J2SE (JAVA 2 STANDARD EDITION)

Introduction To JAVA

- History of JAVA
- Understanding Requirement: why JAVA
- Why java important to the internet
- Discussion of Java features
- About JAVA Development Kit(JDK)
- About JAVA Runtime Environment(JRE)
- Java Virtual Machine(JVM) Architecture
- Role of Just In time compiler (JIT)
- Execution Engine
- JAVA Conventions

An Overview Of JAVA

- JAVA Syntax and Style
- Data Types
- Variables and Arrays
- Control statements and Loop
- Classes and Using Objects
- Command line arguments
- About Constructor
- Role of Constructor in program Execution
- Constructor chaining
- Program Execution with memory structure
- Discussion of (OOPS) concept

Object Oriented Programming and keywords

- Class
- Object
• Inheritance:
  • Single-level Inheritance
  • Multi-level Inheritance
  • Hierarchical Inheritance
  • Multiple Inheritance
  • Hybrid Inheritance
• Polymorphism
  • Method Overloading
  • Method Overriding
  • Up casting
  • Down casting
• Abstraction
  • Abstract Class
  • Interface
• Encapsulation
• Final keyword
  • Final keyword with class
  • Final keyword with method
  • Final keyword with variable
• Super keyword
  • Super keyword with class
  • Super keyword with method
  • Super keyword with variable
• Use of this keyword
• Use of static keyword
• Single Ton Pattern / Static connection

Access modifier/Access Controls
• Public, Private, Protected, Default
• Static, Abstract, Final

Class Hierarchies and interfaces package
• The import statement
• Static imports
• CLASSPATH and import
• Defining Packages
• Package scope

Exception Handling
• Fundamental of Exception handling
• Types of Exceptions
• Learning exceptions handlers
• Try and Catch
• Multiple catch Clauses
• Nested Try statements
• Throw , throws and finally
• Creating custom exceptions

String Handling
• Learning String Operation
• Learning character Extraction
• Learning string Comparison
• Understanding string Buffer Classes
• String builder class
• Creating Immutable Class
• Impotent method in String class

Introduction to I/O Streams
• File handling
• Binary Streams
• Character stream
• Bytes vs. Character
• Converting Byte Streams to Character Streams
• Binary Input Output
• PrintWriter Class
• Reading and Writing Objects
• Serialization
• Scanner

MultiThreading
• Understand multithreading process
• Creating a thread:
  • By extends Thread class
  • By implements Runnable interface
• Thread life cycle
• Thread Safety concept
• Thread synchronization
• Understanding Thread pool
• Garbage collection
• Finalize block

Inner classes
• Inner classes
• Member classes
• Local classes
• Anonymous classes
• Instance Initializers Blocks
• Static Block
Java Collections Framework

- The Collection Interfaces (list, set, Sorted set)
- The collection classes (The array list, Linked list, Hash set, Tree set)
- Accessing a Collection via an Iterator or for each loop
- Working with maps
- Working with Comparators
- The Collection Algorithms
- The Legacy Classes and Interfaces (Enumeration, Vector, Stack, Dictionary, Hashtable)
- Heaps and Priority Queues

Graphics

- GUI Components and Events
- Mouse, keyboard, Sound, and images
- Swings
- AWT

Database Programming using JDBC

- Introduction to JDBC
- JDBC Drivers & Architecture
- CRUD operations using JDBC
- Connecting to non-conventional Database