* **Intents in Android**

Intents are messaging objects used to communicate between app components, such as Activities, Services, or Broadcast Receivers. They enable actions like launching activities, starting services, or delivering broadcasts.

**Types of Intents**

**1. Explicit Intent**

* **Definition**: Specifies the target component (e.g., an Activity or Service) by name.
* **Use Cases**:
  + Navigating between activities within the same app.
  + Starting a service.
* **Key Features**:
  + Target is explicitly defined using the component name or class.
  + Ideal for intra-app communication.
* **Example**: Navigating to another activity.

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

startActivity(intent);

* **Example**: Starting a service.

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

startService(intent);

**2. Implicit Intent**

* **Definition**: Describes a general action to be performed, allowing the Android system to determine which component (app or service) can handle it.
* **Use Cases**:
  + Sharing data.
  + Opening a web page or sending an email.
  + Choosing apps to handle user actions (e.g., opening a file).
* **Key Features**:
  + Does not explicitly name the target component.
  + Relies on **intent filters** in the manifest to match actions and categories.
* **Example**: Opening a web page.

Intent intent = new Intent(Intent.ACTION\_VIEW);

intent.setData(Uri.parse("https://www.example.com"));

startActivity(intent);

* **Example**: Sharing data.

Intent intent = new Intent(Intent.ACTION\_SEND);

intent.setType("text/plain");

intent.putExtra(Intent.EXTRA\_TEXT, "Hello, world!");

startActivity(Intent.createChooser(intent, "Share via"));

**Components of an Intent**

1. **Action**: The operation to be performed (e.g., ACTION\_VIEW, ACTION\_SEND).
2. **Data**: The data to be acted upon, often specified as a URI.
3. **Category**: Provides additional information about the action (e.g., CATEGORY\_DEFAULT).
4. **Extras**: Key-value pairs for passing additional data.
5. **Flags**: Instructions on how to launch the activity (e.g., FLAG\_ACTIVITY\_NEW\_TASK).

**Passing Data with Intents**

You can use the putExtra() method to pass data and retrieve it in the target component using getExtras().

* **Sending Data**:

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

intent.putExtra("KEY\_NAME", "Ram");

intent.putExtra("KEY\_AGE", 25);

startActivity(intent);

* **Receiving Data**:

Intent intent = getIntent();

String name = intent.getStringExtra("KEY\_NAME");

int age = intent.getIntExtra("KEY\_AGE", 0);

**Intent Filters**

For an **Implicit Intent** to be handled, the target component must define an **intent filter** in its manifest file.

* **Example**:

<activity android:name=".SecondActivity">

<intent-filter>

<action android:name="android.intent.action.VIEW"/>

<category android:name="android.intent.category.DEFAULT"/>

<data android:scheme="https" android:host="www.example.com"/>

</intent-filter>

</activity>