

1. System Requirements:-

Hardware Requirements (Minimum)

Core i5, 1.8 GHz, 4 gig RAM, 500 meg disk space.

Hardware Requirements (Recommended)

Core i5, 2.8 GHz, 8 gig RAM, 500 meg disk space.

Operating System Tested on Windows 7/8, Mac OS 10.8.5.

Network and Security Limited privileges required -- please see our standard security requirements.

Software Requirements All free downloadable tools.

2. Course Content:-

1. Core Java Programming Introduction of Java

Introduction to Java; features of Java

Comparison with C and C++

Download and install JDK/JRE (Environment variables set up)

The JDK Directory Structure

First Java Program through command prompt

First Java Program through Eclipse

2. Data types and Operators

Primitive Datatypes, Declarations, Ranges

Variable Names Conventions

Numeric Literals, Character Literals

String Literals

Arrays(One dimensional; two- dimensional)

Array of Object References

Accessing arrays, manipulating arrays

Enumerated Data Types

Non-Primitive Datatypes

Defining a class, variable and method in Java

Method Signature; method calls

Expressions in Java; introduction to various operators

Assignment Operator

Arithmetic Operators

Relational Operators

Logical Operators

Conditional Operators

Operator Precedence

Implicit Type Conversions

Upcasting and downcasting

Strict typing

Type conversion

3. Control Flow statements

Statements and its various categories in Java

if, if-else, if-else-if

switch case

for statement (both flavours traditional and enhanced for)

while and do-while loops

The continue Statement; labelled continue statement

The break Statement; labelled break statement

return statement

4. OOPS and its application in Java

Classes and Objects

Defining a class Defining instance variables and methods

Creating objects out of a class

Method calls via object references

Abstraction

Interfaces and Abstract classes

Abstract and non-abstract methods

Inheritance

extends and implements keywords in Java

Super class and Sub class

this keyword, super keyword in Java for inheritance

Concrete classes in Java

Polymorphism

Compile time polymorphism -- Overloading of methods

Run time polymorphism -- Overriding of methods

Method Overriding rules and method overloading rules

Introduction to Object class and it's methods

Encapsulation

Protection of data

Java Bean, POJO

Getters/Setters

Memory management in Java

Heap

Stack

5. Packages

Need for packages

What are packages; package declaration in Java

Import statement in Java

How do packages resolve name clashes?

6. Miscellaneous

Var-Args

Reference variables, local variables, instance variables

Memory allocations to variables

Double equals operator(==) operator for primitives and objects

To String() method on an object

7. Statics

Static variables and methods

Static imports

Static initialization blocks; instance initialization blocks

Static concept in inheritance

8. Constructors

What are Constructors?

Properties of Constructors

Default and Parameterized Constructors

Rules for constructor implementation

Constructor Chaining

this call super call for constructors

Constructors for Enumerated Data Types

Constructors concept for Abstract classes and interfaces

9. Exceptions in Java

What are Exceptions?

Need for exceptions

How can Exceptions be coded in Java?

API heirarchy for Exceptions

Types of Exceptions

Keywords in Exception API: try, catch, finally, throw, throws

Rules for coding Exceptions

Declaring Exceptions

Defining and Throwing Exceptions

Errors and Runtime Exceptions

Custom Exception

Assertions

What are Assertions?

Enabling and disabling assertions in development environment

10. Strings in Java

What are Strings?

String heap memory and Constant Pool memory

Immutability in Strings

String creation on heap and constant pool

Method APIs on String; operations on Strings

Mutability of String Objects - StringBuilder and StringBuffer

Splitting of Strings and String Tokenizer class

11. Collection Framework in Java

The Collections Framework

The Set Interface

Set Implementation Classes

The List Interface

List Implementation Classes

The Map Interface

Map Implementation Classes

Queue Interface

Queue Implementation classes

Utility classes

Sorting collections using utility methods

equals() and hash Code contract in Java collections

overriding equals and hash Code methods in Java

New Collections added in Java 1.6

Primitive wrapper classes and all its method APIs

12. Generics

Generics for Collections

Generics for class

Generics for methods

12. Input-Output in Java

What is a stream?

Overview of Streams

Bytes vs. Characters

Overview of the entire Java IO API

Reading a file; writing to a file using various APIs

Reading User input from console

Print Writer Class

13. Inner Classes

Inner Classes

Member Classes

Local Classes

Anonymous Classes

Static Nested Classes

14. Threads in Java

Non-Threaded Applications

Threaded Applications

Process based multitasking Vs Thread based multitasking

Thread API in Java

Creating Threads

States of a Thread

Synchronization for threads; static and non-static synchronized methods; blocks; concept of object and class locks

Coordination between threads - wait, notify and notifyAll methods for inter-thread communication

15. JDBC

What is JDBC; introduction

JDBC features

JDBC Drivers

Setting up a database and creating a schema

Writing JDBC code to connect to DB

CRUD Operations with JDBC

Statement types in JDBC

Types of Row set, Result Set in JDBC

16. Access Modifiers in Java

What are access modifiers?

Default

Protected

Private

Public

17. Spring Boot

Framework

Meaven Project