

Android Development

Course Curriculum :-

- **Initial Setup**
 - Android Studio installation
 - Installing Hello world
 - Overview of project structure
 - Assignment: Install & run hello world app on physical device and share in group
- **Introduction To Kotlin**
 - Kotlin Fundamentals
 - Comparison with Java
 - Basic data structure
 - Functions
 - Classes and Inheritance
 - Generics, Higher-Order Functions
 - Lambdas
 - Delegation
 - Scope Functions
 - Assignment: Practice any 5 easy question on leetcode in Kotlin
- **User Interface I**
 - Understanding relevance of files: java, xml, gradle files
 - Layout Attributes: Height, Width, dp, gravity, layout_gravity, margin, padding
 - Views: TextView, ImageView, EditText, Button
 - Create basic structure of a single-screen app with *Layout editor*
- **User Interface II**
 - Introduction to dimen, styles, strings, menu files and it's usage
 - View Groups: LinearLayout, FrameLayout, RelativeLayout
 - Design Twitter Login Page with *Text Editor*
- **User Input**
 - Handle button click using xml
 - Handle button click In Kotlin
 - Creating, positioning, and styling views
 - Assignment: Quiz App
- **Multi Screen Apps**
 - Intents and Activities
 - Debugging [logs/toasts/android studio debugging features]
 - Create new activity & open new activity using explicit intent
 - Creating your own Custom Class & Passing data using extras
 - Intent filters
- **Activity LifeCycle**
- **ListViews / Adapters**
 - ListView xml

- Why are adapters needed?
- Array Adapters/ Base adapters
- Implementing ListView in a Simple Activity
- Click Listeners
- **Android Permissions**
 - Normal permission
 - Runtime permissions [23 & above]
- **Constraint Layout**
 - Introduction[need]
 - explain features of constraint layout
 - Create one layout using Constraint [*Think UI later*]
 - **Assignment: Create Twitter Login page**
- **RecyclerViews**
 - Introduction to RecyclerView[Needed]
 - ViewHolder: Optimize performance when displaying large sets of data
 - Recycler Adapter
 - Implement Recycler Views & replace listView
 - Click handling in recycler view
 - Implement Grid using RecyclerView
 - **Project I:** News App(Static Data) Use GSON/Glide app to parse data in JSON, show in recycler view. Serialize data and show in another activity
- **Networking**
 - Fetch data using Retrofit
 - Parse Data using Custom Classes
 - **Project II:** News App using real time data
- **Fragments**
 - Create a Fragment / Attach to existing activity
 - Static Fragments
 - Attach multiple fragments in one activity
 - Fragment Lifecycle & comparison with activity lifecycle
 - Dynamic Fragments
 - Implementing a View pager [Sliding between fragment]
 - **Project II:** Gallery App to Display image
- **Architecture Patterns**
 - Introduction to MVP/MVVM
 - Understand Project structure
 - Create User Interface
 - Implement ViewModel
 - Using LiveData using ViewModel
 - Display List of data
- **Data Storage & Persistence**
 - onSave / onCreate & implement
 - **Shared Preferences:** explain key/value pairs [Username/password]
 - Hash/Dictionary

- Implement shared Preferences using twitter Sign up page
 - **Internal/External storage**
 - Use internal storage to write in file data
 - read file data & display in app
 - External storage: import any image from gallery & display in app
 - Explain other external storage [file permissions/contacts basics(theory)]
 - **SQLite Database**
 - Cursors
 - Basic CRUD operations using SQL
 - Introduction to Room Library
 - Populating Views from database
 - Using LiveData With Room
 - **Project III: Todo App**
 - Setting up Db for Todo app
 - Implement RecyclerView to display content
 - Use Room to save data
 - Implement Delete/Create/Update operations
- **FireBase**
 - Firebase Introduction
 - SetUp application
 - Introduce firebase realtime database
 - Firebase Authentication
 - **Project IV: Twitter Clone**
 - Introduction to project
 - Connecting to firebase, implement Google login
 - Design database in JSON format
 - Create Twitter Edit Screen
 - Save tweet in firebase real time data
 - Implement firebase push notifications
 - Create profile screen for user
 - Populate profile screen
 - Implement follow/unfollow feature
 - Populate Twitter timeline with only followed users
- **Background Operations**
 - Services
 - Notifications
 - Create a simple notification
 - Clickable notification
 - Alarms
 - Introduction
 - Setting and Repeating alarms
 - Work Managers
 - Define simple request
 - Constraints, Scheduling and periodic worker requests

- **Project V: Update News App**
 - Sync News data every few hours
 - Send notification
- **Deploy Your App**
 - Deploying your app on prod