

# Core Java + Android Course Contents Cum

## Glance of Java

### ❖ Introduction to JAVA

- ❖ Why Java
- ❖ Features of Java Language.
- ❖ JVM

### ❖ The Java Environment:

- ❖ Installing Java.
- ❖ Java Program Development
- ❖ Java Source File Structure
- ❖ Compilation
- ❖ Executions.

### ❖ Basic Language Elements:

- ❖ Tokens, Identifiers
- ❖ Keywords, Literals, Comments
- ❖ Primitive Datatypes, Operators
- ❖ Assignments.

### ❖ Object Oriented Programming

- ❖ Class Fundamentals.
- ❖ Object & Object reference.
- ❖ Object Life time & Garbage Collection.
- ❖ Creating and Operating Objects.
- ❖ Constructor & initialization code block.
- ❖ Access Control, Modifiers, methods
- ❖ Nested , Inner Class & Anonymous Classes
- ❖ Abstract Class & Interfaces
- ❖ Defining Methods, Argument Passing Mechanism
- ❖ Method Overloading, Recursion.
- ❖ Dealing with Static Members. Finalize() Method.
- ❖ Native Method. Use of “this “ reference.
- ❖ Use of Modifiers with Classes & Methods.

### ❖ Extending Classes and Inheritance

- ❖ Use and Benefits of Inheritance in OOP
- ❖ Types of Inheritance in Java
- ❖ Inheriting Data Members and Methods
- ❖ Role of Constructors in inheritance
- ❖ Overriding Super class Methods.
- ❖ Use of “super”.
- ❖ Polymorphism in inheritance.
- ❖ Type Compatibility and Conversion
- ❖ Implementing interfaces.

## ❖ **Package**

- ❖ Organizing Classes and Interfaces in Packages.
- ❖ Package as Access Protection
- ❖ Defining Package.
- ❖ Naming Convention For Packages

## ❖ **Exception Handling**

- ❖ The Idea behind Exception
- ❖ Exceptions & Errors
- ❖ Types of Exception
- ❖ Control Flow In Exceptions
- ❖ JVM reaction to Exceptions
- ❖ Use of try, catch, finally, throw, throws in Exception Handling.
- ❖ In-built and User Defined Exceptions
- ❖ Checked and Un-Checked Exceptions

## ❖ **Array & String**

- ❖ Defining an Array
- ❖ Initializing & Accessing Array
- ❖ Multi –Dimensional Array
- ❖ Operation on String
- ❖ Mutable & Immutable String
- ❖ Using Collection Bases Loop for String
- ❖ Tokenizing a String
- ❖ Creating Strings using StringBuffer

## ❖ **Thread :**

- ❖ Understanding Threads
- ❖ Needs of Multi-Threaded Programming.
- ❖ Thread Life-Cycle
- ❖ Thread Priorities

- ❖ Synchronizing Threads
- ❖ Inter Communication of Threads
- ❖ Critical Factor in Thread -DeadLock

### ❖ **The Collection Framework :**

- ❖ Collections of Objects
- ❖ Collection Types
- ❖ Sets
- ❖ Map
- ❖ Understanding Hashing
- ❖ Use of ArrayList & Vector

### ❖ **Database Programming using JDBC**

- ❖ Introduction to JDBC
- ❖ JDBC Drivers & Architecture
- ❖ CRUD operation Using JDBC
- ❖ Connecting to non-conventional Databases.

## **Glance of Android**

### ❖ **Introduction Android**

- ❖ what is Android?
- ❖ Why should go for Android development compare with other mobile platform like hybrid app(phone gap)
- ❖ Introduction to Android SDK
- ❖ Android SDK Features
- ❖ Introducing the Development Framework
- ❖ Android Architecture

### ❖ **Setting up development environment**

- ❖ How to install java Jdk
- ❖ How to install Eclipse IDE or Android studio as preferable
- ❖ How to install Android SDK
- ❖ How to install Android Plug ins
- ❖ How configure emulator(AVD) and real device for app testing

### ❖ **Creating First Android App**

- ❖ Creating activity

- ❖ Creating basic layout design
- ❖ Introduction of layout resources
- ❖ Introduction of Android Manifest.xml
- ❖ Introduction of R.java
- ❖ Introduction of Assets, Drawable and Raw resources
- ❖ Activity Life Cycle

## ❖ **Basic Components of Android**

- ❖ Activity
- ❖ Services
- ❖ BroadCast Receiver
- ❖ Content Provider

## ❖ **Music Player App**

- ❖ Create Music player app with play, pause and stop option
- ❖ Testing app in real device
- ❖ Understand the bugs in above app
- ❖ Fixing bugs by overriding activity lifecycle methods

## ❖ **How to Create User Interfaces**

- ❖ Fundamental Android U I Design
- ❖ Introducing Views (Form widgets, button, textview, and etc)
- ❖ Introducing Layouts
- ❖ Types of layout
- ❖ Creating and understanding Linear, Relative Layouts
- ❖ Creating Material design layout (new view for lollipop and above users)
- ❖ Creating basic form with material widgets

## ❖ **Introducing Intents**

- ❖ Using Intents to Launch new Activities
- ❖ Types of Intents
- ❖ Implicit and Explicit Intent
- ❖ Starting Activity for result
- ❖ Using Camera, wifi, bluetooth by intent

## ❖ **Notifications**

- ❖ Toasts
- ❖ Custom Toast
- ❖ Status bar notifications

- ❖ Basic notification
- ❖ Custom notification
- ❖ Notification with icon like sms

## ❖ **Adapters**

- ❖ Understand need of Adapter class
- ❖ Simple Array Adapter
- ❖ Cursor adapter
- ❖ Customs adapter

## ❖ **Adopter Views**

- ❖ Auto Complete text views
- ❖ List views
- ❖ Spinner
- ❖ Custom ListView and custom Spinner

## ❖ **Menus**

- ❖ Option menu
- ❖ Context menu
- ❖ Popup menu

## ❖ **Animations**

- ❖ Set
- ❖ Translate
- ❖ Rotation
- ❖ Alpha
- ❖ Scale

## ❖ **Services**

- ❖ Services overview
- ❖ Types of services
- ❖ Implementation of service in music player
- ❖ Service life cycle
- ❖ Multithreading with service

## ❖ **Data Storage**

- ❖ Shared preference
- ❖ Internal and external storage (phone and sd card)
- ❖ Sqlite database

## ❖ **SQLite Database**

- ❖ Learning sqlite command
- ❖ Creating database in android phone
- ❖ creating table
- ❖ Performing different sqlite commands on phone database
- ❖ Understanding need of open helper over SQLiteDatabase
- ❖ Learning open helper for database creation

## ❖ **Login page**

- ❖ CRUD application for user registration to understand database
- ❖ Creating Login page
- ❖ Creating local database

## ❖ **Shared Preference**

- ❖ Introduction of shared preference
- ❖ Saving data in shared preference and accessing
- ❖ Using shared preference data as session creation like as gmail

## ❖ **Content providers**

- ❖ Using Content Providers
- ❖ Content provider to access phone contents and name
- ❖ Content provider to access images
- ❖ Creating custom content provider
- ❖ Native Android Content Providers

## ❖ **Introducing Broadcast Receivers**

- ❖ Broadcast Receivers
- ❖ Types of broadcast receiver

- ❖ Introduction to sticky broadcast
- ❖ Using existing broadcast receiver
- ❖ Creating own broadcast and customizing
- ❖ Alarms manager
- ❖ Pending intent

## ❖ **Media Framework**

- ❖ Making audio player with basic functionality
- ❖ Making Video player with media controller
- ❖ Making Audio recorder
- ❖ Making speech recognition app
- ❖ Making text to speech converter and speech to text converter

## ❖ **How to use system services**

- ❖ GPS
- ❖ Google map integration
- ❖ Sensors
- ❖ Telephony and sms manager
- ❖ Working with bluetooth, wifi and camera APIs

## ❖ **Web services**

- ❖ Understanding need of web service
- ❖ Types of web services
- ❖ Creating web API using java servlet or php

## ❖ **JSON in android**

- ❖ Introduction of json
- ❖ Json object
- ❖ Json array
- ❖ Creating json data
- ❖ Json parsing
- ❖ Introduction to other parsing technique

## ❖ **Async task**

- ❖ Need of async task
- ❖ Method used in async task
- ❖ Hitting web API using http protocol and async task
- ❖ Retrieve data from API
- ❖ Parse data receive from API using json

- ❖ API hitting using other third party library
- ❖ Conclusion and bugs fixing

### ❖ **Cloud notifications**

- ❖ **GCM**:- Google Cloud messaging.(obsolete)
- ❖ **FCM**:-Firebase Cloud messaging.(latest used)

**Note:- Every topic is based on practical. And discussed using some real Industry problem and their solutions.**