

PROGRAM 1:

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

CODE:

activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<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"
        android:minHeight="48dp" />

    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Login"
        android:onClick="Login"/>
</LinearLayout>
```

MainActivity.java:

```
package com.example.firstprogram;
import android.os.Bundle;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import android.widget.EditText;
import android.widget.Toast;
import android.view.View;

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

```

EdgeToEdge.enable(this);
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("Admin") && password.equals("1234");
}
}

```

PROGRAM 2:

Write a program that demonstrates Activity Lifecycle.

CODE:

MainActivity.java

```
package com.example.activityapplication;

import android.os.Bundle;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
            Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
            return insets;
        });
        Toast toast1 = Toast.makeText(getApplicationContext(), "onCreate Called",
        Toast.LENGTH_LONG);
        toast1.show();
    }
    protected void onStart() {
        super.onStart();
        Toast toast1 = Toast.makeText(getApplicationContext(), "onStart Called",
        Toast.LENGTH_LONG);
        toast1.show();
    }
    @Override
    protected void onRestart() {
        super.onRestart();
        Toast toast1 = Toast.makeText(getApplicationContext(), "onRestart Called",
        Toast.LENGTH_LONG);
        toast1.show();
    }
    protected void onPause() {
        super.onPause();
        Toast toast1 = Toast.makeText(getApplicationContext(), "onPause Called",
        Toast.LENGTH_LONG);
```

```
        toast1.show();
    }

    protected void onResume() {
        super.onResume();
        Toast toast1 = Toast.makeText(getApplicationContext(), "onResume Called",
Toast.LENGTH_LONG);
        toast1.show();
    }

    protected void onStop() {
        super.onStop();
        Toast toast1 = Toast.makeText(getApplicationContext(), "onStop Called",
Toast.LENGTH_LONG);
        toast1.show();
    }

    protected void onDestroy() {
        super.onDestroy();
        Toast toast1 = Toast.makeText(getApplicationContext(), "onDestroy Called",
Toast.LENGTH_LONG);
        toast1.show();
    }
}
```

PROGRAM 3:

Implementing basic arithmetic operations of a simple calculator

CODE:

activity_main.xml:

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

<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>

```

MainActivity.java

```
package com.example.thirdprogram;
```

```

import androidx.appcompat.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");
}
}
}

```

PROGRAM 4:

Implement validations on various UI controls

CODE:

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="16dp">

    <EditText
        android:id="@+id/editTextEmail"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Email"
        android:inputType="textEmailAddress"
        android:minHeight="48dp" />

    <EditText
        android:id="@+id/editTextPassword"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Password"
        android:inputType="textPassword"
        android:minHeight="48dp" />

    <Button
        android:id="@+id/buttonSubmit"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Submit" />

    <TextView
        android:id="@+id/textViewError"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="@color/my_red"
        android:textSize="16sp" />

</LinearLayout>
```

MainActivity.java

```
package com.example.fourthprogram;
import android.os.Bundle;
import android.text.TextUtils;
import android.util.Patterns;
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 emailEditText;
    private EditText passwordEditText;
    private Button submitButton;
    private TextView errorTextView;

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

        emailEditText = findViewById(R.id.editTextEmail);
        passwordEditText = findViewById(R.id.editTextPassword);
        submitButton = findViewById(R.id.buttonSubmit);
        errorTextView = findViewById(R.id.textViewError);

        submitButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                validateInputs();
            }
        });
    }

    private void validateInputs() {
        String email = emailEditText.getText().toString().trim();
        String password = passwordEditText.getText().toString().trim();

        // Reset error message
        errorTextView.setText("");

        if (TextUtils.isEmpty(email)) {
            errorTextView.setText("Email cannot be empty");
            return;
        }

        if (!Patterns.EMAIL_ADDRESS.matcher(email).matches()) {
            errorTextView.setText("Invalid email address");
            return;
        }

        if (TextUtils.isEmpty(password)) {
            errorTextView.setText("Password cannot be empty");
            return;
        }

        if (password.length() < 6) {
            errorTextView.setText("Password must be at least 6 characters");
            return;
        }
    }
}

```

```
        Toast.makeText(MainActivity.this, "Validation Successful", Toast.LENGTH_SHORT).show();
    }
}
```

```
colors.xml
<resources>
    <color name="my_red">#FF0000</color>
</resources>
```

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

Code

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="16dp">

    <EditText
        android:id="@+id/editTextName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter your name"
        android:minHeight="48dp" />

    <EditText
        android:id="@+id/editTextEmail"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter your email"
        android:inputType="textEmailAddress"
        android:minHeight="48dp" />

    <Button
        android:id="@+id/buttonRegister"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Register" />

</LinearLayout>
```

MainActivity.java

```
package com.example.recordfifth;
import android.content.Intent;
import android.content.SharedPreferences;
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 editTextName, editTextEmail;
    private Button buttonRegister;

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

        editTextName = findViewById(R.id.editTextName);
        editTextEmail = findViewById(R.id.editTextEmail);
        buttonRegister = findViewById(R.id.buttonRegister);

        buttonRegister.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                registerUser();
            }
        });
    }

    private void registerUser() {
        String name = editTextName.getText().toString().trim();
        String email = editTextEmail.getText().toString().trim();

        if (name.isEmpty() || email.isEmpty()) {
            Toast.makeText(this, "Please fill all fields", Toast.LENGTH_SHORT).show();
            return;
        }

        // Store registration details in SharedPreferences
        SharedPreferences sharedPreferences = getSharedPreferences("UserPrefs", MODE_PRIVATE);
        SharedPreferences.Editor editor = sharedPreferences.edit();
        editor.putString("userName", name);
        editor.putString("userEmail", email);
        editor.apply();

        // Navigate to another activity
        Intent intent = new Intent(MainActivity.this, WelcomeActivity.class);
        startActivity(intent);
        finish(); // Finish this activity
    }
}

```

activity_welcome.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="16dp">

    <TextView
        android:id="@+id/textViewWelcome"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp" />

</LinearLayout>
```

WelcomeActivity.java

```
package com.example.recordfifth;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class WelcomeActivity extends AppCompatActivity {

    private TextView textViewWelcome;

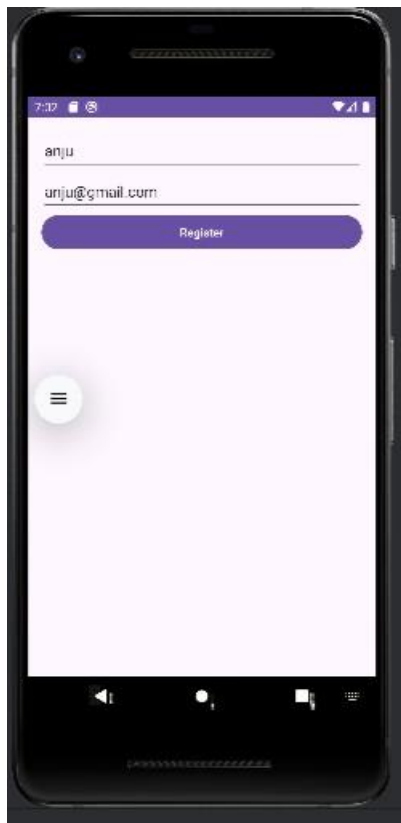
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_welcome);

        textViewWelcome = findViewById(R.id.textViewWelcome);

        // Retrieve registration details from SharedPreferences
        SharedPreferences sharedPreferences = getSharedPreferences("UserPrefs", MODE_PRIVATE);
        String userName = sharedPreferences.getString("userName", "User");
        String userEmail = sharedPreferences.getString("userEmail", "No email");

        textViewWelcome.setText("Welcome, " + userName + "!\\nYour email: " + userEmail);
    }
}
```

Output



PROGRAM 6:

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.recordseventh;
import android.os.Bundle;
import android.content.Intent;
import android.net.Uri;
import android.view.View;
import android.widget.Button;
import androidx.appcompat.app.AppCompatActivity;
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);
    }
}
```


PROGRAM 7:

Develop an application that toggles image using FrameLayout

CODE:

activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<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="centerCrop"
        android:src="@drawable/a" />

</FrameLayout>
```

MainActivity.java

```
package com.example.record7;

import android.os.Bundle;
import android.view.View;
import android.widget.ImageView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    private ImageView imageView;
    private boolean isImage1 = true;

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

        imageView = findViewById(R.id.imageView);

        // Set an OnClickListener to toggle images
        imageView.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                toggleImage();
            }
        });

        private void toggleImage() {
            if (isImage1) {
                imageView.setImageResource(R.drawable.b);
            }
        }
    }
}
```

```
    } else {  
        imageView.setImageResource(R.drawable.a);  
    }  
    isImage1 = !isImage1; // Toggle the boolean flag  
}  
}
```

PROGRAM 8: Implement Adapters and perform exception handling

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.ArrayAdapter;

import android.widget.GridView;

import android.widget.Toast;

import java.util.ArrayList;
```

```

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 9:

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:id="@+id/main"
    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:id="@+id/main"
    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.record9;
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); }
            }); }
}

```

MainActivity2.java

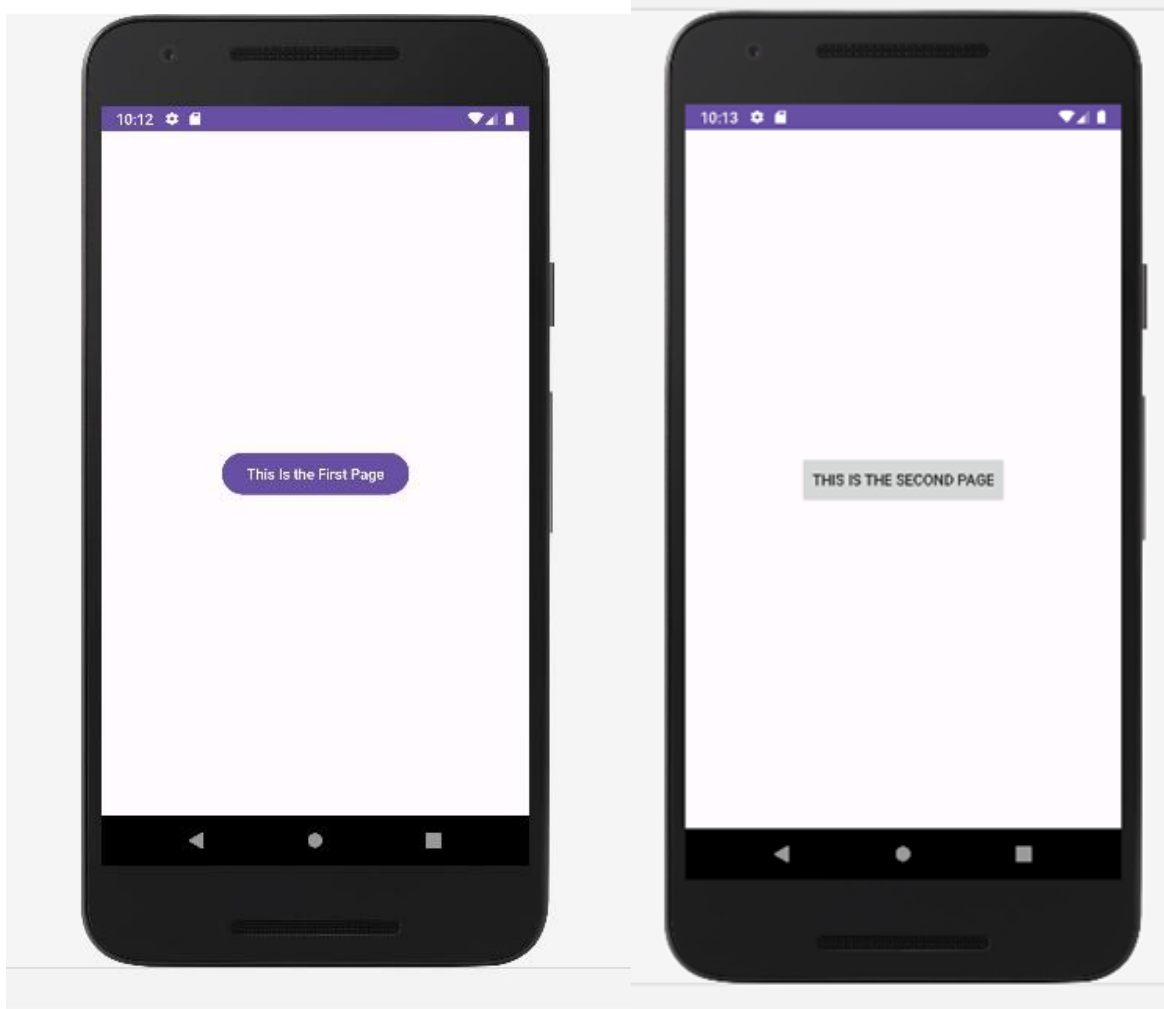
```

package com.example.record9;
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 10:

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[]

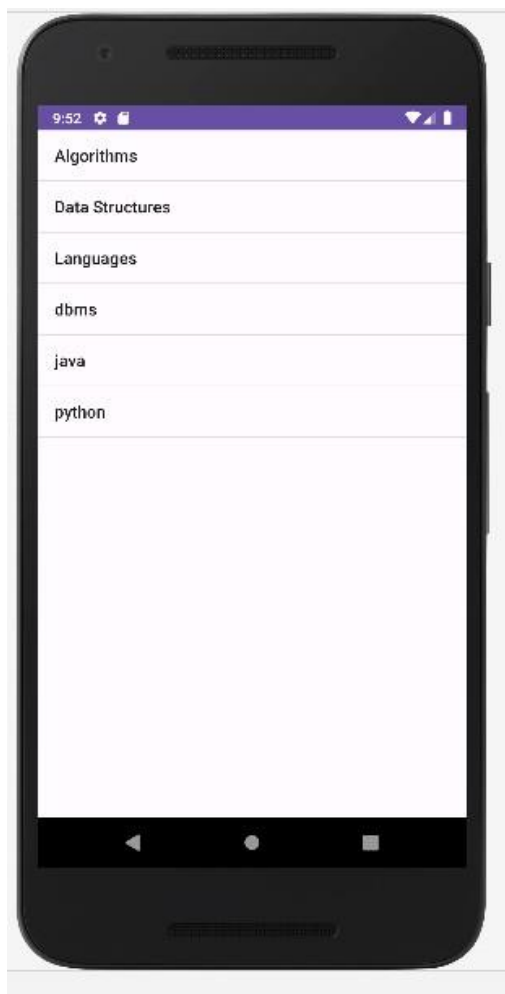
        = { "Algorithms", "Data Structures",

            "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 11

Develop an application that implements spinner component and perform event handling

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"

    android:padding="20dp">

    <Spinner

        android:id="@+id/spinner"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:spinnerMode="dropdown" />

</RelativeLayout>
```

MainActivity.java

```
package com.example.spinnerdemo;

import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ArrayAdapter;
import android.widget.Spinner;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
```

```
Spinner spinner;

String[] colors = {"Red", "Green", "Blue", "Yellow", "Black"};

@Override

protected void onCreate(Bundle savedInstanceState) {

    super.onCreate(savedInstanceState);

    setContentView(R.layout.activity_main);

    spinner = findViewById(R.id.spinner);

    // Create an ArrayAdapter using the string array and a default spinner layout
    ArrayAdapter<String> adapter = new ArrayAdapter<>(this,
        android.R.layout.simple_spinner_item, colors);

    // Specify the layout to use when the list of choices appears
    adapter.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);

    // Apply the adapter to the spinner
    spinner.setAdapter(adapter);

    // Event handling for spinner selection
    spinner.setOnItemClickListener(new AdapterView.OnItemClickListener() {

        @Override

        public void onItemClick(AdapterView<?> parent, View view, int position, long id) {

            String selectedColor = parent.getItemAtPosition(position).toString();

            Toast.makeText(MainActivity.this, "Selected: " + selectedColor,
                Toast.LENGTH_SHORT).show();
```

```
}
```

```
@Override
```

```
public void onNothingSelected(AdapterView<?> parent) {
```

```
    Toast.makeText(MainActivity.this, "Nothing Selected",  
    Toast.LENGTH_SHORT).show();
```

```
}
```

```
});
```

```
}
```

```
}
```

PROGRAM 12

Create database using SQLite and perform INSERT,UPDATE,DELETE and SELECT

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:id="@+id/main"
    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>

</androidx.constraintlayout.widget.ConstraintLayout>

```


MainActivity.java:

```
package com.example.record13;
import androidx.appcompat.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.record13;
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)});
    }
}

```