Practical 2: Create “Hello World” application. That will display “Hello World” in the middle of the screen using TextView Widget in the red color.

Activity_main.xml :

```
<?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"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        android:textColor="#FF0000"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.hellored;

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

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```
        setContentView(R.layout.activity_main);
    }
}
```

Practical 3 Create Registration Page to demonstrate basic widgets:(Sign up form)

Activity_main.xml :

```
<?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="32dp">

    <!-- Username Field -->
    <EditText
        android:id="@+id/etName"
        android:layout_width="match_parent"
        android:layout_height="56dp"
        android:hint="Username"
        android:inputType="text"
        android:padding="16dp" />

    <!-- Email Field -->
    <EditText
        android:id="@+id/etEmail"
        android:layout_width="match_parent"
        android:layout_height="56dp"
        android:hint="Email"
        android:inputType="textEmailAddress"
        android:padding="16dp" />

    <!-- Password Field -->
```

```
    <EditText
        android:id="@+id/etPassword"
        android:layout_width="match_parent"
        android:layout_height="56dp"
        android:hint="Password"
        android:inputType="textPassword"
        android:padding="16dp" />

    <!-- Confirm Password Field -->
    <EditText
        android:id="@+id/etConfirmPassword"
        android:layout_width="match_parent"
        android:layout_height="56dp"
        android:hint="Confirm Password"
        android:inputType="textPassword"
        android:padding="16dp" />

    <!-- Sign Up Button -->
    <Button
        android:id="@+id/btnSignUp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Sign Up"
        android:backgroundTint="@android:color/holo_blue_dark"
        android:textColor="@android:color/white"
        android:layout_marginTop="16dp" />
</LinearLayout>
```

MainActivity.java:

```
package com.example.myapplication;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
```

```
public class MainActivity extends AppCompatActivity {
    private EditText etName, etEmail, etPassword, etConfirmPassword;
    private Button btnSignUp;

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

        // Initialize views
        etName = findViewById(R.id.etName);
        etEmail = findViewById(R.id.etEmail);
        etPassword = findViewById(R.id.etPassword);
        etConfirmPassword = findViewById(R.id.etConfirmPassword);
        btnSignUp = findViewById(R.id.btnSignUp);

        // Set up the signup button click listener
        btnSignUp.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // Capture user input
                String name = etName.getText().toString().trim();
                String email = etEmail.getText().toString().trim();
                String password = etPassword.getText().toString();
                String confirmPassword = etConfirmPassword.getText().toString();

                // Simple validation for empty fields
                if (name.isEmpty() || email.isEmpty() || password.isEmpty() ||
confirmPassword.isEmpty()) {
                    Toast.makeText(MainActivity.this, "Please fill in all fields",
Toast.LENGTH_SHORT).show();
                } else if (!password.equals(confirmPassword)) {
                    // Check if password and confirm password match
                    Toast.makeText(MainActivity.this, "Passwords do not match",
Toast.LENGTH_SHORT).show();
                } else {
```

```
                // Simulate a signup action (you can replace this with actual logic)
                Toast.makeText(MainActivity.this, "Sign up successful",
Toast.LENGTH_SHORT).show();

                // Clear the fields after successful signup
                etName.setText("");
                etEmail.setText("");
                etPassword.setText("");
                etConfirmPassword.setText("");
            }
        }
    });
  }
}
```

Practical 4: Create sample application with login module.(Check username and password) On successful login, Change TextView "Login Successful". And on failing login, alert user using Toast "Login fail".

Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  tools:context=".MainActivity">

  <!-- Username EditText -->
  <EditText
    android:id="@+id/etUserName"
    android:layout_width="match_parent"
    android:layout_height="56dp"
    android:hint="Enter Username"
```

```
    android:layout_marginTop="50dp"
    android:padding="16dp" />

<!-- Password EditText -->
<EditText
    android:id="@+id/etPassword"
    android:layout_width="match_parent"
    android:layout_height="56dp"
    android:hint="Enter Password"
    android:layout_below="@id/etUserName"
    android:layout_marginTop="20dp"
    android:padding="16dp"
    android:inputType="textPassword" />

<!-- Login Button -->
<Button
    android:id="@+id/btnLogin"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Login"
    android:layout_below="@id/etPassword"
    android:layout_marginTop="30dp"
    android:layout_centerHorizontal="true"
    android:backgroundTint="@android:color/holo_blue_dark"
    android:textColor="@android:color/white"/>

<!-- TextView for displaying login status -->
<TextView
    android:id="@+id/tvStatus"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Login Status"
    android:textSize="20sp"
    android:layout_below="@id/btnLogin"
    android:layout_marginTop="20dp"
```

```
        android:layout_centerHorizontal="true"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.logintest;

import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    private EditText etUserName, etPassword;
    private Button btnLogin;
    private TextView tvStatus;

    // Sample hardcoded credentials
    private static final String USERNAME = "admin";
    private static final String PASSWORD = "password123";

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

        // Initialize views
        etUserName = findViewById(R.id.etUserName);
        etPassword = findViewById(R.id.etPassword);
        btnLogin = findViewById(R.id.btnLogin);
        tvStatus = findViewById(R.id.tvStatus);

        // Set click listener for the login button
        btnLogin.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
        public void onClick(View v) {
            // Get the username and password from EditText fields
            String username = etUserName.getText().toString().trim();
            String password = etPassword.getText().toString().trim();

            // Check if the credentials are correct
            if (username.equals(USERNAME) && password.equals(PASSWORD))
{
                // If successful, change TextView and display success message
                tvStatus.setText("Login Successful");
                tvStatus.setTextColor(Color.GREEN);
            } else {
                // If login fails, show Toast message
                Toast.makeText(MainActivity.this, "Login Fail",
Toast.LENGTH_SHORT).show();
                tvStatus.setText("Login Status");
                tvStatus.setTextColor(Color.RED);
            }
        }
    });
  }
}
```

Practical 5 : Create an application for demonstration of Scroll view in android.

Vertical ScrollView (activity_main.xml)

```
<?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">

  <ScrollView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
```

```
android:fillViewport="true">

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical"
    android:padding="16dp">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="This is the first text view."
        android:textSize="18sp"
        android:layout_marginBottom="20dp"/>

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="This is the second text view."
        android:textSize="18sp"
        android:layout_marginBottom="20dp"/>

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="This is the third text view."
        android:textSize="18sp"
        android:layout_marginBottom="20dp"/>

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="This is the fourth text view."
        android:textSize="18sp"
        android:layout_marginBottom="20dp"/>

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="This is the fifth text view."
```

```
    android:textSize="18sp"
    android:layout_marginBottom="20dp"/>

<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="This is the sixth text view."
    android:textSize="18sp"
    android:layout_marginBottom="20dp"/>

<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="This is the seventh text view."
    android:textSize="18sp"
    android:layout_marginBottom="20dp"/>

<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="This is the eighth text view."
    android:textSize="18sp"
    android:layout_marginBottom="20dp"/>

<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="This is the ninth text view."
    android:textSize="18sp"
    android:layout_marginBottom="20dp"/>

<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="This is the tenth text view."
    android:textSize="18sp"
    android:layout_marginBottom="20dp"/>

<TextView
    android:layout_width="match_parent"
```

```
            android:layout_height="wrap_content"
            android:text="This is the eleventh text view."
            android:textSize="18sp"
            android:layout_marginBottom="20dp"/>

        <TextView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="This is the twelfth text view."
            android:textSize="18sp"
            android:layout_marginBottom="20dp"/>

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Click Me" />
      </LinearLayout>
   </ScrollView>
</LinearLayout>
```

Horizontal ScrollView

```
<?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">

   <HorizontalScrollView
      android:layout_width="match_parent"
      android:layout_height="wrap_content">

      <LinearLayout
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:orientation="horizontal"
         android:padding="16dp">

         <Button
```

```
            android:layout_width="200dp"
            android:layout_height="wrap_content"
            android:text="Button 1"/>

        <Button
            android:layout_width="200dp"
            android:layout_height="wrap_content"
            android:text="Button 2"/>

        <Button
            android:layout_width="200dp"
            android:layout_height="wrap_content"
            android:text="Button 3"/>

        <Button
            android:layout_width="200dp"
            android:layout_height="wrap_content"
            android:text="Button 4"/>
    </LinearLayout>
  </HorizontalScrollView>
</LinearLayout>
```

Practical 6: Create login application where you will have to validate username and passwords till the username and password is not validated, login button should remain disabled

Activity_main.xml :

```
<?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="20dp">

  <EditText
    android:id="@+id/etUsername"
    android:layout_width="match_parent"
```

```
        android:layout_height="56dp"
        android:hint="Username"/>

    <EditText
        android:id="@+id/etPassword"
        android:layout_width="match_parent"
        android:layout_height="56dp"
        android:hint="Password"
        android:inputType="textPassword"
        android:layout_marginTop="10dp"/>

    <Button
        android:id="@+id/btnLogin"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Login"
        android:enabled="false"
        android:layout_marginTop="20dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.validatelogin;

import android.os.Bundle;
import android.text.Editable;
import android.text.TextWatcher;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    EditText etUsername, etPassword;
    Button btnLogin;

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

```
        etUsername = findViewById(R.id.etUsername);
        etPassword = findViewById(R.id.etPassword);
        btnLogin = findViewById(R.id.btnLogin);

        // Enable button only if both fields are not empty
        TextWatcher textWatcher = new TextWatcher() {
            @Override
            public void beforeTextChanged(CharSequence s, int start, int count, int after) {}

            @Override
            public void onTextChanged(CharSequence s, int start, int before, int count) {
                // Enable login button only if both fields are filled
                String usernameInput = etUsername.getText().toString().trim();
                String passwordInput = etPassword.getText().toString().trim();
                btnLogin.setEnabled(!usernameInput.isEmpty() &&
!passwordInput.isEmpty());
            }

            @Override
            public void afterTextChanged(Editable s) {}
        };

        etUsername.addTextChangedListener(textWatcher);
        etPassword.addTextChangedListener(textWatcher);

        // Login Button Click Listener
        btnLogin.setOnClickListener(v -> {
            String username = etUsername.getText().toString().trim();
            String password = etPassword.getText().toString().trim();

            if (username.equals("admin") && password.equals("1234")) {
                Toast.makeText(MainActivity.this, "Login Successful",
Toast.LENGTH_SHORT).show();
            } else {
                Toast.makeText(MainActivity.this, "Invalid Credentials",
Toast.LENGTH_SHORT).show();
            }
        });
    }
```

```
}
```

Practical 7: Create an application for calculator

Activity_main.xml :

```
<?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="20dp">

   <EditText
      android:id="@+id/etNumber1"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:hint="Enter First Number"
      android:inputType="numberDecimal"/>

   <EditText
      android:id="@+id/etNumber2"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:hint="Enter Second Number"
      android:inputType="numberDecimal"
      android:layout_marginTop="10dp"/>

   <LinearLayout
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:orientation="horizontal"
      android:gravity="center"
      android:layout_marginTop="20dp">

      <Button
         android:id="@+id/btnAdd"
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:text="+"/>
```

```
        <Button
            android:id="@+id/btnSubtract"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="-"
            android:layout_marginStart="10dp"/>

        <Button
            android:id="@+id/btnMultiply"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="×"
            android:layout_marginStart="10dp"/>

        <Button
            android:id="@+id/btnDivide"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="÷"
            android:layout_marginStart="10dp"/>
    </LinearLayout>

    <TextView
        android:id="@+id/tvResult"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Result: "
        android:textSize="18sp"
        android:gravity="center"
        android:layout_marginTop="20dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.simplecalc;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
```

```
public class MainActivity extends AppCompatActivity {
    EditText etNumber1, etNumber2;
    Button btnAdd, btnSubtract, btnMultiply, btnDivide;
    TextView tvResult;

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

        etNumber1 = findViewById(R.id.etNumber1);
        etNumber2 = findViewById(R.id.etNumber2);
        btnAdd = findViewById(R.id.btnAdd);
        btnSubtract = findViewById(R.id.btnSubtract);
        btnMultiply = findViewById(R.id.btnMultiply);
        btnDivide = findViewById(R.id.btnDivide);
        tvResult = findViewById(R.id.tvResult);

        // Set button click listeners
        btnAdd.setOnClickListener(v -> calculate('+'));
        btnSubtract.setOnClickListener(v -> calculate('-'));
        btnMultiply.setOnClickListener(v -> calculate('*'));
        btnDivide.setOnClickListener(v -> calculate('/'));
    }

    private void calculate(char operation) {
        String num1Str = etNumber1.getText().toString().trim();
        String num2Str = etNumber2.getText().toString().trim();

        if (num1Str.isEmpty() || num2Str.isEmpty()) {
            Toast.makeText(this, "Please enter both numbers", Toast.LENGTH_SHORT).show();
            return;
        }

        double num1 = Double.parseDouble(num1Str);
        double num2 = Double.parseDouble(num2Str);
        double result = 0;

        switch (operation) {
            case '+':
                result = num1 + num2;
                break;
            case '-':
```

```
            result = num1 - num2;
            break;
        case '*':
            result = num1 * num2;
            break;
        case '/':
            if (num2 == 0) {
                Toast.makeText(this, "Cannot divide by zero", Toast.LENGTH_SHORT).show();
                return;
            }
            result = num1 / num2;
            break;
        default:
            Toast.makeText(this, "Invalid Operation", Toast.LENGTH_SHORT).show();
            return;
    }

    tvResult.setText("Result: " + result);
  }
}
```

Practical 8: Demonstrate use of intent in android

MainActivity.java

```
package com.example.intent;

import android.content.Intent;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
  EditText etMessage;
  Button btnSend;

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

    etMessage = findViewById(R.id.etMessage);
```

```
        btnSend = findViewById(R.id.btnSend);

        btnSend.setOnClickListener(v -> {
            String message = etMessage.getText().toString().trim();

            // Check if input is empty
            if (message.isEmpty()) {
                etMessage.setError("Please enter a message!");
                return;
            }

            // Creating an Intent to go to SecondActivity
            Intent intent = new Intent(MainActivity.this, SecondActivity.class);
            // Passing data to the next activity
            intent.putExtra("message_key", message);
            // Starting the SecondActivity
            startActivity(intent);
        });
    }
}
```

SecondActivity.java

```
package com.example.intent;

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

public class SecondActivity extends AppCompatActivity {
    TextView tvReceivedMessage;

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

        tvReceivedMessage = findViewById(R.id.tvReceivedMessage);

        // Getting the Intent that started this activity
        String message = getIntent().getStringExtra("message_key");

        // Displaying the received message
        if (message != null && !message.isEmpty()) {
```

```
            tvReceivedMessage.setText("Received Message: " + message);
        } else {
            tvReceivedMessage.setText("No message received.");
        }
    }
}
```

AndroidManifest.xml

```
<activity android:name=".SecondActivity"></activity>
```

Practical 09: Create application to demonstrate menu option.

Menu_main.xml

Location: `res/menu/menu_main.xml`

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

    <item
        android:id="@+id/action_settings"
        android:title="Settings"
        android:icon="@android:drawable/ic_menu_preferences"
        app:showAsAction="never"/>

    <item
        android:id="@+id/action_about"
        android:title="About"
        android:icon="@android:drawable/ic_menu_info_details"
        app:showAsAction="never"/>

    <item
        android:id="@+id/action_exit"
        android:title="Exit"
        android:icon="@android:drawable/ic_menu_close_clear_cancel"
        app:showAsAction="never"/>
</menu>
```

MainActivity.java
Location: app/src/main/java/com/example/menuoption/MainActivity.java

```
package com.example.menuoption;

import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.Toast;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

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

    // Inflate the menu
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.menu_main, menu);
        return true;
    }

    // Handle menu item clicks
    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {
        switch (item.getItemId()) {
            case R.id.action_settings:
                Toast.makeText(this, "Settings Selected", Toast.LENGTH_SHORT).show();
                return true;
            case R.id.action_about:
                Toast.makeText(this, "About Selected", Toast.LENGTH_SHORT).show();
                return true;
            case R.id.action_exit:
```

```
            finish(); // Close the app
            return true;
        default:
            return super.onOptionsItemSelected(item);
    }
  }
}
```

`activity_main.xml`

📌 Location: `res/layout/activity_main.xml`

```
<?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:gravity="center"
   android:orientation="vertical">

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Menu Demo App"
      android:textSize="20sp"
      android:textStyle="bold"/>
</LinearLayout>
```

Fixed `themes.xml`

📌 Location: `res/values/themes.xml`

<style name="Theme.MyApp"
parent="Theme.MaterialComponents.Light.DarkActionBar">

`AndroidManifest.xml`

📌 **Location:** `app/src/main/AndroidManifest.xml`

```
<application
    android:theme="@style/Theme.MyApp">
```

Practical 10: Create application to demonstrate progress bar.

`activity_main.xml`

📌 **Location:** `res/layout/activity_main.xml`

```
<?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="20dp">

    <!-- Circular Progress Bar -->
    <ProgressBar
        android:id="@+id/progress_circular"
        style="?android:attr/progressBarStyleLarge"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:visibility="gone" />

    <!-- Horizontal Progress Bar -->
    <ProgressBar
        android:id="@+id/progress_horizontal"
        style="?android:attr/progressBarStyleHorizontal"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:progress="0"
        android:max="100"
```

```
        android:visibility="gone"
        android:layout_marginTop="20dp" />

    <!-- Start Progress Button -->
    <Button
        android:id="@+id/btn_start"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Start Progress"
        android:layout_marginTop="20dp" />

</LinearLayout>
```

MainActivity.java

📌 **Location:**
`app/src/main/java/com/example/progressapp/MainActivity.java`

```
package com.example.progressapp;

import android.os.Bundle;
import android.os.Handler;
import android.os.Looper;
import android.view.View;
import android.widget.Button;
import android.widget.ProgressBar;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    private ProgressBar progressCircular, progressHorizontal;
    private Button btnStart;
    private int progressStatus = 0;
    private Handler handler = new Handler(Looper.getMainLooper());

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

```
        setContentView(R.layout.activity_main);

        // Initialize UI elements
        progressCircular = findViewById(R.id.progress_circular);
        progressHorizontal = findViewById(R.id.progress_horizontal);
        btnStart = findViewById(R.id.btn_start);

        btnStart.setOnClickListener(v -> {
            // Show progress bars
            progressCircular.setVisibility(View.VISIBLE);
            progressHorizontal.setVisibility(View.VISIBLE);
            progressStatus = 0;

            // Simulate progress update in a background thread
            new Thread(() -> {
                while (progressStatus < 100) {
                    progressStatus += 10;

                    // Update progress bar on the UI thread
                    runOnUiThread(() -> progressHorizontal.setProgress(progressStatus));

                    try {
                        Thread.sleep(500); // Simulate work being done
                    } catch (InterruptedException e) {
                        e.printStackTrace();
                    }
                }

                // Hide circular progress bar when done
                runOnUiThread(() -> progressCircular.setVisibility(View.GONE));

            }).start();
        });
    }
}
```