

## Syllabus of Java Course in Bangalore

Core Java Syllabus (Total Duration-35hrs)

Module 1: Introduction (Duration-0.5hr)

- Java Why? What? How? When? Where?
- Different Java Versions.
- How Java is different from other Technologies

Module 2: Introduction To Java Programming Environment (Duration-1hr)

- How to Install & set Path.
- A Simple Java Program
- Compiling & executing Java Program
- Phases of Java Program
- Analysis of a Java Program
- Understanding Syntax and Semantic Error,
- Runtime Exception
- Name of a Java Source File
- Platform Independency
- Java Technology (JDK, JRE, JVM, JIT)

- Features of Java
- Text Editors
- Consoles

### Module 3: Fundamentals of Java Programming (Duration-1hr)

- Naming convention of Java language
- Comments
- Statements
- Blocks (Static, Non-static/instance)
- Identifiers
- Keywords
- Literals
- Primitive Data Types, Range
- Reference (User defined) Data type
- Variables (Primitive, Reference)
- Type Casting, Default Value
- Operators
- Program/Interview questions

## Module 4: Control Structures (Duration-1hr)

- Working with Control Structures
- Types of Control Structures
- Decision Control Structure (if, if-else, if else if, switch case)
- Repetition Control Structure (do while, while, for)
- Program/Interview questions

## Module 5: Input Fundamentals And Datatypes In Java (Duration-2hrs)

- Java program inputs from Keyboard
- Methods of Keyboard inputs
- Scanner, Buffered Reader
- Problem Solving
- Java Array
- What is Array
- Array Declaration in java vs C and C++.
- Instantiation of an Array
- String vs character array. Accessing Array
- Elements, Default Value, for-each loop, varargs

- Length of an Array (What is Array Index Out Of Bounds Exception)
- Increasing, Decreasing the Size and Copy of an Array
- Multi-Dimensional Arrays
- Program/Interview questions
- Program/Interview questions Difference between C and C++ with Java
- Application Compilation and Run
- Interview related Question and Answer

## Module 6: Object Oriented Programming (Oops Concepts In Deep) (Duration-4hrs)

- Procedural Vs Object Oriented Program
- Different type of Program Procedural Vs Object Oriented.
- Top Down Vs Bottom Up Approach
- Introduction to Object Oriented
- Abstraction, Encapsulation, Inheritance,
- Polymorphism.
- Introduction to Classes and Objects
- Custom Class Definition
- Instance and Static Variables

- Different ways to create Object Instance
- `Instance Variable` and its role in a Class
- Constructors, types of Constructor,
- Constructor Rule, Constructor Overloading
- `Static Variable` and its use.
- Methods and their behavior.
- Constructor vs Methods
- Constructors
- `this` Keyword
- Java Access Modifiers (and Specifiers)
- Programming Interview related Question and Answer
- Call by value, Call by reference

## Module 7: Command-Line Arguments (Duration-1hr)

- What is a Command-Line Argument?
- Java Application with Command-Line Arguments
- Conversion of Command-Line Arguments
- Passing Command-Line Arguments

- Using methods (Static , Non Static)

## Module 8: Integrated Development Environment (Duration-0.5hr)

- Using various Editors
- Program Compilation, Execution in Editor
- Using Eclipse IDE
- Project Set Up
- Source File Generation
- Application Compilation and Run

## Module 9: Inner Class (Duration-1hr)

- First View of Inner Class
- Outer Class Access
- Types of Inner Class

## Module 10: Inheritance (Duration-2hrs)

- Complete concepts of Inheritance
- Sub-Classes
- Object Classes
- Constructor Calling Chain

- `super` Keyword
- `private` keyword inheritance.
- Reference Casting

## Module 11: Abstract Classes and Inheritance (Duration-2hrs)

- Introduction to Abstract Methods
- Abstract Classes and Interface
- Interface as a Type
- Interface v/s Abstract Class
- Interface Definition
- Interface Implementation
- `Multiple Interfaces Implementation`
- `Interfaces Inheritance`
- How to create object of Interface

## Module 12: Polymorphism (Duration-1hr)

- Introduction to Polymorphism
- Types of Polymorphism
- Overloading Methods

- Overriding Methods
- Hiding Methods
- Final Class and Method
- Polymorphic Behavior in Java
- Benefits of Polymorphism
- Is - A vs Has - A
- Association Vs Aggregation
- Interview related Question and Answer.

### Module 13: Package (Duration-2hrs)

- Package and Class path and its use
- First look into Packages
- Benefits of Packages
- Package Creation and Use
- First look into Class path
- Class path Setting
- Class Import
- Package Import



- Role of public, protected, default and private w.r.t package
- Namespace Management
- Package vs. Header File
- Creating and Using the Sub Package
- Sources and Class Files Management

#### Module 14: Using Predefined Package & Other Classes (Duration-2hrs)

- Java.lang Hierarchy
- Object class and using toString(), equals(), hashCode(), clone(), finalize() etc
- Using Runtime Class, Process Class to play music, video from Java Program
- Primitives and Wrapper Class
- Math Class
- String, StringBuffer, StringBuilder Class
- String Constant Pool
- Various usage and methods of String, StringBuffer, StringBuilder
- Wrapper Classes
- System Class using gc(), exit(), etc.

#### Module 15: New Concepts In Package (Duration-1hr)

- Auto boxing and Auto unboxing
- Static import.
- Instance of operator.
- Enum and its use in Java
- Working with jar

## Module 16: Garbage Collection (Duration-0.5hr)

- Garbage Collection Introduction
- Advantages of Garbage Collection
- Garbage Collection Procedure
- Java API
- Interview related Question and Answer

## Module 17: Exception Handling (Duration-2hrs)

- Introduction to Exceptions
- Effects of Exceptions
- Exception Handling Mechanism
- Try, catch, finally blocks
- Rules of Exception Handling

- Exception class Hierarchy, Checked &
- Unchecked Exception
- Throw & throws keyword
- Custom Exception Class
- Chained Exception.
- Resource handling & multiple exception class
- Interview related Question and Answer.

## Module 18: Multithreading (Duration-3hrs)

- Introduction
- Advantages
- Creating a Thread by inheriting from Thread class
- Run() and start() method.
- Constructor of Thread Class
- Various Method of Thread Class
- Runnable Interface Implementation
- Thread Group
- Thread States and Priorities

- Synchronization method, block
- Class & Object Level Lock
- Deadlock & its Prevention
- Inter thread Synchronization
- Life Cycle of Thread
- Deprecated methods : stop(), suspend(),resume(), etc
- Interview related Question and Answer

## Module 19: Input and Output Streams (Duration-3hrs)

- Java I/O Stream
- pÿ I / O S t r e a m    I n t r o d u c t i o n
- Types of Streams
- Stream Class Hierarchy
- Using File Class
- Copy and Paste the content of a file
- Byte Streams vs Character Streams
- Text File vs Binary File
- Character Reading from Keyboard by Input Stream Reader

- Reading a Line/String from Keyboard by Buffered Reader
- Standard I/O Streams Using Data Streams to read/write
- primitive data
- PrintStream vs PrintWriter Using StreamTokenizer and RandomAccessFile
- Interview related Question and Answer

#### Module 20: Serialization (Duration-0.5hr)

- Introduction to Serialization
- Using Object Streams to read/write object
- Transient Keyword
- Serialization Process
- Deserialization Process
- Interview related Question and Answer

#### Module 21: Collection Framework (Duration-3hrs)

- Generics(Templates)
- What is generic
- Creating User defined Generic classes
- The java.util package

- Collection
- What is Collection Framework
- List, Set & Map interfaces
- Using Vector, Array List, Stack,
- Linked List, etc.
- Using Collections class for sorting
- Using Hashtable, Hash Map, Tree Map,
- SortedMap, LinkedHashMap etc.
- Iterator, Enumerator.
- Using Queue, Deque, SortedQueue, etc.
- Using HashSet, TreeSet, LinkedHashSet etc
- Using Random class
- Using Properties in a Java Program
- Using user defined class for DataStructure
- Using Date and Formatting Date class.
- Interview related Question and Answer

[Module 22: Java 8/9/10 Features \(Duration-1hr\)](#)

## Advanced Java Syllabus (Total Duration-30hrs)

### Module 1: JDBC (Duration-3hrs)

- Introduction to JDBC
- Databases and Drivers
- Types of Driver
- Loading a driver class file
- Establishing the Connection to different
- Database with different Driver
- Executing SQL queries by ResultSet, Statements , PreparedStatement interface.
- Using CallableStatement
- Transaction Management & BatchUpdate
- Programs/Interview related Question and Answer

### Module 2: JSP (Duration-5hrs)

#### Basics Of Jsp

- Life cycle of JSP
- JSP API
- JSP in Eclipse and other IDE s

- Programs/Interview related Question and Answer.

## Scripting Elements

- scriptlet tag
- expression tag
- declaration tag
- Programs/Interview related Question and Answer.

## Implicit Objects

- out
- request
- response
- config
- application
- session
- pageContext
- page
- exception



- Programs/Interview related Question and Answer.

## Directive Elements

- page directive
- include directive
- taglib directive
- Programs/Interview related Question and Answer.

## Exception Handling

### Action Elements

- jsp:forward
- jsp:include
- Bean class
- jsp:useBean
- jsp:setProperty & jsp:getProperty
- Displaying applet in JSP

## Expression Language

- What is expression and how to use it

- Define expression and use over the service flow
- The way to be achieve same in JSP

## Mvc In Jsp

- MVC pattern
- Working flow implementation of MVC
- CRUD operation using MVC
- Design a real time web application using MVC

## JSTL

- Discussion on the tag library
- How to implement and use

## Custom Tags

- Custom Tag : What and Why?
- Custom Tag API?
- Custom Tag Example
- Attributes
- Iteration

- Custom URI

### Module 3: Servlet ( Duration-7hrs)

- Basics of Servlet
- Servlet: What and Why?
- Basics of Web
- Servlet API
- Servlet Interface
- GenericServlet
- HttpServlet
- Servlet Life Cycle
- Working with Apache Tomcat Server
- Steps to create a servlet in Tomcat
- How servlet works?
- servlet in Myeclipse
- servlet in Eclipse
- servlet in Netbeans

### Servlet request

- Servlet Request methods
- Registration example with DB

## Servlet Collaboration

- Request Dispatcher
- send Redirect

## Servlet Configure

- Servlet Configure methods
- Servlet Configure example

## Servlet Context

- Servlet Context methods
- Servlet Context example

## Session Tracking

- Cookies
- Hidden Form Field
- URL Rewriting
- HttpSession

#### Module 4: Concurrent and implementation of collection (Duration-2hrs)

- Implementation of ArrayList
- Implementation of LinkedList
- Implementation of HashMap
- Implementation of Queue/PriorityQueue/Deque

#### Module 5: Advanced Multi-Threading (Duration-3hrs)

- Implementation of Executor pool service and working mechanism with real time
- Big file(Single , multiple ) processing using multiple thread
- Implementation to achieve thread class and runnable interface

#### Module 6: Javamail Api (Duration-2hrs)

- Sending Email
- Sending email through Gmail server
- Receiving Email
- Sending HTML content

#### Module 7: Design Pattern (Duration-2hrs)

- Singleton
- DAO

- DTO
- MVC
- Front Controller
- Factory Method
- Abstract
- etc

## Module 8: Junit (Duration-1hr)

- JUnit: What and Why?
- Annotations used in JUnit
- Assert class
- Test Cases

## Module 9: Maven (Duration-1hr)

- Maven: What and Why?
- Ant Vs Maven
- How to install Maven?
- Maven Repository
- Understanding pom.xml

- Maven Example
- Maven Web App Example
- Maven using Eclipse

Module 10: Project Guidance (Duration-4hrs)