Assignment No 1

Name :- Shree Gopale

Dept :- MCA

Course :- Anroid

ID :- 3

1. What is Android, and who developed it?

Android is an **open-source mobile operating system** based on the **Linux kernel**, primarily used for smartphones, tablets, and smart devices. It was originally developed by **Android Inc.** and later acquired by **Google** in 2005.

2. What are the main components of an Android application?

The main components of an Android application are:

- **Activities** – Represents the UI of an app (screens).
- **Services** – Background processes running without a UI.
- **Broadcast Receivers** – Listens for system-wide or app-specific events.
- **Content Providers** – Manages shared app data (like contacts, files, etc.).
- **Intents** – Used for communication between components.

3. What is the Android Manifest file, and why is it important?

The **AndroidManifest.xml** file provides essential information about the app to the Android system. It:

- Declares **permissions** (e.g., camera, internet access).
- Defines **app components** (activities, services, receivers).
- Specifies **hardware/software requirements**.

4. Explain the difference between implicit and explicit intents in Android.

- **Explicit Intent**: Targets a **specific component** (e.g., opening a new activity in the same app).

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  Intent intent = new Intent(this, SecondActivity.class);

  startActivity(intent);

- **Implicit Intent**: Doesn't specify a component; lets the system decide based on available apps.

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```
Intent intent = new Intent(Intent.ACTION_VIEW, Uri.parse("https://www.google.com"));
startActivity(intent);
```

5. What is an Activity in Android? How does it differ from a Fragment?

- **Activity**: Represents a single screen in an app.
- **Fragment**: A reusable UI component within an activity, allowing better UI modularity.

6. What is the role of the Gradle build system in Android development?

Gradle automates **dependency management**, **compilation**, and **packaging** of the Android app, ensuring efficient builds.

7. How does Android handle background tasks? Explain Services and WorkManager.

- **Services**: Used for long-running background tasks (e.g., music playback, network operations).
- **WorkManager**: Schedules background tasks that should run even after app restarts (e.g., periodic syncs).

8. What is the purpose of RecyclerView, and how is it different from ListView?

RecyclerView is an optimized and flexible version of **ListView** that:

- Uses **ViewHolder pattern** to improve performance.
- Supports different **layout managers** (Linear, Grid, Staggered).
- Provides built-in animations and item decorations.

9. What are the different types of storage options available in Android?

1. **Internal Storage** – Private to the app.
2. **External Storage** – Shared storage (SD card, public directories).
3. **Shared Preferences** – Key-value pairs for lightweight data storage.
4. **SQLite Database** – Structured storage for relational data.
5. **Room Database** – An abstraction over SQLite for better performance.
6. **Cloud Storage** – Firebase, Google Drive, etc.

10. What is Jetpack Compose, and how does it differ from traditional XML-based UI development?

Jetpack Compose is a modern UI toolkit for building native Android UIs **declaratively** using Kotlin, whereas XML-based UI is **imperative** and requires manual UI updates.