FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY (FISAT)™

HORMIS NAGAR, MOOKKANNOOR

ANGAMALY-683577

'FOCUS ON EXCELLENCE'

MOBILE APPLICATION DEVELOPMENT

……..

LABORATORY RECORD

Name: **DILNA P S**

Branch: MASTER OF COMPUTER APPLICATION

Semester: 3 Batch: MCA - A Roll No: 45

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University Exam. Reg. No: ……

CERTIFICATE

This is to certify that this is a Bonafide record of the Practical work done and submitted to Kerala Technological University in partial fulfillment for the award of the Master Of Computer Applications is a record of the original research work done by ***DILNA P S*** *in the* ***MOBILE APPLICATION DEVELOPMENT*** *Laboratory of the Federal Institute of Science and Technology during the academic year 2021-2022.*

Signature of Staff in Charge
Name :
Date :

Signature of H.O.D
Name:

Date of University practical examination ……

Signature of
Internal Examiner

Signature of
External Examiner

CONTENT

Program 1. Create a Simple Calculator for demonstrating the basic arithmetic operations (+ , - , * , /)

MainActivity.java

```
package com.example.calculator;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity implements View.OnClickListener{
EditText etNum1;
EditText etNum2;
Button btnAdd;
Button btnSub;
Button btnMult;
Button btnDiv;
TextView tvResult;
String oper = "";
@Override
public void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
etNum1 = (EditText) findViewById(R.id.etNum1);
etNum2 = (EditText) findViewById(R.id.etNum2);
btnAdd = (Button) findViewById(R.id.btnAdd);
btnSub = (Button) findViewById(R.id.btnSub);
btnMult = (Button) findViewById(R.id.btnMult);
btnDiv = (Button) findViewById(R.id.btnDiv);
btnAdd.setOnClickListener(this);
btnSub.setOnClickListener(this);
btnMult.setOnClickListener(this);
btnDiv.setOnClickListener(this);
}
@Override
public void onClick(View v) {
float num1 = 0;
float num2 = 0;
float result = 0;
// check if the fields are empty
if (TextUtils.isEmpty(etNum1.getText().toString())
|| TextUtils.isEmpty(etNum2.getText().toString())) {
return;
}
// read EditText and fill variables with numbers
num1 = Float.parseFloat(etNum1.getText().toString());
num2 = Float.parseFloat(etNum2.getText().toString());
switch (v.getId()) {
case R.id.btnAdd:
oper = "+";
```

```
result = num1 + num2;
break;
case R.id.btnSub:
oper = "-";
result = num1 - num2;
break;
case R.id.btnMult:
oper = "*";
result = num1 * num2;
break;
case R.id.btnDiv:
oper = "/";
result = num1 / num2;
break;
default:
break;
}
tvResult.setText(num1 + " " + oper + " " + num2 + " = " + result);
}
}
```

Activity Main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
android:orientation="vertical"
android:layout_width="fill_parent"
android:layout_height="fill_parent"
android:weightSum="1">
<LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:id="@+id/linearLayout1"
android:layout_marginLeft="10pt"
android:layout_marginRight="10pt"
android:layout_marginTop="3pt">
<EditText
android:layout_weight="1"
android:layout_height="wrap_content"
android:layout_marginRight="5pt"
android:id="@+id/etNum1"
android:layout_width="match_parent"
android:inputType="numberDecimal">
</EditText>
<EditText
android:layout_height="wrap_content"
android:layout_weight="1"
android:layout_marginLeft="5pt"
android:id="@+id/etNum2"
android:layout_width="match_parent"
android:inputType="numberDecimal">
</EditText>
```

```
</LinearLayout>
<LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:id="@+id/linearLayout2"
android:layout_marginTop="3pt"
android:layout_marginLeft="5pt"
android:layout_marginRight="5pt">
<Button
android:layout_height="wrap_content"
android:layout_width="match_parent"
android:layout_weight="1"
android:text="+"
android:textSize="8pt"
android:id="@+id/btnAdd">
</Button>
<Button
android:layout_height="wrap_content"
android:layout_width="match_parent"
android:layout_weight="1"
android:text="-"
android:textSize="8pt"
android:id="@+id/btnSub">
</Button>
<Button
android:layout_height="wrap_content"
android:layout_width="match_parent"
android:layout_weight="1"
android:text="*"
android:textSize="8pt"
android:id="@+id/btnMult">
</Button>
<Button
android:layout_height="wrap_content"
android:layout_width="match_parent"
android:layout_weight="1"
android:text="/"
android:textSize="8pt"
android:id="@+id/btnDiv">
</Button>
</LinearLayout>
<TextView
android:layout_height="wrap_content"
android:layout_width="match_parent"
android:layout_marginLeft="5pt"
android:layout_marginRight="5pt"
android:textSize="12pt"
android:layout_marginTop="3pt"
android:id="@+id/tvResult"
android:gravity="center_horizontal"
android:layout_weight="0.07">
</TextView>
</LinearLayout>
```

Output

Program 2. Create an application to concatenate two given Strings. (Consider changing the color of the result string to GREEN*)

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="fill_parent"
android:layout_height="fill_parent"
android:background="#E1B04C"
android:orientation="vertical"
android:weightSum="1">
<LinearLayout
android:id="@+id/linearLayout5"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginLeft="5pt"
android:layout_marginTop="5pt"
android:layout_marginRight="5pt">
<TextView
android:id="@+id/id1"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:capitalize="words"
android:text="Concatination"
android:textAlignment="center"
android:textAllCaps="true"
android:textSize="20sp"
tools:ignore="InvalidId" />
</LinearLayout>
<LinearLayout
android:id="@+id/linearLayout1"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginLeft="10pt"
android:layout_marginTop="3pt"
android:layout_marginRight="10pt">
<EditText
android:id="@+id/etNum1"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginRight="5pt"
android:layout_weight="1"
android:hint="String 1"
android:inputType="text"></EditText>
<EditText
android:id="@+id/etNum2"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginLeft="5pt"
```

```
android:layout_weight="1"
android:hint="String 2"
android:inputType="text"></EditText>
</LinearLayout>
<LinearLayout
android:id="@+id/linearLayout2"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginLeft="5pt"
android:layout_marginTop="3pt"
android:layout_marginRight="5pt">
<Button
android:id="@+id/button"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_weight="1"
android:text="concat"
android:textSize="8pt"></Button>
</LinearLayout>
<TextView
android:id="@+id/tvResult"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginLeft="5pt"
android:layout_marginTop="3pt"
android:layout_marginRight="5pt"
android:layout_weight="0.07"
android:gravity="center_horizontal"
android:textColor="#19AC2D"
android:textSize="12pt"></TextView>
</LinearLayout>
```

MainActivity.java

```
package com.example.concatination;
import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity implements
View.OnClickListener{
EditText etNum1;
EditText etNum2;
Button button;
TextView tvResult;
@Override
public void onCreate(Bundle savedInstanceState)
{
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
```

```
etNum1 = (EditText) findViewById(R.id.etNum1);
etNum2 = (EditText) findViewById(R.id.etNum2);
button = (Button) findViewById(R.id.button);
tvResult = (TextView) findViewById(R.id.tvResult);
button.setOnClickListener(this);
}
@Override
public void onClick(View v) {
String num1;
String num2;
if (TextUtils.isEmpty(etNum1.getText().toString())
|| TextUtils.isEmpty(etNum2.getText().toString())) {
return;
}
num1 = etNum1.getText().toString();
num2 = etNum2.getText().toString();
switch (v.getId()) {
case R.id.button:
tvResult.setText(num1 + num2 );
break;
default:
break;
}
}
}
```

Output

Program 3. Create an android application to find the factorial of a given number.

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="fill_parent"
android:layout_height="fill_parent"
android:background="#3779A5"
android:orientation="vertical"
android:weightSum="1">
<LinearLayout
android:id="@+id/linearLayout1"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginLeft="10pt"
android:layout_marginTop="3pt"
android:layout_marginRight="10pt">
<EditText
android:id="@+id/etNum1"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginRight="5pt"
android:layout_weight="1"
android:hint="Enter the value here"
android:inputType="numberDecimal"
android:textColor="#FFFFFF"></EditText>
</LinearLayout>
<LinearLayout
android:id="@+id/linearLayout2"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginLeft="5pt"
android:layout_marginTop="3pt"
android:layout_marginRight="5pt">
<Button
android:id="@+id/btnAdd"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="2"
android:background="#7C3C3C"
android:text="Factorial"
android:textSize="8pt"></Button>
</LinearLayout>
<TextView
android:id="@+id/tvResult"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginLeft="5pt"
android:layout_marginTop="3pt"
android:layout_marginRight="5pt"
android:layout_weight="0.07"
```

```
android:gravity="center_horizontal"
android:textColor="#FFFFFF"
android:textSize="12pt"></TextView>
</LinearLayout>
```

MainActivity.java

```
package com.example.factorial;
import androidx.appcompat.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 implements View.OnClickListener{
EditText etNum1;
Button btnAdd;
TextView tvResult;
String oper = "";
@Override
public void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
etNum1 = (EditText) findViewById(R.id.etNum1);
btnAdd = (Button) findViewById(R.id.btnAdd);
tvResult = (TextView) findViewById(R.id.tvResult);
btnAdd.setOnClickListener(this);
}
@Override
public void onClick(View v) {
float num1=0;
float fact=1;
float result = 0;
num1=Float.parseFloat(etNum1.getText().toString());
switch (v.getId()) {
case R.id.btnAdd:
oper = "+";
for(int i=1;i<=num1;i++)
{
fact=fact*i;
}
result=fact;
break;
default:
break;
}
tvResult.setText("Factorial of"+ " " + num1 + " = " + result);
}
}
```

Output


10:26
factorial
5
CALCULATE
Factorial of 5.0 = 120.0
1 2 3 -
4 5 6 ,
7 8 9
. 0 _

Program 4. Develop a canvas to draw different shapes and to fill the shapes with different colors.

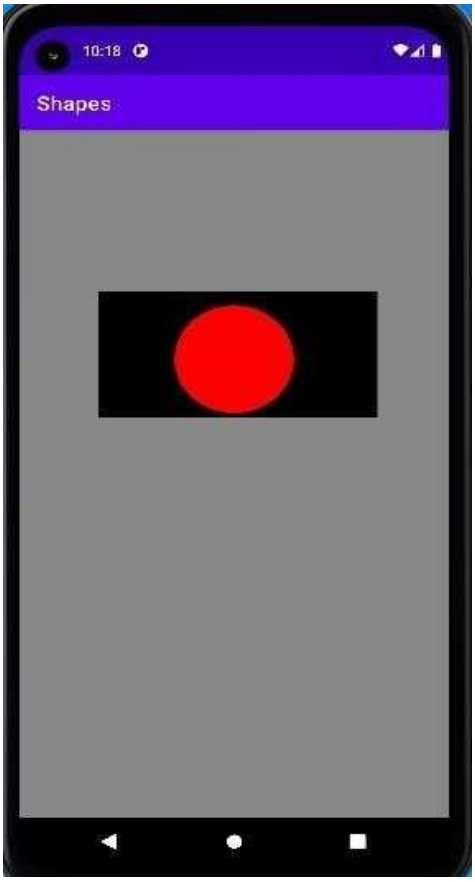
MainActivity.java

```
package com.example.shapes;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
// import android.support.v7.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(new com.example.shapes.custom(this));
}
}
```

custom.java

```
package com.example.shapes;
import android.content.Context;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.Rect;
import android.view.View;
public class custom extends View {
int x;
int y;
private Rect rectangle;
private Paint paint, p1,p2;
public custom(Context context) {
super(context);
x = 200;
y = 50;
int width = 800;
int height = 500;
rectangle = new Rect(x, y, width, height);
// create the Paint and set its color
paint = new Paint();
paint.setColor(Color.BLACK);
p1 = new Paint();
p2 = new Paint();
p1.setColor(Color.GREEN);
p2.setColor(Color.RED);
}
@Override
protected void onDraw(Canvas canvas) {
canvas.drawColor(Color.BLUE);
canvas.drawRect(rectangle, paint);
canvas.drawCircle(500, 200 , 100, p1);
canvas.drawOval(500, 800 , 100,650, p2);
}}
```

Output:



Program 5. Create an application to show happy face smiley and sad face smiley to demonstrate button click events.

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="wrap_content"
android:layout_height="wrap_content"
android:orientation="vertical"
tools:context=".MainActivity">
<com.example.smily.FaceView
android:layout_width="wrap_content"
android:layout_height="wrap_content" />
<Button
android:id="@+id/button"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="---> Sad Face" />
</RelativeLayout>
```

Activity_sec.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">
<com.example.smily.FaceView2
android:layout_width="wrap_content"
android:layout_height="wrap_content" />
<Button
android:id="@+id/button1"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="---> Happy Face" />
</RelativeLayout>
```

Mainactivity.java

```
package com.example.smily;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
Button button;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
```

```
button = (Button) findViewById(R.id.button);
button.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View v) {
openNewActivity();
}
});
}
public void openNewActivity(){
Intent intent = new Intent(this,MainActivity2.class);
startActivity(intent);
}
}
```

Mainactivity2.java

```
package com.example.smily;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import com.example.smily.databinding.ActivityMain2Binding;
import androidx.appcompat.app.AppCompatActivity;
import androidx.navigation.ui.AppBarConfiguration;
public class MainActivity2 extends AppCompatActivity {
Button button1;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_sec);
button1 = (Button) findViewById(R.id.button1);
button1.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View v) {
openNewActivity();
}
});
}
public void openNewActivity(){
Intent intent1 = new Intent(this,MainActivity.class);
startActivity(intent1);
}
}
```

FaceView.java

```
package com.example.smily;
import android.content.Context;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.RectF;
import android.util.AttributeSet;
```

```
import android.view.View;
public class FaceView extends View {
private static final String COLOR_HEX = "WHITE";
private final Paint mPaint;
private float xPosition;
private float yPosition;
private float radius;
private float strokeWidth = 20;
private float defaultScale = 0.90f;
private float eyeRadius = 60;
private float eyeYPosition;
private float leftEyeXPosition;
private float rightEyeXPosition;
public FaceView(Context context, AttributeSet attrs) {
super(context, attrs);
mPaint = new Paint();
mPaint.setAntiAlias(true);
}
@Override
protected void onDraw(Canvas canvas) {
super.onDraw(canvas);
mPaint.setColor(Color.parseColor(COLOR_HEX));
mPaint.setStrokeWidth(strokeWidth);
mPaint.setStyle(Paint.Style.STROKE);
canvas.drawPaint(mPaint);
canvas.drawColor(Color.BLACK);
// drawing outer circle
// lets setup x cord, y cord, radius
// x, y position should point to center.
// radius should be half the width / height
xPosition = getMeasuredWidth() / 2;
yPosition = getMeasuredHeight() / 2;
radius = xPosition < yPosition ? xPosition : yPosition ;
radius *= defaultScale;
canvas.drawCircle(xPosition, yPosition, radius, mPaint);
// Drawing Eyes.
// lets find eye y position
eyeYPosition = (float) (yPosition / 1.2);
// lets find eye x position
leftEyeXPosition = xPosition < yPosition ? xPosition / 2 : (float)
(xPosition / 1.3);
// lets find right eye x position
rightEyeXPosition = xPosition < yPosition ? xPosition + xPosition / 2 :
xPosition + xPosition / 4;
// left eye
canvas.drawCircle(leftEyeXPosition, eyeYPosition, eyeRadius, mPaint);
// right eye
canvas.drawCircle(rightEyeXPosition, eyeYPosition, eyeRadius, mPaint);
// lets draw mouth.
RectF oval = new RectF(leftEyeXPosition, yPosition + yPosition / 12,
rightEyeXPosition, (float) (yPosition + yPosition / 2.5)); // left top right
bottom
canvas.drawArc(oval, 10, 150, false, mPaint); // happy face.
```

```
}
}
```

FaceView2.java

```
package com.example.smily;
import android.content.Context;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.RectF;
import android.util.AttributeSet;
import android.view.View;
public class FaceView2 extends View {
private static final String COLOR_HEX = "WHITE";
private final Paint mPaint;
private float xPosition;
private float yPosition;
private float radius;
private float strokeWidth = 20;
private float defaultScale = 0.90f;
private float eyeRadius = 60;
private float eyeYPosition;
private float leftEyeXPosition;
private float rightEyeXPosition;
public FaceView2(Context context, AttributeSet attrs) {
super(context, attrs);
mPaint = new Paint();
mPaint.setAntiAlias(true);
}
@Override
protected void onDraw(Canvas canvas) {
super.onDraw(canvas);
mPaint.setColor(Color.parseColor(COLOR_HEX));
mPaint.setStrokeWidth(strokeWidth);
mPaint.setStyle(Paint.Style.STROKE);
canvas.drawPaint(mPaint);
canvas.drawColor(Color.BLACK);
// drawing outer circle
// lets setup x cord, y cord, radius
// x, y position should point to center.
// radius should be half the width / height
xPosition = getMeasuredWidth() / 2;
yPosition = getMeasuredHeight() / 2;
radius = xPosition < yPosition ? xPosition : yPosition ;
radius *= defaultScale;
canvas.drawCircle(xPosition, yPosition, radius, mPaint);
// Drawing Eyes.
// lets find eye y position
eyeYPosition = (float) (yPosition / 1.2);
// lets find eye x position
leftEyeXPosition = xPosition < yPosition ? xPosition / 2 : (float)
(xPosition / 1.3);
```

```
// lets find right eye x position
rightEyeXPosition = xPosition < yPosition ? xPosition + xPosition / 2 :
xPosition + xPosition / 4;
// left eye
canvas.drawCircle(leftEyeXPosition, eyeYPosition, eyeRadius, mPaint);
// right eye
canvas.drawCircle(rightEyeXPosition, eyeYPosition, eyeRadius, mPaint);
// lets draw mouth.
RectF oval = new RectF(leftEyeXPosition, yPosition + yPosition / 5,
rightEyeXPosition, (float) (yPosition + yPosition / 2)); // left top right
bottom
canvas.drawArc(oval, 200, 140, false, mPaint); // sad face.
}
}
```

Output:

Program 6. Create an application to demonstrate the use of Intents to communicate between different activities

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:tools="http://schemas.android.com/tools"
xmlns:app="http://schemas.android.com/apk/res-auto"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginEnd="8dp"
android:layout_marginStart="8dp"
android:layout_marginTop="8dp"
android:text="First Activity"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.454"
app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.06" />
<Button
android:id="@+id/button"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginEnd="8dp"
android:layout_marginStart="8dp"
android:layout_marginTop="392dp"
android:onClick="callSecondActivity"
android:text="Call second activity"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
<Button
android:id="@+id/button3"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:onClick="show"
android:text="implicit intent"
tools:layout_editor_absoluteX="135dp"
tools:layout_editor_absoluteY="204dp"
tools:ignore="MissingConstraints" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Activitysec.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/button2"
android:layout_width="263dp"
android:layout_height="53dp"
android:text="go back to 1st activity"
tools:layout_editor_absoluteX="74dp"
tools:layout_editor_absoluteY="219dp"
tools:ignore="MissingConstraints" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

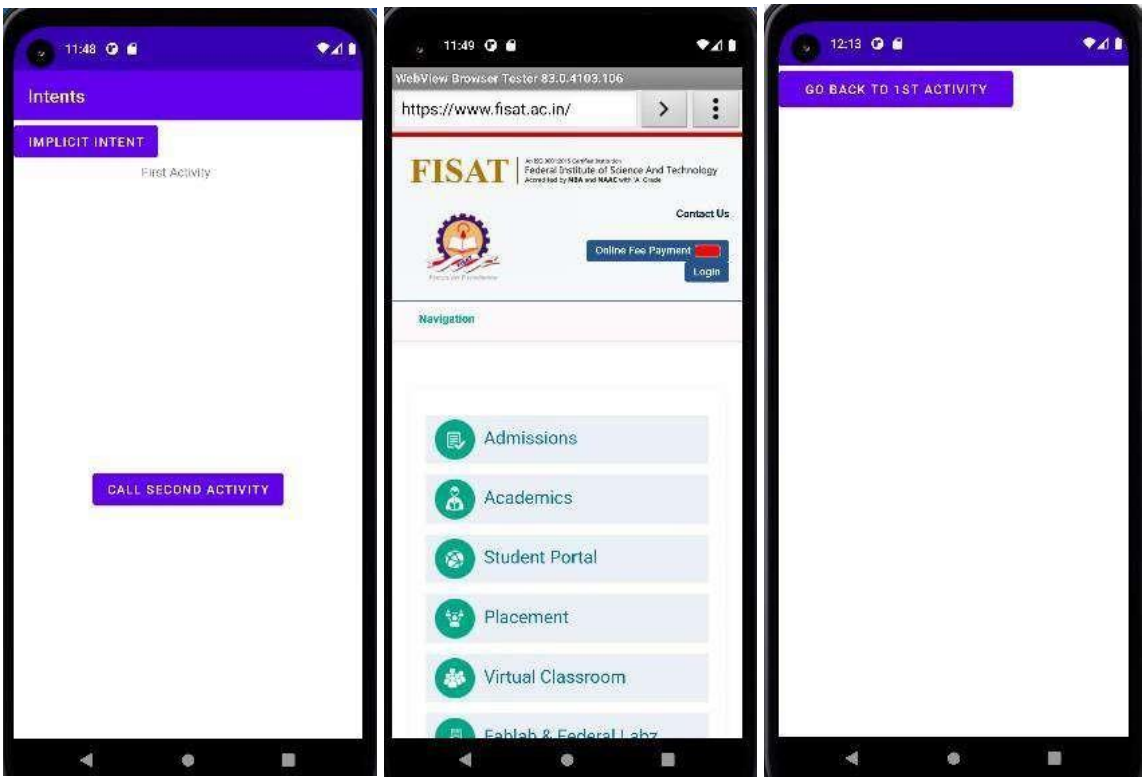
```
package com.example.intents;
import androidx.appcompat.app.AppCompatActivity;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.content.Intent;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
Button button;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
button=findViewById(R.id.button);
//button.setOnClickListener(this);
}
public void show(View view){
Intent intent = new Intent(Intent.ACTION_VIEW);
intent.setData(Uri.parse("https://www.fisat.ac.in"));
startActivity(intent);
}
public void callSecondActivity(View view){
Intent i=new Intent(getApplicationContext(),MainActivity2.class);
startActivity(i);
}
}
```

MainActivity2.java

```
package com.example.intents;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity2 extends AppCompatActivity {
Button button;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activitysec);
Bundle extras = getIntent().getExtras();
button=findViewById(R.id.button);
}
public void callFirstActivity(View view){
Intent i=new Intent(getApplicationContext(),MainActivity.class);
startActivity(i);
}
```

Output:



Program 7. Create an android application to demonstrate storing data into internal phone memory.

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:id="@+id/activity_main"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context="com.example.internalstorage.MainActivity">
<TextView
android:text="@string/name"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignParentTop="true"
android:layout_alignParentLeft="true"
android:layout_alignParentStart="true"
android:layout_marginLeft="51dp"
android:layout_marginStart="51dp"
android:layout_marginTop="59dp"
android:id="@+id/txtname"
android:textStyle="bold|italic"
android:textSize="18sp" />
<TextView
android:text="@string/password"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@+id/txtname"
android:layout_alignLeft="@+id/txtname"
android:layout_alignStart="@+id/txtname"
android:layout_marginTop="56dp"
android:id="@+id/txtpass"
android:textStyle="bold|italic"
android:textSize="18sp" />
<EditText
android:id="@+id/editName"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignParentTop="true"
android:layout_marginStart="21dp"
android:layout_marginLeft="21dp"
android:layout_marginTop="48dp"
android:layout_toEndOf="@+id/txtpass"
android:layout_toRightOf="@+id/txtpass"
android:ems="8"
android:inputType="textPersonName" />
<EditText
android:id="@+id/editPass"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@+id/editName"
```

```
android:layout_alignStart="@+id/editName"
android:layout_alignLeft="@+id/editName"
android:layout_marginTop="35dp"
android:ems="10"
android:inputType="textPassword" />
<Button
android:text="@string/save"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@+id/editPass"
android:layout_alignLeft="@+id/txtpass"
android:layout_alignStart="@+id/txtpass"
android:layout_marginTop="86dp"
android:id="@+id/button"
android:onClick="save"/> // OnClick "save"
<Button
android:text="@string/next"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignTop="@+id/button"
android:layout_alignRight="@+id/editName"
android:layout_alignEnd="@+id/editName"
android:layout_marginRight="25dp"
android:layout_marginEnd="25dp"
android:id="@+id/button2"
android:onClick="next"/> // OnClick "next"
</RelativeLayout>
```

Activity_second.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:id="@+id/activity_main2"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context="com.example.internalstorage.MainActivity2">
<TextView
android:text="@string/getname"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignParentTop="true"
android:layout_alignRight="@+id/button3"
android:layout_alignEnd="@+id/button3"
android:layout_marginRight="11dp"
android:layout_marginEnd="11dp"
android:layout_marginTop="76dp"
android:id="@+id/textView3"
android:textSize="18sp"
android:textStyle="bold|italic" />
<TextView
android:text="@string/getpassword"
android:layout_width="wrap_content"
```

```
android:layout_height="wrap_content"
android:layout_below="@+id/textView3"
android:layout_alignRight="@+id/textView3"
android:layout_alignEnd="@+id/textView3"
android:layout_marginTop="33dp"
android:id="@+id/textView4"
android:textStyle="bold|italic"
android:textSize="18sp" />
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_above="@+id/textView4"
android:layout_alignLeft="@+id/button4"
android:layout_alignStart="@+id/button4"
android:id="@+id/getname"
android:textStyle="bold|italic"
android:textSize="18sp" />
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignBottom="@+id/textView4"
android:layout_alignLeft="@+id/getname"
android:layout_alignStart="@+id/getname"
android:id="@+id/getpass"
android:textStyle="bold|italic"
android:textSize="18sp" />
<Button
android:text="@string/load"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/button3"
android:layout_marginLeft="35dp"
android:layout_marginStart="35dp"
android:onClick="load"
android:layout_below="@+id/textView4"
android:layout_alignParentLeft="true"
android:layout_alignParentStart="true"
android:layout_marginTop="80dp" />
<Button
android:text="@string/back"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginRight="54dp"
android:layout_marginEnd="54dp"
android:id="@+id/button4"
android:onClick="back"
android:layout_alignBaseline="@+id/button3"
android:layout_alignBottom="@+id/button3"
android:layout_alignParentRight="true"
android:layout_alignParentEnd="true" />
</RelativeLayout>
```

MainActivity.java

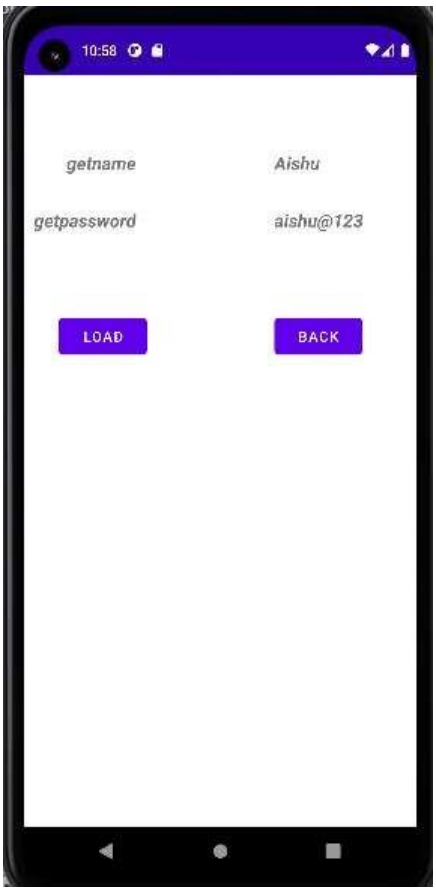
```
package com.example.internalstorage;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.content.Context;
import android.content.Intent;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;
import java.io.File;
import java.io.FileOutputStream;
import java.io.IOException;
public class MainActivity extends AppCompatActivity {
EditText editname,editpass;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
editname = (EditText) findViewById(R.id.editName);
editpass= (EditText) findViewById(R.id.editPass);
}
public void save(View view) // SAVE
{
File file= null;
String name = editname.getText().toString();
String password = editpass.getText().toString();
FileOutputStream fileOutputStream = null;
try {
name = name + " ";
file = getFilesDir();
fileOutputStream = openFileOutput("Code.txt", Context.MODE_PRIVATE); //MODE
PRIVATE
fileOutputStream.write(name.getBytes());
fileOutputStream.write(password.getBytes());
Toast.makeText(this, "Saved \n" + "Path --" + file + "\tCode.txt",
Toast.LENGTH_SHORT).show();
editname.setText("");
editpass.setText("");
return;
} catch (Exception ex) {
ex.printStackTrace();
} finally {
try {
fileOutputStream.close();
} catch (IOException e) {
e.printStackTrace();
}
}
}
public void next( View view) //NEXT
{
Toast.makeText(this,"NEXT", Toast.LENGTH_SHORT).show();
```

```
Intent intent= new Intent(this, MainActivity2.class);
startActivity(intent);
}
}
```

MainActivity2.java

```
package com.example.internalstorage;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.content.Intent;
import android.util.Log;
import android.view.View;
import android.widget.TextView;
import android.widget.Toast;
import java.io.FileInputStream;
public class MainActivity2 extends AppCompatActivity {
TextView getname, getpass;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_second);
getname = (TextView)findViewById(R.id.getname);
getpass = (TextView)findViewById(R.id.getpass);
}
public void load(View view)
{
try {
FileInputStream fileInputStream = openFileInput("Code.txt");
int read = -1;
StringBuffer buffer = new StringBuffer();
while((read =fileInputStream.read())!= -1){
buffer.append((char)read);
}
Log.d("Code", buffer.toString());
String name = buffer.substring(0,buffer.indexOf(" "));
String pass = buffer.substring(buffer.indexOf(" ")+1);
getname.setText(name);
getpass.setText(pass);
} catch (Exception e) {
e.printStackTrace();
}
Toast.makeText(this,"Loaded", Toast.LENGTH_SHORT).show();
}
public void back( View view)
{
Toast.makeText(this,"Back", Toast.LENGTH_SHORT).show();
Intent intent= new Intent(this, MainActivity.class);
startActivity(intent);
}
}
```

Output :


10:58
getname
Aishu
getpassword
aishu@123
LOAD
BACK


10:58
internalstorage
name
Aishu
password
SAVE
NEXT

Program 8. Create an android application to demonstrate GidView.

Activity_msin.xml

```
<?xml version=”1.0” encoding=”utf-8”?>
<GridView xmlns:android=”http://schemas.android.com/apk/res/android”
android:id=”@+id/gridview”
android:layout_width=”fill_parent”
android:layout_height=”fill_parent”
android:columnWidth=”120dp”
android:numColumns=”4”
android:verticalSpacing=”10dp”
android:horizontalSpacing=”10dp”
android:stretchMode=”columnWidth"
android:gravity="center"
/>
```

MainActivity.java

```
package com.example.imageadaptor;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.view.View;
import android.widget.GridView;
public class MainActivity extends AppCompatActivity {
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
GridView gridview = (GridView)
findViewById(R.id.gridview);
gridview.setAdapter(new imageadaptor(this));
}
}
```

imageadaptor.java

```
package com.example.imageadaptor;
import android.content.Context;
import android.view.View;
import android.view.ViewGroup;
import android.widget.BaseAdapter;
import android.widget.GridView;
import android.widget.ImageView;
class imageadaptor extends BaseAdapter {
private Context mContext;
// Constructor
public imageadaptor(Context c) {
mContext = c;
```

```
}
public int getCount() {
return picIds.length;
}
public Object getItem(int position) {
return null;
}
public long getItemId(int position) {
return 0;
}
// create a new ImageView for each item
//referenced by the Adapter
public View getView(int position, View
convertView, ViewGroup parent) {
ImageView imageView;
if (convertView == null) {
imageView = new ImageView(mContext);
imageView.setLayoutParams(new
GridView.LayoutParams(200, 150));
imageView.setScaleType(ImageView.ScaleType.CENTER_CROP);
imageView.setPadding(8, 8, 8, 8);
}
else
{
imageView = (ImageView) convertView;
}
imageView.setImageResource(picIds[position]);
return imageView;
}
// Keep all Images in array
public Integer[] picIds = {
R.drawable.a,
R.drawable.b,
R.drawable.c,
R.drawable.d,
R.drawable.e,
R.drawable.f,
R.drawable.d,
R.drawable.h,
R.drawable.a,
R.drawable.b,
R.drawable.c,
R.drawable.d,
R.drawable.a,
R.drawable.b,
R.drawable.c,
R.drawable.d,
R.drawable.e,
R.drawable.f,
R.drawable.d,
R.drawable.h,
R.drawable.a,
R.drawable.b,
```

```
R.drawable.c,
R.drawable.d,
};
}
```

Output :

Program 9. Demonstrate ImageView and GridView

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<GridView xmlns:android="http://schemas.android.com/apk/res/android"
   android:id="@+id/gridview"
   android:layout_width="fill_parent"
   android:layout_height="fill_parent"
   android:columnWidth="120dp"
   android:numColumns="3"
   android:verticalSpacing="30dp"
   android:horizontalSpacing="5dp"
   android:stretchMode="columnWidth"
   android:gravity="center"
   />
```

MainActivity.java

```
package com.example.pgm91;
import androidx.appcompat.app.AppCompatActivity;
import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.GridView;
public class MainActivity extends Activity
{
   @Override
   protected void onCreate(Bundle savedInstanceState)
{
       super.onCreate(savedInstanceState);
       setContentView(R.layout.activity_main);
       GridView gridview = (GridView)
             findViewById(R.id.gridview);
       gridview.setAdapter(new ImageAdapter(this));
       gridview.setOnItemClickListener(new
       AdapterView.OnItemClickListener()
{
    public void onItemClick(AdapterView<?> parent, View v, int position, long id)
{
// Send intent to SingleViewActivity
Intent i = new Intent(getApplicationContext(),
SingleViewActivity.class);
// Pass image index
i.putExtra("id", position);
startActivity(i);
}
});
}
}
```

ImageAdapter.java

```
package com.example.pgm91;
import android.content.Context;
import android.view.View;
import android.view.ViewGroup;
import android.widget.BaseAdapter;
import android.widget.GridView;
import android.widget.ImageView;
class ImageAdapter extends BaseAdapter {
   private Context mContext;
   public ImageAdapter(Context c) {
      mContext = c;
   }
   public int getCount() {
      return picIds.length;
   }
   public Object getItem(int position) {
      return null;
   }
   public long getItemId(int position) {
      return 0;
   }
   public View getView(int position, View
         convertView, ViewGroup parent) {
      ImageView  imageView;
      if (convertView == null) {
         imageView = new ImageView(mContext);
         imageView.setLayoutParams(new
               GridView.LayoutParams(85, 85));
         imageView.setScaleType(ImageView.ScaleType.CENTER_CROP);
         imageView.setPadding(8, 8, 8, 8);
      } else {
         imageView = (ImageView) convertView;
      }
      imageView.setImageResource(picIds[position]);
      return imageView;
   }
   public Integer[] picIds = {
         R.drawable.a,
         R.drawable.b,
         R.drawable.c,
         R.drawable.d,
         R.drawable.e,
   };
   }
```

activity_single_view.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" >
    <ImageView android:id="@+id/SingleView"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"/>
</LinearLayout>
```

SingleViewActivity.java

```
package com.example.pgm91;
import androidx.appcompat.app.AppCompatActivity;
import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.widget.ImageView;
public class SingleViewActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_single_view);
        Intent i = getIntent();
        int position = i.getExtras().getInt("id");
        ImageAdapter imageAdapter = new ImageAdapter(this);
        ImageView imageView = (ImageView)
                findViewById(R.id.SingleView);
        imageView.setImageResource(imageAdapter.picIds[position]);
    }
}
```

Output :


6:34
prgm9

Program 10. Demonstration of Toggle Button

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="fill_parent"
android:layout_height="fill_parent">
<ImageView
android:id="@+id/imageview"
android:layout_width="fill_parent"
android:layout_height="fill_parent"
android:scaleType="fitCenter"
android:src="@drawable/buttonback" />
<Button
android:id="@+id/next"
android:layout_width="wrap_content"
android:layout_height="30dp"
android:layout_marginBottom="15dp"
android:layout_marginRight="10dp"
android:layout_gravity="bottom|right"
android:paddingTop="2dp"
android:paddingBottom="2dp"
android:background="@drawable/buttonback"
android:textColor="#000000"
android:text="Next" />
</FrameLayout>
```

MainActivity.java

```
package com.example.pgm10;
import android.app.Activity;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.os.Bundle;
public class MainActivity extends Activity {
String s = "Next";
@Override
protected void onCreate(Bundle
savedInstanceState) {
// TODO Auto-generated method stub
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
Button next= (Button)
findViewById(R.id.next);
next.setText(s);
next.setOnClickListener(new
View.OnClickListener() {
@Override
public void onClick(View v) {
if (s.equals("Next")) {
// TODO Auto-generated method stub
```

```
ImageView img = (ImageView)
findViewById(R.id.imageview);
img.setImageResource(R.drawable.piq2);
Button next= (Button)
findViewById(R.id.next);
s = "Prev";
next.setText(s);
} else {
ImageView img = (ImageView)
findViewById(R.id.imageview);
img.setImageResource(R.drawable.pic1);
Button next= (Button)
findViewById(R.id.next);
s = "Next";
next.setText(s);
};
}
});
}
}
```

Output :

Program 11. Demonstration of options menu

MainActivity.java

```
package com.example.optionmenu;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.Toast;
import static android.widget.Toast.LENGTH_LONG;
public class MainActivity extends AppCompatActivity {
@Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
   }
   public boolean onCreateOptionsMenu(Menu menu)
   {
      getMenuInflater().inflate(R.menu.options_menu, menu);
      return true;
   }
   public boolean onOptionsItemSelected(MenuItem item)
   {
      switch (item.getItemId()) {
         case R.id.message:
            Toast.makeText(getApplicationContext(), "Shows share icon",
                  Toast.LENGTH_SHORT).show();
            return true;
         case R.id.picture:
            Toast
                  .makeText(getApplicationContext(),"Shows image icon",
                        Toast.LENGTH_SHORT).show();
            return (true);
         case R.id.mode:
            Toast
                  .makeText(getApplicationContext(),"Shows call icon",
                        Toast.LENGTH_SHORT).show();
            return (true);
         case R.id.about:
            Toast
                  .makeText(getApplicationContext(),"calculator menu",
                        Toast.LENGTH_SHORT).show();
            return (true);
         case R.id.exit:
            finish();
            return (true);
      }
      return (super.onOptionsItemSelected(item));
   }
}
```

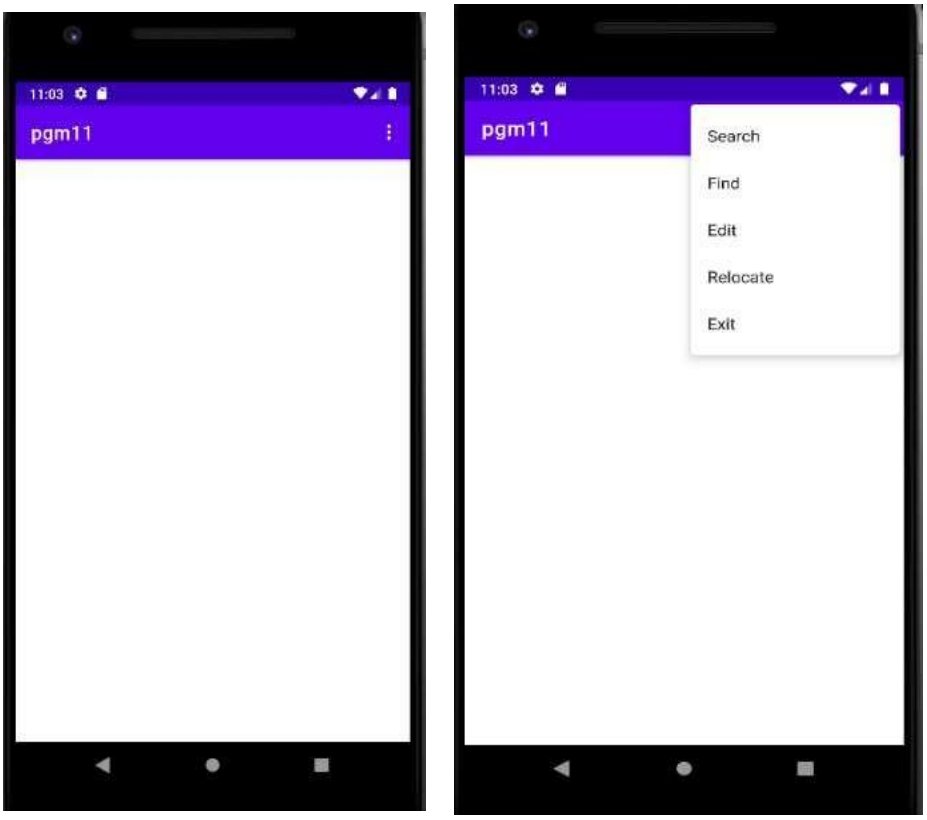
activity_main.xml

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

options_menu.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto">
   <item
      android:id="@+id/message"
      android:icon="@android:drawable/ic_menu_send"
      app:showAsAction="always"
      android:title="message"/>
   <item
      android:id="@+id/picture"
      android:icon="@android:drawable/ic_menu_gallery"
      app:showAsAction="always|withText"
      android:title="picture"/>
   <item
      android:id="@+id/mode"
      android:icon="@android:drawable/ic_menu_call"
      app:showAsAction="always"
      android:title="mode"/>
   <item
      android:id="@+id/about"
      android:icon="@android:drawable/ic_dialog_info"
      app:showAsAction="never|withText"
      android:title="calculator"/>
   <item
      android:id="@+id/exit"
      app:showAsAction="never"
      android:title="exit"/>
</menu>
```

Output :



Program 12. Use of Spinner widget in android application

MainActivity.java

```
package com.example.a12spinnerwidget;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.Spinner;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import android.widget.ArrayAdapter;
public class MainActivity extends AppCompatActivity {
// these are the global variables
Spinner classSpinner, divSpinner;
// string variable to store selected values
String selectedClass, selectedDiv;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
classSpinner = (Spinner) findViewById(R.id.classSpinner);
divSpinner = (Spinner) findViewById(R.id.divSpinner);
// Class Spinner implementing onItemSelectedListener
classSpinner.setOnItemSelectedListener(new
AdapterView.OnItemSelectedListener() {
@Override
public void onItemSelected(AdapterView<?> parent, View view,
int position, long id) {
String selectedClass =
parent.getItemAtPosition(position).toString();
switch (selectedClass) {
case "Class 1":
// assigning div item list defined in XMLto the div
Spinner
divSpinner.setAdapter(new
ArrayAdapter<String>(MainActivity.this,
android.R.layout.simple_spinner_dropdown_item,
getResources().getStringArray(R.array.items_div_class_1)));
break;
case "Class 2":
divSpinner.setAdapter(new
ArrayAdapter<String>(MainActivity.this,
android.R.layout.simple_spinner_dropdown_item,
getResources().getStringArray(R.array.items_div_class_2)));
break;
case "Class 3":
divSpinner.setAdapter(new
ArrayAdapter<String>(MainActivity.this,
android.R.layout.simple_spinner_dropdown_item,
getResources().getStringArray(R.array.items_div_class_3)));
Toast.makeText(MainActivity.this, "\n Class: \t " +
```

```
selectedClass, Toast.LENGTH_LONG).show();
break;
case "Class 4":
divSpinner.setAdapter(new
ArrayAdapter<String>(MainActivity.this,
android.R.layout.simple_spinner_dropdown_item,
getResources().getStringArray(R.array.items_div_class_4)));
Toast.makeText(MainActivity.this, "\n Class: \t " +
selectedClass, Toast.LENGTH_LONG).show();
break;
}
//set divSpinner Visibility to Visible
divSpinner.setVisibility(View.VISIBLE);
}
@Override
public void onNothingSelected(AdapterView<?> parent) {
// can leave this empty
}
});
// Div Spinner implementing onItemSelectedListener
divSpinner.setOnItemSelectedListener(new
AdapterView.OnItemSelectedListener() {
@Override
public void onItemSelected(AdapterView<?> parent, View
view, int position, long id) {
selectedDiv =
parent.getItemAtPosition(position).toString();
// create a Toast to show the values on screen
Toast.makeText(MainActivity.this,
"\n Div: \t" + selectedDiv,
Toast.LENGTH_LONG).show();
}
@Override
public void onNothingSelected(AdapterView<?> parent) {
// can leave this empty
}
});
}
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context="com.example.a12spinnerwidget.MainActivity">
<TextView
android:id="@+id/tvDemo"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_alignParentStart="true"
```

```
android:layout_alignParentTop="true"
android:gravity="center"
android:text="SPINNER DEMO"
android:layout_alignParentLeft="true" />
<Spinner
android:id="@+id/classSpinner"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_below="@+id/tvDemo"
android:layout_marginTop="25dp"
android:entries="@array/items_class"/>
<Spinner
android:id="@+id/divSpinner"
android:visibility="gone"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_below="@id/classSpinner"
android:layout_toLeftOf="@id/classSpinner"
android:layout_marginTop="10dp"
/>
</RelativeLayout>
```

strings.xml

```
<resources>
<string name="app_name">SpinnerDemo</string>
<string-array name="items_class">
<item>Class 1</item>
<item>Class 2</item>
<item>Class 3</item>
<item>Class 4</item>
</string-array>
<string-array name="items_div_class_1">
<item>Div 1-A</item>
<item>Div 1-B</item>
<item>Div 1-C</item>
<item>Div 1-D</item>
</string-array>
<string-array name="items_div_class_2">
<item>Div 2-A</item>
<item>Div 2-B</item>
<item>Div 2-C</item>
<item>Div 2-D</item>
</string-array>
<string-array name="items_div_class_3">
<item>Div 3-A</item>
<item>Div 3-B</item>
<item>Div 3-C</item>
<item>Div 3-D</item>
</string-array>
<string-array name="items_div_class_4">
<item>Div 4-A</item>
<item>Div 4-B</item>
```

```
<item>Div 4-C</item>
<item>Div 4-D</item>
</string-array>
</resources>
```

Output :

Program 13: Database application using SQLite

Activity main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:textAppearance="?android:attr/textAppearanceLarge"
      android:text="Name"
      android:id="@+id/textView"
      android:layout_alignParentTop="true"
      android:layout_alignParentLeft="true"
      android:layout_alignParentStart="true" />
   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:textAppearance="?android:attr/textAppearanceLarge"
      android:text="Surname"
      android:id="@+id/textView2"
      android:layout_below="@+id/editText_name"
      android:layout_alignParentLeft="true"
      android:layout_alignParentStart="true" />
   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:textAppearance="?android:attr/textAppearanceLarge"
      android:text="Marks"
      android:id="@+id/textView3"
      android:layout_below="@+id/editText_surname"
      android:layout_alignParentLeft="true"
      android:layout_alignParentStart="true" />
   <EditText
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:id="@+id/editText_name"
      android:layout_alignTop="@+id/textView"
      android:layout_toRightOf="@+id/textView"
      android:layout_toEndOf="@+id/textView" />
   <EditText
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:id="@+id/editText_surname"
      android:layout_alignTop="@+id/textView2"
      android:layout_toRightOf="@+id/textView2"
      android:layout_toEndOf="@+id/textView2" />
```

```
<EditText
      android:layout_width="match_parent
      android:layout_height="wrap_content"
      android:id="@+id/editText_Marks"
      android:layout_below="@+id/editText_surname"
      android:layout_toRightOf="@+id/textView3"
      android:layout_toEndOf="@+id/textView3" />
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Add Data"
      android:id="@+id/button_add"
      android:layout_below="@+id/editText_Marks"
      android:layout_alignParentLeft="true"
      android:layout_alignParentStart="true"
      android:layout_marginTop="76dp" />
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="View All"
      android:id="@+id/button_viewAll"
      android:layout_above="@+id/button_update"
      android:layout_centerHorizontal="true" />
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Update"
      android:id="@+id/button_update"
      android:layout_below="@+id/button_add"
      android:layout_alignParentLeft="true”
      android:layout_alignParentStart="true" />
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Delete"
      android:id="@+id/button_delete"
      android:layout_centerVertical="true"
      android:layout_below="@+id/button_viewAll"
      android:layout_alignLeft="@+id/button_viewAll"
      android:layout_alignStart="@+id/button_viewAll" />
   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:textAppearance="?android:attr/textAppearanceLarge"
      android:text="id"
      android:id="@+id/textView_id"
      android:layout_below="@+id/editText_Marks"
      android:layout_alignParentLeft="true"
      android:layout_alignParentStart="true" />
   <EditText
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
```

```
        android:id="@+id/editText_id"
        android:layout_alignTop="@+id/textView_id"
        android:layout_toRightOf="@+id/textView3"
        android:layout_toEndOf="@+id/textView3" />
</RelativeLayout>
```

Mainactivity.java

```
package com.example.pgm13;
import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import android.database.Cursor;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    DatabaseHelper myDb;
    EditText editName,editSurname,editMarks ,editTextId;
    Button btnAddData;
    Button btnviewAll;
    Button btnDelete;
    Button btnviewUpdate;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        myDb = new DatabaseHelper(this);
        editName = (EditText)findViewById(R.id.editText_name);
        editSurname = (EditText)findViewById(R.id.editText_surname);
        editMarks = (EditText)findViewById(R.id.editText_Marks);
        editTextId = (EditText)findViewById(R.id.editText_id);
        btnAddData = (Button)findViewById(R.id.button_add);
        btnviewAll = (Button)findViewById(R.id.button_viewAll);
        btnviewUpdate= (Button)findViewById(R.id.button_update);
        btnDelete= (Button)findViewById(R.id.button_delete);
        AddData();
        viewAll();
        UpdateData();
        DeleteData();
    }
    public void DeleteData() {
        btnDelete.setOnClickListener(
                new View.OnClickListener() {
                    @Override
                    public void onClick(View v) {
                        Integer deletedRows = myDb.deleteData(editTextId.getText().toString());
                        if(deletedRows > 0)
                            Toast.makeText(MainActivity.this,"Data
Deleted",Toast.LENGTH_LONG).show();
```

```
                else
                    Toast.makeText(MainActivity.this,"Data not
Deleted",Toast.LENGTH_LONG).show();
                }
            }
        );
    }
    public void UpdateData() {
        btnviewUpdate.setOnClickListener(

            new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    boolean isUpdate = myDb.updateData(editTextId.getText().toString(),
editName.getText().toString(),
editSurname.getText().toString(),editMarks.getText().toString());
                    if(isUpdate == true)
                        Toast.makeText(MainActivity.this,"Data
Update",Toast.LENGTH_LONG).show();
                    else
                        Toast.makeText(MainActivity.this,"Data not
Updated",Toast.LENGTH_LONG).show();
                }
            }
        );
    }
    public void AddData() {
        btnAddData.setOnClickListener(
            new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    boolean isInserted = myDb.insertData(editName.getText().toString(),
editSurname.getText().toString(), editMarks.getText().toString() );

                    if(isInserted == true)
                        Toast.makeText(MainActivity.this,"Data
Inserted",Toast.LENGTH_LONG).show();
                    else
                        Toast.makeText(MainActivity.this,"Data not
Inserted",Toast.LENGTH_LONG).show();
                }
            }
        );
    }
    public void viewAll() {
        btnviewAll.setOnClickListener(
            new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    Cursor res = myDb.getAllData();
                    if(res.getCount() == 0) {
                        showMessage("Error","Nothing found");
```

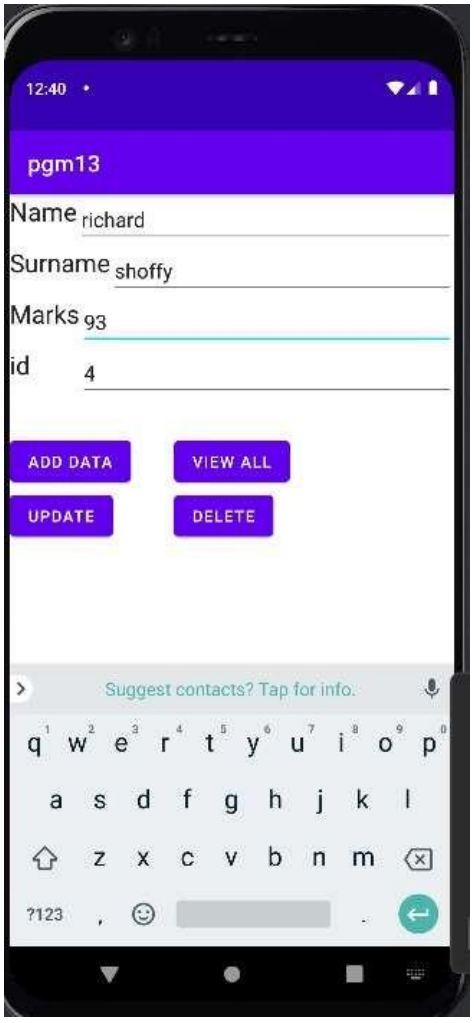
```
                    return;
                }
                StringBuffer buffer = new StringBuffer();
                while (res.moveToNext()) {
                    buffer.append("Id :"+
                            res.getString(0)+"\n");
                    buffer.append("Name :"+
                            res.getString(1)+"\n");
                    buffer.append("Surname :"+
                            res.getString(2)+"\n");
                    buffer.append("Marks :"+
                            res.getString(3)+"\n\n");
                }
                showMessage("Data",buffer.toString());
            }
        }
    );
}
public void showMessage(String title,String Message){
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setCancelable(true);
    builder.setTitle(title);
    builder.setMessage(Message);
    builder.show();
}
@Override
public boolean onCreateOptionsMenu(Menu menu) {
// Inflate the menu; this adds items to the action bar ifit is present.
//getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;
}
@Override
public boolean onOptionsItemSelected(MenuItem item) {
    int id = item.getItemId();
    return super.onOptionsItemSelected(item);
}
}
```

Databasehelper.java

```
package com.example.pgm13;
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 {
    public static final String DATABASE_NAME = "Student.db";
    public static final String TABLE_NAME = "student_table";
    public static final String COL_1 = "ID";
    public static final String COL_2 = "NAME";
    public static final String COL_3 = "SURNAME";
    public static final String COL_4 = "MARKS";
```

```
    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, 1);
    }
    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("create table " + TABLE_NAME +" (ID INTEGER PRIMARY KEY
AUTOINCREMENT,NAME TEXT,SURNAME TEXT,MARKS INTEGER)");
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS "+TABLE_NAME);
        onCreate(db);
    }
    public boolean insertData(String name,String surname,String marks) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();
        contentValues.put(COL_2,name);
        contentValues.put(COL_3,surname);
        contentValues.put(COL_4,marks);
        long result = db.insert(TABLE_NAME,null ,contentValues);
        if(result == -1)
            return false;
        else
            return true;
    }
    public Cursor getAllData() {
        SQLiteDatabase db = this.getWritableDatabase();
        Cursor res = db.rawQuery("select * from "+TABLE_NAME,null);
        return res;
    }
    public boolean updateData(String id,String name,String surname,String
            marks) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();
        contentValues.put(COL_1,id);
        contentValues.put(COL_2,name);
        contentValues.put(COL_3,surname);
        contentValues.put(COL_4,marks);
        db.update(TABLE_NAME, contentValues, "ID = ?",new String[]
                { id });
        return true;
    }
    public Integer deleteData (String id) {
        SQLiteDatabase db = this.getWritableDatabase();
        return db.delete(TABLE_NAME, "ID = ?",new String[] {id});
    }
}
```

Output :


12:40
pgm13
Name richard
Surname shoffy
Marks 93
id 4
ADD DATA
VIEW ALL
UPDATE
DELETE
Suggest contacts? Tap for info.


12:40
pgm13
Name richard
Surname shoffy
Marks 93
id 4
Data
Id :4
Name :richard
Surname :shoffy
Marks :93
Suggest contacts? Tap for info.

GITHUB LINK:

https://github.com/DilnaPranav/Android-Lab.git