



Android Application Development

Course Outline



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 Android ATC Team

www.androidatc.com

Lesson 1: Introduction to Kotlin

Kotlin History	1-2
Kotlin Advantages	1-2
How Kotlin Programs Work?	1-2
Kotlin Software Prerequisites	1-3
Installing Java JDK and JRE	1-3
Installing Android Studio	1-7
Creating Kotlin Project Using Android Studio	1-14
Creating a Kotlin Program	1-18
Running a Kotlin Program	1-19
Writing Comments	1-21
Kotlin Variables	1-22
Kotlin Data Types	1-23
Input of Information to Kotlin Program	1-33

Lesson 2: Control Flow Statements

Introduction	2-2
If Statement	2-2
If – Else Statement	2-4
If Else and Logical Operators	2-6
When Statement and Expression	2-8
For Loops	2-9
While Loops	2-12
Do-while Loops	2-13
Jump Expressions	2-14
Break Statement	2-14
Continue Statement	2-15
Return Statement	2-15

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

Functions	3-2
Function Structure	3-2
Creating a Function	3-3
Functions and Variable Scope	3-7
Object-Oriented Programming (OOP)	3-8
Object	3-9
Class	3-9
Creating a Class	3-9

- Providing Constructors for Your Classes 3-12
- Class Inheritance 3-13
- Overloading Constructors 3-16
- Overriding Properties 3-18
- Abstract Class 3-20
- Interface Class 3-24
- Generic Class 3-28
- Enum Class 3-29
- Class Variables 3-30
- Member Variables 3-31
- Kotlin Collections** 3-33
- Class Hashmaps 3-34
- Class ArrayList 3-37
- Method mutableListOf 3-42

Lesson 4: Android Framework and Android Studio

- Introduction 4-2
- Android Platform Architecture 4-2
- Android Libraries 4-4
- Components of Android Application 4-4
- Types of Android processes and their priorities 4-7
- Android Application Development 4-8
 - Android SDK platform 4-8
 - Integrated Development Environment (IDE) 4-8
 - Android Studio 4-8
 - Gradle 4-10
 - Instant Run 4-10
- Lab 4: Creating Your First Application** 4-12
 - Create your first Android application 4-13
 - Create an Android Virtual Device 4-18
 - Build a “Simple Calculator” Application 4-24

Lesson 5: Creating User Interface UI

- Introduction 5-2
- Android Project Structure 5-2
- View 5-7
- Creating User Interface 5-13
 - Add a text box 5-13
 - Add an Image 5-15
 - Add Check Box 5-19
 - Add Radio Button 5-27
- Lab 5: Creating a Pizza Order Application** 5-32
 - Create Your Application User Interface 5-33

Configure the Android Application Code.....	5-40
Run Your Application.....	5-41

Lesson 6: Android Layouts, Styles, Theme and Menus

Introduction	6-2
Views	6-2
Layouts	6-2
Constraint Layout.....	6-4
Linear Layout	6-6
Relative Layout	6-10
TableRow Layout.....	6-15
Frame Layout.....	6-18
ScroView Layout.....	6-19
Android Styles and Themes	6-21
Android Styles.....	6-22
Android Themes	6-30
App Manifest	6-34
Adaptive Icons	6-36
Lab 6: Android Application Layouts, Styles, and Themes	6-41
Create Your Application Layout	6-42
Configure Your Styles and Themes	6-42
Configure Your App Icon.....	6-52

Lesson 7: Toasts, Activities, Navigations, and Views

Context Class	7-2
Toast Class	7-2
Positioning Your Toast	7-8
What is an Activity?	7-11
Activity Lifecycle	7-12
Managing the activity lifecycle	7-13
Android Intent	7-21
Navigating Between Activities	7-23
Passing Data Between Activities.....	7-29
Android Views	7-33
ListView.....	7-33
RecyclerView	7-41
Lab 7: Configuration of Android RecyclerView	7-42
Adding a RecyclerView to an Activity.....	7-43
Creating a CardView.....	7-45
Creating Your RecyclerView Adapter	7-51
Adding Data to Your RecyclerView	7-60
Running and Testing Your RecyclerView	7-62
Adding Event Listeners to Each RecyclerView Row	7-63

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

Introduction	8-2
Android Dialogs	8-2
Alert Dialog.....	8-2
ProgressBar	8-9
SeekBar	8-18
Date Picker Dialog	8-24
Time Picker Dialog	8-28
Snackbar	8-30
Menus	8-34
WebView	8-38
Android Notifications	8-42
Creating an Android Notification	8-44
Notification Channel	8-45
Lab 8: Configuring Android Web Browser, Menu, and Notification	8-52
Configuring Android Web Browser.....	8-53
Adding Android Menu.....	8-57
Creating a notification channel and a notification message	8-59

Lesson 9: Android Storage, SQLite and Content Providers

Android Storage Options	9-2
Shared Preferences	9-2
Internal Storage	9-8
External Storage	9-15
Network Connection	9-18
SQLite Databases	9-18
SQLite Database in your application	9-18
SQLite Library.....	9-18
Creating an adapter class for SQLite database.....	9-19
Content Providers	9-21
Creating a Content Provider	9-23
Sync Adapters	9-27
How SyncAdapters Work.....	9-27
ORMLite	9-28
Choosing Internal or External Storage	9-29
Lab 9: SQLite Databases and Content Providers	9-30
Creating an SQLite database.....	9-31
Querying an SQLite DB Table	9-37
Creating a Content Provider	9-44
Utilizing ORMLite Library	9-59

