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"
```

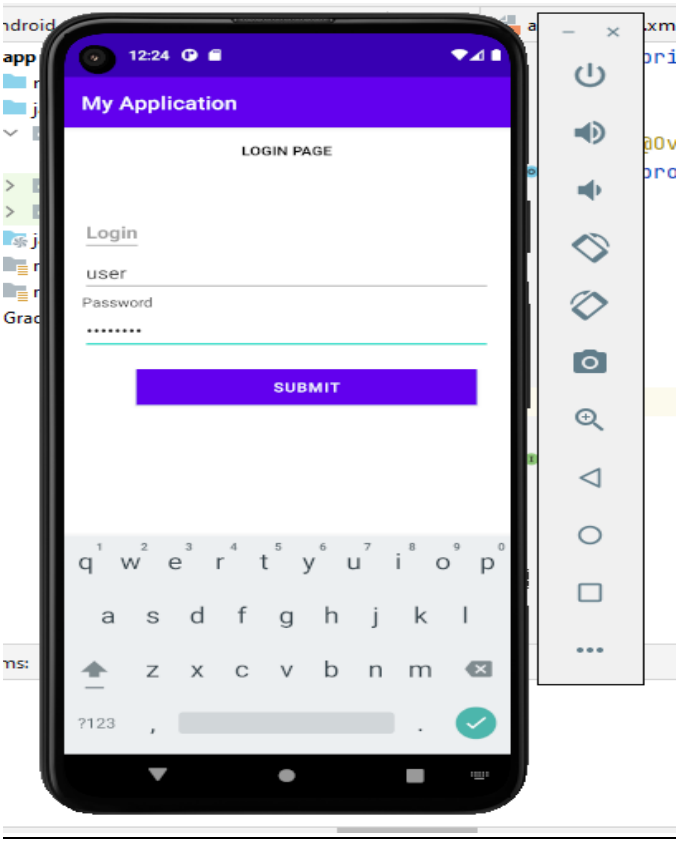
```
        android:layout_width="213dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="8dp"
        android:hint="Enter username" />
    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        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.firstapp;
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 has been 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>
```

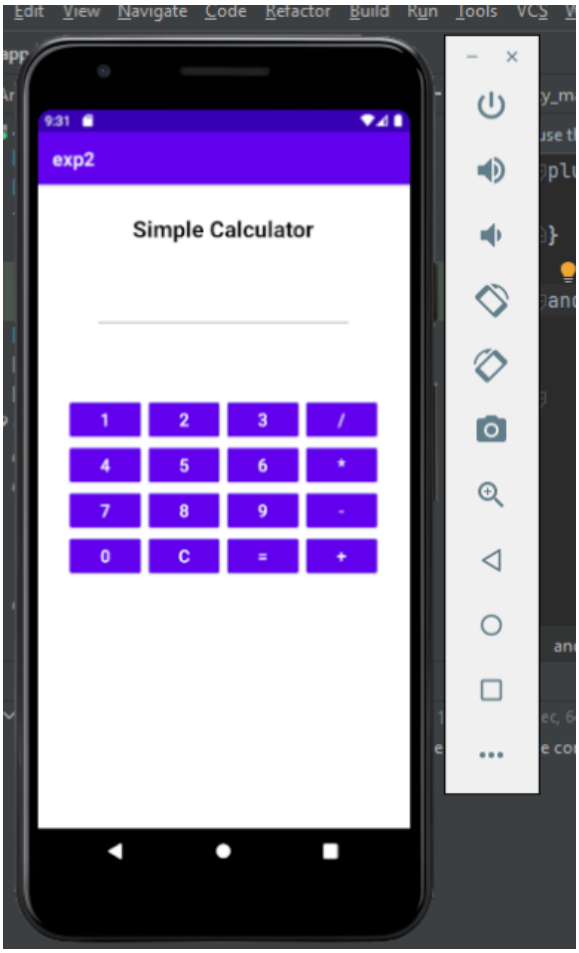
Main.activity.java

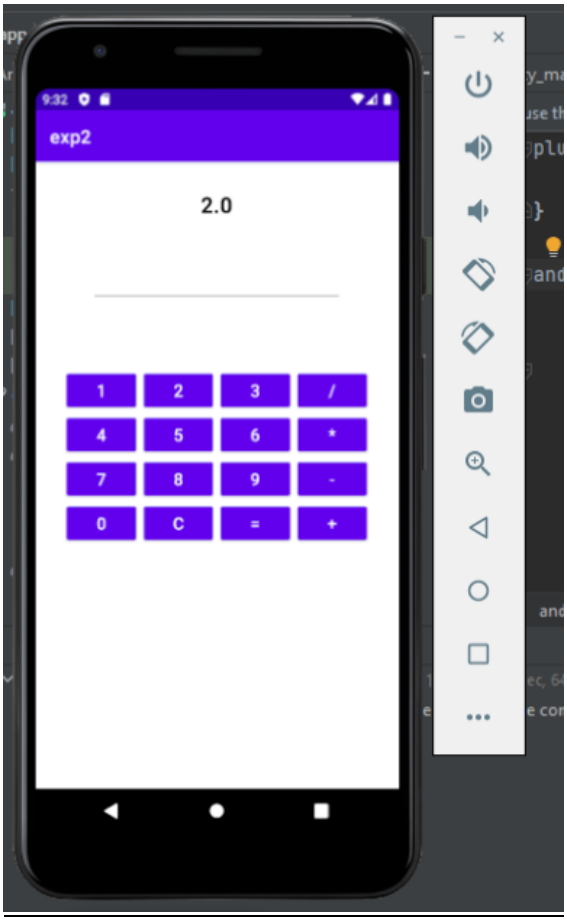
```
package com.example.calc;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    private TextView TextView1;
    private Button button1;
    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 has been 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

```
<?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="match_parent"
        android:layout_height="match_parent"
        android:text="Activity Life Cycle"
        android:textAlignment="center"
        android:layout_marginTop="50dp"
        android:textSize="30dp"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

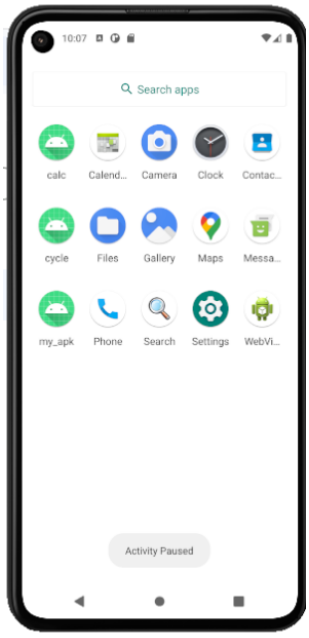
MainActivity.java

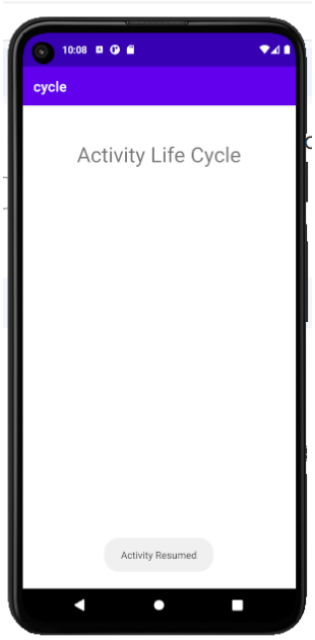
```
package com.example.cycle;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
```

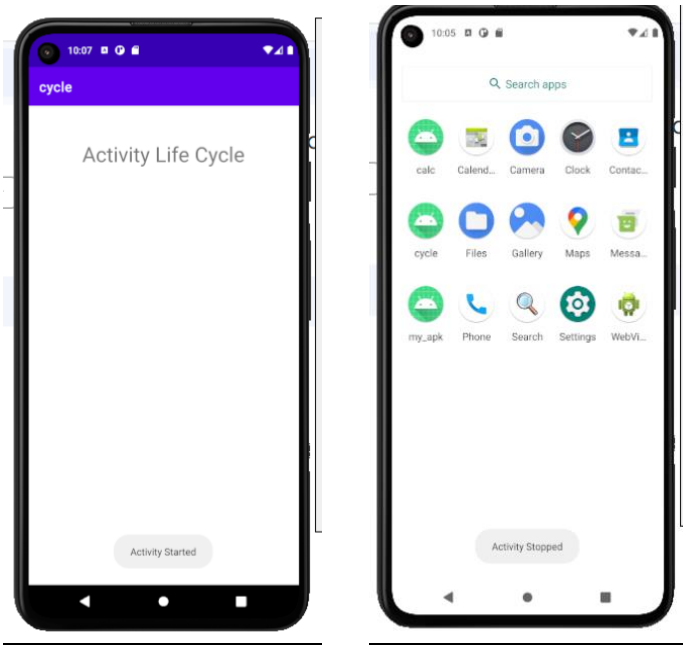
```
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      showToast("Activity Created");
   }
   protected void onStart(){
      super.onStart();
      showToast("Activity Started");
   }
   protected void onResume(){
      super.onResume();
      showToast("Activity Resumed");
   }
   protected void onPause(){
      super.onPause();
      showToast("Activity Paused");
   }
   protected void onStop(){
      super.onStop();
      showToast("Activity Stopped");
   }
   protected void onRestart(){
      super.onRestart();
      showToast("Activity Restarted");
   }
   @Override
   protected void onDestroy() {
      super.onDestroy();
```

```
        showToast("Activity Destroyed");
    }
    void showToast(String message){
        Toast.makeText(this,message,Toast.LENGTH_LONG).show();
    }
}
```

Output







Result : The program was executed successfully and the output was obtained. Thus, CO1 has been 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

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/constraintButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="ConstraintLayout" />
    <Button
        android:id="@+id/linearButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="LinearLayout" />
```

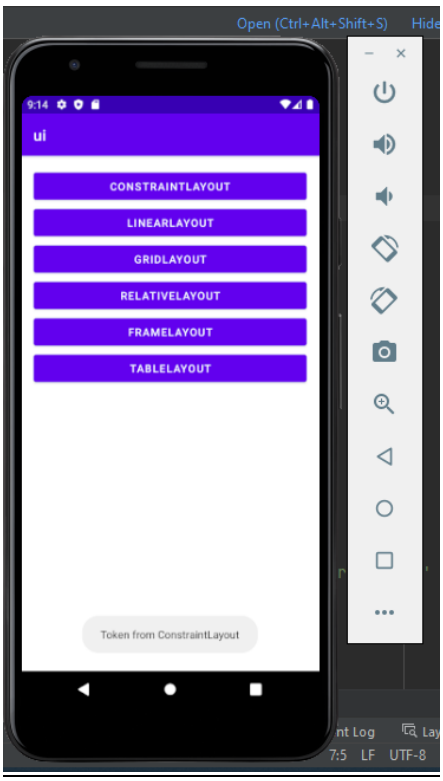
```
    <Button
        android:id="@+id/gridButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="GridLayout" />
    <Button
        android:id="@+id/relativeButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="RelativeLayout" />
    <Button
        android:id="@+id/frameButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="FrameLayout" />
    <Button
        android:id="@+id/tableButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="TableLayout" />
</LinearLayout>
```

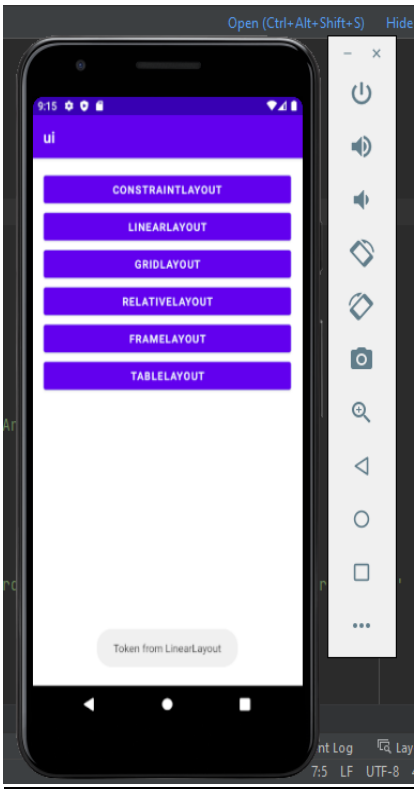
MainActivity.java

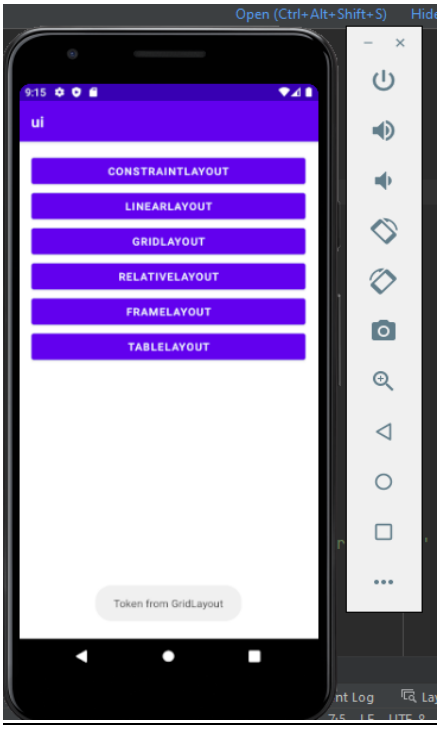
```
package com.example.ui;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
```

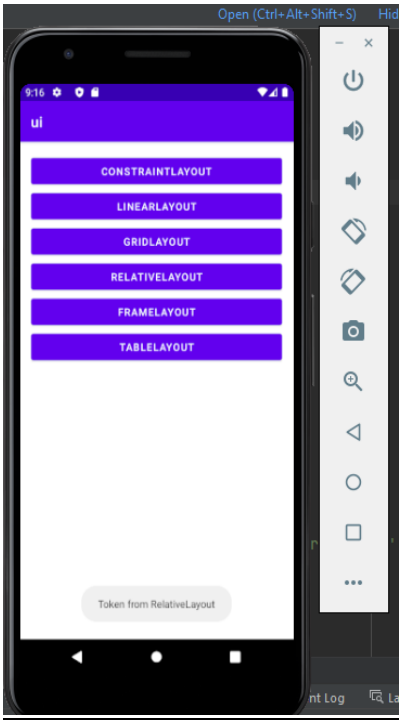
```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button constraintButton = findViewById(R.id.constraintButton);
        Button linearButton = findViewById(R.id.linearButton);
        Button 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();
    }
}
```

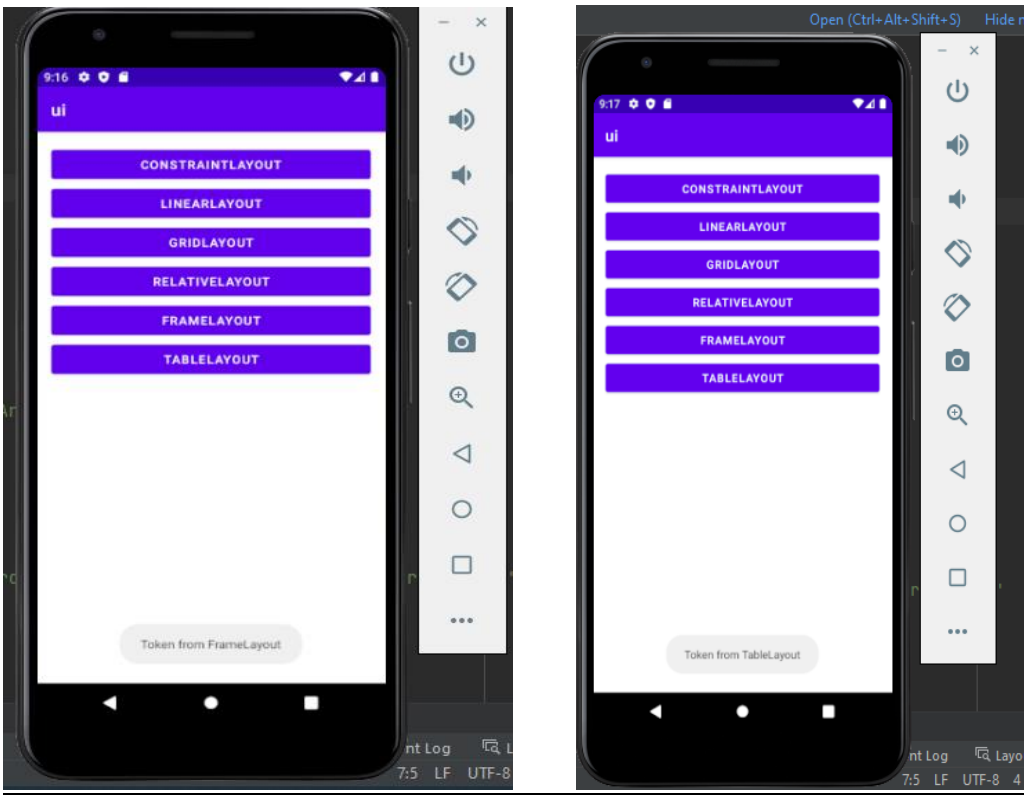
Output


Open (Ctrl+Alt+Shift+S)
ui
CONSTRAINTLAYOUT
LINEARLAYOUT
GRIDLAYOUT
RELATIVELAYOUT
FRAMELAYOUT
TABLELAYOUT
Token from ConstraintLayout


Open (Ctrl+Alt+Shift+S)
ui
CONSTRAINTLAYOUT
LINEARLAYOUT
GRIDLAYOUT
RELATIVELAYOUT
FRAMELAYOUT
TABLELAYOUT
Token from LinearLayout


Open (Ctrl+Alt+Shift+S)
ui
CONSTRAINTLAYOUT
LINEARLAYOUT
GRIDLAYOUT
RELATIVELAYOUT
FRAMELAYOUT
TABLELAYOUT
Token from GridLayout


Open (Ctrl+Alt+Shift+S)
ui
CONSTRAINTLAYOUT
LINEARLAYOUT
GRIDLAYOUT
RELATIVELAYOUT
FRAMELAYOUT
TABLELAYOUT
Token from RelativeLayout



Result : The program was executed successfully and the output was obtained.Thus, CO1 and CO2 has been 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>
```

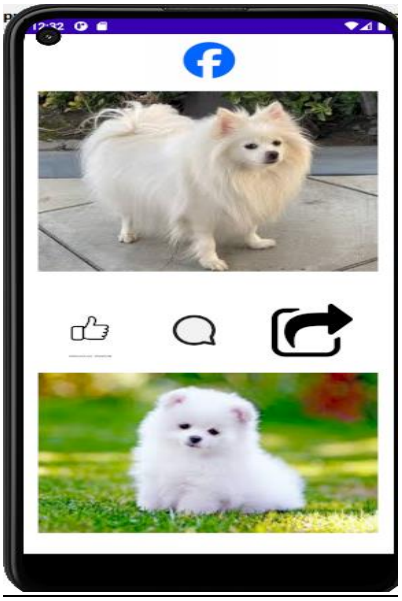
```
    </LinearLayout>
  </ScrollView>
</RelativeLayout>
```

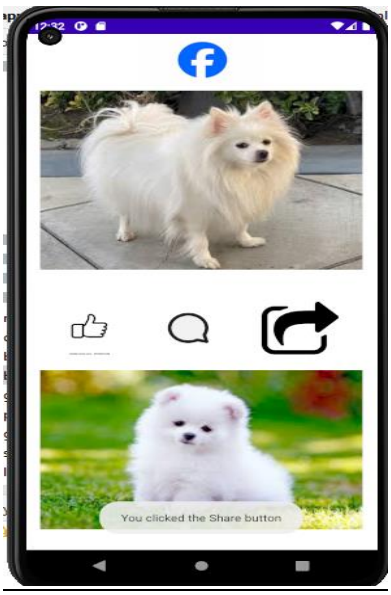
MainActivity.java

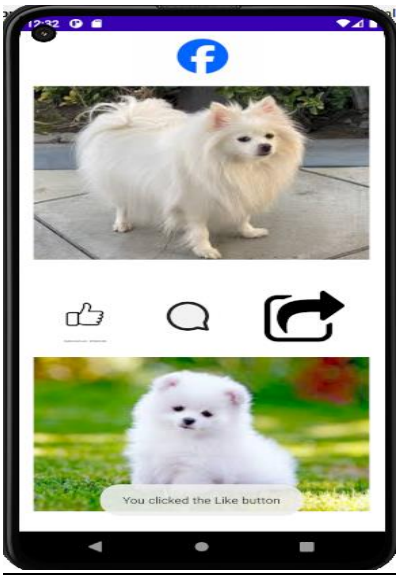
```
package com.example.facebook;
import androidx.appcompat.app.AppCompatActivity;
import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.ImageView;
import android.widget.Toast;
public class MainActivity extends Activity {
  @Override
  protected void onCreate(Bundle 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 has been 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

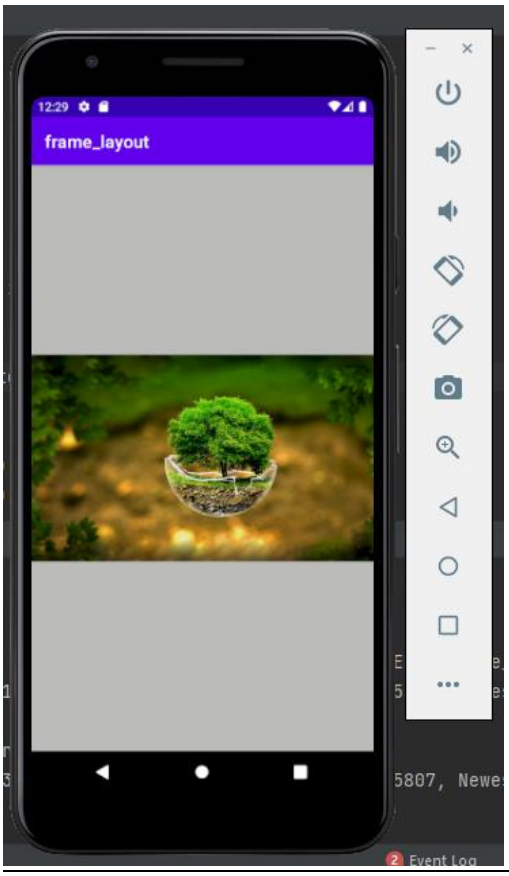
```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"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

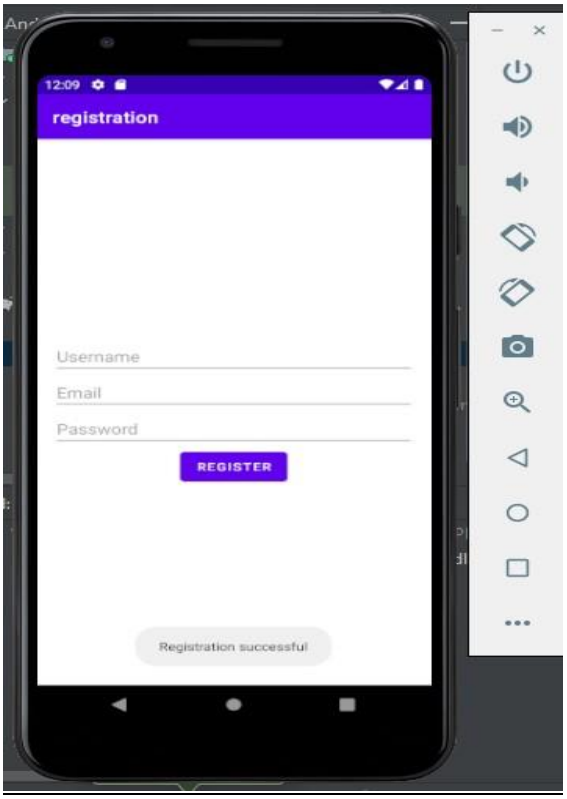
```
        android:inputType="textEmailAddress" />
    <EditText
        android:id="@+id/passwordEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Password"
        android:inputType="textPassword" />
    <Button
        android:id="@+id/registerButton"
        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 has been attained.

Experiment No:8

Aim: Develop an application that uses ArrayAdapter with ListView.

CO3: Develop Applications with multiple activities using intents, array adapter, exceptions and options menu.

Procedure:

Activity_main.xml

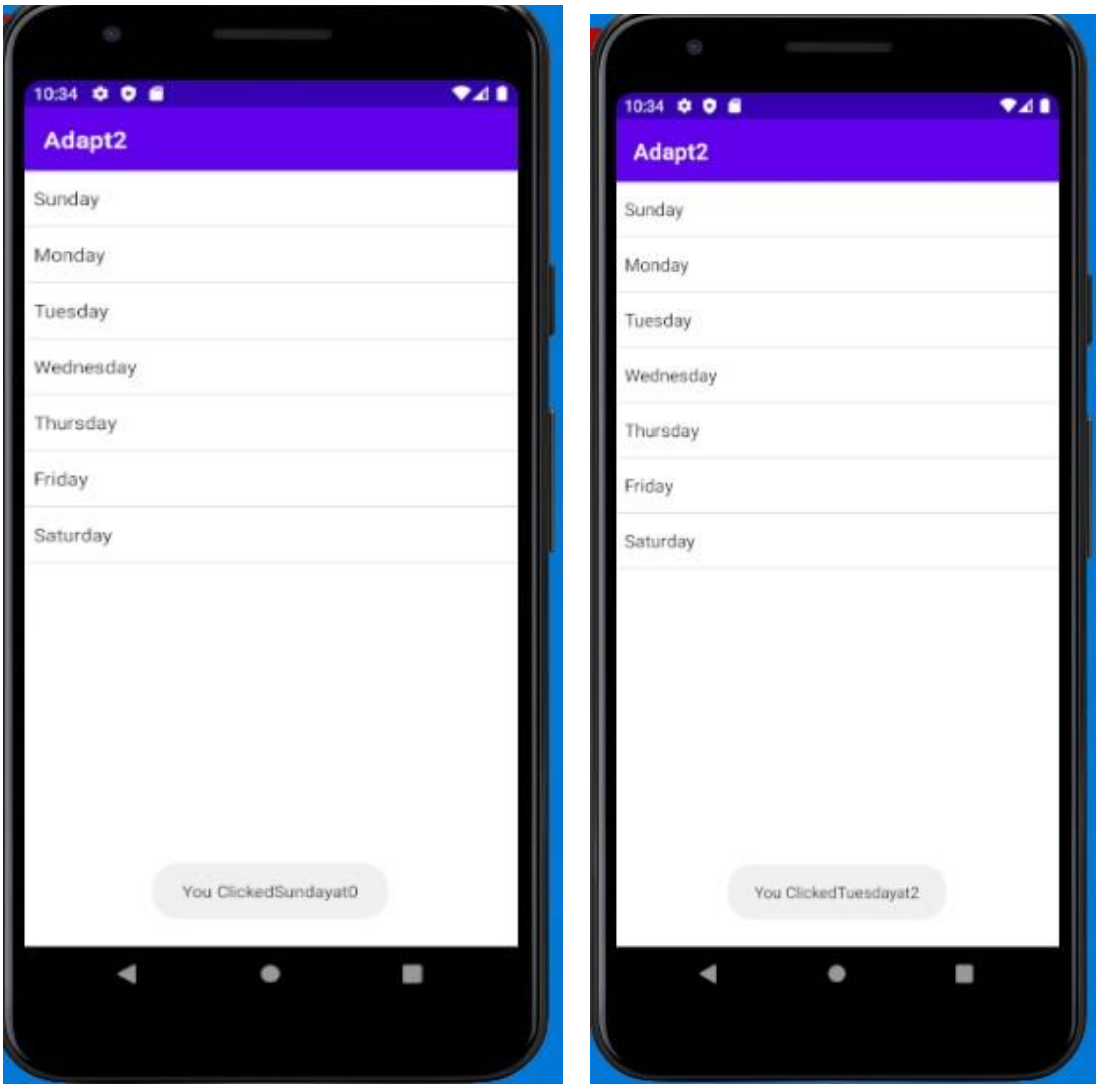
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   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.adapt2;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
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 has been attained.

Experiment No:9

Aim: Implements Options Menu to navigate to activities.

CO3: Develop Applications with multiple activities using intents, array adapter, exceptions 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/msgs"
      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

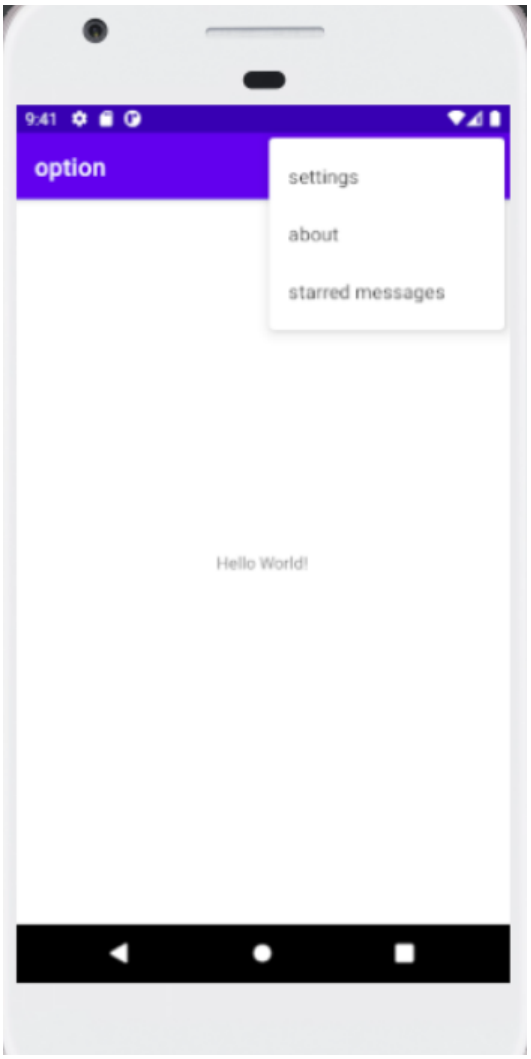
```
package com.example.option;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class settingspage extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_settingspage);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

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 has been attained.

Experiment No:10

Aim: Develop application that works with explicit intents.

CO3: Develop Applications with multiple activities using intents, array adapter, exceptions 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);
    }}
```

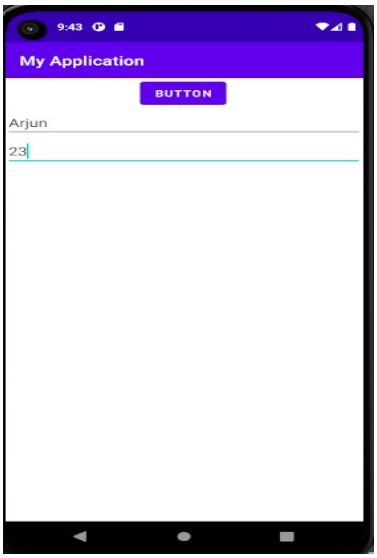
Activity_Main2.xml

```
<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 has been attained.

Experiment No:11

Aim: Develop an application that implement Spinner component and perform Event Handling.

CO4: Implement activities with dialogs, spinner, fragments and navigation drawer by applying themes

Procedure:

Activity_main.xml

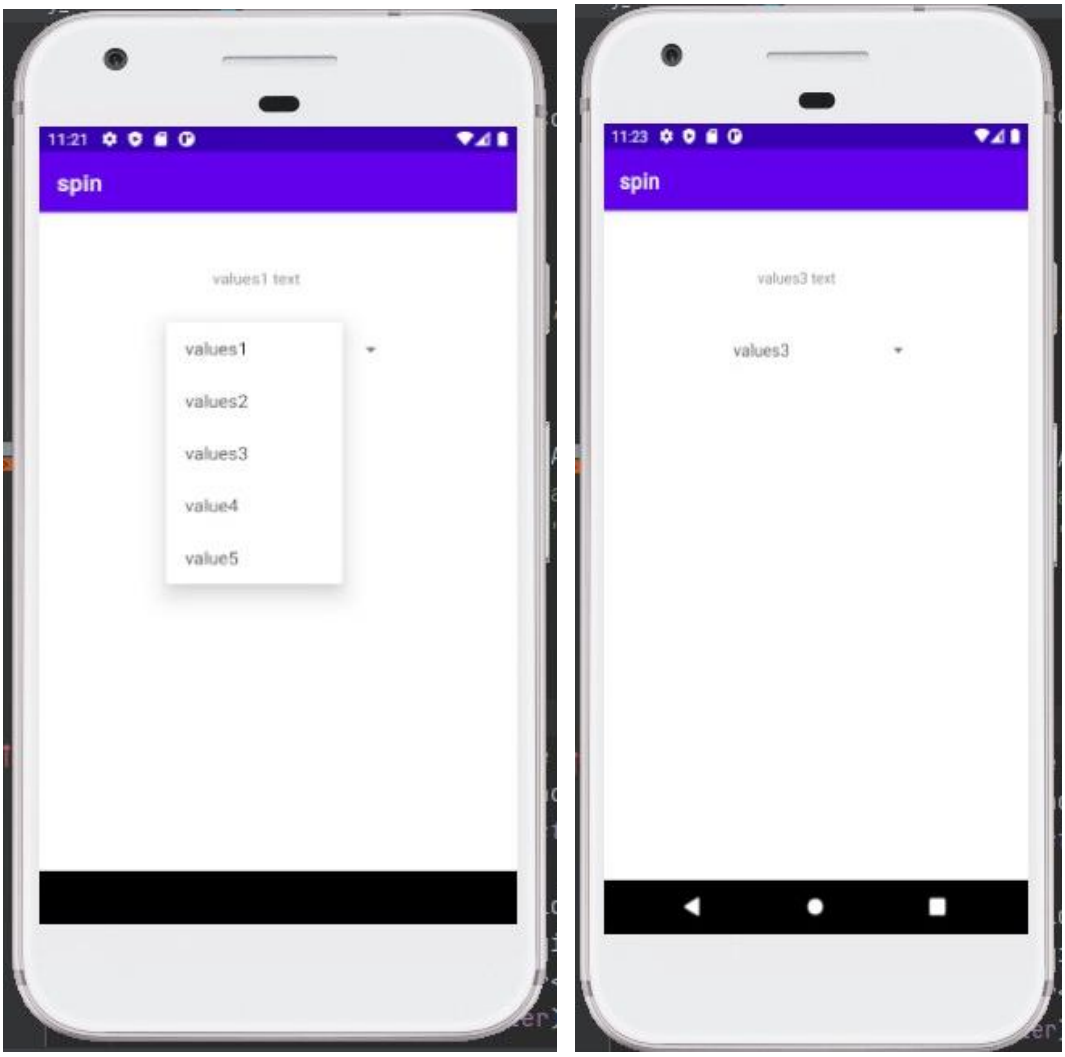
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   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.setOnItemSelectedListener(new AdapterView.OnItemSelectedListener() {
         @Override
         public void onItemSelected(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, CO4 has been 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();
      }    });  }}
```

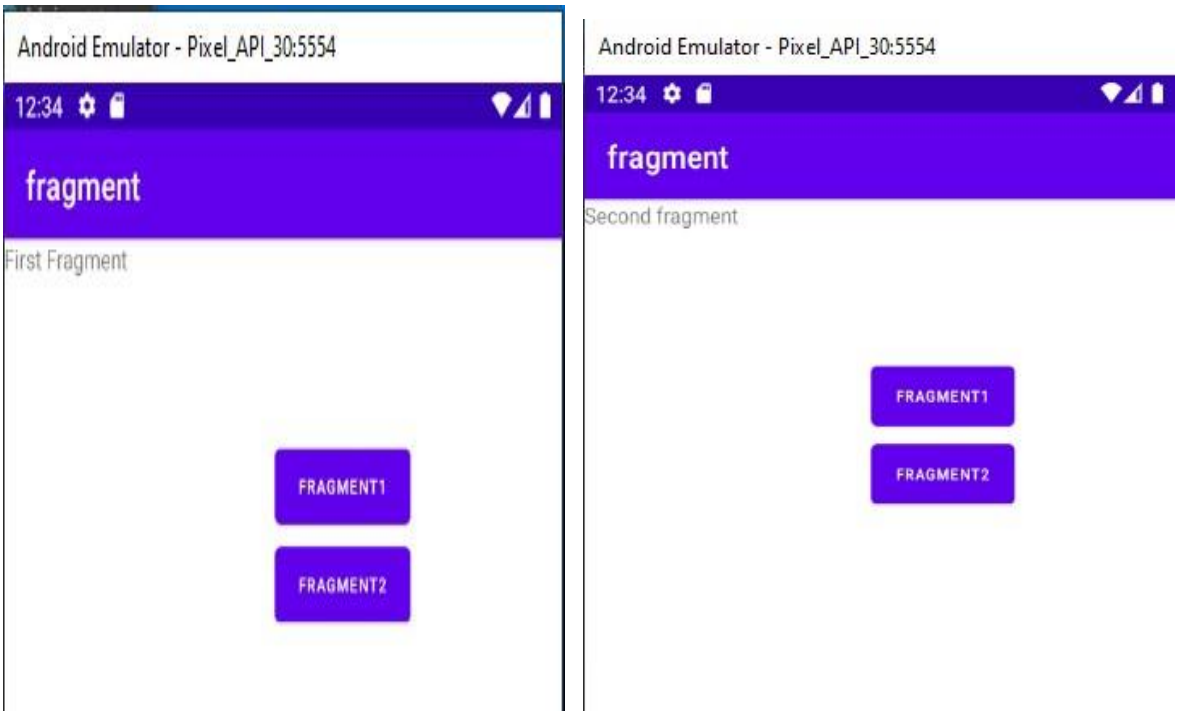
FirstFragment.xml

```
<?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 has been attained.

Experiment No:13

Aim: Implement Adapters and perform exception handling

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

Procedure:

Activity_main.xml

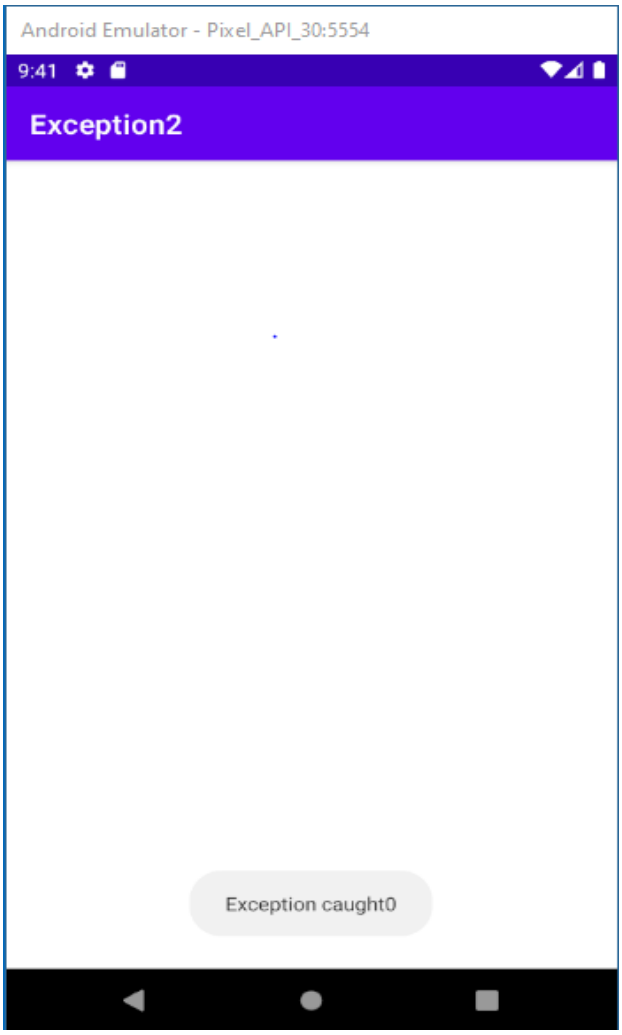
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"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

Experiment No:14

Aim: Create database using SQLite and perform INSERT and SELECT

CO5: Develop mobile applications 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/tv1"
    android:layout_centerHorizontal="true"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textColor="@color/black"
    android:text="Student Details"
    android:textSize="15sp" />
  <EditText
    android:id="@+id/et1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="Enter rollno"
    android:layout_centerHorizontal="true"
    android:layout_margin="18dp"
```

```
    android:layout_below="@+id/tv1"/>
  <EditText
    android:id="@+id/et2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="Enter name"
    android:layout_centerHorizontal="true"
    android:layout_margin="18dp"
    android:layout_below="@+id/et1"/>
  <EditText
    android:id="@+id/et3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/et2"
    android:layout_centerHorizontal="true"
    android:layout_marginStart="18dp"
    android:layout_marginTop="22dp"
    android:layout_marginEnd="18dp"
    android:layout_marginBottom="18dp"
    android:hint="Enter department" />
  <Button
    android:id="@+id/bt1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Insert"
    android:onClick="onInsert"
    android:layout_centerHorizontal="true"
    android:layout_margin="10dp"
    android:layout_below="@+id/et3"/>
  <Button
    android:id="@+id/bt2"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Update"
    android:onClick="onUpdate"
    android:layout_centerHorizontal="true"
    android:layout_margin="10dp"
    android:layout_below="@+id/bt1"/>
  <Button
    android:id="@+id/bt3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Read"
    android:onClick="onRead"
    android:layout_centerHorizontal="true"
    android:layout_margin="10dp"
    android:layout_below="@+id/bt2"/>
  <Button
    android:id="@+id/bt4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Delete"
    android:onClick="onDelete"
    android:layout_centerHorizontal="true"
    android:layout_margin="10dp"
    android:layout_below="@+id/bt3"/>
</RelativeLayout>
```

Main_Activity.java

```
package com.example.sqlite;
import androidx.appcompat.app.AppCompatActivity;
import android.content.ContentValues;
```

```
import android.database.Cursor;
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 tv1;
  EditText et1,et2,et3;
  Button bt1,bt2,bt3,bt4;
  String rno;
  String name;
  String dept;
  SQLiteDatabase db;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
     super.onCreate(savedInstanceState);
     setContentView(R.layout.activity_main);
     tv1 = findViewById(R.id.tv1);
     et1 = findViewById(R.id.et1);
      et2 = findViewById(R.id.et2);
     et3 = findViewById(R.id.et3);
     bt1 = findViewById(R.id.bt1);
     bt2 = findViewById(R.id.bt2);
     bt3 = findViewById(R.id.bt3);
     bt4 = findViewById(R.id.bt4);
     DbHelper dbHelper = new DbHelper(this);
     db = dbHelper.getWritableDatabase();
     db = dbHelper.getReadableDatabase();
```

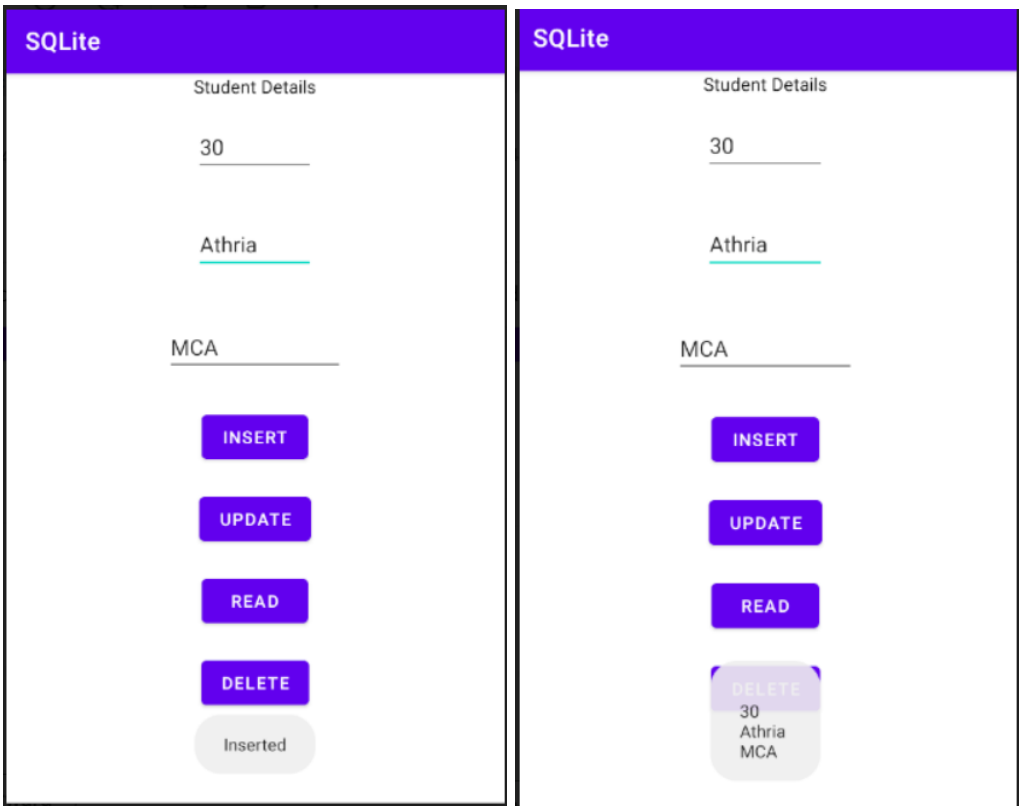
```
  }
  public void onInsert(View view) {
     rno = et1.getText().toString();
     name = et2.getText().toString();
     dept = et3.getText().toString();
     if (rno.equals("") || name.equals("") || dept.equals("")) {
        Toast.makeText(this,"please enter values",Toast.LENGTH_LONG).show();
     }
     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_LONG).show();
     }
  }
  public void onRead(View view) {
     StringBuffer buffer = new StringBuffer();
     Cursor c=db.rawQuery("select * from student",null);
     while (c.moveToNext())
     {
        buffer.append("\n"+c.getString(0));
        buffer.append("\n"+c.getString(1));
        buffer.append("\n"+c.getString(2));
     }
     Toast.makeText(this,buffer.toString(), Toast.LENGTH_SHORT).show();
  }
}
```

DBHelper code

```
package com.example.sqlite;
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(5))");
  }

  @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 has been attained.

Experiment No:15

Aim: Perform UPDATE and DELETE on SQLite database

CO5: Develop mobile applications 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/tv1"
    android:layout_centerHorizontal="true"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textColor="@color/black"
    android:text="Student Details"
    android:textSize="15sp" />
  <EditText
    android:id="@+id/et1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="Enter rollno"
    android:layout_centerHorizontal="true"
    android:layout_margin="18dp"
```

```
    android:layout_below="@+id/tv1"/>
  <EditText
    android:id="@+id/et2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="Enter name"
    android:layout_centerHorizontal="true"
    android:layout_margin="18dp"
    android:layout_below="@+id/et1"/>
  <EditText
    android:id="@+id/et3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/et2"
    android:layout_centerHorizontal="true"
    android:layout_marginStart="18dp"
    android:layout_marginTop="22dp"
    android:layout_marginEnd="18dp"
    android:layout_marginBottom="18dp"
    android:hint="Enter department" />
  <Button
    android:id="@+id/bt1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Insert"
    android:onClick="onInsert"
    android:layout_centerHorizontal="true"
    android:layout_margin="10dp"
    android:layout_below="@+id/et3"/>
  <Button
    android:id="@+id/bt2"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Update"
    android:onClick="onUpdate"
    android:layout_centerHorizontal="true"
    android:layout_margin="10dp"
    android:layout_below="@+id/bt1"/>
  <Button
    android:id="@+id/bt3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Read"
    android:onClick="onRead"
    android:layout_centerHorizontal="true"
    android:layout_margin="10dp"
    android:layout_below="@+id/bt2"/>
  <Button
    android:id="@+id/bt4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Delete"
    android:onClick="onDelete"
    android:layout_centerHorizontal="true"
    android:layout_margin="10dp"
    android:layout_below="@+id/bt3"/>
</RelativeLayout>
```

Main_Activity.java

```
package com.example.sqlite;
import androidx.appcompat.app.AppCompatActivity;
import android.content.ContentValues;
import android.database.Cursor;
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 tv1;
  EditText et1,et2,et3;
  Button bt1,bt2,bt3,bt4;
  String rno;
  String name;
  String dept;
  SQLiteDatabase db;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
     super.onCreate(savedInstanceState);
     setContentView(R.layout.activity_main);
     tv1 = findViewById(R.id.tv1);
     et1 = findViewById(R.id.et1);
      et2 = findViewById(R.id.et2);
     et3 = findViewById(R.id.et3);
     bt1 = findViewById(R.id.bt1);
     bt2 = findViewById(R.id.bt2);
     bt3 = findViewById(R.id.bt3);
```

```
    bt4 = findViewById(R.id.bt4);
    DbHelper dbHelper = new DbHelper(this);
    db = dbHelper.getWritableDatabase();
    db = dbHelper.getReadableDatabase();
  }
  public void onInsert(View view) {
    rno = et1.getText().toString();
    name = et2.getText().toString();
    dept = et3.getText().toString();
    if (rno.equals("") || name.equals("") || dept.equals("")) {
      Toast.makeText(this,"please enter values",Toast.LENGTH_LONG).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_LONG).show();
    }
  }
  public void onRead(View view) {
    StringBuffer buffer = new StringBuffer();
    Cursor c=db.rawQuery("select * from student",null);
    while (c.moveToNext())
    {
      buffer.append("\n"+c.getString(0));
      buffer.append("\n"+c.getString(1));
      buffer.append("\n"+c.getString(2));
    }
    Toast.makeText(this,buffer.toString(), Toast.LENGTH_SHORT).show();
```

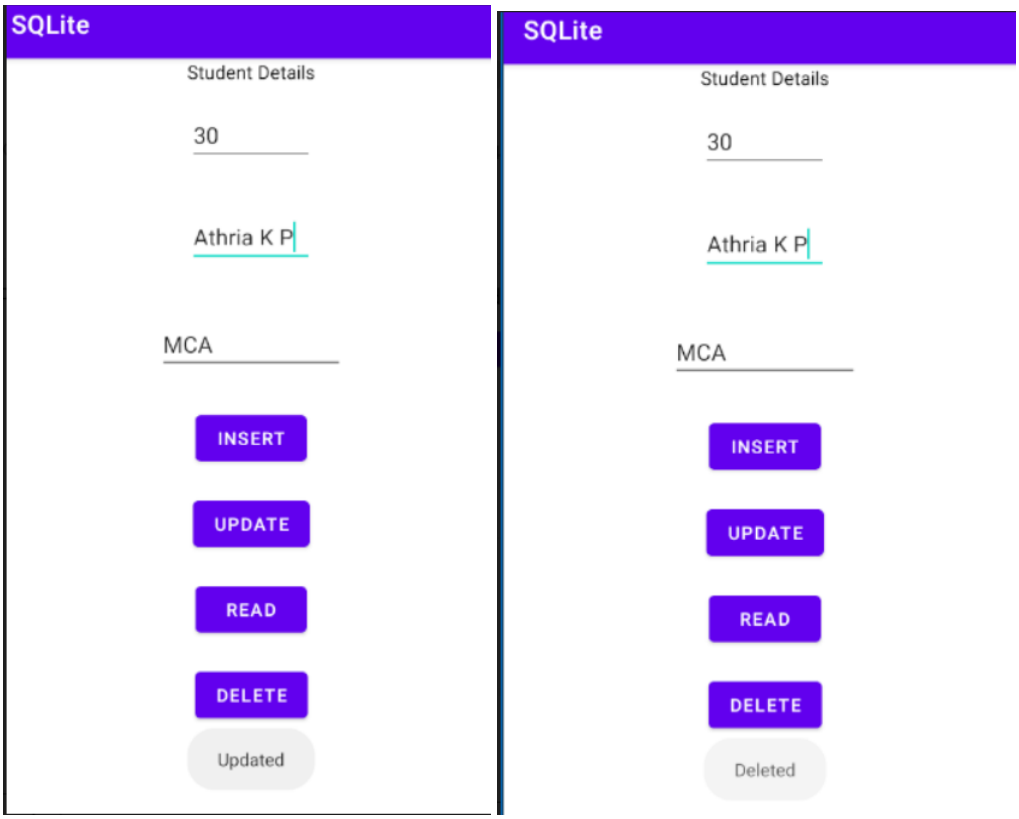
```
  }
}
```

DBHelper code

```
package com.example.sqlite;
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(5))");
  }

  @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 has been attained.