

ANDROID PROGRAMMING

Building Layouts

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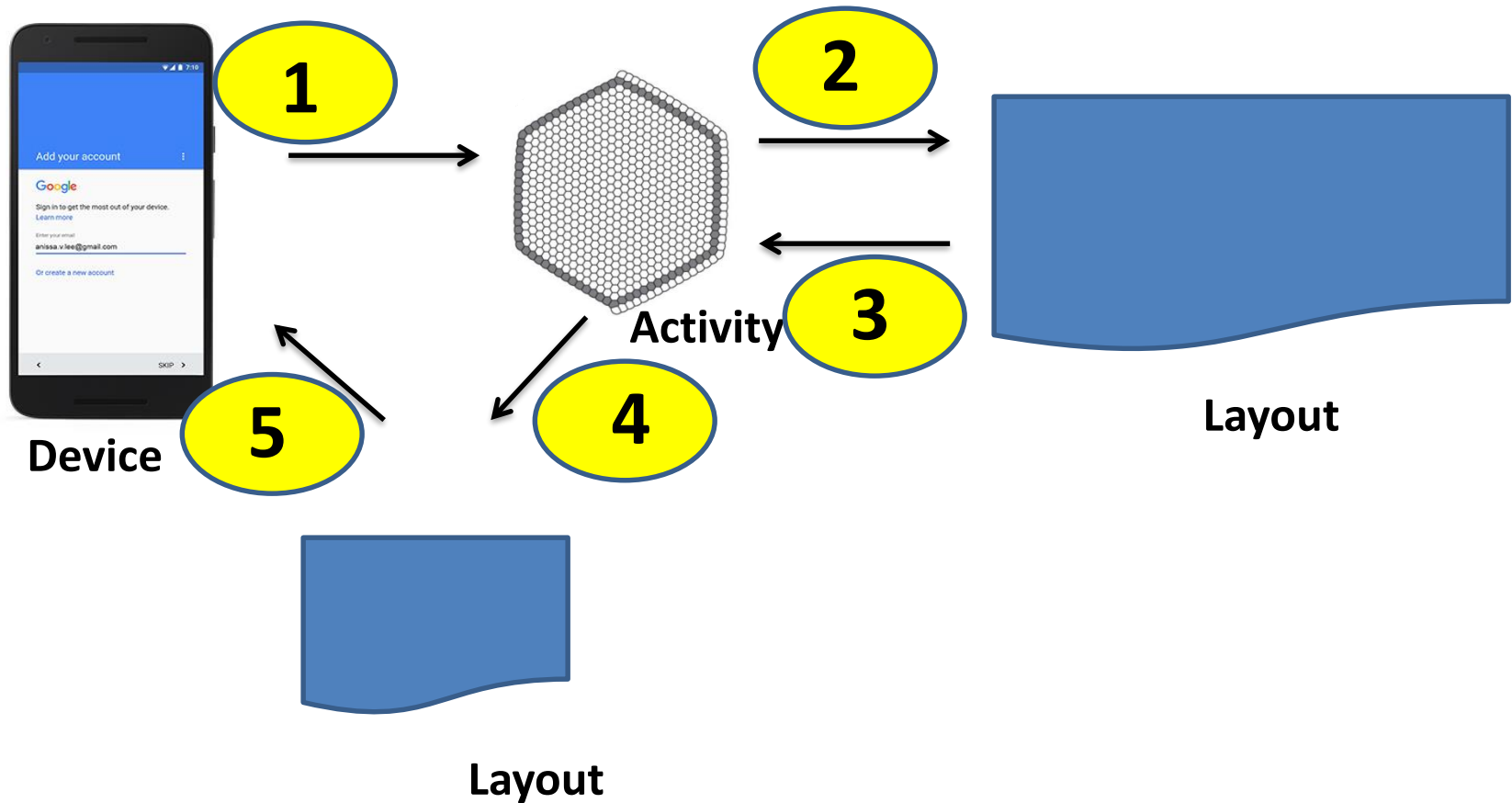
Create Basic android app

1. Set up environment
2. Build app
3. Run app
4. Change app

Build the basic app

1. Create a new project
2. Configure the project
3. Specify the API level
4. Create an activity
5. Configure the activity

Activities and Layout



Activities and Layout

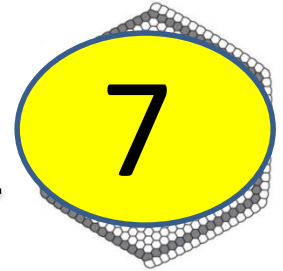


9

User



8



Activity

Change app

- Views
- ViewGroups

Views

➤ XML

- Name value pair

Syntax :

```
<ViewName  
attribute1  
attribute2  
>
```

```
<TextView  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="Hello World!"  
>
```

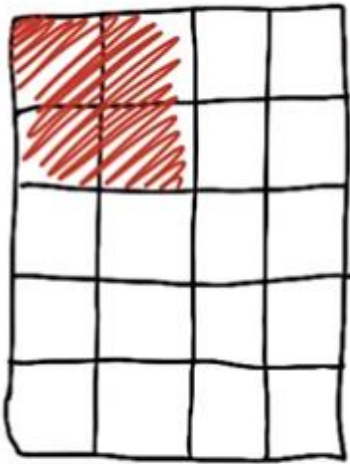
Views

- TextView
- ImageView
- Button
- EditText
- ToggleButton
- Switch
- CheckBox
- RadioButton(RadioGroup)

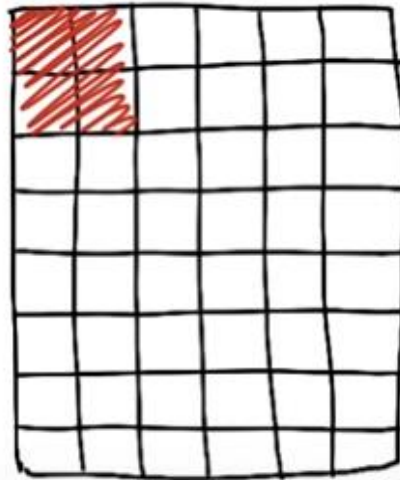
TextView

DENSITY-INDEPENDENT PIXELS

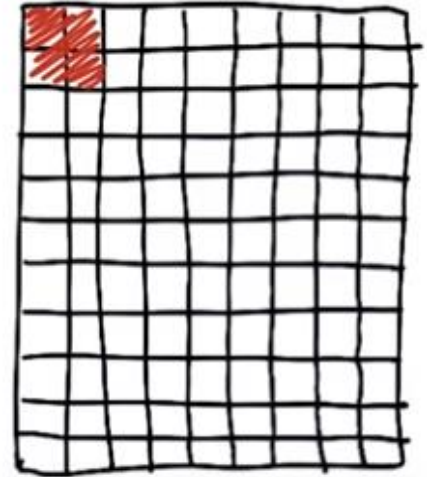
2 pixels by 2 pixels



Medium Resolution Device



High Resolution Device

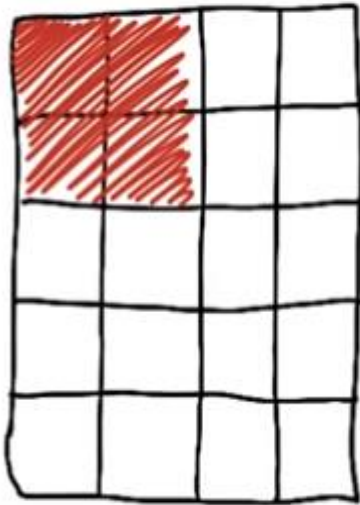


Extra-High Resolution Device

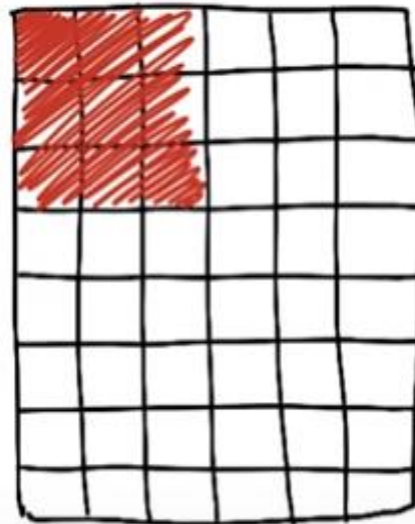
TextView

DENSITY-INDEPENDENT PIXELS

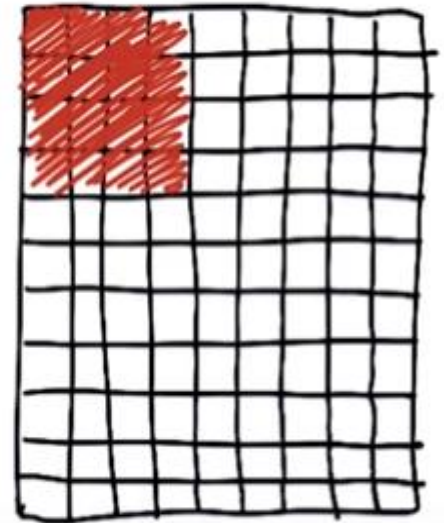
2 dp by 2 dp



Medium Resolution Device



High Resolution Device



Extra-High Resolution Device

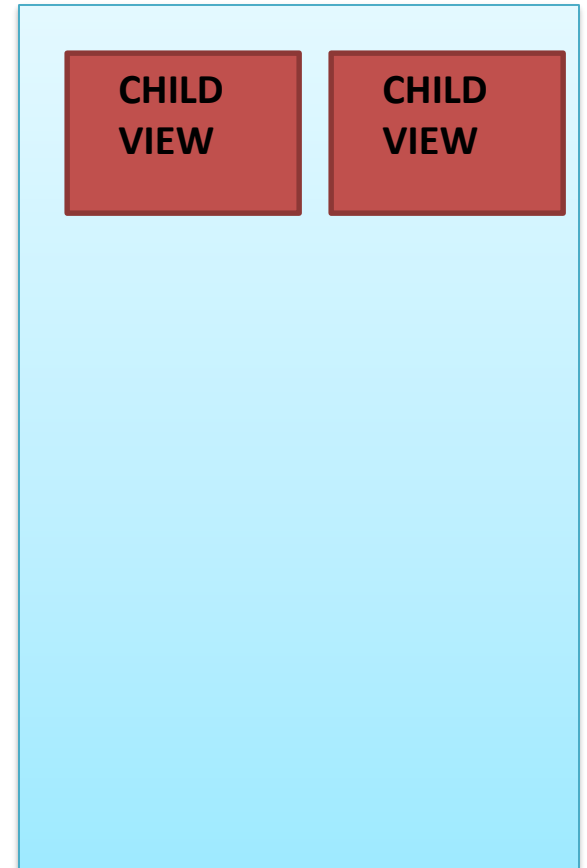
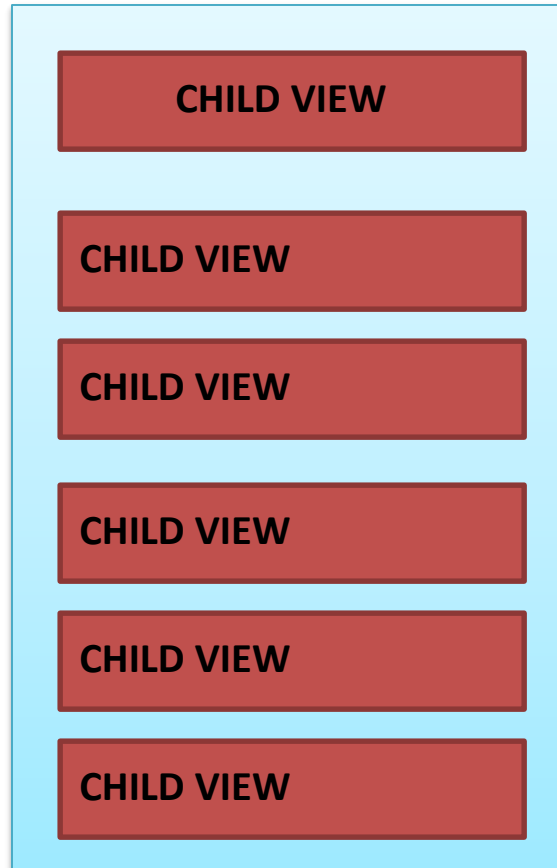
ViewGroup

- LinearLayout
- RelativeLayout
- GridLayout

LinearLayout

➤ Horizontal

➤ Vertical



RelativeLayout

- Relative to Parent
- Relative to other views

Relative to Parent

➤ Attributes

1. `android:layout_alignBottom` Bottom
2. `android:layout_alignTop` Top
3. `android:layout_alignLeft` Left
4. `android:layout_alignRight` Right
5. `android:layout_alignParent` Parent
6. `android:layout_alignHorizontal` Horizontal
7. `android:layout_alignVertical` Vertical



CHILD VIEW

Relative to Parent

CLICK ME

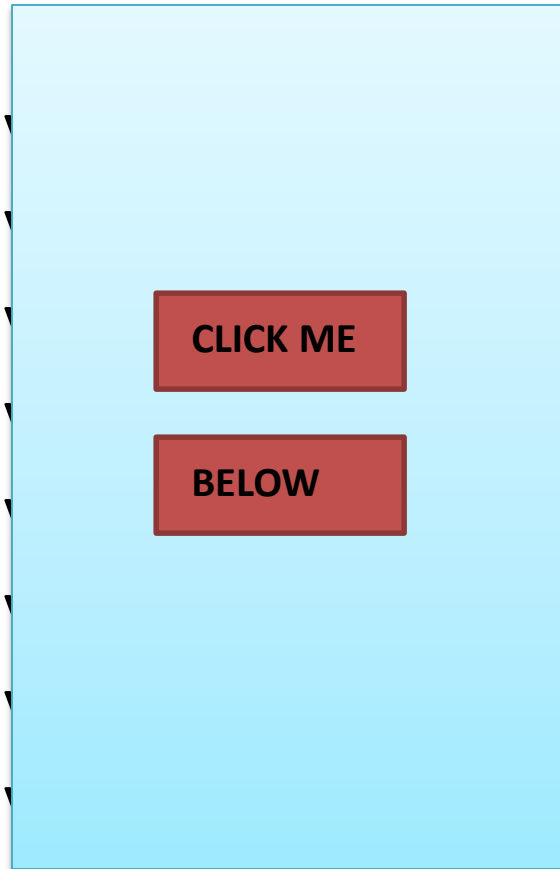
CLICK ME

CLICK ME

Relative to other views

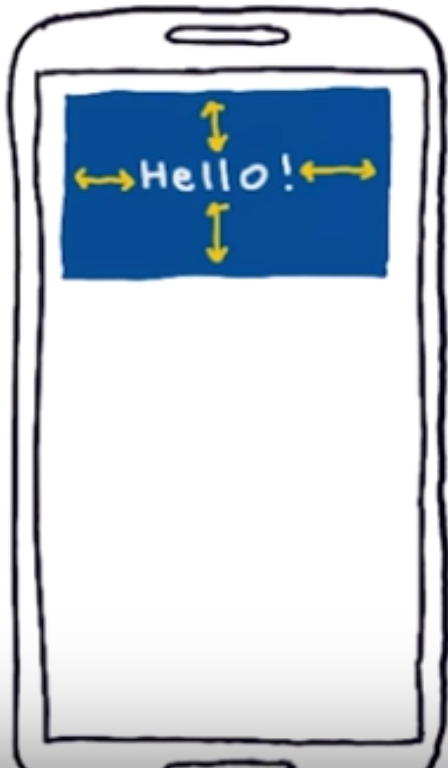
➤ Attributes

1. android:layout
2. android:layout
3. android:layout
4. android:layout
5. android:layout
6. android:layout
7. android:layout
8. android:layout



Padding and Margin

PADDING



TextView attribute:

`android:padding = "8 dp"`

OR

`android:paddingLeft = "8 dp"`

`android:paddingRight = "8 dp"`

`android:paddingTop = "8 dp"`

`android:paddingBottom = "8 dp"`

Padding and Margin

TextView attributes:

`android:layout_margin="8dp"`

OR

`android:layout_marginLeft="8dp"`

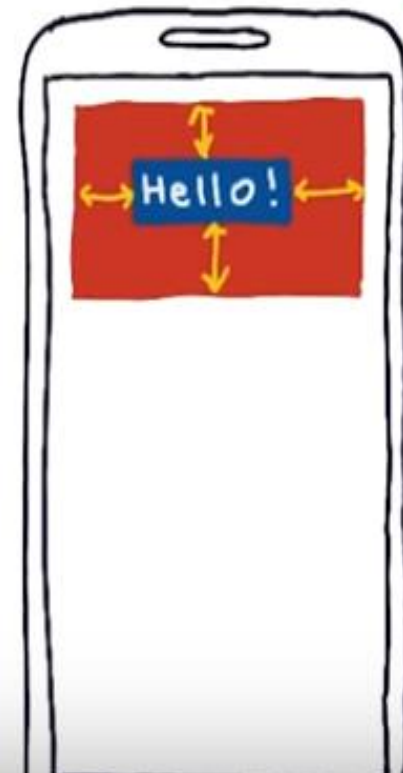
`android:layout_marginRight="8dp"`

`android:layout_marginTop="8dp"`

`android:layout_marginBottom="8dp"`

MARGIN

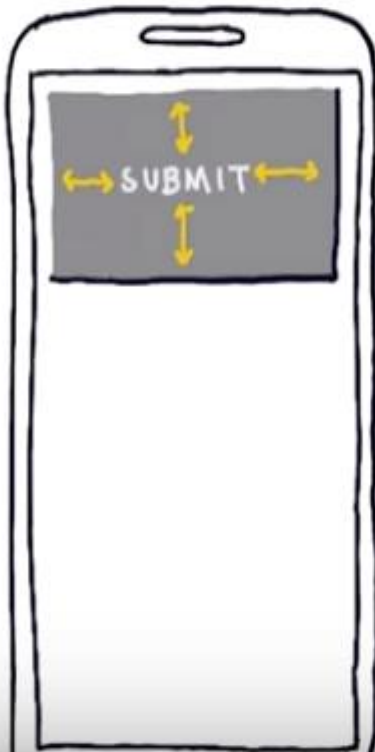
Need
View Group



Padding and Margin

PADDING

8 dp
padding
on
Button

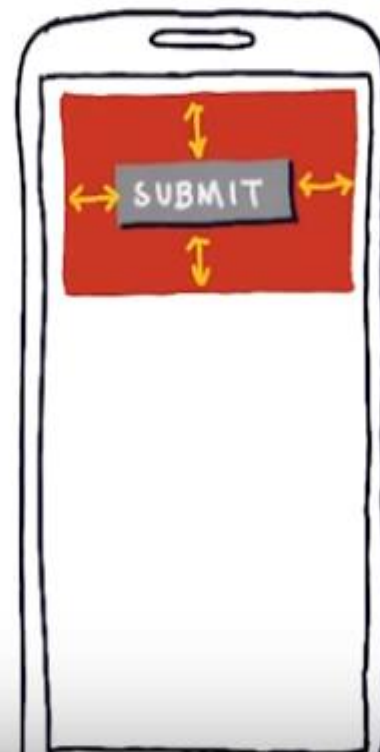


SUBMIT

MARGIN

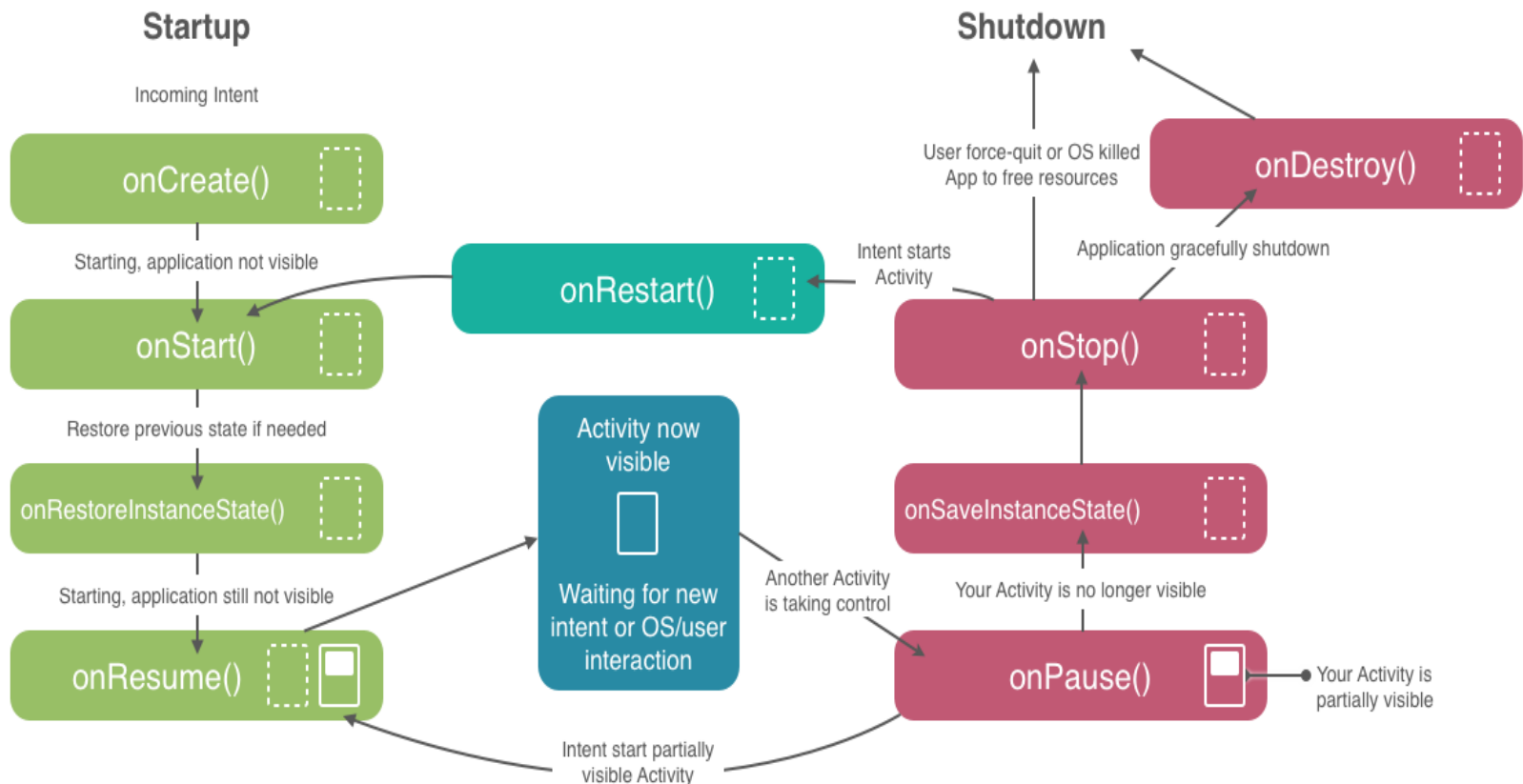
Need
ViewGroup

8 dp
layout
margin
on
Button



Activity Lifecycle

The Android Activity Lifecycle



Event Handling

- **Setting the android:OnClick property in XML**

```
<Button android:id="@+id/btnView"
```

```
.....
```

```
.....
```

```
android:OnClick="btnViewOnClick"/>
```

Event Handling

- Implementing the **OnClickListener** interface on the **Activity** class and passing a reference to the **Button**

```
protected void onCreate(Bundle savedInstanceState) {
```

```
.....
```

```
.....
```

```
toToastText.setOnClickListener(new TextOnClickListener());  
}
```

```
private class TextOnClickListener implements View.OnClickListener {
```

```
    @Override
```

```
    public void onClick(View v) {
```

```
//code here
```

```
}
```

```
}
```

Event Handling

- **Defining a listener programmatically on the onCreate method**

```
button.setOnClickListener(new OnClickListener(){  
    @Override public void onClick(View v) {  
        //do stuff  
    }  
});
```

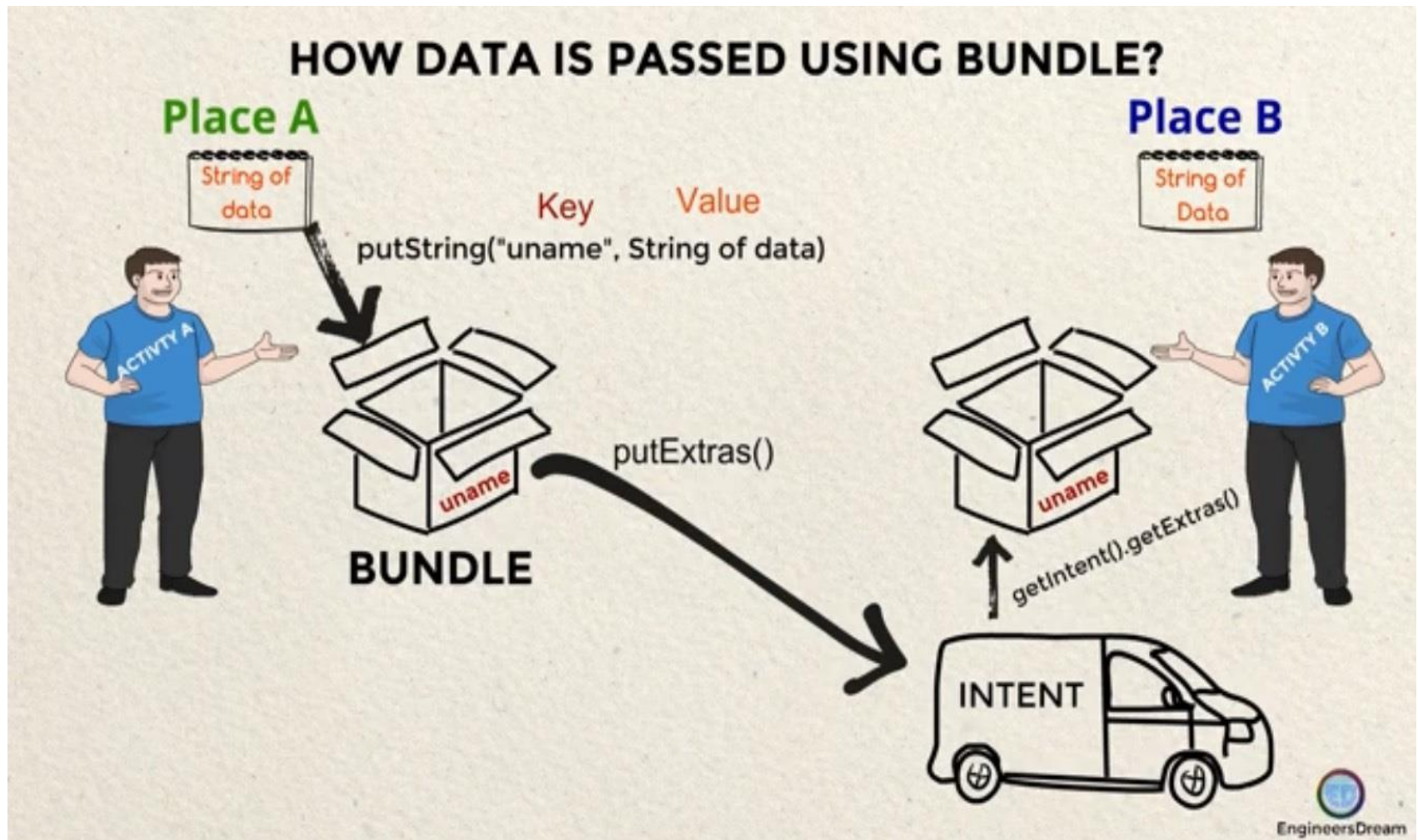
Event Handling

Method	Description
<code>onKeyDown()</code>	This method is called when a new key event occurs.
<code>onKeyUp()</code>	This method is called when a key up event occurs.
<code>onTrackballEvent()</code>	This method is called when a trackball motion event occurs.
<code>onTouchEvent()</code>	This method is called when a touch screen motion event occurs.
<code>onFocusChanged()</code>	This method is called when the view gains or loses focus.

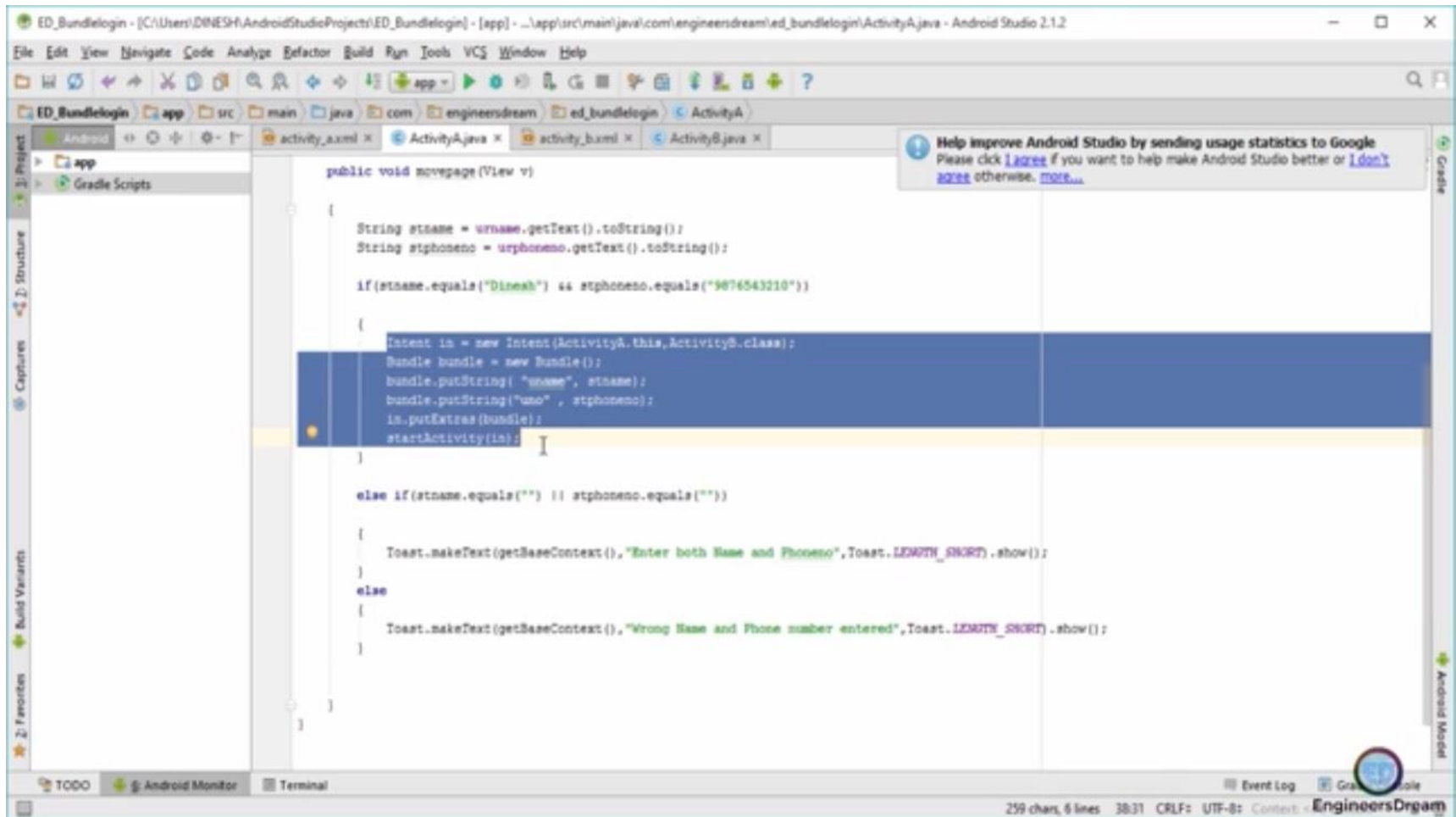
Intent

- Implicit
- Explicit

Intent and Bundle



Explicit Intent



The screenshot shows the Android Studio interface with a Java file named `ActivityA.java` open. The code defines a method `movepage(View v)` that checks if the username is "Dinesh" and the phone number is "9876543210". If both are correct, it creates an explicit intent to start `ActivityB` and passes a bundle of data. If the fields are empty, it shows a toast message asking the user to enter both name and phone number. Otherwise, it shows a toast message indicating that the name and phone number entered are wrong.

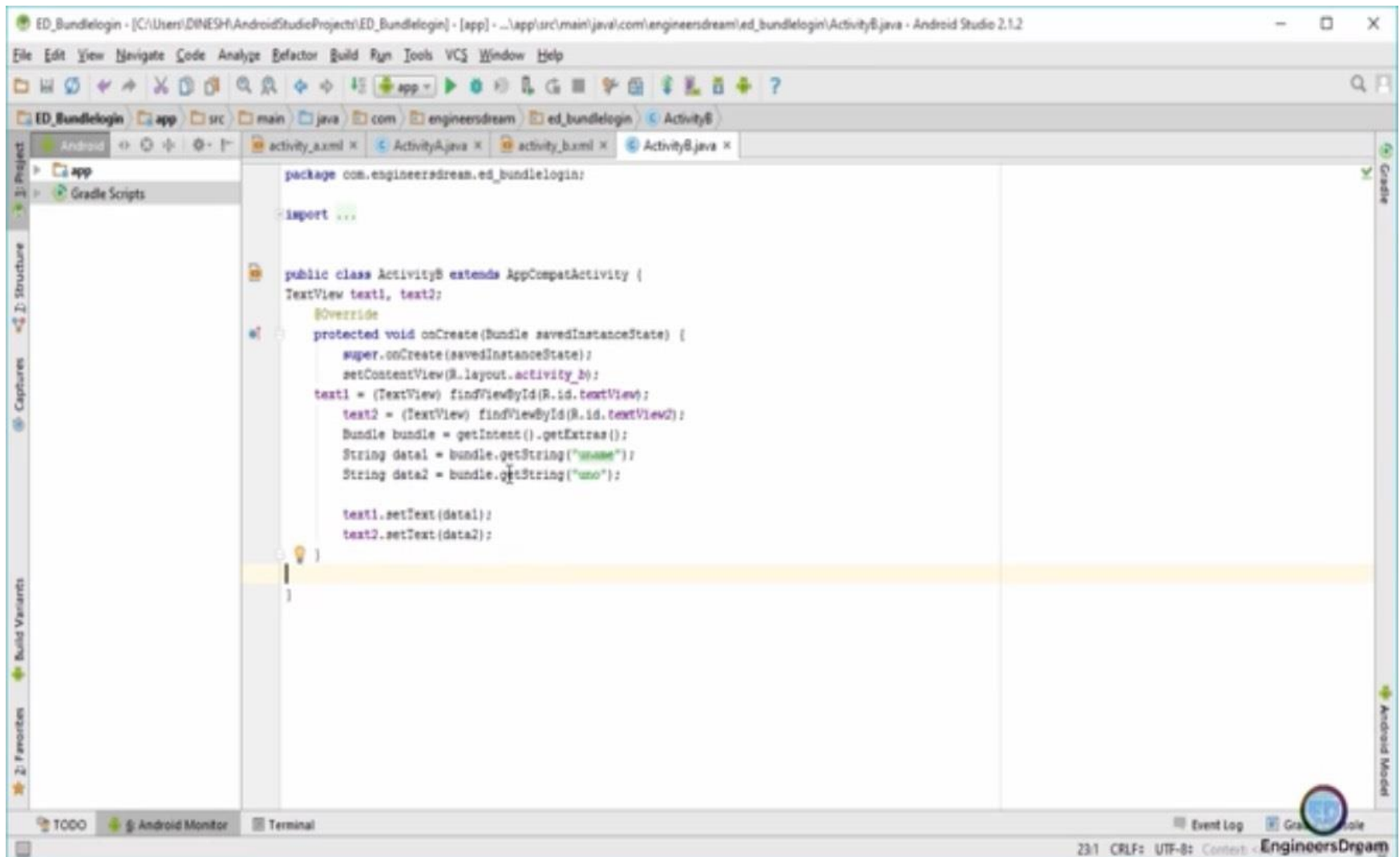
```
public void movepage(View v)
{
    String stname = username.getText().toString();
    String stphonenumber = urphonenumber.getText().toString();

    if(stname.equals("Dinesh") && stphonenumber.equals("9876543210"))
    {
        Intent in = new Intent(ActivityA.this, ActivityB.class);
        Bundle bundle = new Bundle();
        bundle.putString("username", stname);
        bundle.putString("phonenumber", stphonenumber);
        in.putExtras(bundle);
        startActivity(in);
    }

    else if(stname.equals("") || stphonenumber.equals(""))
    {
        Toast.makeText(getApplicationContext(), "Enter both Name and Phonenumber", Toast.LENGTH_SHORT).show();
    }
    else
    {
        Toast.makeText(getApplicationContext(), "Wrong Name and Phone number entered", Toast.LENGTH_SHORT).show();
    }
}
```

At the bottom of the screen, the status bar shows "259 chars, 6 lines 38:31 CRLF: UTF-8: Context: EngineersDream".

Explicit Intent



Implicit Intent

Project 1

```
activity_main.xml x MainActivity.java x

12 public class MainActivity extends AppCompatActivity {
13     Button button1, button2, button3, button4;
14
15     @Override
16     protected void onCreate(Bundle savedInstanceState) {
17         super.onCreate(savedInstanceState);
18         setContentView(R.layout.activity_main);
19
20         button1 = (Button) findViewById(R.id.button1);
21         button2 = (Button) findViewById(R.id.button2);
22         button3 = (Button) findViewById(R.id.button3);
23         button4 = (Button) findViewById(R.id.button4);
24
25
26         button1.setOnClickListener(new View.OnClickListener() {
27             @Override
28             public void onClick(View v) {
29                 Intent i = new Intent(Intent.ACTION_DIAL);
30                 startActivity(i);
31             }
32         });
33         button2.setOnClickListener(new View.OnClickListener() {
34             @Override
35             public void onClick(View v) {
36                 Intent i = new Intent(Intent.ACTION_DIAL, Uri.parse("tel:9022495200"));
37                 startActivity(i);
38             }
39         });
40     }
```

Implicit Intent

Project 2

```
MainActivity.java x AndroidManifest.xml x activity_main.xml x
1 <?xml version="1.0" encoding="utf-8"?>
2 <manifest xmlns:android="http://schemas.android.com/apk/res/android"
3     package="example.android.com.dummycall">
4
5     <application
6         android:allowBackup="true"
7         android:icon="@mipmap/ic_launcher"
8         android:label="@string/app_name"
9         android:roundIcon="@mipmap/ic_launcher_round"
10        android:supportsRtl="true"
11        android:theme="@style/AppTheme">
12        <activity android:name=".MainActivity">
13            <intent-filter>
14                <action android:name="android.intent.action.MAIN" />
15
16                <category android:name="android.intent.category.LAUNCHER" />
17            </intent-filter>
18            <intent-filter>
19                <action android:name="android.intent.action.DIAL"/>
20                <category android:name="android.intent.category.DEFAULT"/>
21                <data android:scheme="tel"/>
22            </intent-filter>
23            <intent-filter>
24                <action android:name="android.intent.action.DIAL"/>
25                <category android:name="android.intent.category.DEFAULT"/>
26            </intent-filter>
27        </activity>
28    </application>
29
30 </manifest>
```

Implicit Intent

Project 2

Pass Data from one app to other

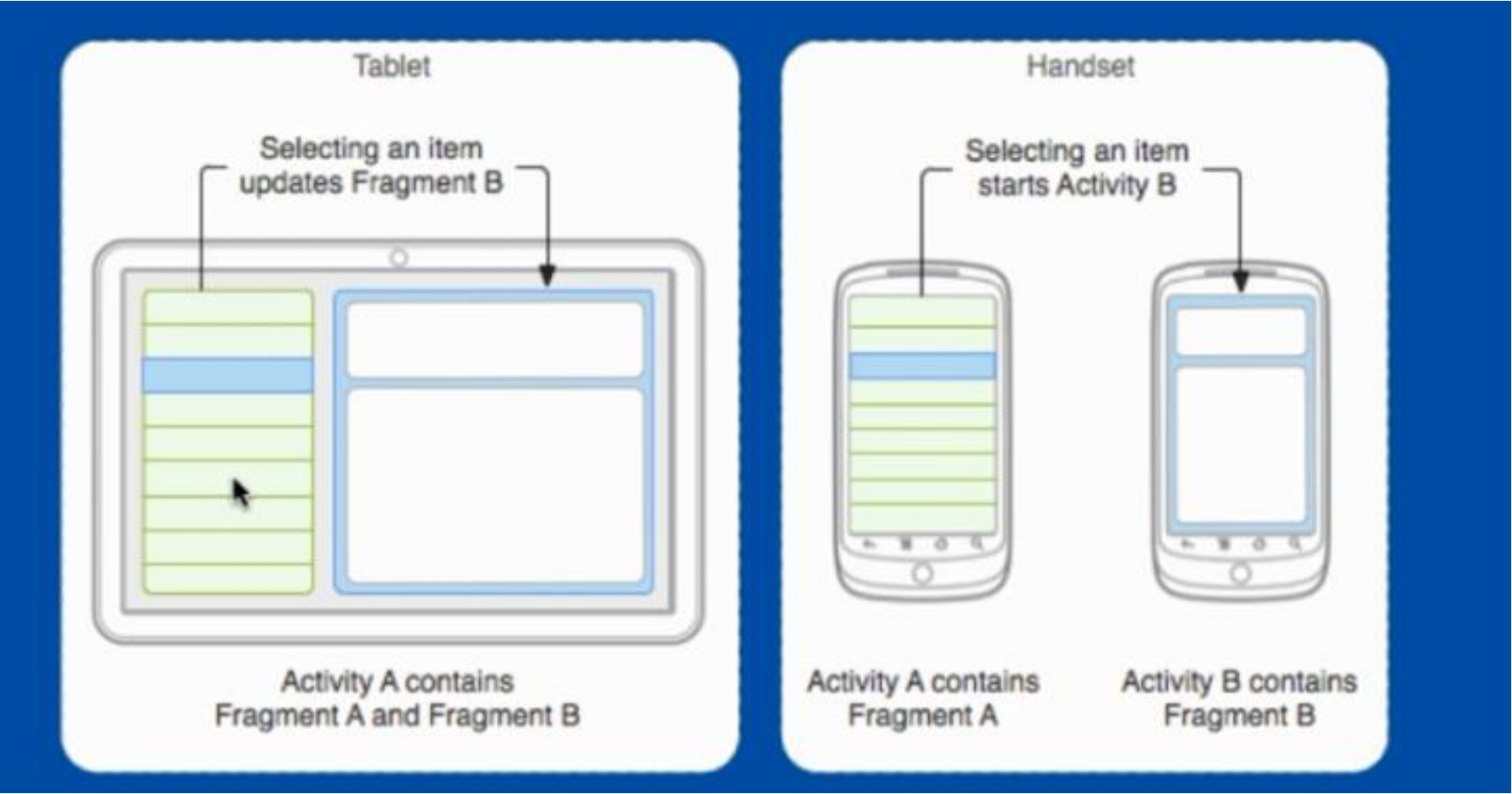
```
MainActivity.java x AndroidManifest.xml x activity_main.xml x
1 package example.android.com.dummycall;
2
3 import ...
4
5
6
7
8
9 public class MainActivity extends AppCompatActivity {
10     TextView textView;
11     @Override
12     protected void onCreate(Bundle savedInstanceState) {
13         super.onCreate(savedInstanceState);
14         setContentView(R.layout.activity_main);
15         textView=(TextView) findViewById(R.id.text_view);
16         if(getIntent().getData() !=null) {
17             textView.setText(getIntent().getData().toString());
18         }
19         else{
20             textView.setText("No Number");
21         }
22     }
23 }
24 }
```

Implicit Intent

Project 1

```
    button3.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            Intent i = new Intent(Intent.ACTION_VIEW, Uri.parse("geo:0,0?q=Ulahasnagar 1 Bharat chowk maharashtra"));  
            startActivity(i);  
        }  
    });  
  
    button4.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            Intent i = new Intent(Intent.ACTION_VIEW, Uri.parse("https://www.facebook.com"));  
            startActivity(i);  
        }  
    });  
}
```


Fragment



Fragment

