

FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY (FISAT)TM

HORMIS NAGAR, MOOKKANNOOR

ANGAMALY-683577



‘FOCUS ON EXCELLENCE’

MOBILE APPLICATION DEVELOPMENT

.....

LABORATORY RECORD

Name: AKHILA MADHAVAN

Branch: MASTER OF COMPUTER APPLICATION

Semester: 3 Batch: MCA - A Roll No: 6

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SCIENCE AND TECHNOLOGY
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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 **AKHILA MADHAVAN** 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

SI No:	Date :	Name of Experiment:	Page No:	Signature of Staff –In – Charge:
1	19/11/2021	Create a Simple Calculator for demonstrating the basic arithmetic operations (+ , - , * , /)	1	
2	19/11/2021	Create an application to concatenate two given Strings. (Consider changing the color of the result string to GREEN*)	5	
3	25/11/2021	Create an android application to find the factorial of a given number.	8	
4	26/11/2021	Develop a canvas to draw different shapes and to fill the shapes with different colors.	11	
5	08/12/2021	Create an application to show happy face smiley and sad face smiley to demonstrate button click events.	13	
6	15/12/2021	Create an application to demonstrate the use of Intents to communicate between different activities	18	
7	17/12/2021	Create an android application to demonstrate storing data into internal phone memory.	21	
8	07/01/2022	Create an android application to demonstrate GridView.	27	
9	15/01/2022	Demonstrate ImageView and GridView	30	
10	21/01/2022	Demonstration of Toggle Button	34	
11	28/01/2022	Demonstration of options menu	37	
12	02/02/2022	Use of Spinner widget in android application demonstration.	40	
13	16/02/2022	Database application using SQLite	44	

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:

2. Create an application to concatenate two givenStrings. (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:



3. Create an android application to find the factorial of agiven 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:

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

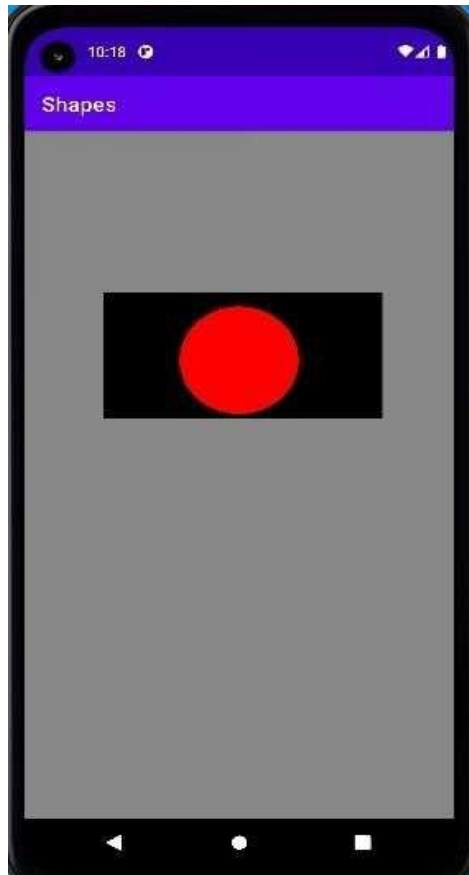
MainActivity.java

```
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:



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:

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>
```

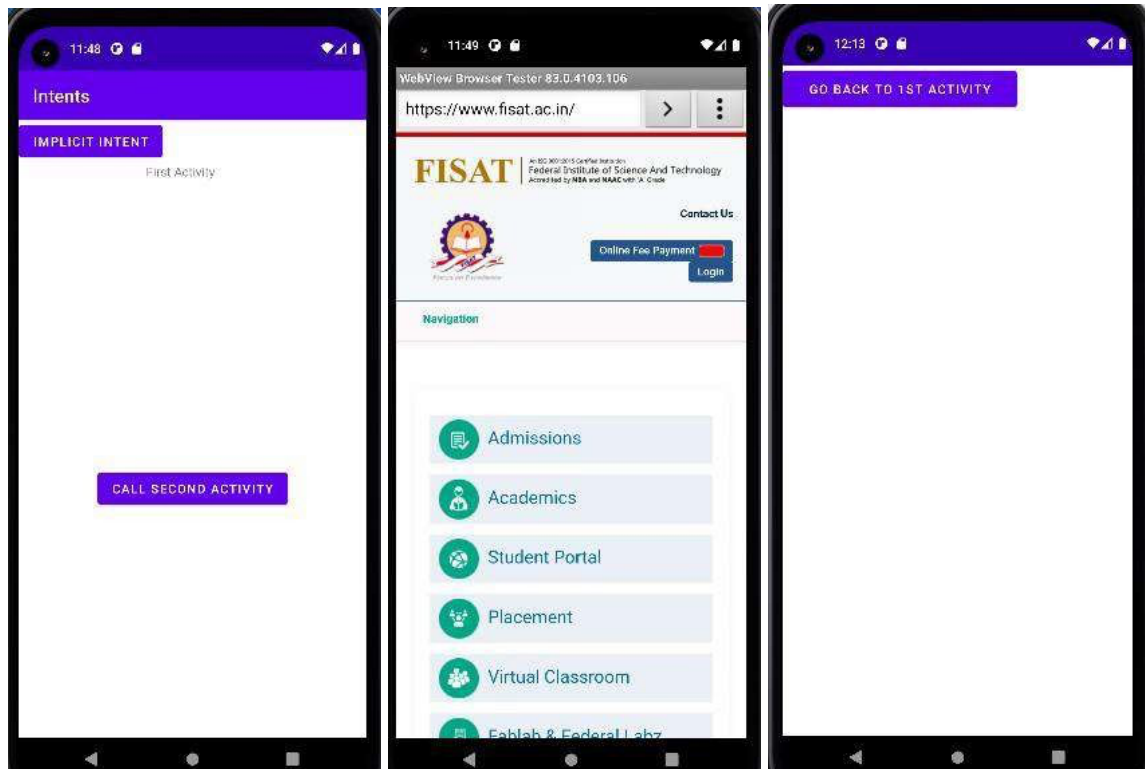
MainActivity.java

```
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:

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>

```

Activitysecond.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>
```

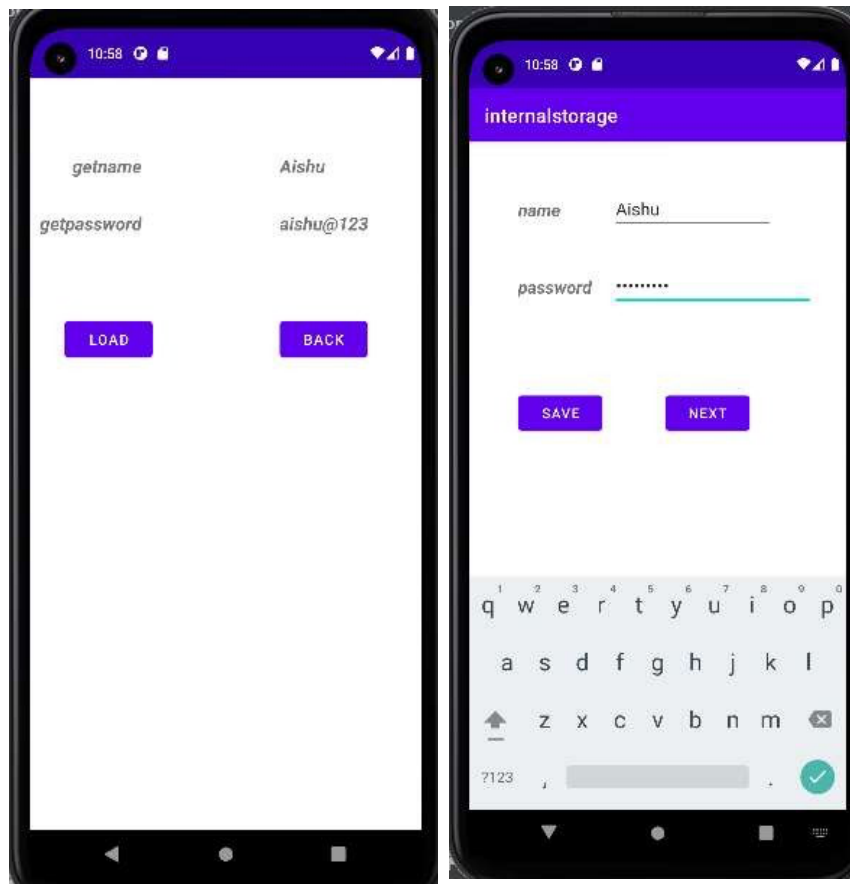
MainActivity.java

```
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:

8. Create an android application to demonstrate 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="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:

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.AdapterView.OnItemClickListener;
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:





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:



11. Demonstration of options menu

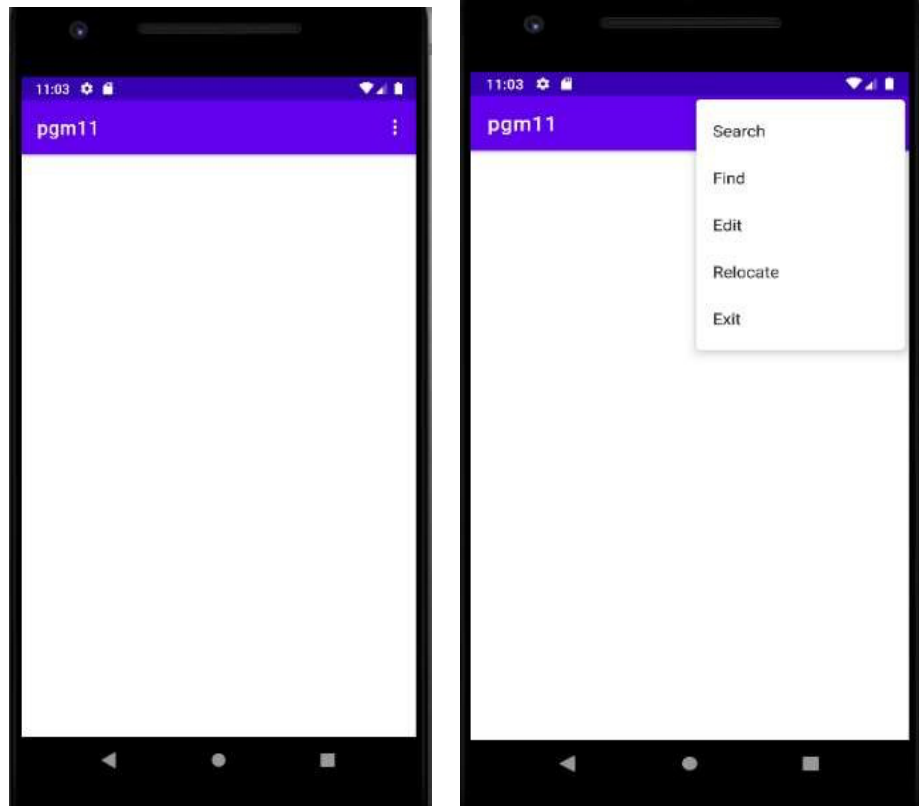
MainActivity.java

```
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:



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.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 XML to 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.al2spinnerwidget.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:

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() );

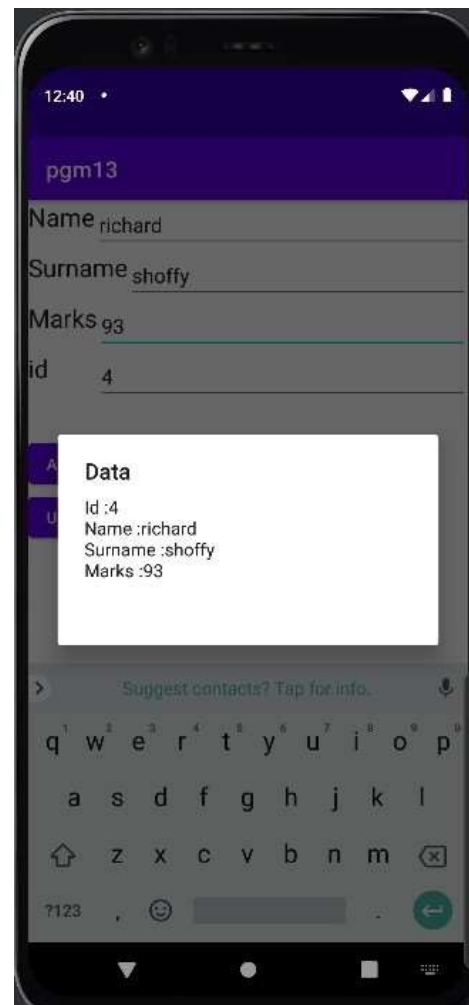
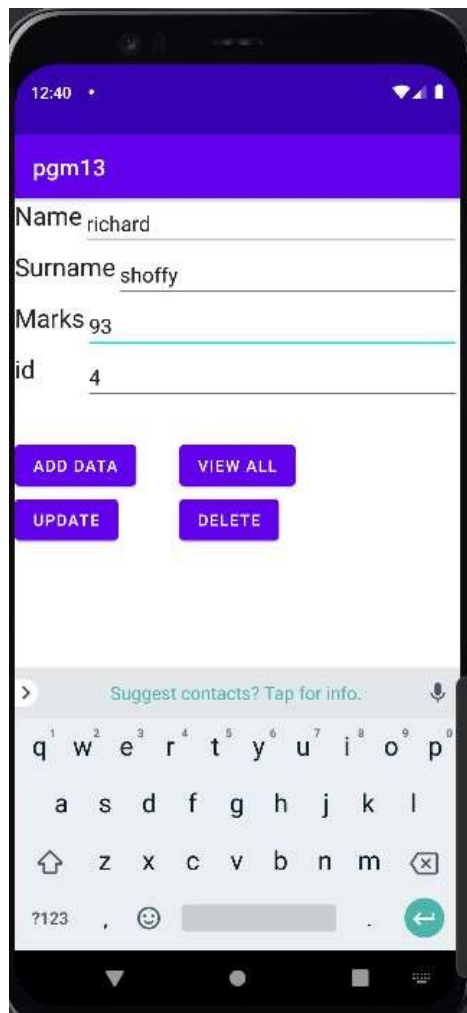
                if(isInserted == true)
                    Toast.makeText(MainActivity.this,"Data
Inserted",Toast.LENGTH_LONG).show();
                else
                    Toast.makeText(MainActivity.this,"Data not
Inserted",Toast.LENGTH_LONG).show();
            }
        }
    );
}
public void viewAll() {
    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 if it 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:

GITHUB LINK:

<https://github.com/AkhilaMadhavan/Mobile-Application-Lab>