

20MCA243 – Mobile Application Development Lab

Lab Report Submitted By

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AJC22MCA-2045

In Partial fulfilment for the Award of the Degree Of

**MASTER OF COMPUTER APPLICATIONS
(MCA TWO YEAR)
[Accredited by NBA]**

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY



**AMAL JYOTHI COLLEGE OF ENGINEERING
KANJIRAPPALLY**

[Affiliated to APJ Abdul Kalam Technological University, Kerala. Approved by AICTE,
Accredited by NAAC. Koovappally, Kanjirappally, Kottayam, Kerala – 686518]

2022-2024

DEPARTMENT OF COMPUTER APPLICATIONS
AMAL JYOTHI COLLEGE OF ENGINEERING
KANJIRAPPALLY



CERTIFICATE

This is to certify that the lab report, “**20MCA243 – Mobile Application Development Lab**” is the bonafide work of **GAYATHRI UNNIKRISHNAN (AJC22MCA-2045)** in partial fulfilment of the requirements for the award of the Degree of Master of Computer Applications under APJ Abdul Kalam Technological University during the year **2023-24**.

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Course Code	Course Name	Syllabus Year	L-T-P-C
20MCA243	Mobile Application Development Lab	2020	0-1-3-2

VISION

To promote an academic and research environment conducive for innovation centric technical education.

MISSION

- MS1 - Provide foundations and advanced technical education in both theoretical and applied Computer Applications in-line with Industry demands.
- MS2 - Create highly skilled computer professionals capable of designing and innovating real life solutions.
- MS3 - Sustain an academic environment conducive to research and teaching focused to generate up-skilled professionals with ethical values.
- MS4 - Promote entrepreneurial initiatives and innovations capable of bridging and contributing with sustainable, socially relevant technology solutions.

COURSE OUTCOME

CO	Outcome	Target
CO1	Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator	60.1
CO2	Write simple programs and develop small applications using the concepts of UI design, layouts and preferences	60.1
CO3	Develop applications with multiple activities using intents, array adapter, exceptions and options menu.	60.1
CO4	Implement activities with dialogs, spinner, fragments and navigation drawer by applying themes	60.1
CO5	Develop mobile applications using SQLite.	60.1

COURSE END SURVEY

CO	Survey Question	Answer Format
CO1	To what extent you are able to design and develop UI using Emulator	Excellent/Very Good/Good Satisfactory/Needs improvement
CO2	To what extent you understood concepts of layouts	Excellent/Very Good/Good Satisfactory/Needs improvement
CO3	To what extent you understood intents, exceptions and menus	Excellent/Very Good/Good Satisfactory/Needs improvement
CO4	To what extent you are able to implement activities applying themes	Excellent/Very Good/Good Satisfactory/Needs improvement
CO5	To what extent you understood to create applications with SQLite	Excellent/Very Good/Good Satisfactory/Needs improvement

CONTENT

SL. NO.	LIST OF LAB EXPERIMENTS/EXERCISES	DATE	CO	PAGE NO
1	Design a Login Form with username and password using LinearLayout and toast valid Credentials	21-09-2023	CO1	1
2	Implementing basic arithmetic operations of a simple calculator	11-10-2023	CO1,CO2	4
3	Write a program that demonstrates Activity Lifecycle.	12-10-2023	CO1	12
4	Implement validations on various UI controls .	25-10-2023	CO1,CO2	15
5	Create a Facebook page using RelativeLayout; set properties using .xml file	26-10-2023	CO2	19
6	Develop an application that toggles image using FrameLayout	01-11-2023	CO2	24
7	Design a registration activity and store registration details in local memory of phone using Intents and SharedPreferences.	01-11-2023	CO2	27
8	Develop an application that uses ArrayAdapter with ListView.	09-11-2023	CO3	30
9	Implement Options Menu to navigate to activities	09-11-2023	CO3	33
10	Develop application that works with explicit intents	16-11-2023	CO3	37
11	Develop an application that implements Spinner component and perform event handling	16-11-2023	CO4	41
12	Develop an application using fragments	22-11-2023	CO4	44
13	Implement Adapters and perform exception handling	23-11-2023	CO4	48
14	Create database using SQLite and perform INSERT and SELECT	04-12-2023	CO5	50
15	Perform UPDATE and DELETE on SQLite database		CO5	55

Experiment No. 1

Aim: Design a Login Form with username and password using LinearLayout and toast valid Credentials.

CO1: Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator.

Procedure:

Activity main.xml

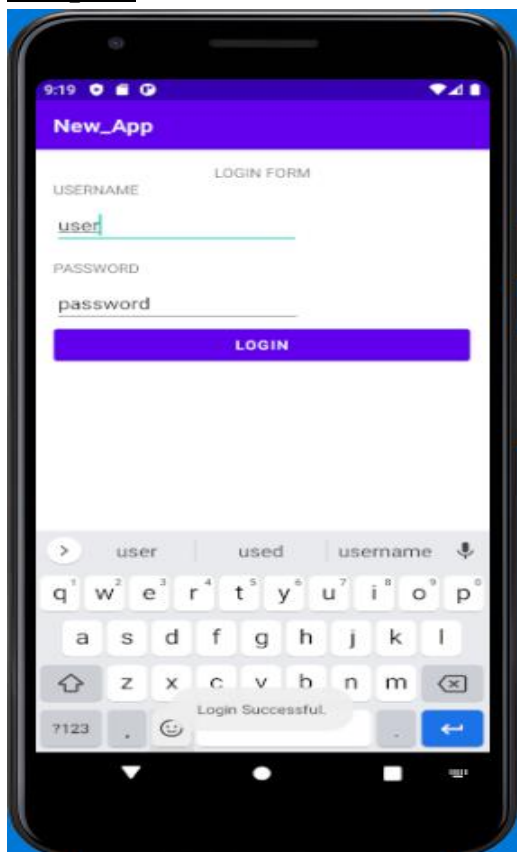
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp">
    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="LOGIN FORM"
        android:textAlignment="center" />
    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="USERNAME" />
    <EditText
        android:id="@+id/usernameEditText"
        android:layout_width="213dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="8dp"
        android:hint="Enter username" />
    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
        android:text="PASSWORD"
        android:layout_marginTop="16dp"/>
<EditText
    android:id="@+id/passwordEditText"
    android:layout_width="215dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="8dp"
    android:hint="Enter password" />
<Button
    android:id="@+id/loginButton"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Login" />
</LinearLayout>
```

Main.activity.java

```
package com.example.my_apk;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.Button;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    private static final String VALID_USERNAME="user";
    private static final String VALID_PASSWORD="password";
    private EditText usernameEditText;
    private EditText passwordEditText;
    private Button loginButton;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        usernameEditText=findViewById(R.id.usernameEditText);
        passwordEditText=findViewById(R.id.passwordEditText);
        loginButton=findViewById(R.id.loginButton);
        loginButton.setOnClickListener(v -> {
            String enteredUsername=usernameEditText.getText().toString();
            String enteredPassword=passwordEditText.getText().toString();
```

```
        if(isValidCredentials(enteredUsername,enteredPassword)) {  
            showToast("Login Successful");  
        }  
        else{  
            showToast("Invalid Credentials");  
        }  
    });}  
private boolean isValidCredentials(String enteredUsername, String enteredPassword){  
    return VALID_USERNAME.equals(enteredUsername) &&  
VALID_PASSWORD.equals(enteredPassword);  
}  
private void showToast(String message){  
    Toast.makeText(this,message,Toast.LENGTH_SHORT).show();  
}}
```

Output:

Result : The program was executed successfully and the output was obtained. Thus CO1 was attained.

Experiment No. 2

Aim: Implementing basic arithmetic operations of a simple calculator

CO1: Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator.

CO2: Write simple programs and develop small applications using the concepts of UI design, layouts and preferences

Procedure:

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="30dp"
    android:gravity="center_horizontal">
    <!-- Text View -->
    <TextView
        android:id="@+id/TextView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Simple Calculator"
        android:textColor="@color/black"
        android:textSize="24sp"
        android:layout_gravity="center"
        android:layout_marginBottom="16dp"
        android:textStyle="bold"/>
    <!-- Edit Text-->
    <EditText
        android:id="@+id/EditText1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="30dp"
```

```
        android:layout_marginStart="50dp"
        android:layout_marginTop="50dp"
        android:layout_marginEnd="50dp"
        android:layout_marginBottom="50dp" />
<GridLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:rowCount="4"
    android:columnCount="4"
    android:layout_gravity="center"
    android:layout_marginTop="40dp">
    <Button
        android:id="@+id/button1"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        style="?android:attr/buttonStyleSmall"
        android:layout_columnWeight="1"
        android:text="1"
        android:textSize="18sp"
        android:onClick="onDigitClick"/>
    <Button
        android:id="@+id/button2"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        style="?android:attr/buttonStyleSmall"
        android:layout_columnWeight="1"
        android:text="2"
        android:textSize="18sp"
        android:onClick="onDigitClick"/>
    <Button
        android:id="@+id/button3"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        style="?android:attr/buttonStyleSmall"
        android:layout_columnWeight="1"
        android:text="3"
        android:textSize="18sp"
        android:onClick="onDigitClick"/>
    <Button
        android:id="@+id/buttonDiv"
```

```
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        style="?android:attr/buttonStyleSmall"
        android:layout_columnWeight="1"
        android:text="/"
        android:textSize="18sp"
        android:onClick="onOperatorClick"/>
<Button
    android:id="@+id/button4"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    style="?android:attr/buttonStyleSmall"
    android:layout_columnWeight="1"
    android:text="4"
    android:textSize="18sp"
    android:onClick="onDigitClick"/>
<Button
    android:id="@+id/button5"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    style="?android:attr/buttonStyleSmall"
    android:layout_columnWeight="1"
    android:text="5"
    android:textSize="18sp"
    android:onClick="onDigitClick"/>
<Button
    android:id="@+id/button6"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    style="?android:attr/buttonStyleSmall"
    android:layout_columnWeight="1"
    android:text="6"
    android:textSize="18sp"
    android:onClick="onDigitClick"/>
<Button
    android:id="@+id/buttonMul"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    style="?android:attr/buttonStyleSmall"
    android:layout_columnWeight="1"
```

```
        android:text="*"
        android:textSize="18sp"
        android:onClick="onOperatorClick"/>
<Button
    android:id="@+id/button7"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    style="?android:attr/buttonStyleSmall"
    android:layout_columnWeight="1"
    android:text="7"
    android:textSize="18sp"
    android:onClick="onDigitClick"/>
<Button
    android:id="@+id/button8"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    style="?android:attr/buttonStyleSmall"
    android:layout_columnWeight="1"
    android:text="8"
    android:textSize="18sp"
    android:onClick="onDigitClick"/>
<Button
    android:id="@+id/button9"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    style="?android:attr/buttonStyleSmall"
    android:layout_columnWeight="1"
    android:text="9"
    android:textSize="18sp"
    android:onClick="onDigitClick"/>
<Button
    android:id="@+id/buttonSub"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    style="?android:attr/buttonStyleSmall"
    android:layout_columnWeight="1"
    android:text="-"
    android:textSize="18sp"
    android:onClick="onOperatorClick"/>
<Button
```

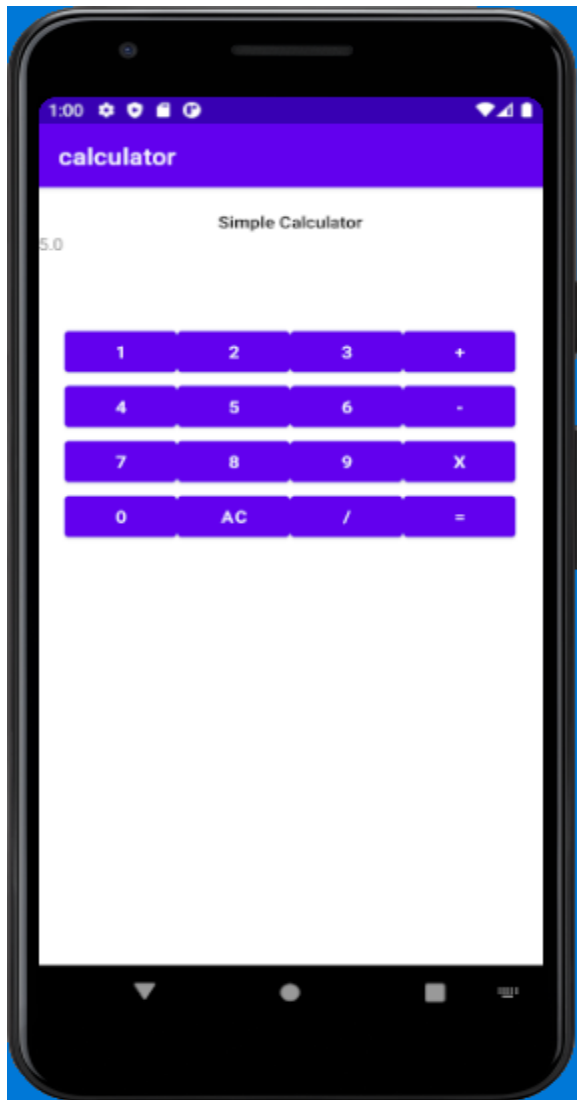
```
        android:id="@+id/button0"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        style="?android:attr/buttonStyleSmall"
        android:layout_columnWeight="1"
        android:text="0"
        android:textSize="18sp"
        android:onClick="onDigitClick"/>
    <Button
        android:id="@+id/buttonDot"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        style="?android:attr/buttonStyleSmall"
        android:layout_columnWeight="1"
        android:text="C"
        android:textSize="18sp"
        android:onClick="onClearClick"/>
    <Button
        android:id="@+id/buttonEqual"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        style="?android:attr/buttonStyleSmall"
        android:layout_columnWeight="1"
        android:text="="
        android:textSize="18sp"
        android:onClick="onEqualsClick"/>
    <Button
        android:id="@+id/buttonAdd"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        style="?android:attr/buttonStyleSmall"
        android:layout_columnWeight="1"
        android:text="+"
        android:textSize="18sp"
        android:onClick="onOperatorClick"/>
</GridLayout>
</LinearLayout>
```

Main.activity.java

```
package com.example.calc;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    private TextView TextView1;
    private Button button1;
    private Button button2;
    private Button button3;
    private Button buttonDiv;
    private Button button4;
    private Button button5;
    private Button button6;
    private Button buttonMul;
    private Button button7;
    private Button button8;
    private Button button9;
    private Button buttonSub;
    private Button button0;
    private Button buttonDot;
    private Button buttonEqual;
    private Button buttonAdd;
    private String currentInput = "";
    private double operand1 = 0;
    private String operator = "";
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        TextView1 = findViewById(R.id.TextView1);
    }
    public void onDigitClick(View view) {
        Button button = (Button) view;
        currentInput += button.getText().toString();
        updateDisplay();
    }
    public void onOperatorClick(View view){
```

```
        if (!currentInput.isEmpty()){
            operand1 = Double.parseDouble(currentInput);
            operator = ((Button) view).getText().toString();
            currentInput = "";
        } }
    public void onEqualsClick(View view){
        if (!currentInput.isEmpty()){
            double operand2 = Double.parseDouble(currentInput);
            double result = performOperation(operand1,operand2,operator);
            currentInput = String.valueOf(result);
            updateDisplay();
        } }
    public void onClearClick(View view){
        currentInput = "";
        operand1 = 0;
        operator = "";
        updateDisplay();
    }
    private double performOperation(double operand1, double operand2, String operator){
        switch (operator){
            case "+":
                return operand1 + operand2;
            case "-":
                return operand1 - operand2;
            case "*":
                return operand1 * operand2;
            case "/":
                if (operand2 !=0) {
                    return operand1 / operand2;
                } else {
                    return Double.NaN;
                }
            default:
                return 0;
        } }
    public void updateDisplay(){
        TextView1.setText(currentInput);
    }
}
```

Output



Result : The program was executed successfully and the output was obtained. Thus CO1 and CO2 was attained.

Experiment No. 3

Aim: Write a program that demonstrates Activity Lifecycle.

CO1: Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator.

Procedure:

Activity_main.xml

```
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Activity Lifecycle"
        android:textSize="24sp"
        android:layout_gravity="center_horizontal"
        android:layout_marginTop="16dp"/>
    <Button
        android:id="@+id/btnCreate"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="onCreate () "/>
    <Button
        android:id="@+id/btnStart"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="onStart () "/>
    <Button
        android:id="@+id/btnPause"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="onPause () "/>
    <Button
        android:id="@+id/btnStop"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="onStop () "/>
    <Button
        android:id="@+id/btnRestart"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="onRestart () "/>
```



```
<Button

    android:id="@+id/btnDestroy"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="onDestroy() "/>
</LinearLayout>
```

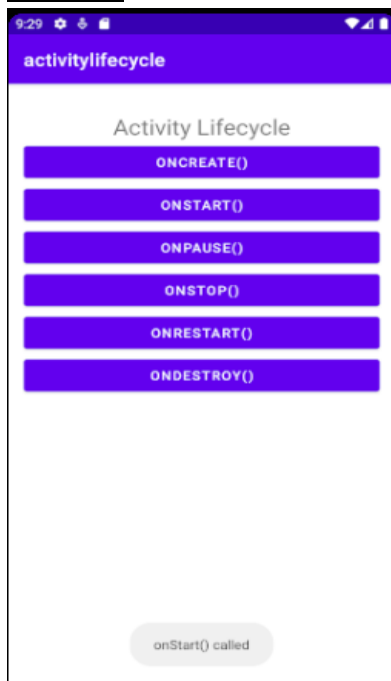
MainActivity.java

```
package com.example.myapplication_activitylifecycle;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    private TextView textView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button btnCreate = findViewById(R.id.btnCreate);
        Button btnStart = findViewById(R.id.btnStart);
        Button btnPause = findViewById(R.id.btnPause);
        Button btnStop = findViewById(R.id.btnStop);
        Button btnRestart = findViewById(R.id.btnRestart);
        Button btnDestroy = findViewById(R.id.btnDestroy);
        btnCreate.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Toast.makeText(getApplicationContext(), "onCreate()
called", Toast.LENGTH_LONG).show();
            }
        });
        btnStart.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Toast.makeText(getApplicationContext(), "onStart()
called", Toast.LENGTH_LONG).show();
            }
        });
        btnPause.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Toast.makeText(getApplicationContext(), "onPause()
called", Toast.LENGTH_LONG).show();
            }
        });
        btnStop.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
```

```
        Toast.makeText(getApplicationContext(), "onStop() called",
        Toast.LENGTH_LONG).show(); }
    });

    btnRestart.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Toast.makeText(getApplicationContext(), "onRestart()
called", Toast.LENGTH_LONG).show();
        }
    });
    btnDestroy.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Toast.makeText(getApplicationContext(), "onDestroy()
called", Toast.LENGTH_LONG).show();
        }
    });
}
}
```

Output



Result : The program was executed successfully and the output was obtained. Thus CO1 was attained.

Experiment No. 4

Aim: Implement validations on various UI controls .

CO1: Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator.

CO2: Write simple programs and develop small applications using the concepts of UI design, layouts and preferences .

Procedure:**Activity main.xml**

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

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >

        <Button
            android:id="@+id/button1"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Relative Layout" />

    </RelativeLayout>

    <GridLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:columnCount="2"
        android:rowCount="2" >

        <Button
            android:id="@+id/button2"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Grid Layout" />

    </GridLayout>

    <FrameLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >

        <Button
            android:id="@+id/button3"
```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Frame Layout" />

</FrameLayout>

<androidx.constraintlayout.widget.ConstraintLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content">

    <Button
        android:id="@+id/button4"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintBottom_toBottomOf="parent"
        android:text="Constrained Layout" />

</androidx.constraintlayout.widget.ConstraintLayout>

<TableLayout
    android:id="@+id/tableLayout1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TableRow
        android:id="@+id/tableRow1"
        android:gravity="center_horizontal">

        <Button
            android:id="@+id/button5"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Table Layout"/>

    </TableRow>

</TableLayout>

</LinearLayout>
```

MainActivity.java

```
package com.example.uilayout;

import android.os.Bundle;
import android.view.View;
```

```
import android.widget.Button;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

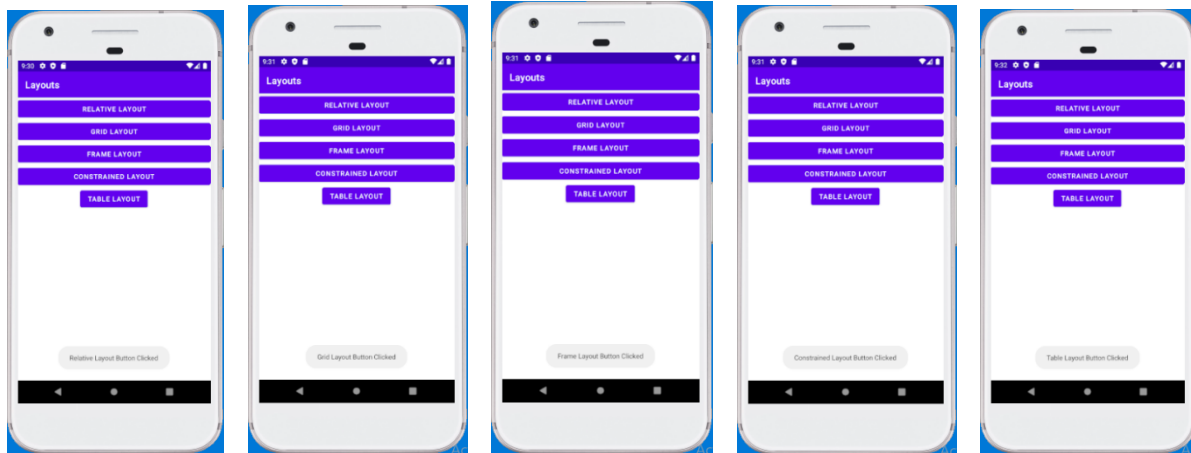
        Button constraintButton = findViewById(R.id.constraintButton);
        Button linearButton = findViewById(R.id.linearButton);
        Button gridButton = findViewById(R.id.gridButton);
        Button relativeButton = findViewById(R.id.relativeButton);
        Button frameButton = findViewById(R.id.frameButton);
        Button tableButton = findViewById(R.id.tableButton);

        View.OnClickListener buttonClickListener = new
        View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String layoutName = ((Button) v).getText().toString();
                displayToken(layoutName);
            }
        };

        constraintButton.setOnClickListener(buttonClickListener);
        linearButton.setOnClickListener(buttonClickListener);
        gridButton.setOnClickListener(buttonClickListener);
        relativeButton.setOnClickListener(buttonClickListener);
        frameButton.setOnClickListener(buttonClickListener);
        tableButton.setOnClickListener(buttonClickListener);
    }

    private void displayToken(String layoutName) {
        Toast.makeText(this, "Token from " + layoutName,
        Toast.LENGTH_SHORT).show();
    }
}
```

Output



Result : The program was executed successfully and the output was obtained. Thus CO1 and CO2 was attained.

Experiment No. 5

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

CO2: Write simple programs and develop small applications using the concepts of UI design, layouts and preferences .

Procedure:

Activity main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:paddingLeft="16dp"
    android:paddingRight="16dp" >
    <ScrollView
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <LinearLayout
            android:layout_width="fill_parent"
            android:layout_height="fill_parent"
            android:orientation="vertical">
            <ImageView
                android:id="@+id/facebookView"
                android:layout_width="200dp"
                android:layout_height="80dp"
                android:layout_gravity="center"
                android:src="@drawable/facebook" />
            <ImageView
                android:id="@+id/imageView4"
                android:layout_width="match_parent"
                android:layout_height="281dp"
                android:src="@drawable/post" />
            <GridLayout
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
```

```
        android:layout_gravity="center"
        android:layout_marginTop="40dp"
        android:columnCount="4"
        android:rowCount="4">
        <!-- Like ImageView -->
        <ImageView
            android:id="@+id/likeImageView"
            android:layout_width="110dp"
            android:layout_height="83dp"
            android:layout_gravity="center"
            android:clickable="true"
            android:onClick="onLikeClick"
            android:src="@drawable/like" />
        <!-- Comment ImageView -->
        <ImageView
            android:id="@+id/commentImageView"
            android:layout_width="111dp"
            android:layout_height="66dp"
            android:layout_row="0"
            android:layout_column="1"
            android:layout_gravity="center"
            android:clickable="true"
            android:onClick="onCommentClick"
            android:src="@drawable/comment" />
        <ImageView
            android:id="@+id/shareImageView"
            android:layout_width="93dp"
            android:layout_height="86dp"
            android:layout_row="0"
            android:layout_column="3"
            android:layout_gravity="center"
            android:clickable="true"
            android:onClick="onShareClick"
            android:src="@drawable/share" />
    </GridLayout>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical">
        <ImageView
```

```
        android:id="@+id/imageView7"
        android:layout_width="match_parent"
        android:layout_height="281dp"
        android:src="@drawable/dog" />
<GridLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="40dp"
    android:columnCount="4"
    android:rowCount="4">
    <!-- Like ImageView -->
    <ImageView
        android:id="@+id/likeImageView2"
        android:layout_width="110dp"
        android:layout_height="83dp"
        android:layout_gravity="center"
        android:clickable="true"
        android:onClick="onLikeClick"
        android:src="@drawable/like" />
    <!-- (Your existing ImageView code) -->
    <!-- Comment ImageView -->
    <ImageView
        android:id="@+id/commentImageView2"
        android:layout_width="111dp"
        android:layout_height="66dp"
        android:layout_row="0"
        android:layout_column="1"
        android:layout_gravity="center"
        android:clickable="true"
        android:onClick="onCommentClick"
        android:src="@drawable/comment" />
    <ImageView
        android:id="@+id/shareImageView2"
        android:layout_width="93dp"
        android:layout_height="86dp"
        android:layout_row="0"
        android:layout_column="3"
        android:layout_gravity="center"
        android:clickable="true"
```

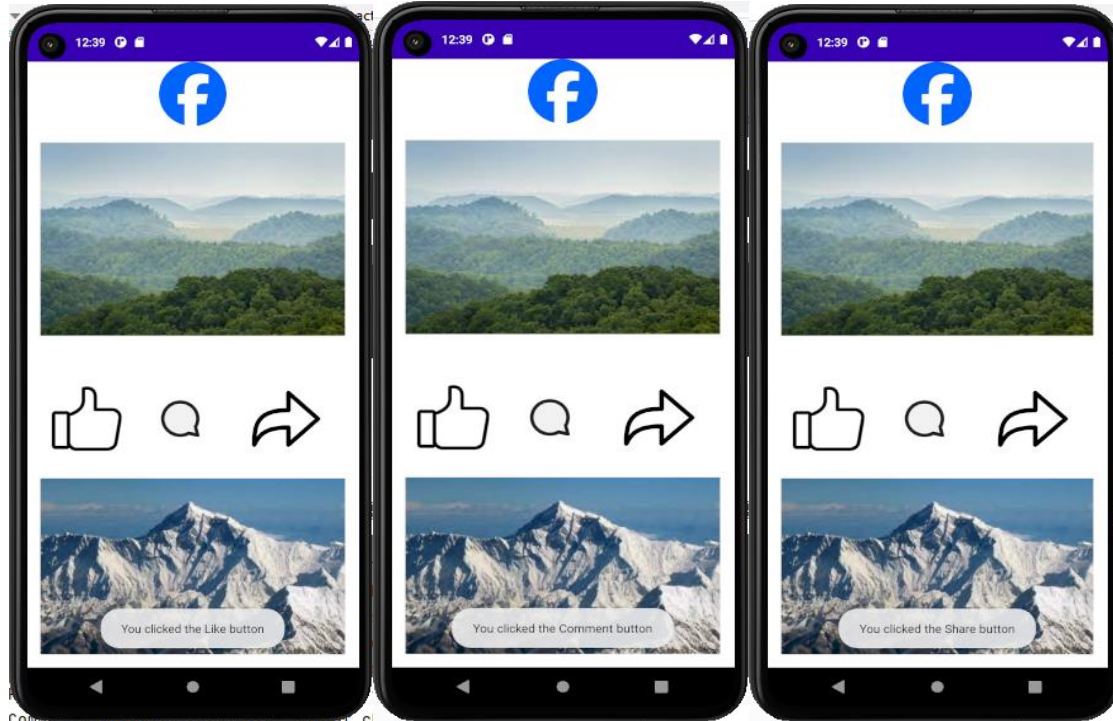
```
        android:onClick="onShareClick"
        android:src="@drawable/share" />
        <!-- (Your existing ImageView code) -->
    </GridLayout>
</LinearLayout>
</LinearLayout>
</ScrollView>
</RelativeLayout>
```

MainActivity.java

```
package com.example.facebook;
import androidx.appcompat.app.AppCompatActivity;
import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.ImageView;
import android.widget.Toast;
public class MainActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // Find the ImageView elements by their IDs
        ImageView facebookView = findViewById(R.id.facebookView );
        ImageView likeImageView = findViewById(R.id.likeImageView);
        ImageView commentImageView = findViewById(R.id.commentImageView);
        ImageView shareImageView = findViewById(R.id.shareImageView);
        // Set click listeners for the ImageViews
        likeImageView.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                showToast("You clicked the Like button");
            }
        });
        commentImageView.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                showToast("You clicked the Comment button");
            }
        });
        shareImageView.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
```

```
        showToast("You clicked the Share button");  
    }    }); }  
// Helper method to display a toast message  
private void showToast(String message) {  
    Toast.makeText(this, message, Toast.LENGTH_SHORT).show(); } }
```

Output



Result : The program was executed successfully and the output was obtained. Thus CO2 was attained.

Experiment No. 6

Aim: Develop an application that toggles image using FrameLayout.

CO2: Write simple programs and develop small applications using the concepts of UI design, layouts and preferences .

Procedure:**Activity main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#BDBABA"
    tools:context=".MainActivity">
    <ImageView
        android:id="@+id/imageView1"
        android:layout_width="427dp"
        android:layout_height="wrap_content"
        android:layout_gravity="left|top"
        android:background="#CACAC8"
        app:srcCompat="@drawable/s1" />
    <ImageView
        android:id="@+id/imageView2"
        android:layout_width="396dp"
        android:layout_height="wrap_content"
        android:layout_gravity="left|top"
        android:visibility="gone"
        app:srcCompat="@drawable/f1" />
</FrameLayout>
```

MainActivity.java

```
javapackage com.example.frame_layout;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.ImageView;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    ImageView i1,i2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        i1=(ImageView) findViewById(R.id.imageView1);
        i2=(ImageView) findViewById(R.id.imageView2);
        i1.setOnClickListener(this);
        i2.setOnClickListener(this);
    }
    @Override
    public void onClick(View v) {
        if(v.getId()==R.id.imageView1)
        {
            i1.setVisibility(v.GONE);
            i2.setVisibility(v.VISIBLE);
        }
        else
        {
            i2.setVisibility(v.GONE);
            i1.setVisibility(v.VISIBLE);
        }
    }
}
```

Output



Result : The program was executed successfully and the output was obtained. Thus CO2 was attained.

Experiment No. 7

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

CO2: Write simple programs and develop small applications using the concepts of UI design, layouts and preferences .

Procedure:**Activity main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp"
    android:gravity="center">
    <EditText
        android:id="@+id/usernameEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Username"
        android:inputType="text" />
    <EditText
        android:id="@+id/emailEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Email"
        android:inputType="textEmailAddress" />
    <EditText
        android:id="@+id/passwordEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Password"
        android:inputType="textPassword" />
    <Button
        android:id="@+id/registerButton"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="Register" />
</LinearLayout>
```

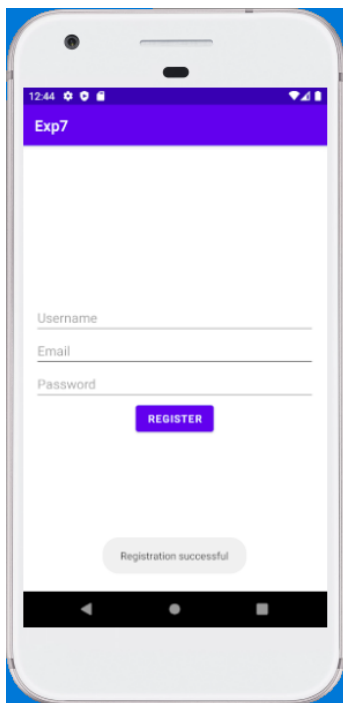
MainActivity.java

```
package com.example.registration;
import android.content.Intent;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    private EditText usernameEditText, emailEditText, passwordEditText;
    private Button registerButton;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        usernameEditText = findViewById(R.id.usernameEditText);
        emailEditText = findViewById(R.id.emailEditText);
        passwordEditText = findViewById(R.id.passwordEditText);
        registerButton = findViewById(R.id.registerButton);
        registerButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String username = usernameEditText.getText().toString();
                String email = emailEditText.getText().toString();
                String password = passwordEditText.getText().toString();
                // Store registration details in SharedPreferences
                SharedPreferences preferences = getSharedPreferences("MyPrefs",
MODE_PRIVATE);
                SharedPreferences.Editor editor = preferences.edit();
                editor.putString("username", username);
                editor.putString("email", email);
```



```
        editor.putString("password", password);
        editor.apply();
        Toast.makeText(MainActivity.this, "Registration successful",
Toast.LENGTH_SHORT).show();
        // Start another activity, e.g., MainActivity, using an Intent
        Intent intent = new Intent(MainActivity.this, MainActivity.class);
        startActivity(intent);
    }    });
}}
```

Output



Result : The program was executed successfully and the output was obtained. Thus CO2 was attained.

Experiment No:8

Aim: Develop an application using array adapter with List view

CO3: Develop application with multiple activities using intents array adapter, exception and options menu.

Procedure:**Activity main.xml**

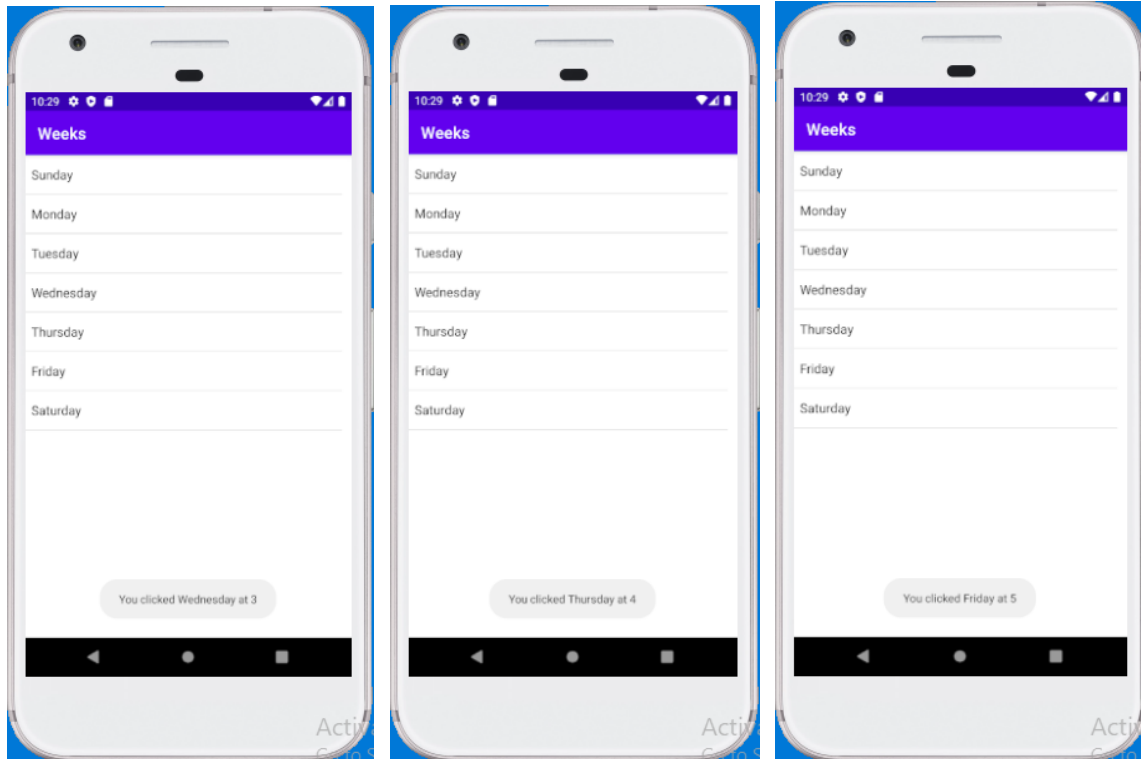
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >
    <ListView
        android:id="@+id/MyLists"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />
</RelativeLayout>
```

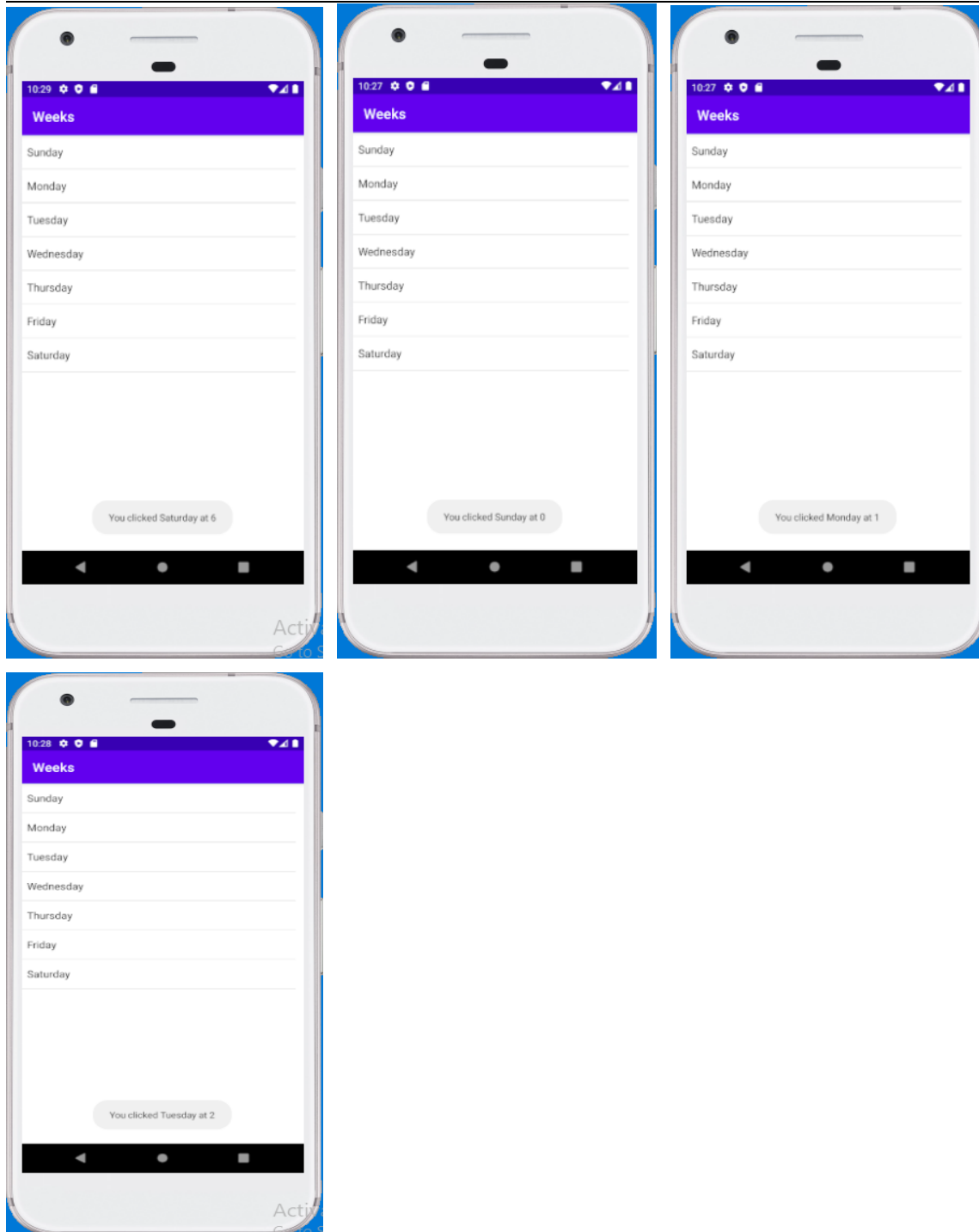
Main Activity.java

```
package com.example.days;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity implements AdapterView.OnItemClickListener {
    ListView l;
    String[] days = {"Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        l = findViewById(R.id.MyLists);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        androidx.appcompat.R.layout.support_simple_spinner_dropdown_item, days);
```

```
l.setAdapter(adapter);  
l.setOnItemClickListener(this);  
}  
@Override  
public void onItemClick(AdapterView<?> adapterView, View view, int position, long id) {  
    TextView temp = (TextView) view;  
    Toast.makeText(this, "You Clicked" + temp.getText() + " at " + position, Toast.LENGTH_SHORT).show();  
}}
```

Output:





Result: The program is executed successfully and the output is verified. Thus CO3 was attained.

Experiment No:9

Aim: Implement Options Menu to navigate to activities

CO3: Develop application with multiple activities using intents array adapter, exception and options menu.

Procedure:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

menu_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
<item
    android:id="@+id/settings"
    android:title="settings"/>
    <item
        android:id="@+id/about"
        android:title="about"/>
    <item
        android:id="@+id/messages" />
</menu>
```

```
        android:title="starred messages"/>
    </menu>
```

activity_settingspage.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=".settingspage">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

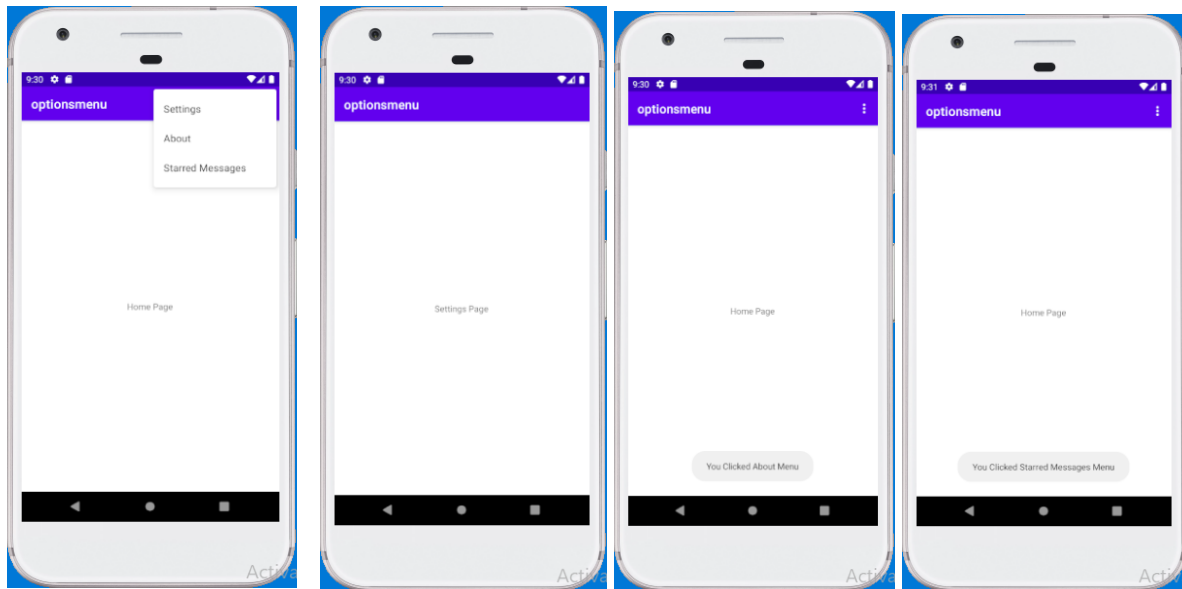
settingspage.java

```
package com.example.option;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class settingspage extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_settingspage);
    }
}
```

MainActivity.java

```
package com.example.option;
import androidx.annotation.NonNull;
```

```
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.menu_main, menu);
        return super.onCreateOptionsMenu(menu);
    }
    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {
        switch(item.getItemId())
        {
            case R.id.settings:
                Intent intent = new Intent(MainActivity.this, settingspage.class);
                startActivity(intent);
                break;
            case R.id.about:
                Toast.makeText(this, "you clicked about", Toast.LENGTH_LONG).show();
                break;
            case R.id.msgs:
                Toast.makeText(this, "you clicked starred messages", Toast.LENGTH_LONG).show();
                break;
        }
        return super.onOptionsItemSelected(item);
    }
}
```

Output:

Result: The program is executed successfully and the output is verified. Thus CO3 was attained.

Experiment No:10

Aim: Develop an application that with explicit intent.

CO3: Develop application with multiple activities using intents array adapter, exception and options menu.

Procedure:**Activity Main1.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="switchActivity"
        android:text="Button"
        app:layout_constraintBottom_toTopOf="@+id/editText1"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.5" />
    <EditText
        android:id="@+id/editText1"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:ems="10"
        android:text="Enter Your Name"
        app:layout_constraintTop_toBottomOf="@+id/button"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent" />
```

```
<EditText
    android:id="@+id/editText2"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:ems="10"
    android:text="Enter age"
    app:layout_constraintTop_toBottomOf="@+id/editText1"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Activity main1.java

```
package com.example.myapplication;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity {
    EditText name;
    EditText age;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        name=findViewById(R.id.editText1);
        age=findViewById(R.id.editText2);
    }
    public void switchActivity(View view){
        Intent intent=new Intent(this,MainActivity2.class);
        intent.putExtra("user",name.getText().toString());
        intent.putExtra("age",age.getText().toString());
        startActivity(intent);
    }
}
```

Activity Main2.xml

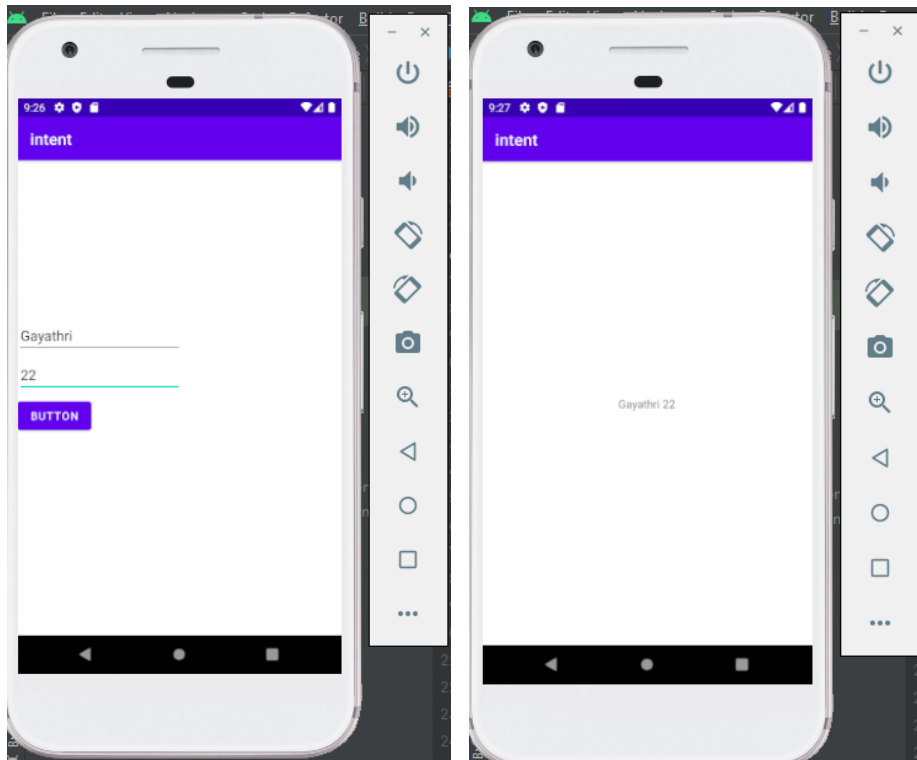
```
<?xml version="1.0" encoding="utf-8"?>
```

```
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity2">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Activity 2"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintBottom_toBottomOf="parent"
        android:layout_margin="16dp" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Activity Main2.java

```
package com.example.myapplication;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;
public class MainActivity2 extends AppCompatActivity {
    TextView tv;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);
        Intent intent=getIntent();
        String user=intent.getStringExtra("user");
        String age =intent.getStringExtra("age");
        tv=findViewById(R.id.textView);
        tv.setText("welcome "+user+"age :"+age);
    }
}
```

Output:

Result: The program is executed successfully and the output is verified. Thus CO3 was attained.

Experiment No:11

Aim: Develop an application that implements Spinner component and perform event Handling.

CO3: Implement activities with dialogs spinners fragments and navigation drawer by applying themes.

Procedure:

Activity main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textview1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        android:layout_marginTop="50dp"
        android:layout_marginLeft="150dp"/>
    <Spinner
        android:id="@+id/spinner2"
        android:layout_height="50dp"
        android:layout_width="200dp"
        android:layout_marginTop="100dp"
        android:layout_marginLeft="110dp"/>
</RelativeLayout>
```

Main activity.java

```
package com.example.spin;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
```

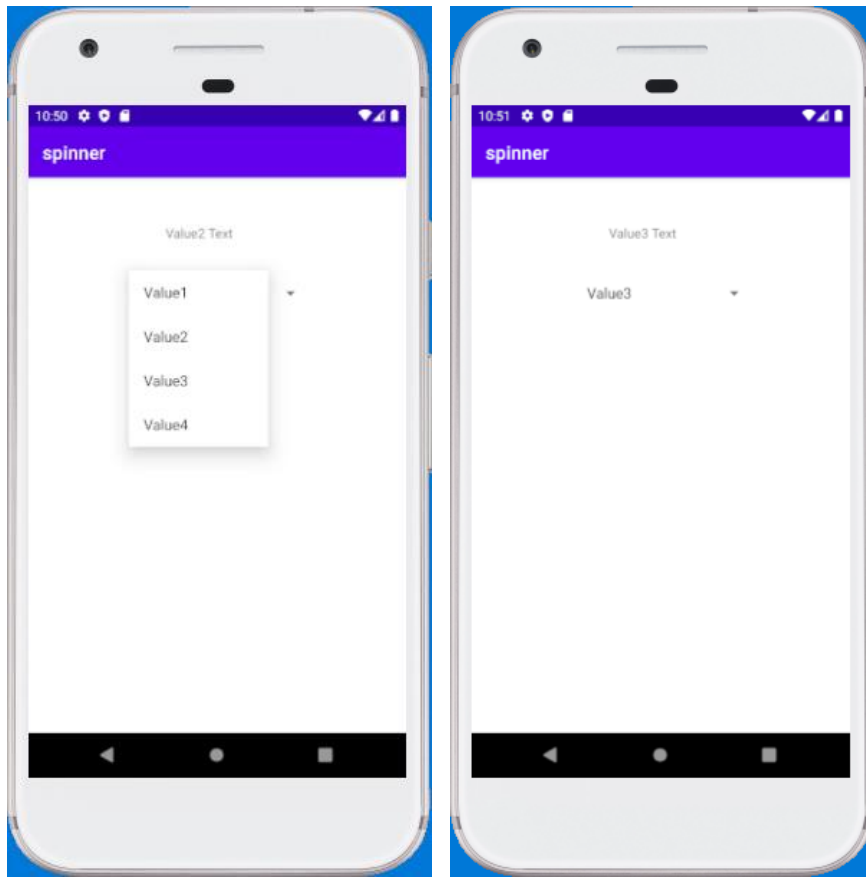
```
import android.widget.Spinner;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    String []names = {"values1","values2","values3","value4","value5"};
    String []text = {"values1 text","values2 text","values3 text","value4 text","value5 text"};
    ArrayAdapter<String> adapter;
    Spinner spinner;
    TextView textView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        spinner = findViewById(R.id.spinner2);
        textView = findViewById(R.id.textview1);
        adapter = new ArrayAdapter<String>(getApplicationContext(),
android.R.layout.simple_list_item_1,names);
        spinner.setAdapter(adapter);
        spinner.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> adapterView, View view, int i, long l) {
                switch (i)
                {
                    case 0:
                        textView.setText(""+text[i]);
                        break;
                    case 1:
                        textView.setText(""+text[i]);
                        break;
                    case 2:
                        textView.setText(""+text[i]);
                        break;
                    case 3:
                        textView.setText(""+text[i]);
                        break;
                    case 4:
                        textView.setText(""+text[i]);
                        break;
                }
            }
        })
    }
}
```

```
@Override
```

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

```
    }    });    }
```

Output:



Result: The program is executed successfully and the output is verified. Thus CO3 was attained.

Experiment No:12

Aim: Develop an application using fragments

CO4: Implement activities with dialogs spinners fragments and navigation drawer by applying themes.

Procedure:

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout
    android:id="@+id/fragment_container"
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <Button
        android:id="@+id/fragment1"
        android:layout_width="100dp"
        android:layout_height="50dp"
        android:layout_marginStart="200dp"
        android:layout_marginTop="100"
        android:layout_marginEnd="100dp"
        android:text="Fragment1"
        android:textSize="10dp"
        tools:layout_editor_absoluteX="16dp"
        tools:layout_editor_absoluteY="16dp" />
    <Button
        android:id="@+id/fragment2"
```

```

        android:layout_width="100dp"
        android:layout_height="50dp"
        android:layout_marginStart="200dp"
        android:layout_marginTop="150"
        android:layout_marginEnd="300dp"
        android:text="Fragment2"
        android:textSize="10dp"
        tools:ignore="MissingConstraints"
        tools:layout_editor_absoluteX="17dp"
        tools:layout_editor_absoluteY="67dp" />
</FrameLayout>

```

Activity_main.java

```

package com.example.fragment;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button buttonFragment1 = findViewById(R.id.fragment1);
        Button buttonFragment2 = findViewById(R.id.fragment2);
        buttonFragment1.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                getSupportFragmentManager().beginTransaction()
                    .replace(R.id.fragment_container, new firstfragment())
                    .commit();
            }
        });
        buttonFragment2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                getSupportFragmentManager().beginTransaction()
                    .replace(R.id.fragment_container, new secondfragment())
                    .commit();
            }
        });
    }
}

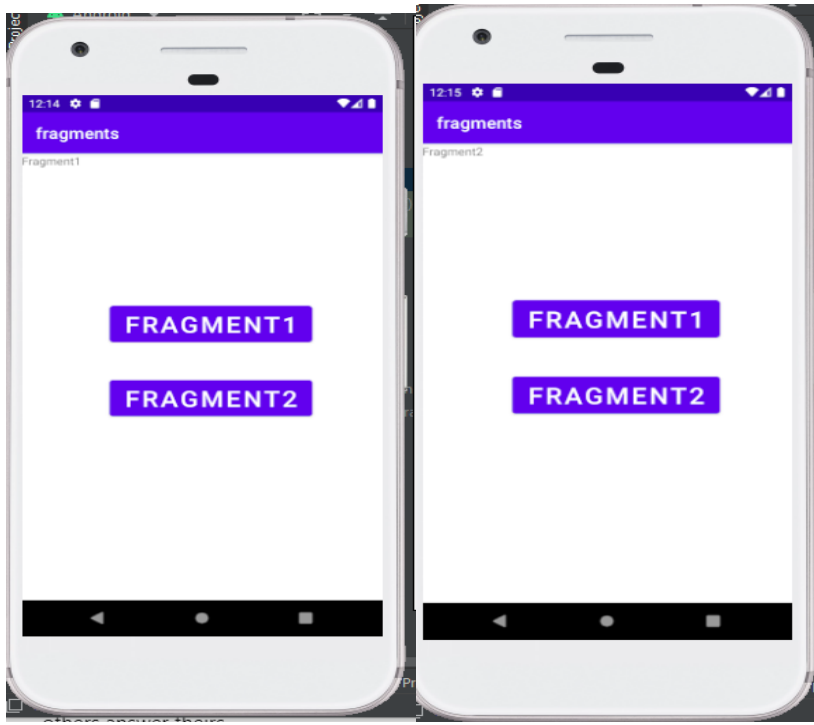
```

FirstFragment.xml

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout 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=".firstfragment">
    <!-- TODO: Update blank fragment layout -->
    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:text="First Fragment" />
</FrameLayout>
```

SecondFragment.xml

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout 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=".secondfragment">
    <!-- TODO: Update blank fragment layout -->
    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:text="Second fragment" />
</FrameLayout>
```

Output:

Result: The program is executed Successfully and the output is verified. Thus CO4 was attained.

Experiment No:13

Aim: Implement adapter and perform exception.

CO4: Implement activities with dialogs spinners fragments and navigation drawer by applying themes.

Procedure:

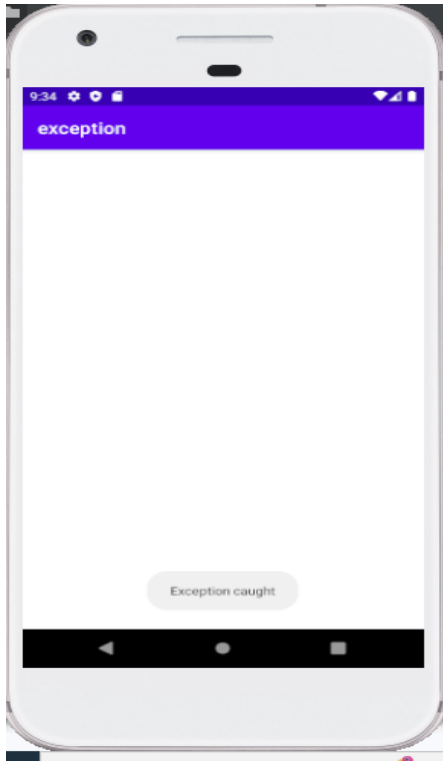
Activity main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <ListView
        android:id="@+id/listview"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />
</RelativeLayout>
```

Activity main.java

```
package com.example.exception2;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.Toast;
import java.util.ArrayList;
import java.util.List;
public class MainActivity extends AppCompatActivity {
    List<String> list=new ArrayList();
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        list.add("Item1");
        list.add("Item2");
        list.add("Item3");
    }
}
```

```
list.add("Item4");  
for(int i=0;i<5;i++){  
    try{  
        list.get(i);    }  
    catch (Exception e){  
        Toast.makeText(this,"Exception caught0",Toast.LENGTH_LONG).show();  
    } } }
```

Output :

Result: The program is executed successfully and the output is verified. Thus CO4 was attained.

Experiment No:14

Aim: Create database using SQLite and perform INSERT and SELECT.

CO5: Develop mobile application using SQLite .

Procedure:**Activity_main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="STUDENT DETAILS"
        android:layout_centerHorizontal="true"
        />

    <EditText
        android:id="@+id/edit1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="Enter Rollno"
        android:layout_margin="10dp"
        android:layout_centerHorizontal="true"
        android:layout_below="@id/textView"
        />

    <EditText
        android:id="@+id/edit2"
        android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
    android:hint="Enter Name"
    android:layout_margin="10dp"
    android:layout_centerHorizontal="true"
    android:layout_below="@id/edit1"
  />
```

<EditText

```
    android:id="@+id/edit3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="Enter Department"
    android:layout_margin="10dp"
    android:layout_centerHorizontal="true"
    android:layout_below="@id/edit2"
  />
```

<Button

```
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="INSERT"
    android:onClick="onInsert"
    android:layout_margin="10dp"
    android:layout_centerHorizontal="true"
    android:layout_below="@id/edit3" />
```

<Button

```
    android:id="@+id/button3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="READ"
    android:onClick="onRead"
    android:layout_margin="10dp"
    android:layout_centerHorizontal="true"
    android:layout_below="@id/button2" />
```

</RelativeLayout>

MainActivity.java

```
package com.example.sql;
import androidx.appcompat.app.AppCompatActivity;
import android.content.ContentValues;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    TextView textView;
    EditText edit1, edit2, edit3;
    Button button1, button2, button3, button4;
    String rno;
    String name;
    String dept;
    SQLiteDatabase db;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        textView = findViewById(R.id.textView);
        edit1 = findViewById(R.id.edit1);
        edit2 = findViewById(R.id.edit2);
        edit3 = findViewById(R.id.edit3);
        button1 = findViewById(R.id.button1);
        button2 = findViewById(R.id.button2);
        button3 = findViewById(R.id.button3);
        button4 = findViewById(R.id.button4);
        DBHelper dbHelper = new DBHelper(this);
        db = dbHelper.getWritableDatabase();
        db = dbHelper.getReadableDatabase(); }
    public void onInsert(View view) {
        rno = edit1.getText().toString();
        name = edit2.getText().toString();
        dept = edit3.getText().toString();
```

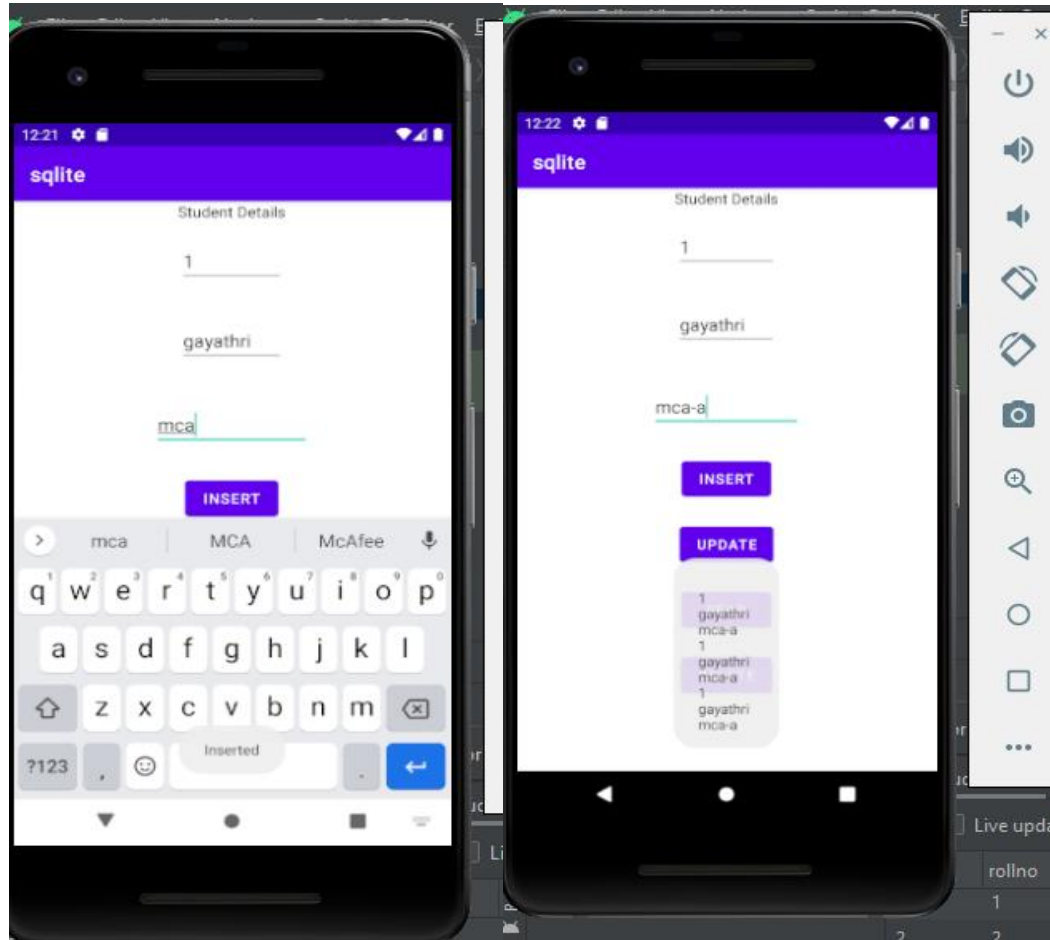
```
        if(rno.equals("") || name.equals("") || dept.equals(""))
        {
            Toast.makeText(this, "Please Enter Values", Toast.LENGTH_SHORT).show();}
        else
        {
            ContentValues values = new ContentValues();
            values.put("rollno", rno);
            values.put("name", name);
            values.put("dept", dept);
            db.insert("student", null, values);
            Toast.makeText(this, "Inserted", Toast.LENGTH_SHORT).show();
        } }
    public void onRead(View view) {
    }
}
```

DBHelper.java

```
package com.example.sql;
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import androidx.annotation.Nullable;
public class DBHelper extends SQLiteOpenHelper {
    public DBHelper(@Nullable Context context) {
        super(context, "student.db", null , 1 );
    }

    @Override
    public void onCreate(SQLiteDatabase sqLiteDatabase) {
        sqLiteDatabase.execSQL("create table student(rollno int, name varchar(20), dept
        varchar(10))");
    }

    @Override
    public void onUpgrade(SQLiteDatabase sqLiteDatabase, int i, int i1) {
        sqLiteDatabase.execSQL("drop table if exists student");
        onCreate(sqLiteDatabase);
    }
}
```

Output:

Result: The program is executed successfully and the output is verified. Thus CO5 was attained.

Experiment No:15

Aim: Perform UPDATE and DELETE on SQLite database

CO5: Develop mobile application using SQLite

Procedure:

Activity main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="STUDENT DETAILS"
        android:layout_centerHorizontal="true" />

    <EditText
        android:id="@+id/edit1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="Enter Rollno"
        android:layout_margin="10dp"
        android:layout_centerHorizontal="true"
        android:layout_below="@id/textView"/>

    <EditText
        android:id="@+id/edit2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="Enter Name"
        android:layout_margin="10dp"
        android:layout_centerHorizontal="true"
```

```
android:layout_below="@id/edit1"/>
```

```
<EditText
```

```
    android:id="@+id/edit3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="Enter Department"
    android:layout_margin="10dp"
    android:layout_centerHorizontal="true"
    android:layout_below="@id/edit2"/>
```

```
<Button
```

```
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="INSERT"
    android:onClick="onInsert"
    android:layout_margin="10dp"
    android:layout_centerHorizontal="true"
    android:layout_below="@id/edit3" />
```

```
<Button
```

```
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="UPDATE"
    android:onClick="onUpdate"
    android:layout_margin="10dp"
    android:layout_centerHorizontal="true"
    android:layout_below="@id/button1" />
```

```
<Button
```

```
    android:id="@+id/button3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="READ"
    android:onClick="onRead"
    android:layout_margin="10dp"
    android:layout_centerHorizontal="true"
    android:layout_below="@id/button2" />
```

```
<Button
    android:id="@+id/button4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="DELETE"
    android:onClick="onDelete"
    android:layout_margin="10dp"
    android:layout_centerHorizontal="true"
    android:layout_below="@id/button3" />
```

```
</RelativeLayout>
```

MainActivity.java

```
package com.example.sql;
import androidx.appcompat.app.AppCompatActivity;
import android.content.ContentValues;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {

    TextView textView;
    EditText edit1, edit2, edit3;
    Button button1, button2, button3, button4;
    String rno;
    String name;
    String dept;
    SQLiteDatabase db;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

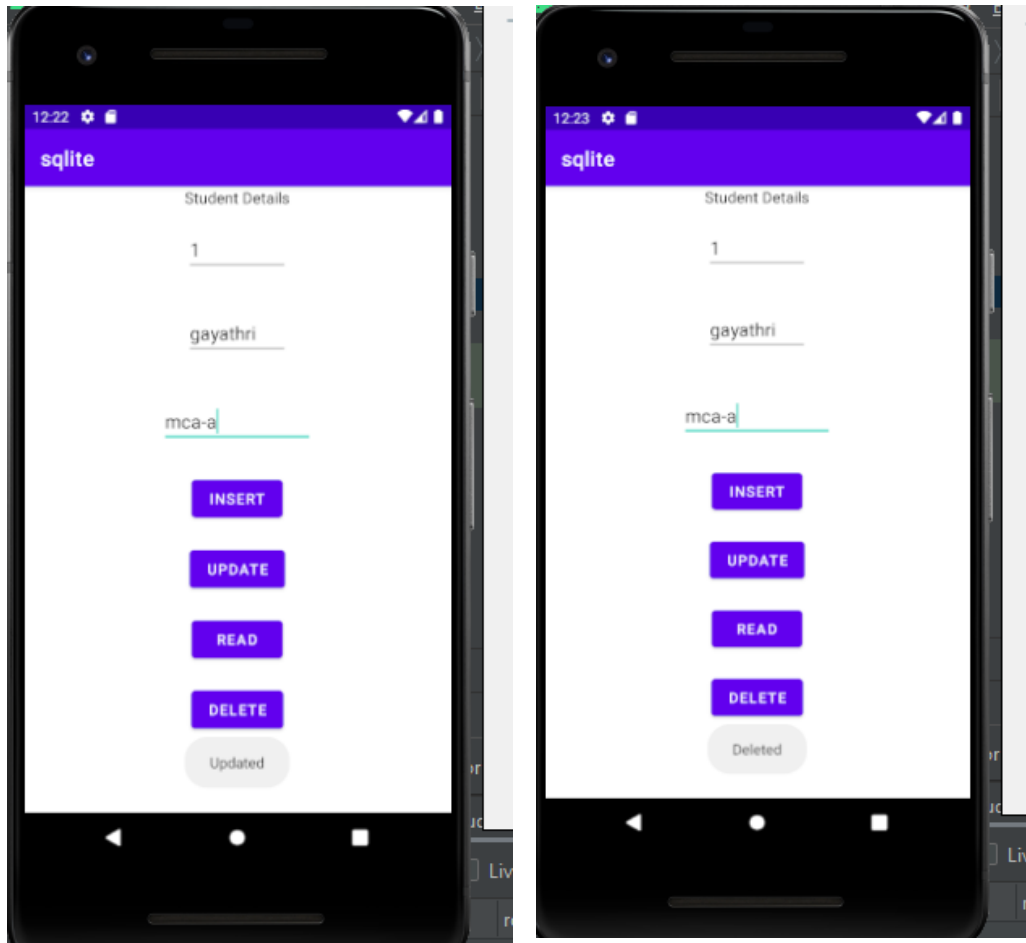
        textView = findViewById(R.id.textView);
```

```
edit1 = findViewById(R.id.edit1);
edit2 = findViewById(R.id.edit2);
edit3 = findViewById(R.id.edit3);
button1 = findViewById(R.id.button1);
button2 = findViewById(R.id.button2);
button3 = findViewById(R.id.button3);
button4 = findViewById(R.id.button4);
DBHelper dbHelper = new DBHelper(this);
db = dbHelper.getWritableDatabase();
db = dbHelper.getReadableDatabase();
}
public void onInsert(View view) {
    rno = edit1.getText().toString();
    name = edit2.getText().toString();
    dept = edit3.getText().toString();
    if(rno.equals("") || name.equals("") || dept.equals(""))
    {
        Toast.makeText(this, "Please Enter Values", Toast.LENGTH_SHORT).show();
    }
    else
    {
        ContentValues values = new ContentValues();
        values.put("rollno", rno);
        values.put("name", name);
        values.put("dept", dept);
        db.insert("student", null, values);
        Toast.makeText(this, "Inserted", Toast.LENGTH_SHORT).show();
    }
}
public void onUpdate(View view) {
}
public void onRead(View view) {
}
public void onDelete(View view) {
}
}
```

DBHelper.java

```
package com.example.sql;
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import androidx.annotation.Nullable;

public class DBHelper extends SQLiteOpenHelper
{
    public DBHelper(@Nullable Context context)
    {
        super(context, "student.db", null , 1 );
    }
    @Override
    public void onCreate(SQLiteDatabase sqLiteDatabase)
    {
        sqLiteDatabase.execSQL("create table student(rollno int, name varchar(20), dept
varchar(10))");
    }
    @Override
    public void onUpgrade(SQLiteDatabase sqLiteDatabase, int i, int i1)
    {
        sqLiteDatabase.execSQL("drop table if exists student");
        onCreate(sqLiteDatabase);
    }
}
```

Output:

Result: The program is executed successfully and the output is verified. Thus CO5 was attained.