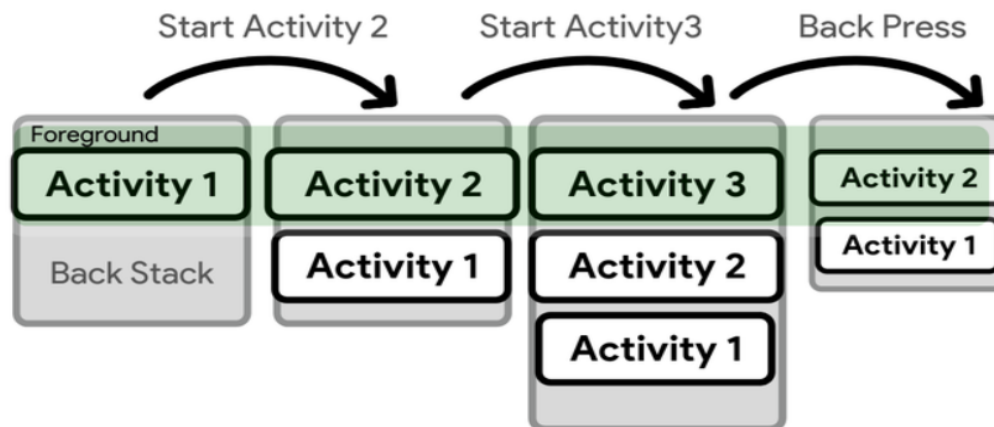# Android Development

Ch-03

Android Intents

- **Intent** is a messaging object. We use it to communicate with other Android components.

- When your application has **more than one activity**, you often need to **navigate from one to another**. In Android, you navigate between activities through what is known as an **Intent**.

- Android supports **explicit and implicit** intents. An application can define the target component directly in the intent (explicit intent) or based on the intent description(implicit intents).

- **Why dealing with implicit Intent?** Because sometimes we don't know the explicit name of target component but its action. like dealing with Maps, camera, contacts, ...

- You can send additional information to be used by the target component via a **Bundle** in the form of (key, value) pairs.

- To **start** an activity, use the method **startActivity(intent),** This method exists in parent class.

Android Intents

- **What happens**: Your application sends a message "intent" to the Android system defining the component class you are targeting. You define the target component explicitly or implicitly. When the OS receives the intent, it will search in the manifest of all applications on the device to found the component which corresponds intent's target.

Tasks and Stacks

- During the transition from one activity to another, the activities are packaged into a box, this box is called: **back stack.**

- The activities are stacked in the order in which they are opened in back stack.

- If the user presses Back repeatedly, each activity in the stack is popped off to show the one before it, until the user returns to the Launcher Activity.

Intent Example

```xml
<Button
    android:id="@+id/btnSecondActivity"

    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello World!"
   app:layout_constraintBottom_toBottomOf="parent"
   app:layout_constraintLeft_toLeftOf="parent"
   app:layout_constraintRight_toRightOf="parent"
   app:layout_constraintTop_toTopOf="parent" />
```

```java
Button btnSecondActivity = findViewById(R.id.btnSecondActivity);

btnSecondActivity.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

        Intent i = new Intent(getApplicationContext(), MainActivity2.class) ;

        startActivity(i);

    }

});
```

Exercise

The solution: manifest.xml

```xml
<activity
    android:name=".ActivityB"
    android:exported="true" >
    <intent-filter>
        <action android:name="display_information"/>
        <action android:name="show_data"/>
        <category android:name="android.intent.category.DEFAULT"/>
    </intent-filter>
</activity>
<activity
    android:name=".MainActivity"
    android:exported="true">
    <intent-filter>
        <action android:name="android.intent.action.MAIN" />

        <category android:name="android.intent.category.LAUNCHER" />
    </intent-filter>
</activity>
```

The solution: ActivityA.xml

```xml
<EditText
    android:id="@+id/ed_username_activity_a"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp"
    android:gravity="center"
    android:hint="Enter your name"
    android:textSize="30sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.25"
    android:inputType="text"/>
```

The solution: ActivityA.xml

```xml
<EditText
    android:id="@+id/ed_phone_number_activity_a"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp"
    android:gravity="center"
    android:hint="Enter your phone"
    android:inputType="number"
    android:textSize="30sp"
    android:layout_marginTop="20dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/ed_username_activity_a" />

<Button
    android:id="@+id/btn_transfer"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="GO To Activity B"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    android:textSize="30sp"
    android:layout_marginTop="20dp"
    app:layout_constraintTop_toBottomOf="@id/ed_phone_number_activity_a"/>
```

The solution: ActivityA.java

```java
EditText ed_username_activity_a, ed_phone_number_activity_a;
Button btn_transfer;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_activity);
    ed_username_activity_a= findViewById(R.id.ed_username_activity_a);
    ed_phone_number_activity_a= findViewById(R.id.ed_phone_number_activity_a);
    btn_transfer= findViewById(R.id.btn_transfer);

    btn_transfer.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            String username= ed_username_activity_a.getText().toString();
            int phone= Integer.parseInt(ed_phone_number_activity_a.getText().toString());

            Intent i=new Intent( packageContext: ActivityA.this, ActivityB.class); // explicit intents
              Intent i=new Intent( "display_information");//implicit intents
            i.putExtra( name: "username",username);
            i.putExtra( name: "phone",phone);
            startActivity(i);
        }
    });
}
```

The solution: ActivityB.xml

```xml
<TextView
    android:id="@+id/tv_greeting"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintBottom_toBottomOf="parent"
    android:textSize="35sp"
    android:textColor="@color/black"
    android:gravity="center"
    android:text="Welcom \n'Ahmed Mohammed'"/>

<TextView
    android:id="@+id/tv_phone_number"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    app:layout_constraintTop_toBottomOf="@id/tv_greeting"
    android:textSize="30sp"
    android:text="059059059"
    android:gravity="center"
    android:layout_marginTop="20dp"/>
```

The solution: ActivityB.java

```java
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_b);

    tv_greeting = findViewById(R.id.tv_greeting);
    tv_phone_number = findViewById(R.id.tv_phone_number);

    if (getIntent() != null) {
        Intent i = getIntent();
        if (i.hasExtra( name: "username") && i.hasExtra( name: "phone")) {
            username = i.getStringExtra( name: "username");
            tv_greeting.setText("Welcome\n'" + username + "'");

            phone = getIntent().getIntExtra( name: "phone", defaultValue: 0);
            tv_phone_number.setText("" + phone);
        }

        Toast toast=new Toast( context: ActivityB.this);
        toast.setText("welcome '"+username+"'\n"+phone);
        toast.setDuration(Toast.LENGTH_LONG);
        toast.show();
    }
}
```

Common Intents(Dial)

```
Intent i=new Intent(Intent.ACTION_DIAL);
i.setData(Uri.parse("tel:0594022616"));
if (i.resolveActivity(getPackageManager()) != null) {
    startActivity(i);
}
```

Common Intents(send SMS)

```
Intent i = new Intent(Intent.ACTION_SEND);
Uri mobileNo = Uri.parse("smsto:0594022616");
i.setData(mobileNo);
i.putExtra( name: "sms_body", value: "my message");
if (i.resolveActivity(getPackageManager()) != null) {
    //this if condition: to check if there's application that received this intent
    startActivity(i);
}
```

Common Intents(web browsing)

```java
//for web browsing
Uri web_uri = Uri.parse("http://www.google.com");
Intent i = new Intent(Intent.ACTION_VIEW, web_uri);
startActivity(i);
```

For Additional Common Intents

- Visit the link:
  https://developer.android.com/guide/components/intents-common

Done

Fares Saleem