Lab1

Ex3

1. **What programming languages you can use for Android app development?**

You can use Java, Kotlin, C++, C#, Corona, HTML, CSS, JavaScript, Python

1. **What is a apk file?**

An Android Package Kit (APK for short) is the package file format used by the Android operating system for distribution and installation of mobile apps.

1. **How Android system runs apps?**

The Android operating system is a multi-user Linux system in which each app is a different user. By default, the system assigns each app a unique Linux user ID (the ID is used only by the system and is unknown to the app). The system sets permissions for all the files in an app so that only the user ID assigned to that app can access them. Each process has its own virtual machine (VM), so an app's code runs in isolation from other apps.

1. **Name four types of Android components. Describe each.**

There are four different types of app components: Activities, Services, Broadcast receivers, Content providers  
**Activities:** An *activity* is the entry point for interacting with the user. It represents a single screen with a user interface.  
**Services**: A *service* is a general-purpose entry point for keeping an app running in the background for all kinds of reasons. It is a component that runs in the background to perform long-running operations or to perform work for remote processes. A service does not provide a user interface.

**Broadcast receivers:** A *broadcast receiver* is a component that enables the system to deliver events to the app outside of a regular user flow, allowing the app to respond to system-wide broadcast announcements. Because broadcast receivers are another well-defined entry into the app, the system can deliver broadcasts even to apps that aren't currently running.

**Content providers:** A *content provider* manages a shared set of app data that you can store in the file system, in a SQLite database, on the web, or on any other persistent storage location that your app can access. Through the content provider, other apps can query or modify the data if the content provider allows it.

1. **What is manifest file and what is its purpose?**

Every app project must have an AndroidManifest.xml file (with precisely that name) at the root of the [project source set](https://developer.android.com/studio/build#sourcesets). The manifest file describes essential information about your app to the Android build tools, the Android operating system, and Google Play. The app's package name, which usually matches your code's namespace. The Android build tools use this to determine the location of code entities when building your project. When packaging the app, the build tools replace this value with the application ID from the Gradle build files, which is used as the unique app identifier on the system and on Google Play. The permissions that the app needs in order to access protected parts of the system or other apps. It also declares any permissions that other apps must have if they want to access content from this app. The components of the app, which include all activities, services, broadcast receivers, and content providers.

1. **What are resources?Why they are needed?**

Resources are the additional files and static content that your code uses, such as bitmaps, layout definitions, user interface strings, animation instructions, and more.

You should always externalize app resources such as images and strings from your code, so that you can maintain them independently. You should also provide alternative resources for specific device configurations, by grouping them in specially-named resource directories. At runtime, Android uses the appropriate resource based on the current configuration.