Android Application Development using Kotlin

1. **Introduction to Kotlin**
    - **a.** Kotlin History
    - **b.** Kotlin Advantages
    - **c.** How Kotlin Program Work?
    - **d.** Kotlin software Prerequisites
        - **i.** Installing Java JDK and JRE
    - **e.** Installing Android Studio
    - **f.** Creating Kotlin Project using Android Studio
    - **g.** Creating a Kotling Program
    - **h.** Running a Kotlin Program
    - **i.** Writing comments
    - **j.** Kotlin Variables
    - **k.** Kotlin Data Types
    - **l.** Input of Information to Kotlin Program

2. **Control Flow Statements**
    - **a.** Introduction
    - **b.** If statement
    - **c.** If-else- statement
    - **d.** When Statement and expression
    - **e.** For Loops
    - **f.** While Loops
    - **g.** Do- While loops
    - **h.** Jump Expressions
        - **i.** Break Statement
        - **ii.** Continue Statement
        - **iii.** Return statement

3. **Function & Object Oriented Programming (OOP)**
    - **a.** Function
    - **b.** Function Structure
    - **c.** Creating a Function
    - **d.** Function and variable scope
    - **e.** Object –Oriented Programming (OOP)
    - **f.** Object
    - **g.** Class
        - **i.** Creating a class
        - **ii.** Providing Constructors for your classes
        - **iii.** Class inheritance

iv. Overloading constructors
v. Overriding Properties
vi. Abstract Class
vii. Interface Class
viii. Generic Class
ix. Enum Class
x. Class Variables
xi. Member Variables

h. Kotlin collection
i. Class Hash maps
ii. Class Array List
iii. Method mutuableListof

4. **Android Framework and Android studio**
   a. Introduction
   b. Android Platform Architecture
   c. Android Libraries
   d. Components of Android application
   e. Types of Android processes and their properties
   f. Android Application Development
      i. Android SDK platform
      ii. Integrated Development Environment (IDE)
      iii. Android Studio
      iv. Gradle
      v. Instant Run
   g. **LAB: Creating your first application**
      i. Create your first android application
      ii. Create an Android virtual device
      iii. Build a simple calculator application

5. **Creating user interface UI**
   a. Introduction
   b. Android Project Structure
   c. View
   d. Creating user interface
      i. Add a text box
      ii. Add an Image
      iii. Add Check Box
      iv. Add Radio Button
   e. **LAB:** Create a Pizza Order application
      i. Create your application user interface

ii. Configure the Android application code
iii. Run your application

6. Android Layouts, Styles, Themes and Menus
    a. Introduction
    b. Views
    c. Layouts
        i. Constraint layout
        ii. Linear Layout
        iii. Relative Layout
        iv. Table Row Layout
        v. Frame Layout
        vi. Screw view Layout
    d. Android Styles and Themes
        i. Android Styles
        ii. Android Themes
    e. App manifest
        i. Adaptive Icons
    f. **LAB: Android Application Layout, Styles and Themes**
        i. Create your application layout
        ii. Configure your styles and themes
        iii. Configure your app icon

7. **Toasts, Activities, Navigation and Views**
    a. Context Class
    b. Toast Class
        i. Positioning your toast
    c. What is an Activity?
    d. Activity Lifecycle
        i. Managing the activity life cycle
    e. Android Intent
        i. Navigation between activities
        ii. Passing data between activities
    f. Android Views
        i. List View
        ii. Recycler view
    g. **LAB: Configuring of android Recycler view**
        i. Adding a Recycler View to an Activity
        ii. Creating a Card View
        iii. Creating your recycler view adapter
        iv. Adding Data to your recycler view
        v. Adding Event Listeners to each Recycler View Row

8. **Android Dialogs, Snack Bar, Menus, Web View and notification**
    - **a.** Introduction
    - **b.** Android Dialogs
        - **i.** Alert Dialog
        - **ii.** Progress Bar
        - **iii.** Seek Bar
        - **iv.** Date Picker Dialog
        - **v.** Time Picker Dialog
    - **c.** Snack Bar
    - **d.** Menus
    - **e.** Web View
    - **f.** Android Notifications
        - **i.** Creating an Android notification
        - **ii.** Notification channel
    - **g.** **LAB: Configuring Android Web Browser, Menu and notification**
        - **i.** Configuring Android Web Browser
        - **ii.** Adding Android Menu
        - **iii.** Creating a notification channel and a notification message

9. **Android Storage, SQLite and Content Providers**
    - **a.** Android Storage Options
    - **b.** Shared Preferences
    - **c.** Internal Storage
    - **d.** External Storage
    - **e.** Network Connection
    - **f.** SQLite Databases
        - **i.** SQLite Database in your application
        - **ii.** SQLite Library
        - **iii.** Creating an adapter class for SQLite Database
    - **g.** Content Providers
        - **i.** Creating a Content Provider
    - **h.** Sync Adapters
        - **i.** How Sync Adapters work
    - **i.** ORMLite
    - **j.** Choosing Internal or External storage
    - **k.** **LAB: SQLite databases and Content Providers**
        - **i.** Creating an SQLite Database
        - **ii.** Querying an SQLite DB Table
        - **iii.** Creating a content provider
        - **iv.** Utilizing ORMLite Library

10. Location –Aware Apps: Using GPS and Google Maps

- **a.** Introduction
- **b.** What is GPS and how does it work?
- **c.** Other Location Service Providers
- **d.** Configuring Google Maps
  - **i.** Map fragment
  - **ii.** Getting a Google API key
  - **iii.** Adding a Google Map Marker
  - **iv.** Methods to Capture a User's Location
  - **v.** Reveres Geo Location and Geocoder class
- **e.** JSON and API
- **f.** **LAB 10: Location Aware Apps using a GPS and Google Maps**
  - **i.** Creating an App Interface
  - **ii.** Getting a Google API key
  - **iii.** Configuring Your app to use your API key
  - **iv.** Configuring User App's Permission
  - **v.** Capturing User's Location
  - **vi.** Finding the nearest restaurant to a user's current Location