

MOBILE APPLICATION DEVELOPMENT LAB

(20MCA243)

LAB RECORD

Submitted in partial fulfilment of the requirements for the award of the degree
of Master of Computer Applications of A P J Abdul Kalam Technological
University

Submitted by:

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MASTER OF COMPUTER APPLICATIONS
ST. JOSEPH'S COLLEGE OF ENGINEERING AND
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KERALA

December 2023

ST. JOSEPH'S COLLEGE OF ENGINEERING AND TECHNOLOGY, PALAI

(An ISO 9001: 2015 Certified College)

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CERTIFICATE

This is to certify that the Mobile Application Development Lab Record (20MCA243) submitted by Anumol Thomas student of Third semester MCA at ST. JOSEPH'S COLLEGE OF ENGINEERING AND TECHNOLOGY, PALAI in partial fulfilment for the award of Master of Computer Applications is a bonafide record of the lab work carried out by her under our guidance and supervision. This record in any form has not been submitted to any other University or Institute for any purpose.

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(HOD MCA)

Submitted for the End Semester Examination held on _____

Examiner 1:

Examiner 2:

DECLARATION

I Anumol Thomas, do hereby declare that the Mobile Application Development Lab Record (20 MCA 243) is a record of work carried out under the guidance of Mr. Sumithmon K S, Asst.Professor ,Department of Computer Applications, SJCET, Palai as per the requirement of the curriculum of Master of Computer Applications Programme of A P J Abdul Kalam Technological University, Thiruvananthapuram. Further, I also declare that this record has not been submitted, full or part thereof, in any University / Institution for the award of any Degree / Diploma.

Place: Choondacherry

ANUMOL THOMAS

Date :

(SJC22MCA-2011)

CONTENT

Program No	Program List	Page No
1	Design a Login Form with username and password using LinearLayout and toast valid credentials	1
2	Write a program that demonstrates Activity Lifecycle.	4
3	Implementing basic arithmetic operations of a simple calculator	8
4	Implement validations on various UI controls	14
5	Design a registration activity and store registration details in local memory of phone using Intents and SharedPreferences	18
6	Design a simple Calculator using GridLayout and Cascaded LinearLayout	25
7	Create a Facebook page using RelativeLayout; set properties using .xml file	31
8	Develop an application that toggles image using FrameLayout	34
9	Implement Adapters and perform exception handling	37
10	Implement Intent to navigate between multiple activities	40
11	Implement Options Menu to navigate to activities	44
12	Develop an application that uses ArrayAdapter with ListView	47
13	Develop an application that implements Spinner component and perform event handling	49
14	Create database using SQLite and perform INSERT and SELECT	52
15	Perform UPDATE and DELETE on SQLite database	59

PROGRAM 1:

Design a Login Form with username and password using LinearLayout and toast valid credentials

CODE:**activity_main.xml:**

```
<LinearLayout android:layout_height="match_parent"
    android:layout_width="match_parent"    android:orientation="vertical"
    xmlns:android="http://schemas.android.com/apk/res/android" >

    <EditText

    android:id="@+id/uname1"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:hint="Username" />

    <EditText    android:id="@+id/pass1"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:hint="Password"

    android:inputType="textPassword" />

    <Button

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:text="Login"

    android:onClick="Login"/>

</LinearLayout>
```

MainActivity.java:

```
package      com.example.sjcet.login;      import
android.support.v7.app.AppCompatActivity;      import
android.os.Bundle; import android.view.View; import
android.widget.EditText; import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
private EditText unameEditText;      private EditText
passEditText;

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

setContentView(R.layout.activity_main);

unameEditText = findViewById(R.id.uname1);
passEditText = findViewById(R.id.pass1);

    }

    public void Login(View view) {

        String username = unameEditText.getText().toString();
String password = passEditText.getText().toString();      if
(isValidCredentials(username,password)){

        Toast.makeText(this,"login Successful",Toast.LENGTH_SHORT).show();

    }
else{

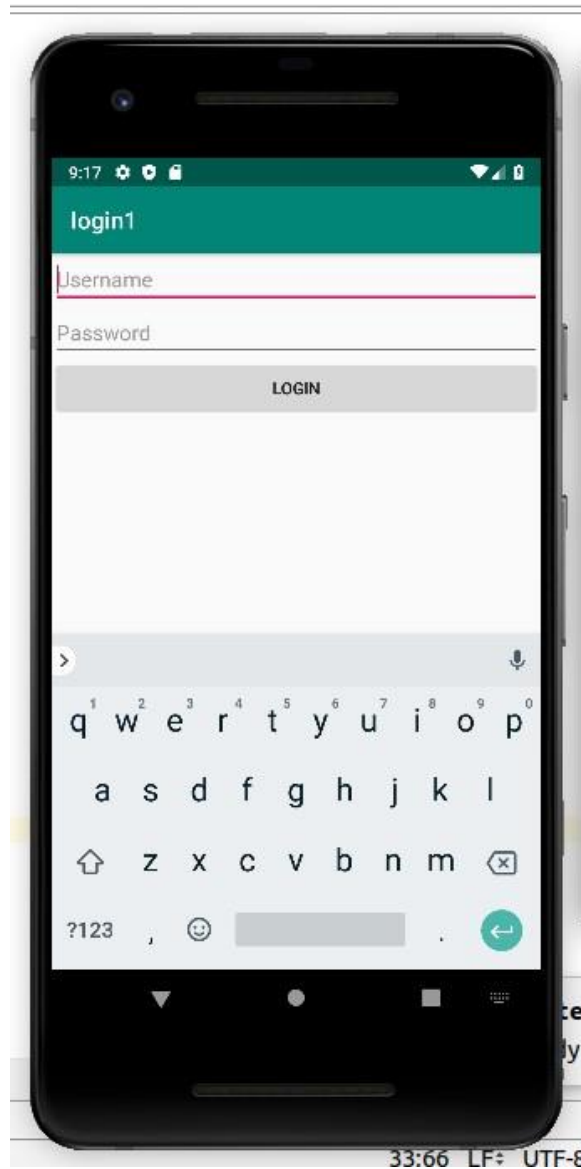
        Toast.makeText(this,"invalid credentials",Toast.LENGTH_SHORT).show();

    }

}

    private boolean isValidCredentials(String username,String password){
return username.equals("Anjala") && password.equals("1234");
```

```
}  
}
```

OUTPUT:**PROGRAM 2:**

Write a program that demonstrates Activity Lifecycle.

CODE:**activity_main.xml:**

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

<android.support.constraint.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">

    <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
        android:layout_width="match_parent"
        android:layout_height="match_parent"    android:padding="16dp">

        <Button
            android:id="@+id/btnGoToSecondActivity"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"    android:text="Go
to MainActivity"    android:layout_centerInParent="true"
        />

    </RelativeLayout>

</android.support.constraint.ConstraintLayout>
```

MainActivity.java: package

```
com.example.sjcet.lifecycle; import
android.support.v7.app.AppCompatActivity; import
android.os.Bundle; import android.app.Activity;
```



```
import android.content.Intent;    import
android.os.Bundle;    import android.util.Log;
import android.view.View;    import
android.widget.Button;    import
android.widget.Toast; public class MainActivity extends
Activity {    private static final String TAG =
"Lifecycle";    protected void onCreate(Bundle
savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
    Log.d(TAG, "onCreate: MainActivity");
    Button goToSecondActivityBtn = findViewById(R.id.btnGoToSecondActivity);
goToSecondActivityBtn.setOnClickListener(new View.OnClickListener() {
public void onClick(View view) {        startActivity(new
Intent(MainActivity.this, MainActivity.class));
    }
    });
}
protected void onStart() {
super.onStart();
    Log.d(TAG, "onStart: MainActivity");
    Toast.makeText(this,"ON START",Toast.LENGTH_SHORT).show();
}
protected void onResume() {
super.onResume();
    Log.d(TAG, "onResume: MainActivity");
```

```
        Toast.makeText(this,"ON RESUME",Toast.LENGTH_SHORT).show();
    }

    protected void onPause() {
super.onPause();

        Log.d(TAG, "onPause: MainActivity");

        Toast.makeText(this,"ON PAUSE",Toast.LENGTH_SHORT).show();
    }

    protected void onStop() {
super.onStop();

        Log.d(TAG, "onStop: MainActivity");

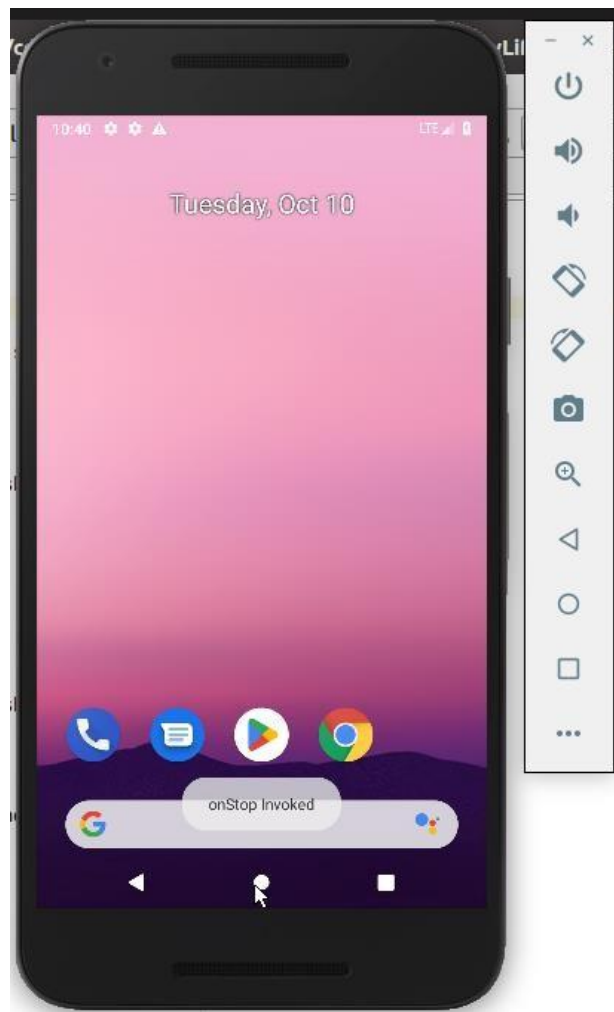
        Toast.makeText(this,"ON STOP",Toast.LENGTH_SHORT).show();
    }

    protected void onDestroy() {
super.onDestroy();

        Log.d(TAG, "onDestroy: MainActivity");

        Toast.makeText(this,"ON DESTROY",Toast.LENGTH_SHORT).show();
    }
}
```

OUTPUT:

**PROGRAM 3:**

Implementing basic arithmetic operations of a simple calculator

CODE:

activity_main.xml:

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

```
<android.support.constraint.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">
    <LinearLayout        android:layout_width="match_parent"
android:layout_height="match_parent"
xmlns:android="http://schemas.android.com/apk/res/android"
android:orientation="vertical">
        <LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal">
            <EditText
android:id="@+id/ed1"
android:layout_width="160dp"
android:layout_height="wrap_content"
android:hint="Num 1"/>
            <EditText
                android:id="@+id/ed2"
android:layout_width="160dp"
android:layout_height="wrap_content"
android:hint="Num 2"/>
        </LinearLayout>        <Button
android:layout_height="wrap_content"
android:layout_width="120dp"
```

```
android:text="Add"
android:onClick="Add"/>
    <Button
        android:layout_height="wrap_content"
        android:layout_width="120dp"
        android:text="Sub"
        android:onClick="Sub"/>
    <Button
        android:layout_height="wrap_content"
        android:layout_width="120dp"
        android:text="Mul"
        android:onClick="Mul"/>
    <Button
        android:layout_height="wrap_content"
        android:layout_width="120dp"
        android:text="Div"        android:onClick="Div"/>
    <Button
        android:id="@+id/clearButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="Clear"
        android:onClick="Clear"/>
    <LinearLayout
        android:layout_width="wrap_content"
```

```
android:layout_height="wrap_content"
android:orientation="horizontal" >
    <TextView
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Result:"
android:textSize="20sp"/>
    <TextView
android:id="@+id/tv1"
android:layout_width="160dp"
android:layout_height="30dp" />
    </LinearLayout>
</LinearLayout>
</android.support.constraint.ConstraintLayout>
```

MainActivity.java:

```
package com.example.sjcet.calculator; import
android.support.v7.app.AppCompatActivity;
import android.os.Bundle; import
android.view.View; import
android.widget.EditText;

import android.widget.TextView; public class
MainActivity extends AppCompatActivity {    EditText
ed1,ed2; TextView tv1;double num1,num2;    protected
void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);    ed1 =
```

```
findViewById(R.id.ed1);    ed2 =
findViewById(R.id.ed2);    tv1=
findViewById(R.id.tv1);

    }

    public void Clear(View view) {
ed1.setText(""); ed2.setText(""); tv1.setText("");
    }

    public void Add(View view) {
        String num1str = ed1.getText().toString();
String num2str = ed2.getText().toString();    if
(!num1str.isEmpty() && !num2str.isEmpty()) {
    double num1 = Double.parseDouble(num1str);
    double num2 = Double.parseDouble(num2str);
    double result = num1 + num2;
tv1.setText(String.valueOf(result));
        } else {
            tv1.setText("Result: Invalid input"); } }

    public void Sub(View view) {
        String num1str = ed1.getText().toString();
String num2str = ed2.getText().toString();    if
(!num1str.isEmpty() && !num2str.isEmpty()) {
    double num1 = Double.parseDouble(num1str);
    double num2 = Double.parseDouble(num2str);
    double result = num1 - num2;
tv1.setText(String.valueOf(result));
        } else {
```

```
        tv1.setText("Result: Invalid input"); }}

    public void Mul(View view) {

        String num1str = ed1.getText().toString();
        String num2str = ed2.getText().toString();    if
        (!num1str.isEmpty() && !num2str.isEmpty()) {
            double num1 = Double.parseDouble(num1str);
            double num2 = Double.parseDouble(num2str);
            double result = num1 * num2;
            tv1.setText(String.valueOf(result));
        } else {
            tv1.setText("Result: Invalid input"); } }

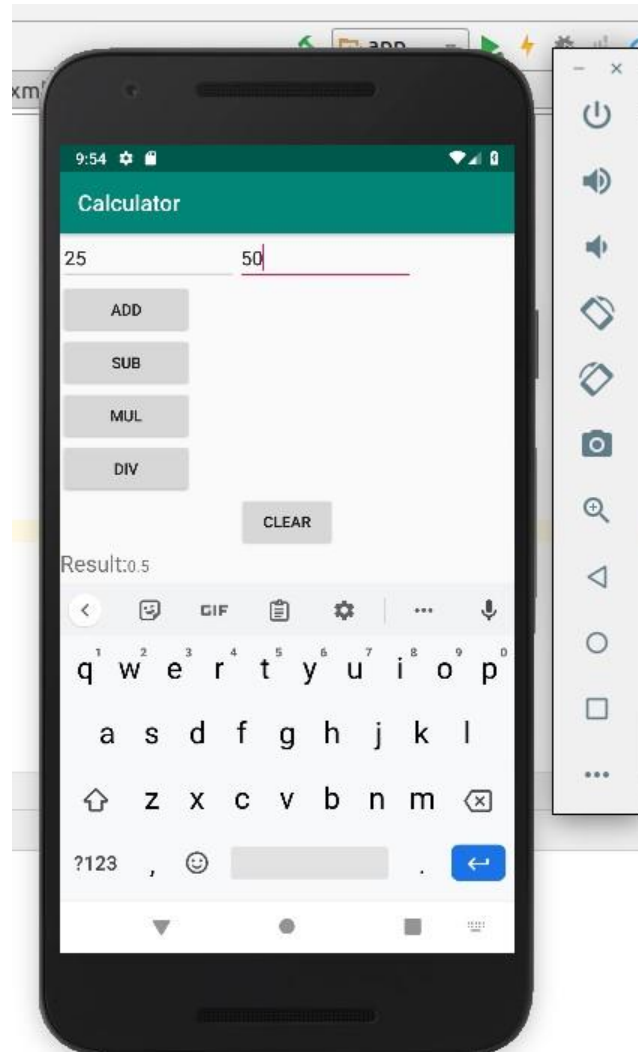
    public void Div(View view) {

        String num1str = ed1.getText().toString();
        String num2str = ed2.getText().toString();    if
        (!num1str.isEmpty() && !num2str.isEmpty()) {
            double num1 = Double.parseDouble(num1str);
            double num2 = Double.parseDouble(num2str);

            if (num2 != 0) {                double
            result = num1 / num2;
            tv1.setText(String.valueOf(result));
        } else {
            tv1.setText("Result: Division by zero");}
        } else {    tv1.setText("Result:
        Invalid input");
    }
}
```



```
}
```

OUTPUT:**PROGRAM 4:**

Implement validations on various UI controls

CODE:**activity_main.xml:**

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

```
<RelativeLayout 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:padding="16dp"
tools:context=".MainActivity">

    <EditText

        android:id="@+id/etUsername"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:hint="Username"  />

        <EditText

            android:id="@+id/etPassword"

            android:layout_width="match_parent"

            android:layout_height="wrap_content"

            android:layout_below="@+id/etUsername"

            android:layout_centerHorizontal="true"

            android:layout_marginTop="60dp"

            android:hint="Password"

            android:inputType="textPassword" /> <Button

                android:id="@+id/btnSubmit"

                android:layout_width="wrap_content"

                android:layout_height="wrap_content"

                android:layout_below="@+id/etPassword"

                android:layout_alignStart="@+id/etUsername"

                android:layout_marginTop="59dp"
```

```

    android:text="Submit" />    <TextView
    android:id="@+id/tvUsernameError"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/etUsername"
    android:layout_marginTop="4dp"
        android:text=""
    android:textColor="#FF0000" />
    <TextView
    android:id="@+id/tvPasswordError"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/etPassword"
    android:layout_marginTop="4dp"
        android:text=""
    android:textColor="#FF0000" />

```

</RelativeLayout>

MainActivity.java:

```

package com.example.sjcet.ui; import
    android.support.v7.app.AppCompatActivity; import
    android.os.Bundle; import android.view.View; import
    android.widget.Button; import android.widget.EditText;
import android.widget.TextView; public class
MainActivity extends AppCompatActivity {
    EditText etUsername, etPassword;    TextView
    tvUsernameError, tvPasswordError;    protected void
    onCreate(Bundle savedInstanceState) {

```

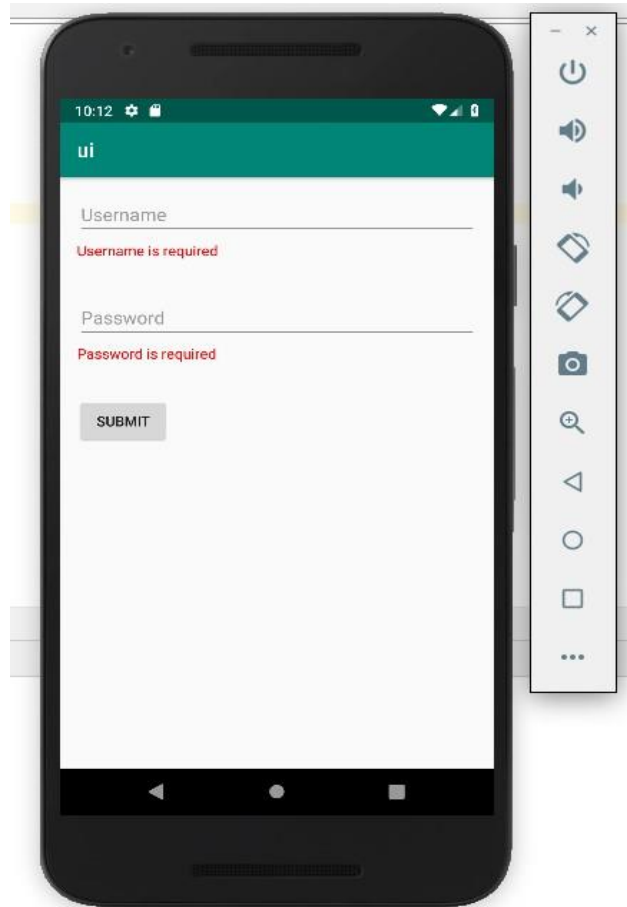
```
super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main);    etUsername =
findViewById(R.id.etUsername);    etPassword =
findViewById(R.id.etPassword);    tvUsernameError =
findViewById(R.id.tvUsernameError);    tvPasswordError =
findViewById(R.id.tvPasswordError);    Button btnSubmit =
findViewById(R.id.btnSubmit);

btnSubmit.setOnClickListener(new View.OnClickListener() {
public void onClick(View view) {
    validateInput(); } });

private void validateInput() {
    String username = etUsername.getText().toString().trim();
    String password = etPassword.getText().toString().trim();
    boolean isValid = true;    if (username.isEmpty()) {
    tvUsernameError.setText("Username is required");

    isValid = false;
    } else {
        tvUsernameError.setText("");    }    if
(password.isEmpty())    {
    tvPasswordError.setText("Password is required");
    isValid = false;
    } else if (password.length() < 6) {
    tvPasswordError.setText("Password must be at least 6 characters");
    isValid = false;
    } else {
        tvPasswordError.setText(""); } } }
```

OUTPUT:**PROGRAM 5:**

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

CODE:

```
activity_main.xml: <LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:orientation="vertical">
    <EditText
    android:id="@+id/usernameEditText"
    android:layout_width="match_parent"
```

```
android:layout_height="wrap_content"
android:hint="Username" />
    <EditText
android:id="@+id/emailEditText"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:hint="Email" />
    <EditText
android:id="@+id/passwordEditText"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:hint="Password"
android:inputType="textPassword" /> <Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Register"
android:onClick="register" />
</LinearLayout>
```

activity_main2.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> MainActivity.java:
package com.example.sjcet.calculator; import android.annotation.TargetApi; import
android.os.Build; import android.support.annotation.RequiresApi; import
android.support.v7.app.AppCompatActivity; import android.os.Bundle; 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;    protected void
onCreate(Bundle savedInstanceState) {
```

```
super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main); textView

= findViewById(R.id.textView);

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

String[] buttonLabels = {

    "7", "8", "9", "/",

    "4", "5", "6", "*",

    "1", "2", "3", "-",

    "C", "0", "=", "+"

};

for (String label : buttonLabels) {

Button button = new Button(this);

button.setText(label);

button.setTextSize(24);

button.setOnClickListener(this);

gridLayout.addView(button); }

}

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 {
                WebView webView = new WebView(this);
                webView.getSettings().setJavaScriptEnabled(true);
```

```
webView.addJavascriptInterface(new Object() {  
    public void processHTML(String html) {  
        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); }  
}
```

Main2Activity.java

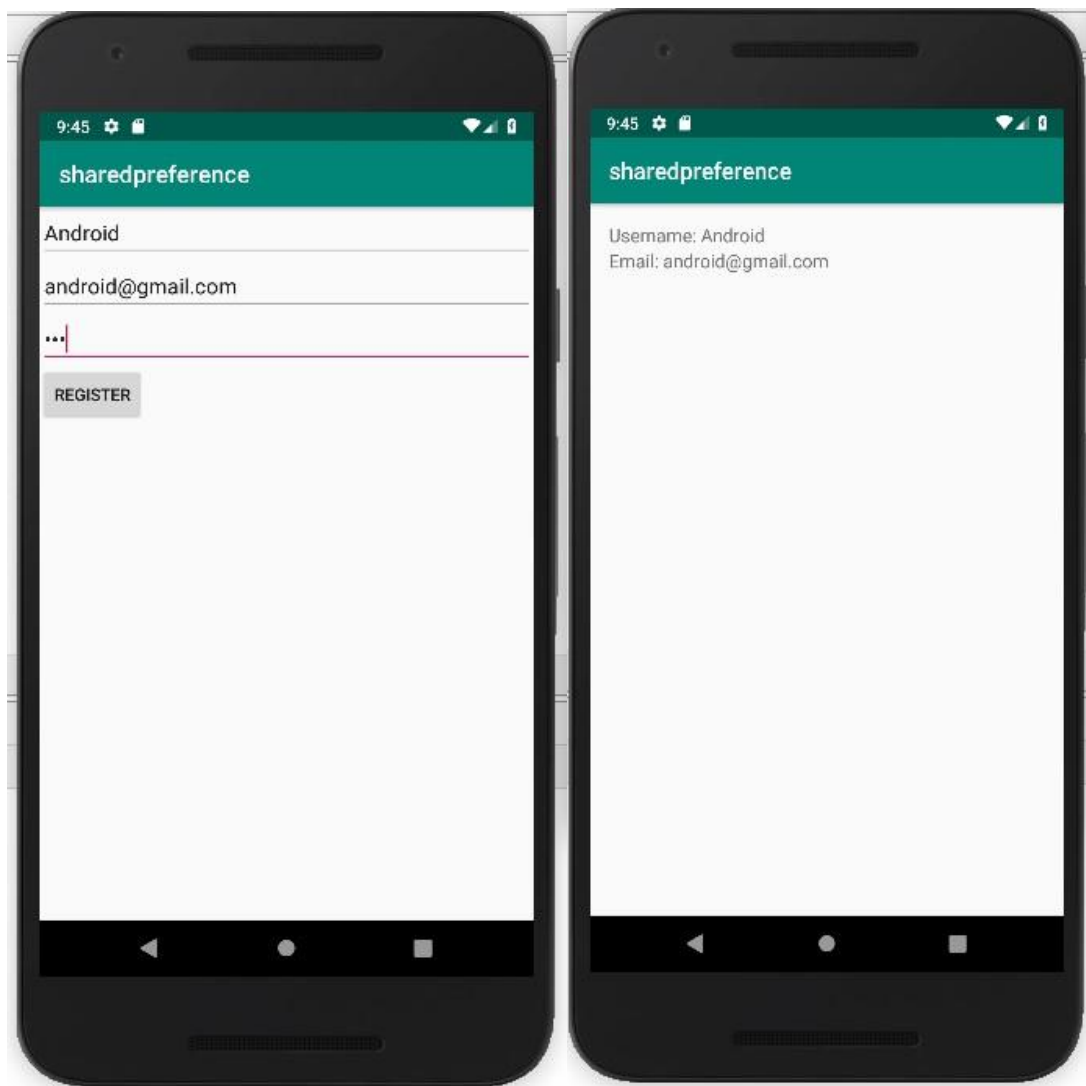
```
package com.example.sjcet.sharedpreference; import  
android.content.SharedPreferences; import  
android.support.v7.app.AppCompatActivity; import  
android.os.Bundle; import android.widget.TextView;  
public class Main2Activity extends AppCompatActivity {  
    String username, email, password;    protected void  
onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main2);
```

```
        SharedPreferences preferences = getSharedPreferences("UserData",
        MODE_PRIVATE);

        username = preferences.getString("username", "DefaultUsername");
        email = preferences.getString("email", "DefaultEmail");    password =
        preferences.getString("password", "DefaultPassword"); TextView
        usernameTextView = findViewById(R.id.usernameTextView);

        TextView emailTextView = findViewById(R.id.emailTextView);
        usernameTextView.setText("Username: " + username);    emailTextView.setText("Email:
        " + email);
    }
}
```

OUTPUT:

**PROGRAM 6:**

Design a simple Calculator using GridLayout and Cascaded LinearLayout

CODE:**activity_main.xml:**

```
<?xml version="1.0" encoding="UTF-8"?>
<LinearLayout
    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"
android:orientation="vertical"    android:padding="16dp"
tools:context=".MainActivity">
    <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/back
ground_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">
    </GridLayout>
</LinearLayout> MainActivity.java:
package com.example.sjcet.calculator; import
android.annotation.TargetApi; import
android.os.Build; import
android.support.annotation.RequiresApi; import
android.support.v7.app.AppCompatActivity;
import android.os.Bundle; 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);        textView
= findViewById(R.id.textView);

        GridLayout gridLayout = findViewById(R.id.gridLayout);
```

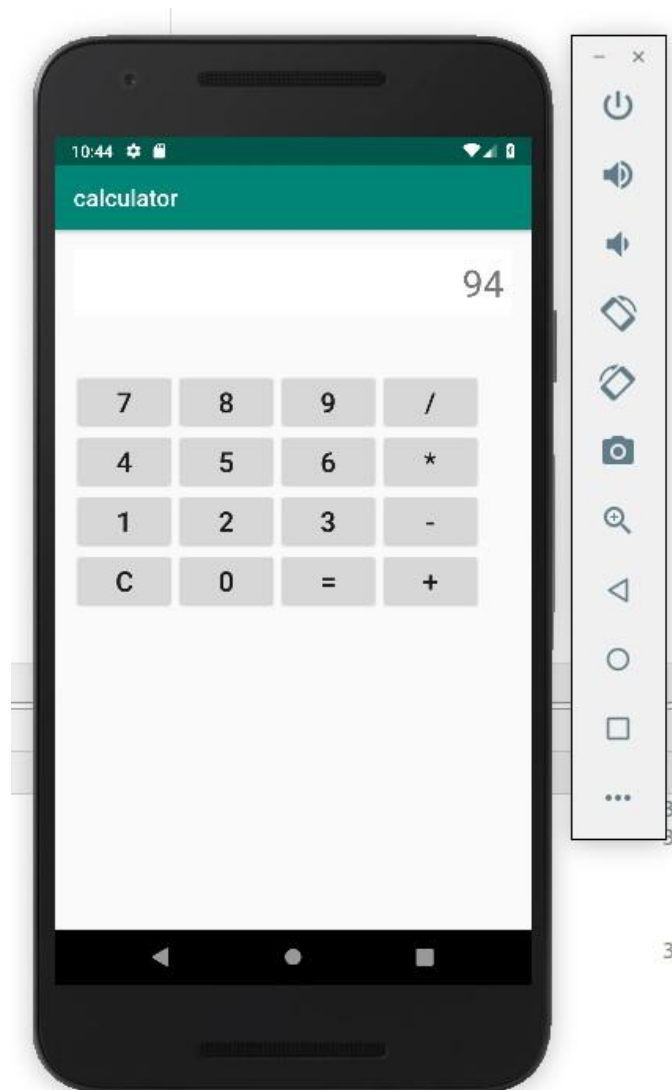
```
String[] buttonLabels = {  
    "7", "8", "9", "/",  
    "4", "5", "6", "*",  
    "1", "2", "3", "-",  
    "C", "0", "=", "+"  
};  
  
for (String label : buttonLabels) {  
    Button button = new Button(this);  
    button.setText(label);  
    button.setTextSize(24);  
    button.setOnClickListener(this);  
    GridLayout.addView(button);  
  
    } }  
  
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 {  
        WebView webView = new WebView(this);  
webView.getSettings().setJavaScriptEnabled(true);  
webView.addJavascriptInterface(new Object() {  
public void processHTML(String html) {  
        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);  
    }  
}
```

OUTPUT:

**PROGRAM 7:**

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

CODE:**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">

    <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>
```

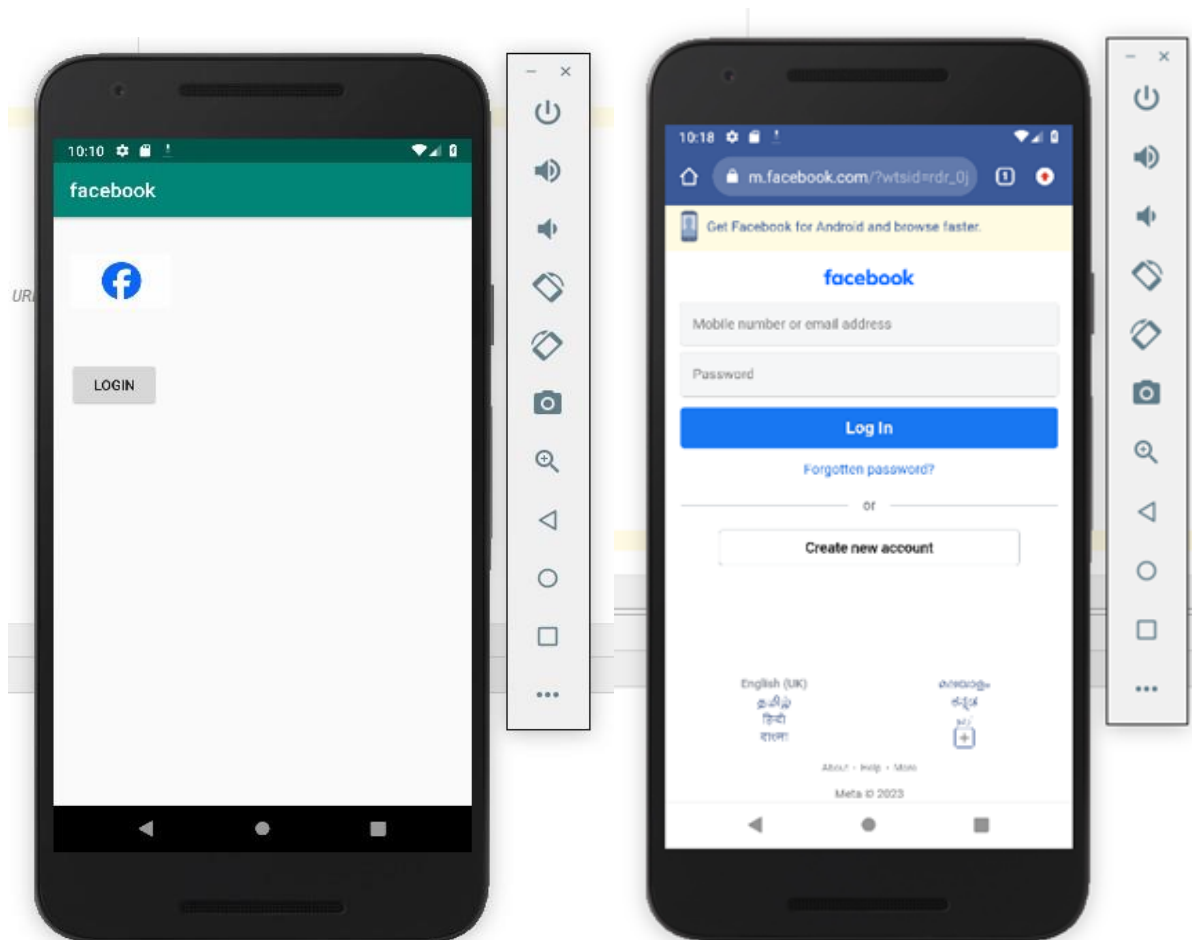
MainActivity.java: package

```
com.example.sjcet.facebook; import
android.support.v7.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 {    protected void
onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
```

```
Button loginButton = findViewById(R.id.loginButton);
loginButton.setOnClickListener(new View.OnClickListener() {
    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) {
        Intent intent = new Intent(Intent.ACTION_VIEW);
        intent.setData(Uri.parse(facebookUrl));        startActivity(intent);
    }
}
}
```

OUTPUT:



PROGRAM 8:

Develop an application that toggles image using FrameLayout

CODE:

activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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">
    <FrameLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">
            <ImageView
                android:id="@+id/imageView1"
                android:layout_width="match_parent"
                android:layout_height="match_parent"
                android:src="@drawable/a"
                android:scaleType="fitXY" />
                <ImageView
                    android:id="@+id/imageView2"
                    android:layout_width="match_parent"
                    android:layout_height="match_parent"
                    android:src="@drawable/b"
                    android:scaleType="fitXY"
                    android:visibility="gone" />
            </FrameLayout>
        <Button
            android:id="@+id/toggleButton"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Toggle Image"
            android:layout_centerHorizontal="true"
            android:layout_alignParentBottom="true" />
    </RelativeLayout> MainActivity.java:
```

```
package com.example.sjcet.toogle; import
android.support.v7.app.AppCompatActivity; import
android.os.Bundle; import android.view.View; import
android.widget.Button; import
android.widget.FrameLayout; import
android.widget.ImageView; public class MainActivity
extends AppCompatActivity {    private ImageView
imageView1;    private ImageView imageView2;
private Button toggleButton;    private boolean
isImage1Visible = true;    protected void
onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
imageView1 = findViewById(R.id.imageView1);
imageView2 = findViewById(R.id.imageView2);
toggleButton = findViewById(R.id.toggleButton);
toggleButton.setOnClickListener(new
View.OnClickListener() {        public void
onClick(View view) {
            if (isImage1Visible) {
imageView1.setVisibility(View.GONE);
imageView2.setVisibility(View.VISIBLE);
            } else {
                imageView1.setVisibility(View.VISIBLE);
imageView2.setVisibility(View.GONE); }        isImage1Visible =
!isImage1Visible; } } });}
```

```
}
```

OUTPUT:**PROGRAM 9:****CODE:****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"
    android:padding="16dp" tools:context=".MainActivity">

    <GridView
```



```
        android:id="@+id/gridView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"    android:numColumns="2"
    />
</RelativeLayout> MainActivity.java package
com.example.adapter; import
androidx.appcompat.app.AppCompatActivity; import
android.os.Bundle; import android.view.View;
import android.widget.AdapterView; import
android.widget.AdapterView; import
android.widget.AdapterView; import
android.widget.AdapterView; import
android.widget.AdapterView; import
android.widget.AdapterView; import
import java.util.List;
public class MainActivity extends AppCompatActivity {
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        GridView gridView = findViewById(R.id.gridView);

        final List<String> data = fetchData();

        ArrayAdapter<String> adapter = new ArrayAdapter<>(this,
        android.R.layout.simple_list_item_1, data);    gridView.setAdapter(adapter);
        gridView.setOnItemClickListener(new AdapterView.OnItemClickListener() {    public
        void onItemClick(AdapterView<?> parent, View view, int position, long id) {
            try {
                String item = data.get(position);

                Toast.makeText(MainActivity.this, "Clicked: " + item,
                Toast.LENGTH_SHORT).show();
            }
        }
    }
}
```

```
        } catch (IndexOutOfBoundsException e) {  
            e.printStackTrace();  
            Toast.makeText(MainActivity.this, "Item not found", Toast.LENGTH_SHORT).show();  
        }  
    }  
});  
}  
  
private List<String> fetchData() {  
    List<String> data = new ArrayList<>();  
    data.add("Item 1");    data.add("Item 2");  
    data.add("Item 3");  
  
    data.add("Item 4");  
    return data;  
}  
}
```

OUTPUT:

**PROGRAM 10:**

Implement Intent to navigate between multiple activities

CODE:**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">
    <Button        android:id="@+id/page1"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="This Is the First Page"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"
app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

activity_main2.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=".MainActivity2">
    <Button        android:id="@+id/page2"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="This Is the Second Page"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"
```

```
app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package      com.example.intent;      import
androidx.appcompat.app.AppCompatActivity;  import
android.os.Bundle; import android.content.Intent; import
android.view.View;  import  android.widget.Button;
public class MainActivity extends AppCompatActivity {
    Button b1 ;

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);      b1 =
        findViewById(R.id.page1);      b1.setOnClickListener(

            new View.OnClickListener() {

                public void onClick(View v) {

                    Intent i = new Intent(MainActivity.this,MainActivity2.class);

                    startActivity(i);  }

            }

        ); }
}
```

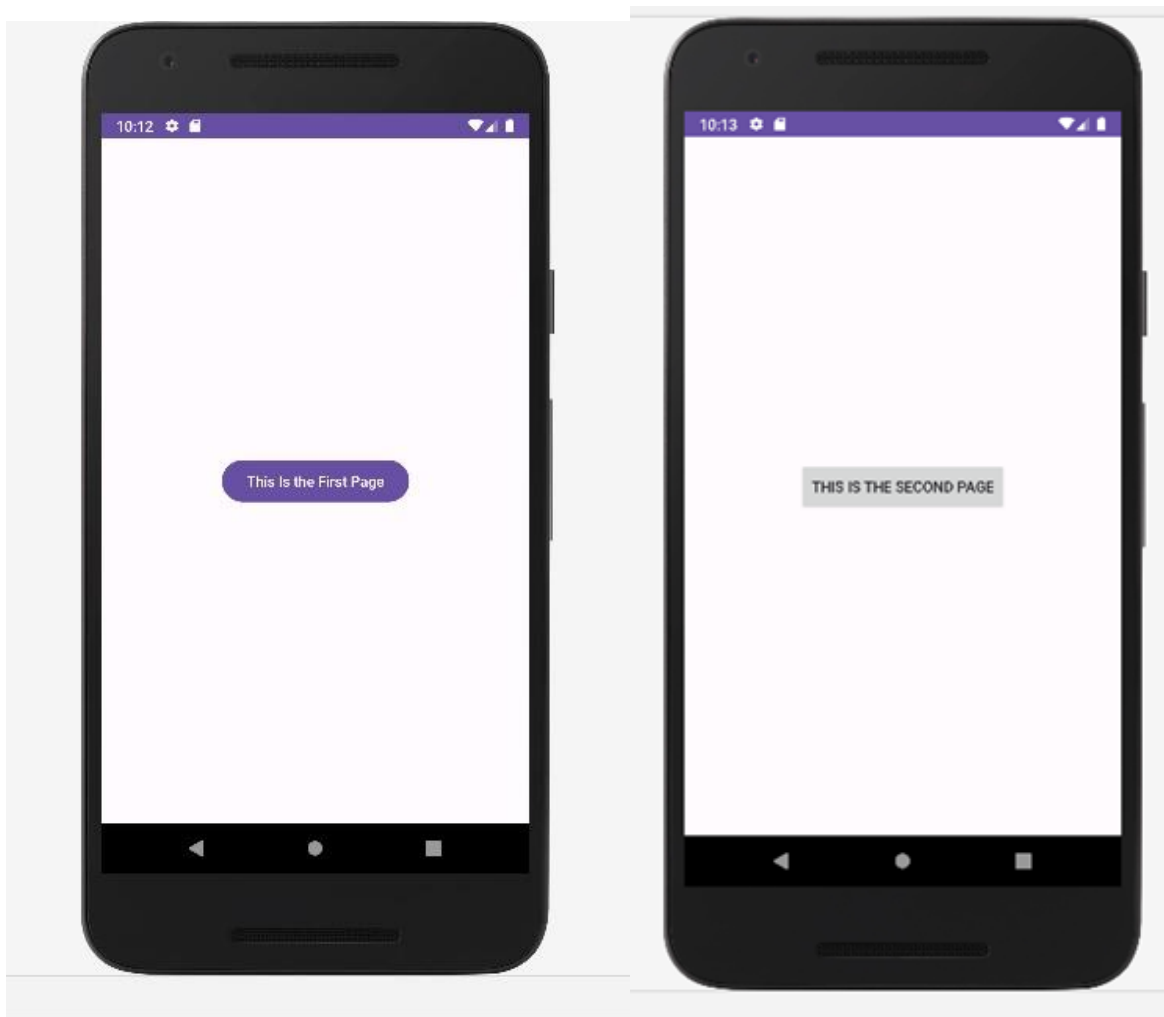
Main2Activity.java:

```
package      com.example.intent;      import
android.app.Activity;      import
android.content.Intent;      import
android.os.Bundle;      import
android.view.View;      import
```

```
android.widget.Button;    public    class
MainActivity2 extends Activity {    Button b2
;
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main2);    b2 =
findViewById(R.id.page2);    b2.setOnClickListener(
new View.OnClickListener() {
        @Override            public
void onClick(View v) {
            Intent i = new Intent(MainActivity2.this,MainActivity.class);
            startActivity(i);
        }
    }
});

}
}
```

OUTPUT:

**PROGRAM 11:**

Implement Options Menu to navigate to activities

CODE:**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=".Ques12Activity">
</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.java package com.example.application;

import androidx.annotation.NonNull; import
androidx.appcompat.app.AppCompatActivity;

import android.content.Intent; import android.os.Bundle;

import android.view.Menu; import
android.view.MenuItem; public class MainActivity
extends AppCompatActivity { protected void
onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
}

public boolean onOptionsItemSelected(@NonNull MenuItem item) { int menu_id=
item.getItemId(); switch (menu_id){ case R.id.second_activity:{
Intent intent= new Intent(getApplicationContext(), SecondActivity.class);
startActivity(intent); break;} case R.id.third_activity:{
Intent intent= new Intent(getApplicationContext(), ThirdActivity.class);
startActivity(intent); break;} default:{
Intent intent= new Intent(getApplicationContext(), MainActivity.class);
startActivity(intent); break;}} return true;}

public boolean onCreateOptionsMenu(Menu menu) {
getMenuInflater().inflate(R.menu.menu_items,menu); return
super.onCreateOptionsMenu(menu);}
}
```


menu_items.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">

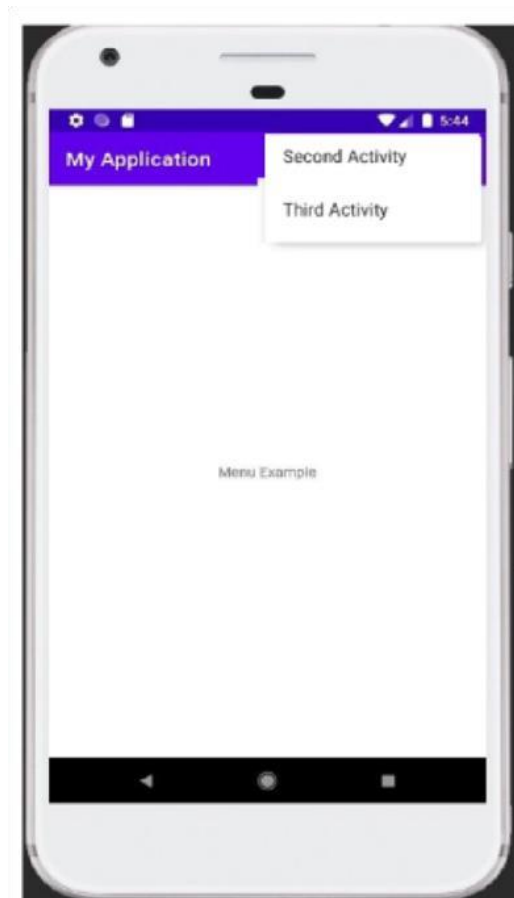
<group> <item android:id="@+id/second_activity"
android:title="Second Activity"
app:showAsAction="never"
app:iconTint="@color/white"/>

<item android:id="@+id/third_activity"
android:title="Third Activity"
app:showAsAction="never" app:iconTint="@color/white"/>

</group>

</menu>
```

OUTPUT:

**PROGRAM 12:**

Develop an application that uses ArrayAdapter with ListView

CODE:**activity_main.xml:**

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

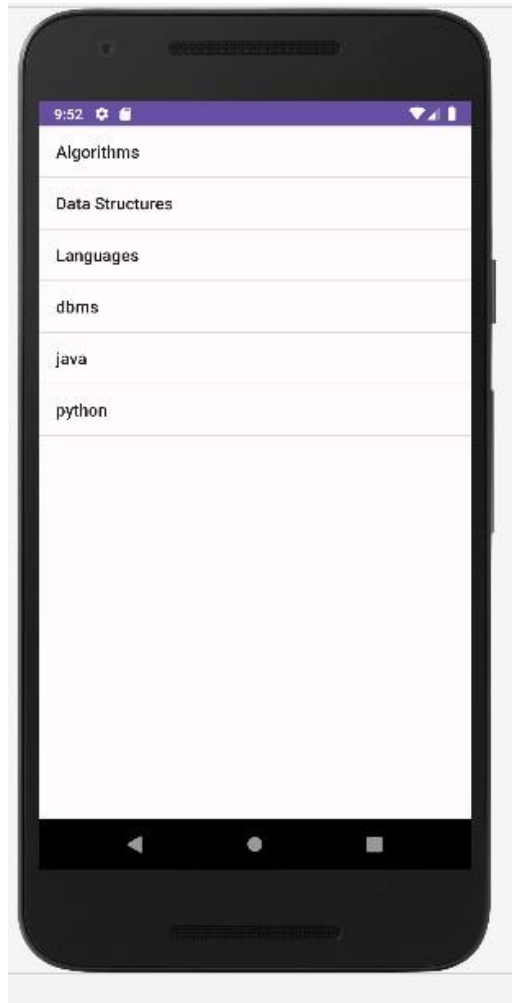
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_height="match_parent"    android:layout_width="match_parent">

    <ListView        android:id="@+id/list"
    android:layout_width="match_parent"
```

```
android:layout_height="match_parent"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package com.example.arrayadapter; import
androidx.appcompat.app.AppCompatActivity; import
android.os.Bundle; import android.view.View; import
android.widget.ListView; import android.widget.AdapterView;
import android.widget.ArrayAdapter; import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    ListView l;
    String tutorials[]
        = { "Algorithms", "Data Structures",
"Languages","dbms","java","python"};    protected void
onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);    l =
findViewById(R.id.list);    final
ArrayAdapter<String> arr;    arr = new
ArrayAdapter<String>(this,
android.R.layout.simple_list_item_1, tutorials);
l.setAdapter(arr);
    l.setOnItemClickListener(new AdapterView.OnItemClickListener() { public void
onItemClick(AdapterView<?> adapterView, View view, int position, long id) {
        String value = arr.getItem(position);
        Toast.makeText(getApplicationContext(), value, Toast.LENGTH_SHORT).show();
    } }); }}
```

OUTPUT:**PROGRAM 13:**

Develop an application that implements Spinner component and perform event handling

CODE:**activity_main.xml:**

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

<android.support.constraint.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">
```

```
<Spinner android:id="@+id/spinner"
    android:layout_width="167dp"
    android:layout_height="57dp"
    android:layout_marginStart="47dp"
    android:layout_marginTop="111dp"
    android:layout_marginEnd="197dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</android.support.constraint.ConstraintLayout>
```

MainActivity.java:

```
package com.example.sjcet.c4q2; import

android.support.v7.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View; import

android.widget.Adapter; import

android.widget.AdapterView; import

android.widget.AdapterView; import

android.widget.AdapterView; import

android.widget.AdapterView; import

android.widget.AdapterView; import

android.widget.AdapterView; import

public class MainActivity extends AppCompatActivity implements
AdapterView.OnItemSelectedListener { protected void

onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main);

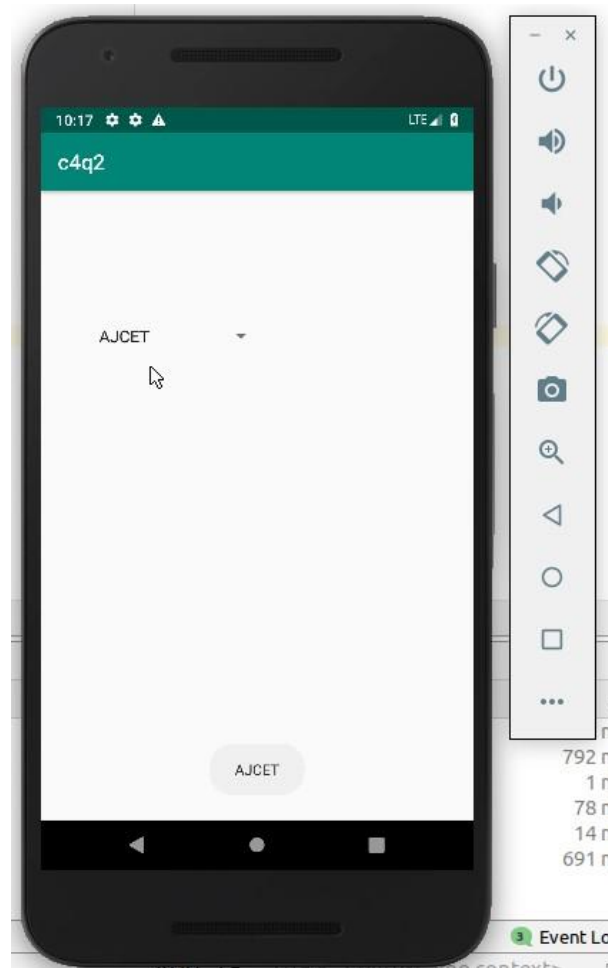
Spinner spinner=findViewById(R.id.spinner);
```

```
ArrayAdapter<CharSequence> adapter =  
    ArrayAdapter.createFromResource(this,R.array.college,  
        android.R.layout.simple_spinner_item);  
    adapter.setDropDownViewResource(android.R.layout.simple_spinner_item);  
    spinner.setAdapter(adapter); spinner.setOnItemSelectedListener(this);  
}  
  
public void onItemSelected(AdapterView<?> parent, View view, int position, long l) {  
    String text = parent.getItemAtPosition(position).toString();  
    Toast.makeText(parent.getContext(),text, Toast.LENGTH_SHORT).show();  
}  
  
public void onNothingSelected(AdapterView<?> adapterView) {  
}  
}
```

strings.xml

```
<resources>  
  
    <string name="app_name">c4q2</string>  
  
    <string-array name="college">  
  
        <item>SGC</item>  
  
        <item>SJCET</item>  
  
        <item>AJCET</item>  
  
    </string-array>  
  
</resources>
```

OUTPUT:

**PROGRAM 14:**

Create database using SQLite and perform INSERT and SELECT

CODE:**activity_main.xml:**

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

<android.support.constraint.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">
```

```
<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">

<EditText android:id="@+id/editTextName"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Name" />

<EditText android:id="@+id/editTextAge"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Age"
    android:inputType="number" />

<EditText android:id="@+id/editTextMark"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Mark"
    android:inputType="number" />

<Button android:id="@+id/buttonInsert"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Insert Data" />

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



```
        android:text="select Data" />
<TextView android:id="@+id/textViewData"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:text="User Data:"
        android:textStyle="bold" />
</LinearLayout>
</android.support.constraint.ConstraintLayout> MainActivity.java:
package com.example.sjcet.c5q1; import
android.support.v7.app.AppCompatActivity;
import android.database.Cursor; import
android.os.Bundle; import android.view.View;
import android.widget.Button; import
android.widget.EditText; import
android.widget.TextView; import
android.widget.Toast;
public class MainActivity extends AppCompatActivity { private
    DatabaseHelper db; // database name private EditText
    editTextName, editTextAge, editTextMark; private
    TextView textViewData; protected void onCreate(Bundle
    savedInstanceState) { super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main); db = new
    DatabaseHelper(this); editTextName =
    findViewById(R.id.editTextName); editTextAge =
    findViewById(R.id.editTextAge); editTextMark =
```

```
findViewById(R.id.editTextMark); textViewData =  
findViewById(R.id.textViewData);  
Button buttonInsert = findViewById(R.id.buttonInsert); Button  
buttonSelect = findViewById(R.id.buttonSelect);  
buttonInsert.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        String name = editTextName.getText().toString(); int age =  
        Integer.parseInt(editTextAge.getText().toString()); int mark =  
        Integer.parseInt(editTextMark.getText().toString()); boolean  
        insertData = db.insertUser(name, age, mark); // insert data if  
        (insertData) {  
            Toast.makeText(MainActivity.this, "User Inserted Successfully",  
            Toast.LENGTH_SHORT).show();  
            displayData();  
        } else {  
            Toast.makeText(MainActivity.this, "Failed to Insert User",  
            Toast.LENGTH_SHORT).show();  
        }  
    }  
});  
buttonSelect.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) { displayData();  
    }  
});
```

```
    } //display data private void  
  
    displayData() { Cursor cursor =  
        db.getAllUsers(); if (cursor.getCount()  
        == 0) { textViewData.setText("No users  
        found");  
    } else {  
        StringBuilder data = new StringBuilder();  
        while (cursor.moveToNext()) {  
            int id = cursor.getInt(0); String  
            name = cursor.getString(1); int  
            age = cursor.getInt(2); int mark =  
            cursor.getInt(3); data.append("ID:  
            ").append(id)  
            .append(", Name: ").append(name)  
            .append(", Age: ").append(age)  
            .append(", Mark: ").append(mark)  
            .append("\n");  
        } textViewData.setText(data.toString());  
    }  
}
```

DatabaseHelper.java package

```
com.example.sjcet.c5q1; import  
android.content.ContentValues; import  
android.content.Context; import  
android.database.Cursor; import
```

```
android.database.sqlite.SQLiteDatabase; import
android.database.sqlite.SQLiteOpenHelper;

public class DatabaseHelper extends SQLiteOpenHelper{ private static final
    String DATABASE_NAME = "UserDatabase.db"; private static final
    String TABLE_NAME = "UserTable"; private static final String
    COL_1 = "ID"; private static final String COL_2 = "NAME";

    private static final String COL_3 = "AGE";
    private static final String COL_4 = "MARK";

    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, 1);
    }

    @Override public void
    onCreate(SQLiteDatabase db) {
        db.execSQL("CREATE TABLE " + TABLE_NAME + " (" +
        COL_1 + " INTEGER PRIMARY KEY AUTOINCREMENT," +
        COL_2 + " TEXT," +
        COL_3 + " INTEGER," +
        COL_4 + " INTEGER)");
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
        onCreate(db);
    }

    public boolean insertUser(String name, int age, int mark) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();
```

```
        contentValues.put(COL_2, name);

        contentValues.put(COL_3, age); contentValues.put(COL_4,
        mark); long result = db.insert(TABLE_NAME, null,
        contentValues);

        return result != -1;
    }

    public Cursor getAllUsers() {
        SQLiteDatabase db = this.getWritableDatabase();

        return db.rawQuery("SELECT * FROM " + TABLE_NAME, null);
    }
}
```

OUTPUT:



PROGRAM 15:

Perform UPDATE and DELETE on SQLite database

CODE:

activity_main.xml:

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

<android.support.constraint.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">
    <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"    tools:layout_editor_absoluteX="0dp"
        tools:layout_editor_absoluteY="0dp">
        <EditText
            android:id="@+id/editTextName"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="Name" />
        <EditText
            android:id="@+id/editTextAge"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="Age"
            android:inputType="number" />
        <EditText
            android:id="@+id/editTextMark"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="Mark"
            android:inputType="number" />
        <Button
            android:id="@+id/buttonInsert"
            android:layout_width="wrap_content"
```

```
android:layout_height="wrap_content"
android:text="Insert Data" />
    <Button
android:id="@+id/buttonSelect"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="select Data" />
    <EditText
android:id="@+id/deleteIdEditText"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_below="@id/buttonSelect"
android:layout_marginTop="16dp"
android:hint="Enter ID to delete"
android:inputType="number" />
    <Button        android:id="@+id/buttonDelete"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@id/deleteIdEditText"
android:layout_marginTop="16dp"
android:text="Delete" />
    <EditText
android:id="@+id/deleteIdUpdateText"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_below="@id/buttonSelect"
```



```

        android:layout_marginTop="16dp"
        android:hint="Enter ID to update"
        android:inputType="number" />
        <Button
            android:id="@+id/buttonGetDetailsToUpdate"
            android:layout_width="wrap_content"
            android:layout_height="35dp"
            android:layout_below="@id/buttonDelete"      android:text="Get
Details to Update" />
        <Button
            android:id="@+id/buttonUpdate"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Update" />
        <TextView
            android:id="@+id/textViewData"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="16dp"
            android:text="User Data:"      android:textStyle="bold"
        />
    </LinearLayout>
</android.support.constraint.ConstraintLayout>
MainActivity.java:
package com.example.sjcet.a5thcyclepgm1new; import
android.support.v7.app.AppCompatActivity; import
android.database.Cursor; import android.os.Bundle;

```

```
import android.view.View; import
android.widget.Button; import android.widget.EditText;
import android.widget.TextView; import
android.widget.Toast; public class MainActivity extends
AppCompatActivity { private DatabaseHelper db;
    private      EditText      editTextName,      editTextAge, editTextMark,
deleteIdEditText,deleteIdUpdateText; private TextView textViewData; protected void
onCreate(Bundle savedInstanceState) {      super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);      db = new DatabaseHelper(this);

        editTextName = findViewById(R.id.editTextName);
editTextAge = findViewById(R.id.editTextAge);      editTextMark
= findViewById(R.id.editTextMark);      textViewData =
findViewById(R.id.textViewData);      deleteIdEditText =
findViewById(R.id.deleteIdEditText);      deleteIdUpdateText =
findViewById(R.id.deleteIdUpdateText);

        Button buttonInsert = findViewById(R.id.buttonInsert);
        Button buttonSelect = findViewById(R.id.buttonSelect);
        Button buttonDelete = findViewById(R.id.buttonDelete);
        Button buttonUpdate = findViewById(R.id.buttonUpdate);
        Button buttonGetDetailsToUpdate = findViewById(R.id.buttonGetDetailsToUpdate);
buttonInsert.setOnClickListener(new View.OnClickListener() {
    @Override      public void
onClick(View v) {
        String name = editTextName.getText().toString();
        String ageString = editTextAge.getText().toString().trim();
String markString = editTextMark.getText().toString().trim();
```

```
        if (name.isEmpty() || ageString.isEmpty() || markString.isEmpty()) {  
            Toast.makeText(MainActivity.this, "Please fill in all fields",  
                Toast.LENGTH_SHORT).show();  
            return;        }  
        int age = Integer.parseInt(ageString);        int  
        mark = Integer.parseInt(markString);        boolean  
        insertData = db.insertUser(name, age, mark);  
        if (insertData) {  
            Toast.makeText(MainActivity.this, "User Inserted Successfully",  
                Toast.LENGTH_SHORT).show();  
            editTextName.setText("");  
            editTextAge.setText("");  
            editTextMark.setText("");  
        } else {  
            Toast.makeText(MainActivity.this, "Failed to Insert User",  
                Toast.LENGTH_SHORT).show();  
        }  
    }  
});  
buttonSelect.setOnClickListener(new View.OnClickListener() {  
    public void onClick(View v) {  
        displayData();  
    }  
});  
buttonDelete.setOnClickListener(new View.OnClickListener() {  
    public void onClick(View v) {        deleteDataById();  
    }  
});
```

```
buttonGetDetailsToUpdate.setOnClickListener(new View.OnClickListener() {  
    public void onClick(View v) {  
        String idString = deleteIdUpdateText.getText().toString();  
        if (!idString.isEmpty()) {            int idToUpdate =  
            Integer.parseInt(idString);  
            displayDetailsForUpdate(idToUpdate);  
        } else {  
            Toast.makeText(MainActivity.this, "Please enter an ID", Toast.LENGTH_SHORT).show();  
        }  
    }  
});  
  
buttonUpdate.setOnClickListener(new View.OnClickListener() {  
    public void onClick(View v) {  
        String name = editTextName.getText().toString();            int  
        age = Integer.parseInt(editTextAge.getText().toString());            int  
        mark = Integer.parseInt(editTextMark.getText().toString());  
        boolean updateData = db.updateUser(name, age, mark);  
        if (updateData) {  
            Toast.makeText(MainActivity.this, "User Updated Successfully",  
                Toast.LENGTH_SHORT).show();  
            editTextName.setText("");  
            editTextAge.setText("");  
            editTextMark.setText("");            displayData();  
        } else {  
            Toast.makeText(MainActivity.this, "Failed to Update User",  
                Toast.LENGTH_SHORT).show();  
        }  
    }  
});
```

```
    }

    });

}

private void deleteDataById() {

    String idString = deleteIdEditText.getText().toString();

    if (!idString.isEmpty()) {        int idToDelete =

    Integer.parseInt(idString);        boolean deleted =

    db.deleteUser(idToDelete);

        if (deleted) {

            Toast.makeText(MainActivity.this, "User Deleted Successfully",
                Toast.LENGTH_SHORT).show();

            displayData();        } else {

            Toast.makeText(MainActivity.this, "Failed to Delete User",
                Toast.LENGTH_SHORT).show();

        }

    } else {

        Toast.makeText(MainActivity.this, "Please enter an ID",
            Toast.LENGTH_SHORT).show();

    }

}

private void displayDetailsForUpdate(int idToUpdate) {

    Cursor cursor = db.getUserById(idToUpdate);        if

    (cursor != null && cursor.moveToFirst()) {

        String name = cursor.getString(cursor.getColumnIndex("NAME"));

        int age = cursor.getInt(cursor.getColumnIndex("AGE"));        int mark =

        cursor.getInt(cursor.getColumnIndex("MARK"));

        editTextName.setText(name);

    }

}
```

```
editTextAge.setText(String.valueOf(age));
editTextMark.setText(String.valueOf(mark));

    cursor.close();

} else {

    Toast.makeText(MainActivity.this, "User ID not found",
        Toast.LENGTH_SHORT).show();

}

}

private void displayData() {

    Cursor cursor = db.getAllUsers();

    if (cursor.getCount() == 0) {
textViewData.setText("No users found");

    } else {

        StringBuilder data = new StringBuilder();

        while (cursor.moveToNext()) {

            int id = cursor.getInt(0);

            String name = cursor.getString(1);

            int age = cursor.getInt(2);          int
            mark = cursor.getInt(3);

            data.append("ID: ").append(id)

                .append(", Name: ").append(name)

                .append(", Age: ").append(age)

                .append(", Mark: ").append(mark)

                .append("\n");

        }

        textViewData.setText(data.toString());

    }

}
```

```
}}
```

DatabaseHelper.java

```
package com.example.sjcet.a5thcyclepgm1new; import
android.content.ContentValues; import
android.content.Context; import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase; import
android.database.sqlite.SQLiteOpenHelper; public class
DatabaseHelper extends SQLiteOpenHelper { private static
final String DATABASE_NAME = "users.db"; private static
final String TABLE_NAME = "users_table"; private static
final String COL1 = "ID"; private static final String COL2 =
"NAME"; private static final String COL3 = "AGE";
private static final String COL4 = "MARK"; public
DatabaseHelper(Context context) { super(context,
DATABASE_NAME, null, 1);
}
public void onCreate(SQLiteDatabase db) {
    String createTable = "CREATE TABLE " + TABLE_NAME + " (" +
        COL1 + " INTEGER PRIMARY KEY AUTOINCREMENT, " +
        COL2 + " TEXT, " +
        COL3 + " INTEGER, " +
        COL4 + " INTEGER)";
    db.execSQL(createTable);
}
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
    db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
```

```
        onCreate(db);

    }

    public boolean insertUser(String name, int age, int mark) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();
        contentValues.put(COL2, name);
        contentValues.put(COL3, age);    contentValues.put(COL4,
        mark);

        long result = db.insert(TABLE_NAME, null, contentValues);
        return result != -1; // Insertion successful if result != -1, else return false
    }

    public Cursor getAllUsers() {
        SQLiteDatabase db = this.getWritableDatabase();
        return db.rawQuery("SELECT * FROM " + TABLE_NAME, null);
    }

    public boolean deleteUser(int id) {
        SQLiteDatabase db = this.getWritableDatabase();    int result =
        db.delete(TABLE_NAME, COL1 + "=?", new String[]{String.valueOf(id)});
        return result > 0;
    }

    public boolean updateUser(String name, int age, int mark) {
        SQLiteDatabase db = this.getWritableDatabase();    ContentValues
        contentValues = new ContentValues();    contentValues.put(COL3,
        age);
        contentValues.put(COL4, mark);
    }
}
```



```

        int updatedRows = db.update(TABLE_NAME, contentValues, COL2 + "=?", new
String[]{name});    return updatedRows > 0;

    }

    public Cursor getUserById(int id) {

        SQLiteDatabase db = this.getWritableDatabase();

        return db.rawQuery("SELECT * FROM " + TABLE_NAME + " WHERE " + COL1 +
"=?", new String[]{String.valueOf(id)});

    }

}

```

OUTPUT:

