

**SHRI G.S. INSTITUTE OF TECHNOLOGY &
SCIENCE, INDORE DEPARTMENT OF COMPUTER
ENGINEERING**



Android Application Development

2024-2025

SUBMITTED TO:

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Assignment-1

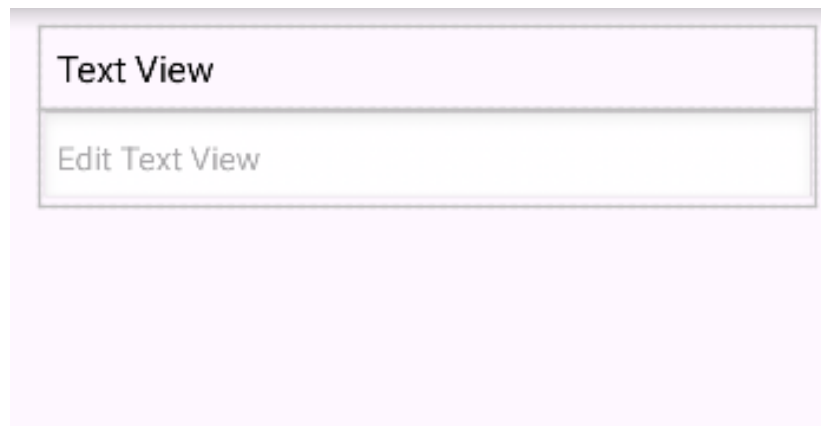
Text and Edit Text View

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp">

    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/textview_text"
        android:textSize="18sp"
        android:textColor="#000000"
        android:padding="8dp"/>

    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="@string/edittext_hint"
        android:textSize="16sp"
        android:padding="8dp"
        android:background="@android:drawable/edit_text"/>

</LinearLayout>
```



Assignment-2

Layouts

Linear Layout

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="16dp"
    android:background="#ECEFF1">

    <TextView
        android:id="@+id/textViewCounter"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/counter_default"
        android:textSize="40sp"
        android:textColor="#000000"
        android:padding="20dp"
        android:gravity="center" />

    <Button
        android:id="@+id/buttonIncrement"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/increase"
        android:drawableTop="@drawable/arrow_up"
        android:padding="10dp"
        android:textSize="18sp" />

    <Button
        android:id="@+id/buttonDecrement"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/decrease"
        android:drawableTop="@drawable/arrow_down"
        android:padding="10dp"
        android:textSize="18sp" />

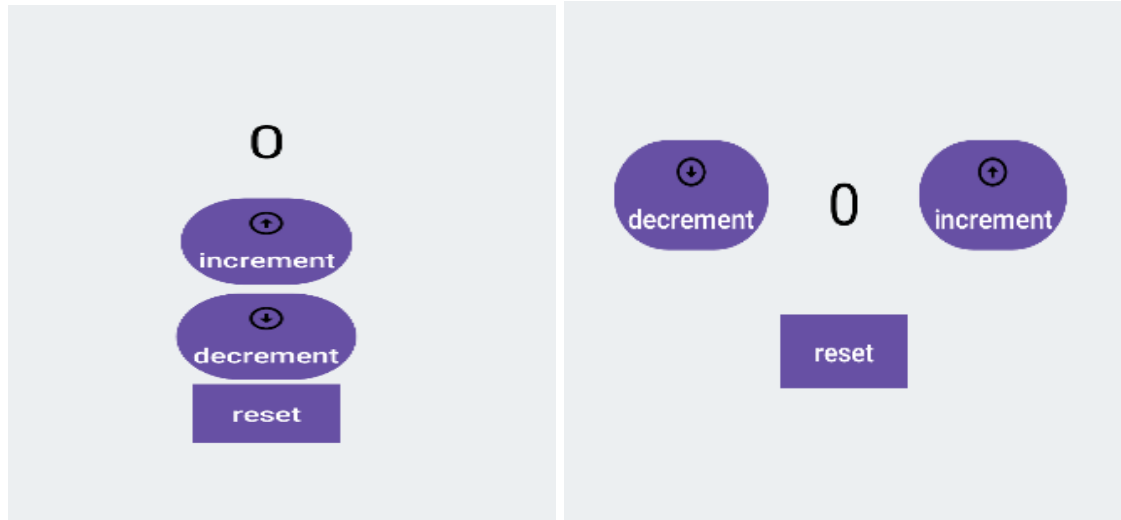
    <Button
        android:id="@+id/buttonReset"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```

    android:text="@string/reset"
    android:padding="10dp"
    android:textSize="18sp"
    android:textColor="#FFFFFF"
    android:background="#D32F2F"/>

```

</LinearLayout>



Relative Layout

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    android:background="#ECEFF1">

    <TextView
        android:id="@+id/textViewCounter"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/counter_default"
        android:textSize="40sp"
        android:textColor="#000000"
        android:padding="20dp"
        android:layout_centerInParent="true"/>

    <Button
        android:id="@+id/buttonIncrement"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"

```

```
    android:text="@string/increase"
    android:drawableTop="@drawable/arrow_up"
    android:padding="10dp"
    android:textSize="18sp"
    android:layout_toRightOf="@id/textViewCounter"
    android:layout_alignTop="@id/textViewCounter"
    android:layout_marginStart="20dp"/>
```

<Button

```
    android:id="@+id/buttonDecrement"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/decrease"
    android:drawableTop="@drawable/arrow_down"
    android:padding="10dp"
    android:textSize="18sp"
    android:layout_toLeftOf="@id/textViewCounter"
    android:layout_alignTop="@id/textViewCounter"
    android:layout_marginEnd="20dp"/>
```

<Button

```
    android:id="@+id/buttonReset"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/reset"
    android:padding="10dp"
    android:textSize="18sp"
    android:textColor="#FFFFFF"
    android:background="#D32F2F"
    android:layout_below="@id/textViewCounter"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="30dp"/>
```

</RelativeLayout>

Constraint Layout

<?xml version="1.0" encoding="utf-8"?>

```
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    android:background="#ECEFF1">
```

<TextView

```
android:id="@+id/textViewCounter"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="@string/counter_default"
android:textSize="40sp"
android:textColor="#000000"
android:padding="20dp"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintEnd_toEndOf="parent"/>
```

<!-- Decrease Button on the left -->

<Button

```
android:id="@+id/buttonDecrement"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="@string/decrease"
android:drawableTop="@drawable/arrow_down"
android:padding="10dp"
android:textSize="18sp"
app:layout_constraintEnd_toStartOf="@id/textViewCounter"
app:layout_constraintTop_toBottomOf="@id/textViewCounter"
app:layout_constraintMarginTop="30dp"/>
```

<!-- Increase Button on the right -->

<Button

```
android:id="@+id/buttonIncrement"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="@string/increase"
android:drawableTop="@drawable/arrow_up"
android:padding="10dp"
android:textSize="18sp"
app:layout_constraintStart_toEndOf="@id/textViewCounter"
app:layout_constraintTop_toBottomOf="@id/textViewCounter"
app:layout_constraintMarginTop="30dp"/>
```

<!-- Reset Button below both buttons -->

<Button

```
android:id="@+id/buttonReset"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="@string/reset"
android:padding="10dp"
```

```

        android:textSize="18sp"
        android:textColor="#FFFFFF"
        android:background="#D32F2F"
        app:layout_constraintTop_toBottomOf="@id/buttonIncrement"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintMarginTop="30dp"/>
</androidx.constraintlayout.widget.ConstraintLayout>

```

Assignment-3

Intents

Explicit Intents

MainActivity.java

```

package com.example.intent;

import android.content.Intent;
import android.os.Bundle;
import android.widget.Button;
import android.widget.ImageButton;
import android.widget.TextView;
import android.widget.Toast;
import androidx.activity.result.ActivityResultLauncher;
import androidx.activity.result.contract.ActivityResultContracts;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    private int counter = 0;
    private TextView ans;

    private final ActivityResultLauncher<Intent> activityResultLauncher =
        registerForActivityResult(new ActivityResultContracts.StartActivityForResult(), result -> {
            if (result.getResultCode() == RESULT_OK && result.getData() != null) {
                counter = result.getData().getIntExtra("counter_value", counter);
                ans.setText(String.valueOf(counter));
            }
        });

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

        ImageButton inc = findViewById(R.id.inc);

```

```

        ImageButton dec = findViewById(R.id.dec);
        Button reset = findViewById(R.id.reset);
        ans = findViewById(R.id.ans);

        inc.setOnClickListener(v -> {
            counter++;
            ans.setText(String.valueOf(counter));
            Toast.makeText(this, "Counter incremented: " + counter,
                Toast.LENGTH_SHORT).show();
            openActivity2(counter);
        });

        dec.setOnClickListener(v -> {
            counter--;
            ans.setText(String.valueOf(counter));
            Toast.makeText(this, "Counter decremented: " + counter,
                Toast.LENGTH_SHORT).show();
            openActivity3(counter);
        });

        reset.setOnClickListener(v -> {
            counter = 0;
            ans.setText(String.valueOf(counter));
            Toast.makeText(this, "Counter reset to 0", Toast.LENGTH_SHORT).show();
        });
    }

    private void openActivity2(int value) {
        Intent intent = new Intent(MainActivity.this, Activity2.class);
        intent.putExtra("counter_value", value + 1);
        startActivity(intent);
    }

    private void openActivity3(int value) {
        Intent intent = new Intent(MainActivity.this, Activity3.class);
        intent.putExtra("counter_value", value - 1);
        startActivity(intent);
    }
}

```

Activity2.java

```

package com.example.intent;

import android.content.Intent;

```



```

import android.os.Bundle;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class Activity2 extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity2);

        TextView resultText = findViewById(R.id.result_text);

        Intent intent = getIntent();
        int counterValue = intent.getIntExtra("counter_value", 0);

        resultText.setText("Counter Value: " + counterValue);

    }
}

```

Activity3.java

```

package com.example.intent;

import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class Activity3 extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity2);

        TextView resultText = findViewById(R.id.result_text);

        Intent intent = getIntent();
        int counterValue = intent.getIntExtra("counter_value", 0);

        resultText.setText("Counter Value: " + counterValue);

    }
}

```

}

Manifest File

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Intent"
        tools:targetApi="31">
        <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>
        <activity android:name=".Activity2"/>
        <activity android:name=".Activity3"/>

    </application>

</manifest>
```

Assignment-4

Fragments

MainActivity.java

```
package com.example.fragments;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.graphics.Color;
import android.os.Bundle;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    public int counter = 0;
    private TextView textViewCounter;

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

        textViewCounter = findViewById(R.id.textViewCounter);

        if (savedInstanceState == null) {
            getSupportFragmentManager().beginTransaction()
                .replace(R.id.fragment_increment, new Increment())
                .replace(R.id.fragment_decrement, new Decrement())
                .replace(R.id.fragment_reset, new Reset())
                .commit();
        }
    }

    public void setTextColor(int color) {
        textViewCounter.setTextColor(color);
    }

    public void increment() {
        counter++;
    }

    public void decrement() {
        counter--;
    }
}
```

```

        public void reset() {
            counter = 0;
        }
    }
}

```

Increment.java

```
package com.example.fragments;
```

```

import android.graphics.Color;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ImageButton;
import androidx.fragment.app.Fragment;

```

```
public class Increment extends Fragment {
```

```
    @Override
```

```
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
```

```
        View fragmentView = inflater.inflate(R.layout.fragment_increment, container, false);
```

```
        fragmentView.setBackgroundColor(Color.GREEN);
```

```
        ImageButton incrementButton = fragmentView.findViewById(R.id.buttonIncrement);
        incrementButton.setOnClickListener(v -> {
```

```
            ((MainActivity) getActivity()).increment();
```

```
            ((MainActivity) getActivity()).setTextColor(Color.GREEN);
        });
```

```
        return fragmentView;
```

```
    }
}

```

Decrement.java

```
package com.example.fragments;
```

```

import android.graphics.Color;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

```

```

import android.widget.ImageButton;
import androidx.fragment.app.Fragment;

public class Decrement extends Fragment {

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
        View fragmentView = inflater.inflate(R.layout.fragment_decrement, container, false);

        fragmentView.setBackgroundColor(Color.RED);

        ImageButton decrementButton = fragmentView.findViewById(R.id.buttonDecrement);
        decrementButton.setOnClickListener(v -> {

            ((MainActivity) getActivity()).decrement();

            ((MainActivity) getActivity()).setTextColor(Color.RED);
        });

        return fragmentView;
    }
}

```

Reset.java

```

package com.example.fragments;

import android.graphics.Color;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ImageButton;
import androidx.fragment.app.Fragment;

public class Reset extends Fragment {

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
        View fragmentView = inflater.inflate(R.layout.fragment_reset, container, false);

        fragmentView.setBackgroundColor(Color.BLUE);

        ImageButton resetButton = fragmentView.findViewById(R.id.buttonReset);
    }
}

```

```

resetButton.setOnClickListener(v -> {

    ((MainActivity) getActivity()).reset();

    ((MainActivity) getActivity()).setTextColor(Color.BLUE);
});

return fragmentView;
}
}

```

Manifest File

```

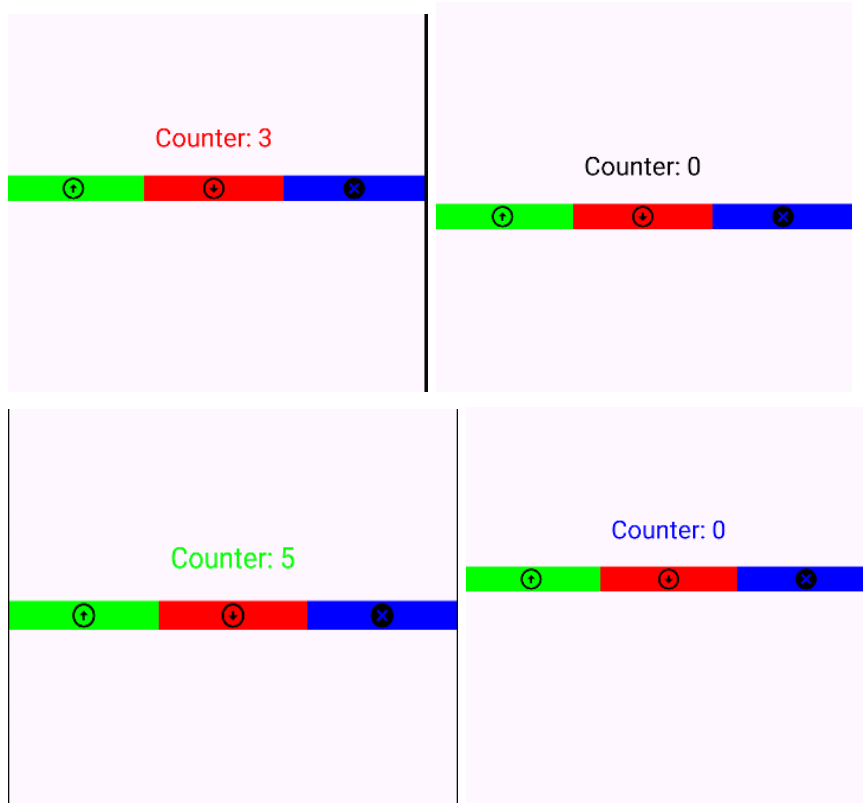
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="true"
        android:theme="@style/Theme.Fragments"
        tools:targetApi="31">
        <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>
    </application>

</manifest>

```



Assignment-5

Shared Preferences & Content Providers

Shared Preferences

```
package com.example.shared_preferences;

import android.content.SharedPreferences;
import android.os.Bundle;
import android.widget.Button;
import android.widget.ImageButton;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    private TextView ans, savedValue;
    private int count = 0;
    private SharedPreferences sharedPreferences;
    private static final String PREF_NAME = "CounterPrefs";
    private static final String KEY_COUNT = "count_value";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```

setContentView(R.layout.activity_main);

ans = findViewById(R.id.ans);
savedValue = findViewById(R.id.saved_value);
ImageButton inc = findViewById(R.id.inc);
ImageButton dec = findViewById(R.id.dec);
Button reset = findViewById(R.id.reset);
Button save = findViewById(R.id.save);
Button retrieve = findViewById(R.id.retrieve);

sharedPreferences = getSharedPreferences(PREF_NAME, MODE_PRIVATE);

inc.setOnClickListener(view -> {
    count++;
    updateCounter();
});

dec.setOnClickListener(view -> {
    count--;
    updateCounter();
});

reset.setOnClickListener(view -> {
    count = 0;
    updateCounter();
});

save.setOnClickListener(view -> {
    saveCounter();
});

retrieve.setOnClickListener(view -> {
    retrieveCounter();
});

retrieveCounter();
}

private void updateCounter() {
    ans.setText(String.valueOf(count));
}

private void saveCounter() {
    SharedPreferences.Editor editor = sharedPreferences.edit();

```



```

        editor.putInt(KEY_COUNT, count);
        editor.apply();
        savedValue.setText("Saved Value: " + count);
    }

    private void retrieveCounter() {
        int savedCount = sharedPreferences.getInt(KEY_COUNT, 0);
        savedValue.setText("Saved Value: " + savedCount);
    }
}

```

Manifest File

```

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="true"
        android:theme="@style/Theme.Shared_preferences"
        tools:targetApi="31">
        <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>
    </application>

</manifest>

```



Reset

Save

Retrieve

9

Saved Value: 6