



## Core JAVA

### Week 1

#### 1. The Java Environment:

- 1.1. Installing Java.
- 1.2. Java Program Development
- 1.3. Java Source File Structure
- 1.4. Compilation
- 1.5. Executions.

#### 2. Basic Language Elements:

- 2.1. Lexical Tokens, Identifiers
- 2.2. Keywords, Literals, Comments
- 2.3. Primitive Datatypes, Operators
- 2.4. Assignments.
- 2.5. Internal Details of JVM.
- 2.6. Variables and Data Types.
- 2.7. Control Statement & Operators.

### Week 2

#### 1. Object Oriented Programming:

- 1.1. Class Fundamentals.
- 1.2. Object & Object reference.
- 1.3. Object Life time & Garbage Collection.
- 1.4. Creating and Operating Objects.
- 1.5. Constructor & initialization code block.
- 1.6. Access Control, Modifiers, methods
- 1.7. Nested , Inner Class & Anonymous Classes
- 1.8. Abstract Class & Interfaces
- 1.9. Defining Methods, Argument Passing Mechanism
- 1.10. Method Overloading, Recursion.
- 1.11. Dealing with Static Members. Finalize() Method.
- 1.12. Native Method. Use of "this " reference.
- 1.13. Use of Modifiers with Classes & Methods.



## Week 3

### 1. Extending Classes and Inheritance:

- 1.1. Class Fundamentals.
- 1.2. Object & Object reference.
- 1.3. Object Life time & Garbage Collection.
- 1.4. Creating and Operating Objects.
- 1.5. Constructor & initialization code block.
- 1.6. Access Control, Modifiers, methods
- 1.7. Nested , Inner Class & Anonymous Classes
- 1.8. Abstract Class & Interfaces
- 1.9. Defining Methods, Argument Passing Mechanism
- 1.10. Method Overloading, Recursion.
- 1.11. Dealing with Static Members. Finalize() Method.
- 1.12. Native Method. Use of “this “ reference.
- 1.13. Use of Modifiers with Classes & Methods.

### 2. Extending Classes and Inheritance:

- 2.1. Use and Benefits of Inheritance in OOP
- 2.2. Types of Inheritance in Java
- 2.3. Inheriting Data Members and Methods
- 2.4. Role of Constructors in inheritance
- 2.5. Overriding Super Class Methods.
- 2.6. Use of “super”.
- 2.7. Polymorphism in inheritance.
- 2.8. Type Compatibility and Conversion
- 2.9. Implementing interfaces.

### 3. Package:

- 3.1. Organizing Classes and Interfaces in Packages.
- 3.2. Package as Access Protection
- 3.3. Defining Package.
- 3.4. CLASSPATH Setting for Packages.
- 3.5. Making JAR Files for Library Packages
- 3.6. Import and Static Import
- 3.7. Naming Convention For Packages

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## Week 4

### 1. Exception Handling:

- 1.1. The Idea behind Exception
- 1.2. Exceptions & Errors
- 1.3. Types of Exception
- 1.4. Control Flow In Exceptions
- 1.5. JVM reaction to Exceptions
- 1.6. Use of try, catch, finally, throw, throws in Exception Handling.
- 1.7. In-built and User Defined Exceptions
- 1.8. Checked and Un-Checked Exceptions

## Week 5

### 1. Array & String :

- 1.1. Defining an Array
- 1.2. Initializing & Accessing Array
- 1.3. Multi –Dimensional Array
- 1.4. Operation on String
- 1.5. Mutable & Immutable String
- 1.6. Using Collection Bases Loop for String
- 1.7. Tokenizing a String
- 1.8. Creating Strings using StringBuffer

## Week 6

### 1. Thread :

- 1.1. Understanding Threads
- 1.2. Needs of Multi-Threaded Programming.
- 1.3. Thread Life-Cycle
- 1.4. Thread Priorities
- 1.5. Synchronizing Threads
- 1.6. Inter Communication of Threads

## Week 7

### 1. Input / Output Operation in Java:

- 1.1. Streams and the new I/O Capabilities
- 1.2. Understanding Streams
- 1.3. The Classes for Input and Output
- 1.4. The Standard Streams



- 1.5. Working with File Object
- 1.6. File I/O Basics
- 1.7. Reading and Writing to Files
- 1.8. Buffer and Buffer Management
- 1.9. Read/Write Operations with File Channel
- 1.10. Serializing Objects

## Week 8

### 1. Java Utilities (java.util Package)

- 1.1. The Collection Framework :
- 1.2. Collections of Objects
- 1.3. Collection Types
- 1.4. Sets
- 1.5. Sequence
- 1.6. Map
- 1.7. Understanding Hashing
- 1.8. Use of ArrayList & Vector

## Week 9

### 1. Networking Programming:

- 1.1. Networking Basics
- 1.2. Client-Server Architecture
- 1.3. Socket Overview
- 1.4. Networking Classes and Interfaces
- 1.5. Network Protocols
- 1.6. Developing Networking Applications in Java

## Week 10

### 1. JDBC:

- 1.1. Database Programming using JDBC
- 1.2. Introduction to JDBC
- 1.3. JDBC Drivers & Architecture
- 1.4. CURD operation Using JDBC
- 1.5. Connecting to non-conventional Databases.

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