Java SE

**Introduction to Java**
- JDK
- JRE

**Discussion of Java features and OOPS Concepts**

**Installation of Netbeans IDE**

**Datatypes**
- primitive data types
- non-primitive data types

**Variable declaration**

**Operators**

**Control flow statements**

**Command line arguments**

**Passing command line arguments in Netbeans**

**Take input and display output**

**Arrays and Enhanced for loop**

**OOPS programming**
- class and object
- various types of constructors
- instance methods and static methods
- use of this keyword
- use of super keyword
- inheritance
- polymorphism
- package and various scope rules
- abstract class and interfaces
- use of static, final keyword
- inner class
- anonymous class
- anonymous inner class
Exception handling
  ➢ try, catch, finally, throw, throws
  ➢ checked exception
  ➢ unchecked exception

String Handling
  ➢ mutable string
  ➢ immutable string
  ➢ String, StringBuilder, and StringBuffer
  ➢ Important Methods in the String Class

IO (Input and Output)
  ➢ byte stream
  ➢ character stream
  ➢ Working with Files and Directories
  ➢ bridge classes
  ➢ Object Serialization
Working with Date class
Generics and Collections
- List, Set, Map, Queue interface and its implementing classes
- Utility classes

Wrapper classes
Enums, Autoboxing, Unboxing and Annotations
Multithreading programming
- Thread class
- Runnable interface
- Synchronization
- Fork/join framework

GUI programming
- Difference between CUI and GUI
- Swing (various components and containers)
- Event handling
- Layout manager
- Applet through JApplet
- Drawing
- MDI (Multiple document interface)
- Develop GUI using Netbeans Drag n drop feature

JDBC (Java database connectivity)
- Type of drivers
- Basics of SQL
- executing SQL using statement
- executing SQL using preparedStatement

Socket programming
RMI (Remote method invocation)
XML programming in Java
Send email from Java application using JavaMail API
Use web service in Java application
Generate HTTP request from Java application
OpenJDK
Android

History and platform-independence.
Introduction to Java, JSE, JEE, JME, Web services, Other technologies.
JVM, JRE and JDK

Simple Java Program Structure
- Documentation section
- Package statement
- Import statement
- Interface statement
- Class definition
- Main class method

Creating, compiling and running program
Command Line argument

Object Orientation
- Classes: Introduction, Definition, Field, Methods.
- Objects: Concept, Creation, Accessing Members.
- Constructors: Types, Overloading.
- Static Members

Java Beans: Concept, getters and setters.

- Inheritance: Subclassing, Constructor chain, Method Overriding.
- Final: Class, Variable, Methods.
- Abstract: Classes, Methods.
- Varargs Methods
- Visibility Controls.
- Interfaces: Defining, Extending, Implementing
- Package: naming, creating, accessing, usage.
- Understanding IS-A, HAS-A Relationship Polymorphism, Encapsulation, Abstraction, Inheritance

**Arrays:** Declaration, creation, initialization, 1-D, 2-D, n-D

**String:** Methods, Immutable Objects, Regex, toString(), StringBuilder, StringBuffer.

Enumerations and Annotations **JVM:** Java Heap, Stack, Garbage collection, hashCode(), equals(). Wapper Classes and Static Imports

**Exception Handling:** Throwable, Errors, Exceptions, try ...catch.... finally, throws, Exception classes.

**Multithreading:** Thread creation by extending Thread and implementing Runnable, Life cycle, Thread Exceptions, Priorities, Synchronisation.

**IO:** Stream Classes, Byte Stream, CharacterStream, File Handling, IO Exceptions, Serialization.

**Generics:** Concept, Generic Methods and Classes.

**Inner Classes:** Method-local inner classes, Anonymous inner classes, Static nested classes.

**Collection:** Set, List, Map, Collection Interface, Collections class, Sorted-Unsorted, Order-Unordered, Queue, Autoboxing with collections, Comparable Interface Event Handling with Swings.

**Introduction to Android Programming**
- Android OS
- Architecture
- Dalvik Virtual Machine
- Android SDK
- Android Development Tools (ADT)
- Android Virtual Devices (AVD)

**Activities**
- Activity Life cycle
- Style and Themes
- Activity Title
- Dialog Windows
➤ Progress Dialog

**Intents**
➤ Linking activities using intents
➤ Filter Collision
➤ Intent Object and usage.
➤ Calling built-in application.
➤ Intent object
➤ Intent filters

**Notifications**
➤ Displaying notifications

**Fragments**
➤ Life cycle
➤ Adding fragments Dynamically
➤ Fragment Interaction

**User Interface**
➤ Views and ViewGroups
➤ Layouts-Linear, Absolute, Table, Relative, Frame
➤ Scroll View • Display Orientation
➤ Managing Screen Orientation
➤ Action Bar
➤ Programatically creating UI
➤ Listening to UI Notifications

**Basic Views**
➤ TextView, Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, RadioGroup, ProgressBar View, AutoCompleteTextView View
➤ Picker View-TimePicker and DatePicker
➤ ListView and Spinner View
➤ Specialized Fragments
Image Views

- Gallery and ImageView
- ImageSwitcher
- GridView

Menus

- Helper methods
- Options Menu
- Context Menu
- Additional Views-AnalogClock, DigitalClock, WebView

Persisting Data

- Saving and Loading Preferences
- Saving data to files
- Creating and Using Databases

Content Providers

- Data sharing
- Using a content provider.
- Creating content provider.

Messaging

- SMS Messaging
- Sending Email

Location Based Services

- Displaying Maps
- Location data
- Monitoring Location
Networking

- Consuming Web Service via HTTP.
- Consuming JSON Services.
- Socket programming

Android Service Development

- Creating service
- Services communication
- Activity and Service binding.
- Understanding Threading.

Publishing Android Application

- Preparing application for publishing.
- Deploying APK Files.