Experiment 1: Hello Android

1. Objective

Familiarize yourself with the Android Studio IDE and create a simple application that displays "Hello, Android!" on the screen. This exercise will help you understand the basic setup, project structure, and the workflow of Android app development.

2. Steps to Complete the Application

1. Set Up Android Studio:

   Download and install Android Studio from the official website.

   Launch Android Studio and set up the IDE with default settings.

2. Create a New Android Project:

   Select File > New > New Project.

   Choose Empty Activity and click Next.

   Enter your application name (e.g., HelloAndroid).

   Ensure the language is set to Java (or Kotlin if preferred).

   Choose the minimum API level supported by your app (recommend API 21 or higher for broader device compatibility).

   Click Finish.

3. Understand the Project Structure:

   Familiarize yourself with the basic project structure in the Project pane.

   Key directories include:

   app > src > main > res: Resource files (layouts, strings, images, etc.).

   app > src > main > java: Your Java source files.

app > src > main > AndroidManifest.xml: Configuration file for your app.

4. Modify the Layout:

   Navigate to app > res > layout > activity_main.xml.

   Use the Design view or Code view to modify the layout.

   Ensure there is a TextView element in your layout for displaying the "Hello, Android!" text.

5. Edit the TextView in activity_main.xml:

   In the activity_main.xml file, locate the TextView element.

   Set the text attribute to "Hello, Android!".

   Customize the appearance as desired (text size, color, etc.).

```
<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello, Android!"
    android:textSize="24sp"
    android:layout_gravity="center" />
```

6. Run the Application:

   Connect an Android device to your computer or use the Android Emulator.

   Click the Run button in Android Studio.

   Choose your device or emulator and wait for the app to launch.

7. View the Output:

   The app should display "Hello, Android!" on the device or emulator screen.

3. Code Required

The primary code involved in this experiment is in the activity_main.xml layout file, which is responsible for the UI design. You've already seen the TextView XML code above. Apart from that, there's minimal Java/Kotlin code modification required for this initial experiment as the default MainActivity class generated by Android Studio suffices for displaying the simple UI.

In the default MainActivity.java (or MainActivity.kt for Kotlin), Android Studio includes the necessary code to set the content view to our activity_main.xml layout using the setContentView(R.layout.activity_main); method call within the onCreate method. This method is called when the activity is starting, and is where you should perform basic application startup logic such as creating views and binding data to lists.