1. Design a registration activity and store registration details in local memory of phone using Intents and SharedPreferences.

CODE

MainActivity.java

```
package com.example.sharedpreference;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.content.Intent;
import android.content.SharedPreferences;
import android.view.View;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {


    private EditText usernameEditText;
    private EditText emailEditText;
    private EditText passwordEditText;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        usernameEditText = findViewById(R.id.usernameEditText);
        emailEditText = findViewById(R.id.emailEditText);
        passwordEditText = findViewById(R.id.passwordEditText);
    }

    public void register(View view) {
        // Get user input from EditText fields
        String username = usernameEditText.getText().toString();
        String email = emailEditText.getText().toString();
        String password = passwordEditText.getText().toString();

        // Store registration details in SharedPreferences
        SharedPreferences preferences = getSharedPreferences("UserData", MODE_PRIVATE);
        SharedPreferences.Editor editor = preferences.edit();
        editor.putString("username", username);
```

```
        editor.putString("email", email);
        editor.putString("password", password);
        editor.apply();

        // Redirect to the main activity or login screen using an Intent
        Intent intent = new Intent(this, Main2Activity.class);

        // Start the MainActivity
        startActivity(intent);
    }
}
```

MainActivity2.java

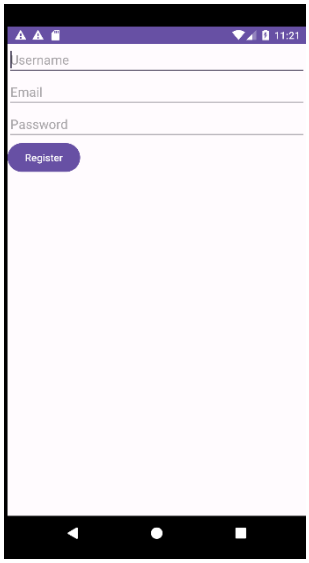
```
package com.example.sharedpreference;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.TextView;
import android.content.SharedPreferences;;

public class Main2Activity extends AppCompatActivity {

    String username, email, password;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);

        // Retrieve data from SharedPreferences
        SharedPreferences preferences = getSharedPreferences("UserData", MODE_PRIVATE);
        username = preferences.getString("username", "DefaultUsername");
        email = preferences.getString("email", "DefaultEmail");
        password = preferences.getString("password", "DefaultPassword");

        // Display the retrieved data in TextViews or perform any actions you need
        TextView usernameTextView = findViewById(R.id.usernameTextView);
        TextView emailTextView = findViewById(R.id.emailTextView);

        usernameTextView.setText("Username: " + username);
        emailTextView.setText("Email: " + email);
    }
```

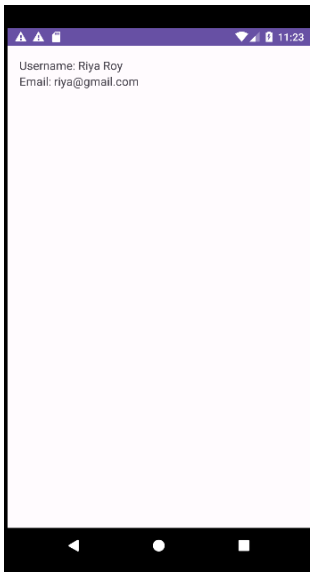
```
}
```

Activity-main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/usernameTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="welcome"
        android:textSize="16sp" />
    <TextView
        android:id="@+id/emailTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="welcome"
        android:textSize="16sp" />
</LinearLayout>
```

OUTPUT


11:21
Username
Email
Password
Register


11:23
Username: Riya Roy
Email: riya@gmail.com

2. Design a simple Calculator using GridLayout and Cascaded LinearLayout.

CODE

MainActivity.java

```
package com.example.c2_q2;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.webkit.JavascriptInterface;
import android.webkit.WebView;
import android.widget.Button;
import android.widget.GridLayout;
import android.widget.TextView;


public class MainActivity extends AppCompatActivity implements View.OnClickListener {

    private TextView textView;
    private String currentInput = "";
    private String operator = "";
    private double firstOperand = 0;
    private double secondOperand = 0;
    private boolean isNewInput = true;

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

        // Initialize TextView
        textView = findViewById(R.id.textView);

        // Initialize GridLayout
        GridLayout gridLayout = findViewById(R.id.gridLayout);

        // Define button labels
        String[] buttonLabels = {
                "7", "8", "9", "/",
                "4", "5", "6", "*",
```

```
            "1", "2", "3", "-",
            "C", "0", "=", "+"
    };

    // Create and add buttons to GridLayout
    for (String label : buttonLabels) {
        Button button = new Button(this);
        button.setText(label);
        button.setTextSize(24);
        button.setOnClickListener(this);
        gridLayout.addView(button);
    }
}

@Override
public void onClick(View v) {
    Button button = (Button) v;
    String buttonText = button.getText().toString();

    switch (buttonText) {
        case "=":
            calculateResult();
            break;
        case "C":
            clearInput();
            break;
        default:
            handleInput(buttonText);
            break;
    }
}

private void handleInput(String input) {
    if (isNewInput) {
        currentInput = input;
        isNewInput = false;
    } else {
        currentInput += input;
    }
    updateDisplay();
}

private void clearInput() {
    currentInput = "";
```

```
        operator = "";
        firstOperand = 0;
        secondOperand = 0;
        isNewInput = true;
        updateDisplay();
    }

    private void calculateResult() {
        if (!isNewInput) {
            String expression = currentInput;
            try {
                // Use JavaScript eval() to evaluate the expression
                WebView webView = new WebView(this);
                webView.getSettings().setJavaScriptEnabled(true);
                webView.addJavascriptInterface(new Object() {
                    @JavascriptInterface
                    public void processHTML(String html) {
                        // Process the result returned from JavaScript
                        currentInput = html;
                        isNewInput = true;
                        updateDisplay();
                    }
                }, "Android");

                webView.evaluateJavascript("javascript:Android.processHTML(eval('" + expression +
"'))", null);
            } catch (Exception e) {
                currentInput = "Error: Invalid expression";
                isNewInput = true;
                updateDisplay();
            }
        }
    }



    private void updateDisplay() {
        textView.setText(currentInput);
    }
```

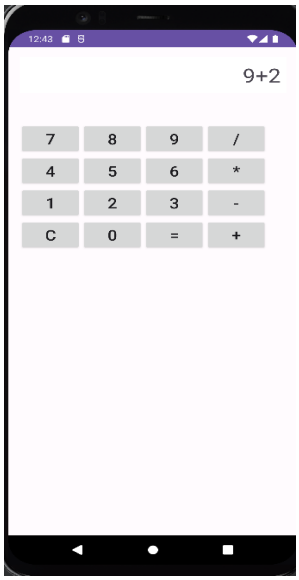
Activity-main.xml

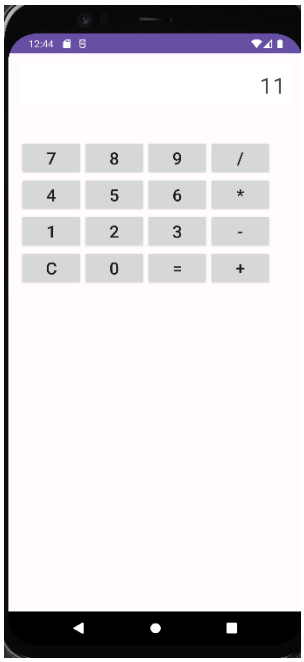
```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<LinearLayout
    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:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp"
    tools:context=".MainActivity">

    <!-- Display TextView -->

    <!-- Calculator Buttons using GridLayout -->
    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="end"
        android:layout_marginBottom="16dp"
        android:background="@android:color/background_light"
        android:gravity="end"
        android:padding="8dp"
        android:text="0"
        android:textSize="32sp" />
    <WebView
        android:id="@+id/webView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="end"
        android:layout_marginBottom="16dp"
        android:background="@android:color/background_light"
        android:padding="8dp"
        android:textSize="32sp" />

    <GridLayout
        android:id="@+id/gridLayout"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:columnCount="4"
        android:rowCount="5"
        android:layout_marginTop="16dp"
        android:layout_marginBottom="16dp">
```

```
        <!-- Buttons will be added dynamically in code -->

    </GridLayout>

</LinearLayout>
```

OUTPUT





3. Create a Facebook page using RelativeLayout; set properties using .xml file.

CODE

MainActivity.java

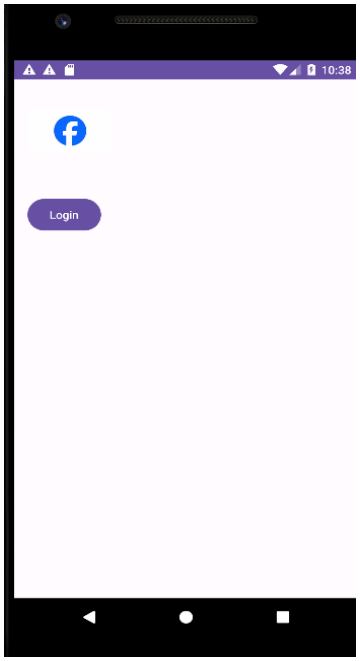
```
package com.example.facebook;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.content.Intent;
import android.net.Uri;
import android.view.View;
import android.widget.Button;


public class MainActivity extends AppCompatActivity {

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

        Button loginButton = findViewById(R.id.loginButton);
        loginButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                openFacebook();
            }
        });
    }

    private void openFacebook() {
        String facebookUrl = "https://www.facebook.com"; // Or use the actual Facebook URL

        try {
            Intent intent = new Intent(Intent.ACTION_VIEW);
            intent.setData(Uri.parse("fb://facewebmodal/f?href=" + facebookUrl));
            startActivity(intent);
        } catch (Exception e) {
            // Facebook app isn't installed, open the website
            Intent intent = new Intent(Intent.ACTION_VIEW);
```

```
            intent.setData(Uri.parse(facebookUrl));
            startActivity(intent);
        }
    }
}
```

Activity-main.xml

```
<?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">

    <!-- Profile Picture -->
    <ImageView
        android:id="@+id/profilePicture"
        android:layout_width="100dp"
        android:layout_height="100dp"
        android:src="@drawable/f"
        android:layout_margin="16dp"
        android:contentDescription="TODO" />

    <Button
        android:id="@+id/loginButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/profilePicture"
        android:layout_margin="16dp"
        android:layout_marginEnd="16dp"
        android:layout_marginRight="16dp"

        android:text="Login" />

</RelativeLayout>
```

OUTPUT



4.Develop an application that toggles image using FrameLayout

CODE

MainActivity.java

```
package com.example.image;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {

    private ImageView imageView;
    private Button toggleButton;
    private boolean isImage1Displayed = true;

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

        imageView = findViewById(R.id.imageView);
        toggleButton = findViewById(R.id.toggleButton);

        toggleButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // Toggle between the two images
                if (isImage1Displayed) {
                    imageView.setImageResource(R.drawable.image2);
                } else {
                    imageView.setImageResource(R.drawable.image1);
                }
                isImage1Displayed = !isImage1Displayed;
            }
        });
    }
}
```

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: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!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <!-- res/layout/activity_main.xml -->
    <FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <ImageView
            android:id="@+id/imageView"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:scaleType="fitXY"
            android:src="@drawable/image1" />

        <Button
            android:id="@+id/toggleButton"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="bottom|end"
            android:text="Toggle Image" />
    </FrameLayout>


</androidx.constraintlayout.widget.ConstraintLayout>
```

OUTPUT