



Android Application Development

Android 8.x

Course Outline

Duration (40 Hours)



Kotlin



**Android
Studio**

- Covers a wide range of Android development topics.
- Provides essential lessons on various Android SDK libraries.
- Includes step-by-step lab exercises to build Android applications.
- Contains guides to build location-aware applications using GPS.

By: Society For Education and Technology

www.androidatc.com

Lesson 1: Introduction to Kotlin

Kotlin History

Kotlin Advantages

How Kotlin Programs Work?

Kotlin Software Prerequisites

Installing Java JDK and JRE

Installing Android Studio

Creating Kotlin Project Using Android Studio

Creating a Kotlin Program

Running a Kotlin Program

Writing Comments

Kotlin Variables

Kotlin Data Types

Input of Information to Kotlin Program

Lesson 2: Control Flow Statements

Introduction

If Statement

If - Else Statement

If Else and Logical Operators

When Statement and Expression

For Loops

While Loops

Do-while Loops

Jump Expressions

Break Statement

Continue Statement

Return Statement

Lesson 3: Functions & Object-Oriented Programming (OOP)

Functions

Function Structure

Creating a Function

Functions and Variable Scope

Object-Oriented Programming (OOP)

Object

Class

Creating a Class

Providing Constructors for Your Classes

Class Inheritance

Overloading Constructors

Overriding Properties

Abstract Class

Interface Class

Generic Class

Enum Class

Class Variables

Member Variables

Kotlin Collections

Class Hashmaps

Class ArrayList

Method mutableListOf

Lesson 4: Android Framework and Android Studio

Introduction

Android Platform Architecture

Android Libraries

Components of Android Application

Types of Android processes and their priorities

Android Application Development

Android SDK platform

Integrated Development Environment (IDE)

Android Studio

Gradle

Instant Run

Lab 4: Creating Your First Application

Create your first Android application

Create an Android Virtual Device

Build a “Simple Calculator” Application

Lesson 5: Creating User Interface UI

Introduction

Android Project Structure

View

Creating User Interface

Add a text box

Add an Image

Add Check Box

Add Radio Button

Lab 5: Creating a Pizza Order Application

Create Your Application User Interface

Configure the Android Application Code

Run Your Application

Lesson 6: Android Layouts, Styles, Theme and Menus

Introduction

Views

Layouts

Constraint Layout

Linear Layout

Relative Layout

TableRow Layout

Frame Layout

ScrollView Layout

Android Styles and Themes

Android Styles

Android Themes

App Manifest

Adaptive Icons

Lab 6: Android Application Layouts, Styles, and Themes

Create Your Application Layout

Configure Your Styles and Themes

Configure Your App Icon

Lesson 7: Toasts, Activities, Navigations, and Views

Context Class

Toast Class

Positioning Your Toast

What is an Activity?

Activity Lifecycle

Managing the activity lifecycle

Android Intent

Navigating Between Activities

Passing Data Between Activities

Android Views

ListView

RecyclerView

Lab 7: Configuration of Android RecyclerView

Adding a RecyclerView to an Activity

Creating a CardView

Creating Your RecyclerView Adapter

Adding Data to Your RecyclerView

Running and Testing Your RecyclerView

Adding Event Listeners to Each RecyclerView Row

Lesson 8: Android Dialogs, Snackbar, Menus, WebView and Notifications

Introduction

Android Dialogs

Alert Dialog

ProgressBar

SeekBar

Date Picker Dialog

Time Picker Dialog

Snackbar

Menus

WebView

Android Notifications

Creating an Android Notification

Notification Channel

Lab 8: Configuring Android Web Browser, Menu, and Notification

Configuring Android Web Browser.

Adding Android Menu.

Creating a notification channel and a notification message

Lesson 9: Android Storage, SQLite and Content Providers

Android Storage Options

Shared Preferences

Internal Storage

External Storage

Network Connection

SQLite Databases

SQLite Database in your application

SQLite Library

Creating an adapter class for SQLite database

Content Providers

Creating a Content Provider

Sync Adapters

How SyncAdapters Work

ORMLite

Choosing Internal or External Storage

Lab 9: SQLite Databases and Content Providers

- Creating an SQLite database
- Querying an SQLite DB Table
- Creating a Content Provider
- Utilizing ORMLite Library

Lesson 10: Location-Aware Apps: Using GPS and Google Maps

Introduction

What is GPS and how does it work?

Other Location Service Providers

Configuring Google Maps.

- Map Fragment
- Getting a Google API key
- Adding a Google Map Marker
- Methods to Capture a User's Location
- Reverse Geolocation and Geocoder Class

JSON and API

Lab 10: Location-Aware Apps Using a GPS and Google Maps

- Creating an App Interface
- Getting a Google API key
- Configuring Your App to Use Your API Key
- Configuring User App's Permission
- Capturing Users' Location
- Finding the Nearest Restaurants to a User's Current Location