard format.

- Encapsulation
- Polymorphism
- Inheritance
- OOP in Java
- Class Fundamentals
- Using Objects
- Constructor
- Garbage Collection

- Method Overloading
- Method Overriding
- Static Members
- Understanding Interface
- Using Interfaces

Module 5: Packages

In this module you will learn how to re-use/access our class files when it is in same package/different package/different project.

- Why packages
- Understanding Class path
- Access modifiers & their Scope

Module 6: Exception Handling

In this module you will learn how to handle our standalone applications/web applications, whenever there is an error occurs, how to tackle it, and where it is occurring, by learning this module you will get it.

- When an exception occurs.
- Importance of Exception Handling
- Exception Propagation
- Exception Types
- Using try and catch
- throw, throws, finally
- Writing User defined Exceptions

Module 7: I/O Operations in Java

In this module you will learn how to create a file and how to modify/read/write/handle an existing file, through your code and you can make your file access permission rights.

- Byte Oriented Streams
- File Handling
- Readers and Writers

Module 8: Multithreaded Programming

In this module you will learn how to perform multiple tasks at a same time or it may be partially. Here tasks can be either running multiple code simultaneously when some background code is running or to run the code one after another or it may be at a time.

- Introduction to Multi-Threading
- Understanding Threads & its States
- Java Threading Model
- Thread class & Runnable Interface
- Thread Priorities
- Thread Synchronization
- Interthread Communication
- Preventing Deadlocks

Module 9: Java Util Package / Collections Framework

In this module you will learn how to make/get our content in a user's prospective/his requirement, when it is in same file or it may be in a different file even if it is in different format.

- Collection & Iterator Interface
- Enumeration
- List and ArrayList
- Vector
- Comparator
- Set Interface & SortedSet
- Hashtable
- Properties

Module 10: Generics

In this module you will learn how to create our own class type parameters where we can reuse the same code by giving different inputs.

- Introduction to Generics
- Using Built-in Generics Collections
- Writing Simple Generic Class
- Bounded Generics
- Wild Card Generics

Module 11: Abstract Window Toolkit

In this module you will learn how to create standalone application by using all the concepts which we learn previously. In here we will make mini frameworks we can make our applications more visible, more styling, more user interface Remember we need to write lot of code in here for creating a template and for our own logics.

- Graphics
- Color and Font
- AWT Components/Controls
- Event Handling & Layouts

Module 12: Swing Programming

In this module you don't need to create any template in here the template is already created for us and just we need to add some our own components in it and to add our styles and some logic for our application that's it in here writing the code for creating template and components is reduced, In here we differentiated model, designing, and our logical part.

- Introduction to Swing & MVC Architecture
- Light Weight Component
- Swing Hierarchy
- Atomic Components e.g. JButton, JList and more
- Intermediate Container e.g. JPanel, JSplitPane and more
- Top-Level Container e.g. JFrame and JApplet
- Swing Related Events

Real-time Project involving most of the above concepts with following will be provided

- Product Abstract Document
- Requirement Specification Document
- **Step-by-Step procedure for building the project from ground up by using IDE.**
- Complete Source Code

At the end of the course participants will get the knowledge of:

1. Creating your own windows application and you can able to know how to utilize the various available resources without need of other's help.