

23MCA243

Mobile Application Development Lab

Lab Report Submitted By

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AJC23MCA-2032

In Partial Fulfilment for the Award of the Degree of

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



**AMAL JYOTHI COLLEGE OF ENGINEERING(AUTONOMOUS)
KANJIRAPPALLY**

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

2024-2025

DEPARTMENT OF COMPUTER APPLICATIONS
AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)
KANJIRAPPALLY



CERTIFICATE

This is to certify that the lab report, “**20MCA243 – Mobile Application Development Lab**” is the Bonafide work of **JEEVAN DOMINIC (AJC23MCA-2032)** 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 **2024-25**.

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Course Code	Course Name	Syllabus Year	L-T-P-C
23MCA243	Mobile Application Development Lab	2023	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 upskilled 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

MCA 2022-2024

CONTENT

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1	Design a Login Form with username and password using LinearLayout and toast valid credentials.	24-08-2024	CO1	1
2	Write a program that demonstrates Activity Lifecycle.	07-09-2024	CO1	4
3	Implementing basic arithmetic operations of a simple calculator.	14-09-2024	CO1	7
4	Implement validations on various UI controls.	21-09-2024	CO1	11
5	Design a registration activity and store registration details in local memory of phone using Intents and Shared Preferences.	28-09-2024	CO2	15
6	Create a Facebook page using RelativeLayout; set properties using .xml file.	05-10-2024	CO2	19
7	Develop an application that toggles image using FrameLayout.	05-10-2024	CO2	23
8	Implement Adapters and perform exception handling.	12-10-2024	CO3	26
9	Implement Intent to navigate between multiple activities.	18-10-2024	CO3	29

Sl. No.	Experiment	Date	CO	Page No.
10	Develop application that works with explicit intents.	18-10-2024	C03	33
11	Implement Options Menu to navigate to activities.	25-10-2024	C03	36
12	Develop an application that uses ArrayAdapter with ListView.	25-10-2024	C03	39
13	Develop an application that use GridView with images and display Alert box on selection.	25-10-2024	C04	42
14	Develop an application that implements Spinner component and perform event handling.	25-10-2024	C04	46
15	Develop application using Fragments.	09-11-2024	C04	49
16	Implement Navigation drawer.	09-11-2024	C04	53
17	Create database using SQLite and perform INSERT and SELECT.	16-11-2024	C05	57
18	Perform UPDATE and DELETE on SQLite database.	16-11-2024	C05	62

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.

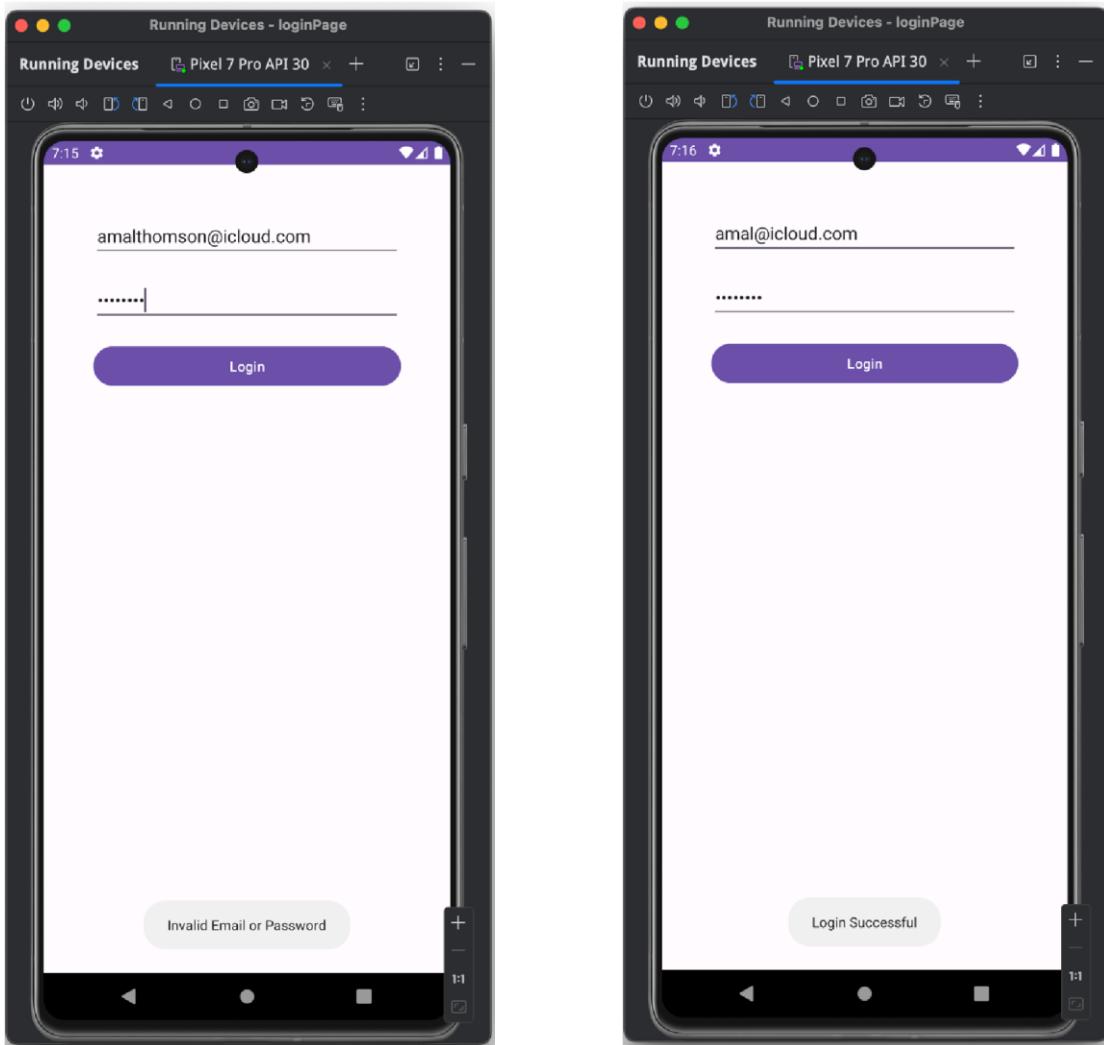
Procedure

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<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"    android:padding="50dp"
    tools:context=".MainActivity">
    <EditText
        android:id="@+id/email"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"      android:hint="Email"
        android:inputType="textEmailAddress" />
    <EditText
        android:id="@+id/password"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/email"
        android:layout_marginTop="20dp"      android:hint="Password"
        android:inputType="textPassword" />
    <Button
        android:id="@+id/loginButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/password"
        android:layout_marginTop="20dp"
        android:text="Login" />
</RelativeLayout>
```

```
MainActivity.java package
com.example.loginpage; 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 email;    private EditText password;
    private Button loginButton;    private final String
    predefinedEmail = "amal@icloud.com";    private final String
    predefinedPassword = "Amal@123";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);    email =
        findViewById(R.id.email);    password =
        findViewById(R.id.password);    loginButton =
        findViewById(R.id.loginButton);
        loginButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String enteredEmail = email.getText().toString();
                String enteredPassword = password.getText().toString();
                if (enteredEmail.equals(predefinedEmail) &&
                    enteredPassword.equals(predefinedPassword)) {
                    showToast("Login Successful");
                } else {
                    showToast("Invalid Email or Password");
                }
            }
        });
    }
    private void showToast(String message) {
        Toast.makeText(this, message, Toast.LENGTH_SHORT).show();
    }
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO1 was obtained.

Experiment No.: 2

Aim

Write a program that demonstrates Activity Lifecycle.

C01

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"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"    android:layout_height="match_parent">
</RelativeLayout>
```

MainActivity.java

```
package com.example.activitylifecycle;
import android.app.Activity; import
android.os.Bundle; import
android.util.Log;
public class MainActivity extends Activity {
    private static final String TAG = "ActivityLifecycleDemo";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);      setContentView(R.layout.activity_main);
        Log.d(TAG, "onCreate");
    }
    @Override
    protected void onStart() {
        super.onStart();      Log.d(TAG,
        "onStart");
    }
    @Override    protected void
    onResume() {
        super.onResume();
        Log.d(TAG, "onResume");
    }
}
```

```
    @Override protected
void onPause() {
super.onPause();
Log.d(TAG, "onPause");
}
    @Override protected
void onStop() {
super.onStop();
Log.d(TAG, "onStop");
}
    @Override protected void
onDestroy() {
super.onDestroy();
Log.d(TAG, "onDestroy");
}
    @Override protected void
onRestart() {
super.onRestart();
Log.d(TAG, "onRestart");
}
}
```

Output Screenshot

```

activityLifecycle < Version control <
Android Logcat + package:mine
Pixel 7 Pro API 30 (emulator-5554) Android 11, API 30 < app < MainActivity.java <
Logcat < package:mine <
2023-12-08 02:32:05.179 11852-11879 libEGL com.example.activitylifecycle
2023-12-08 02:32:05.191 11852-11852 ActivityLifecycleDemo com.example.activitylifecycle
2023-12-08 02:32:05.192 11852-11852 ActivityLifecycleDemo com.example.activitylifecycle
2023-12-08 02:32:05.194 11852-11852 ActivityLifecycleDemo com.example.activitylifecycle
2023-12-08 02:32:05.207 11852-11877 HostConnection com.example.activitylifecycle
0xb40007211463050, tid 11877
2023-12-08 02:32:05.212 11852-11877 HostConnection com.example.activitylifecycle
D loaded /vendor/lib64/egl/libGLESv2_emulation.so
D onCreate
D onStart
D onResume
D HostConnection::get() New Host Connection established
2023-12-08 02:32:05.218 11852-11877 OpenGLRenderer com.example.activitylifecycle
D HostComposition ext ANDROID_EMU_CHECKSUM_HELPER_V1
D ANDROID_EMU_native_sync_v2 ANDROID_EMU_native_sync_v3 ANDROID_EMU_dma_v1 ANDROID_EMU_host_composition_v1 ANDROID_EMU_host_composition_v2
D ANDROID_EMU_vulkan ANDROID_EMU_deferred_vulkan_commands ANDROID_EMU_vulkan_null_optional_strings ANDROID_EMU_vulkan_create_resources_with_requirements
D ANDROID_EMU_YUV_Cache ANDROID_EMU_vulkan_ignored_handles ANDROID_EMU_has_shared_slots_host_memory_allocator ANDROID_EMU_vulkan_free_memory_sync
D ANDROID_EMU_vulkan_shader_float16_int8 ANDROID_EMU_vulkan_async_queue_submit ANDROID_EMU_sync_buffer_data ANDROID_EMU_vulkan_async_qsri GL_OES_EGL_image_external_essl3
D GL_OES_vertex_array_object ANDROID_EMU_host_side_tracing ANDROID_EMU_gles_max_version_3_0
2023-12-08 02:32:05.218 11852-11877 OpenGLRenderer com.example.activitylifecycle
W Failed to choose config with EGL_SWAP_BEHAVIOR_PRESERVED, retrying
without...
2023-12-08 02:32:05.223 11852-11877 EGL_emulation com.example.activitylifecycle
2023-12-08 02:32:05.227 11852-11877 EGL_emulation com.example.activitylifecycle
D eglCreateContext: 0xb400072014de9a0: maj 3 min 0 rcv 3
D eglGetCurrent: 0xb400072014de9a0: ver 3 0 (tinfo 0xb400071a14b5cb0)
I mapper 4.x is not supported
D createInquire: call
D HostConnection::get() New Host Connection established
2023-12-08 02:32:05.234 11852-11877 Gralloc4 com.example.activitylifecycle
2023-12-08 02:32:05.234 11852-11877 HostConnection com.example.activitylifecycle
2023-12-08 02:32:05.234 11852-11877 HostConnection com.example.activitylifecycle
0xb40007211463010, tid 11877
2023-12-08 02:32:05.234 11852-11877 goldfish-address-space com.example.activitylifecycle
2023-12-08 02:32:05.235 11852-11877 goldfish-address-space com.example.activitylifecycle
2023-12-08 02:32:05.278 11852-11877 HostConnection com.example.activitylifecycle
D allocate: Ask for block of size 0x100
D allocate: ioctl allocate returned offset 0x1ebff8000 size 0x8000
D HostComposition ext ANDROID_EMU_CHECKSUM_HELPER_V1
D ANDROID_EMU_native_sync_v2 ANDROID_EMU_native_sync_v3 ANDROID_EMU_dma_v1 ANDROID_EMU_host_composition_v1 ANDROID_EMU_host_composition_v2
D ANDROID_EMU_vulkan ANDROID_EMU_deferred_vulkan_commands ANDROID_EMU_vulkan_null_optional_strings ANDROID_EMU_vulkan_create_resources_with_requirements
D ANDROID_EMU_YUV_Cache ANDROID_EMU_vulkan_ignored_handles ANDROID_EMU_has_shared_slots_host_memory_allocator ANDROID_EMU_vulkan_free_memory_sync
D ANDROID_EMU_vulkan_shader_float16_int8 ANDROID_EMU_vulkan_async_queue_submit ANDROID_EMU_sync_buffer_data ANDROID_EMU_vulkan_async_qsri GL_OES_EGL_image_external_essl3
D GL_OES_vertex_array_object ANDROID_EMU_host_side_tracing ANDROID_EMU_gles_max_version_3_0
2023-12-08 02:32:19.335 11852-11884 ProfileInstaller com.example.activitylifecycle
2023-12-08 02:32:32.802 11852-11852 ActivityLifecycleDemo com.example.activitylifecycle
2023-12-08 02:32:33.176 11852-11852 ActivityLifecycleDemo com.example.activitylifecycle
2023-12-08 02:32:34.295 11852-11852 ActivityLifecycleDemo com.example.activitylifecycle
D Installing profile for com.example.activitylifecycle
D onPause
D onStop
D onDestroy
----- PROCESS ENDED (11852) for package com.example.activitylifecycle -----

```

Result

The program was executed and the result was successfully obtained. Thus CO1 was obtained.

Experiment No.: 3

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.

Procedure

```
ativity_main.xml <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="50dp"
    tools:context=".MainActivity">
    <EditText
        android:id="@+id/num1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"    android:hint="Enter
        number 1"    android:inputType="numberDecimal"/>
    <EditText
        android:id="@+id/num2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"    android:hint="Enter
        number 2"    android:inputType="numberDecimal"/>
    <Button
        android:id="@+id/add"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"    android:text="Add"/>
    <Button
        android:id="@+id/subtract"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Subtract"/>
    <Button
        android:id="@+id/multiply"
```

```

    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Multiply"/>
<Button
    android:id="@+id/divide"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"      android:text="Divide"/>
</LinearLayout>

```

MainActivity.java

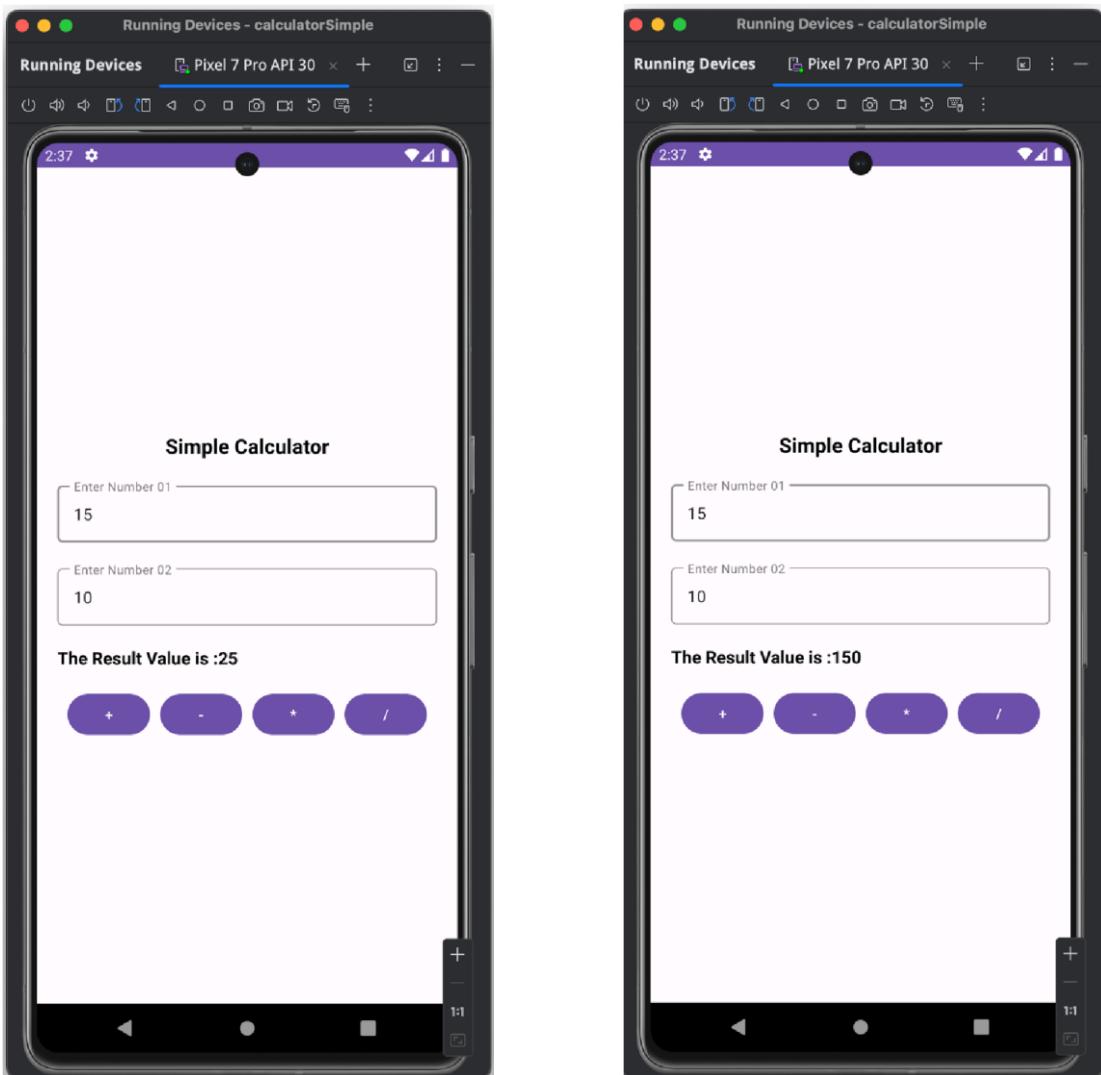
```

package com.example.simplecalculator; import
android.os.Bundle; import android.view.View; import
android.widget.Button; import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);      EditText
        num1 = findViewById(R.id.num1);
        EditText num2 = findViewById(R.id.num2);
        Button addButton = findViewById(R.id.add);
        Button subtractButton = findViewById(R.id.subtract);
        Button multiplyButton = findViewById(R.id.multiply);
        Button divideButton = findViewById(R.id.divide);
        addButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void
            onClick(View v) {
                performCalculation("+");
            }
        });
        subtractButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                performCalculation("-");
            }
        });
        multiplyButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void
            onClick(View v) {
                performCalculation("*");
            }
        });
    }
}

```

```
});  
divideButton.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void  
onClick(View v) {  
        performCalculation("/");  
    }  
});  
}  
private void performCalculation(String operator) {  
String num1Str = num1.getText().toString();  
String num2Str = num2.getText().toString();      if  
(num1Str.isEmpty() || num2Str.isEmpty()) {  
    showToast("Please enter both numbers.");  
return;  
}  
    double num1 = Double.parseDouble(num1Str);  
double num2 = Double.parseDouble(num2Str);  
double result = 0;      switch (operator) {  
case "+":          result = num1 + num2;  
    break;  
case "-":  
    result = num1 - num2;  
    break;      case  
"*":          result = num1 *  
num2;  
    break;  
case "/":  
    if (num2 == 0) {  
        showToast("Division by zero is not allowed.");  
return;  
    }  
    result = num1 / num2;  
    break;  
}      showToast("Result: " +  
result);  
}  
private void showToast(String message) {  
    Toast.makeText(this, message, Toast.LENGTH_SHORT).show();  
}  
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO1 was obtained.

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.

Procedure

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    android:padding="16dp"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/usernameEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Username" />

    <EditText    android:id="@+id/emailEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/usernameEditText"
        android:layout_marginTop="16dp"
        android:hint="Email" />

    <EditText
        android:id="@+id/phoneEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/emailEditText"
        android:layout_marginTop="16dp"
        android:inputType="phone"
        android:hint="Phone Number" />

    <EditText
        android:id="@+id/passwordEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/phoneEditText"
        android:layout_marginTop="16dp"
        android:inputType="textPassword"      android:hint="Password"
    />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
    android:layout_below="@+id/passwordEditText"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="24dp"
    android:onClick="validateInputs"
    android:text="Validate Inputs" />
</RelativeLayout>
```

```
MainActivity.java
package com.example.uivalidation; import android.app.Activity; import android.os.Bundle; import android.view.View; import android.widget.EditText; import android.widget.Toast; import java.util.regex.Pattern; public class MainActivity extends Activity {    private EditText usernameEditText;    private EditText emailEditText;    private EditText phoneEditText;    private EditText passwordEditText;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);        usernameEditText =
            findViewById(R.id.usernameEditText);        emailEditText =
            findViewById(R.id.emailEditText);        phoneEditText =
            findViewById(R.id.phoneEditText);
            passwordEditText = findViewById(R.id.passwordEditText);
    }

    public void validateInputs(View view) {
        String username = usernameEditText.getText().toString().trim();
        String email = emailEditText.getText().toString().trim();
        String phone = phoneEditText.getText().toString().trim();
        String password = passwordEditText.getText().toString();
        if (!isValidUsername(username)) {            showToast("Invalid
username");        } else if (!isValidEmail(email)) {
            showToast("Invalid email address");        } else if
(!isValidPhoneNumber(phone)) {            showToast("Invalid
phone number");        } else if (!isValidPassword(password)) {
            showToast("Invalid password");
        } else {
            showToast("All inputs are valid");
        }
    }
}
```

```
        }
    }

    private void showToast(String message) {
        Toast.makeText(this, message, Toast.LENGTH_SHORT).show();
    }

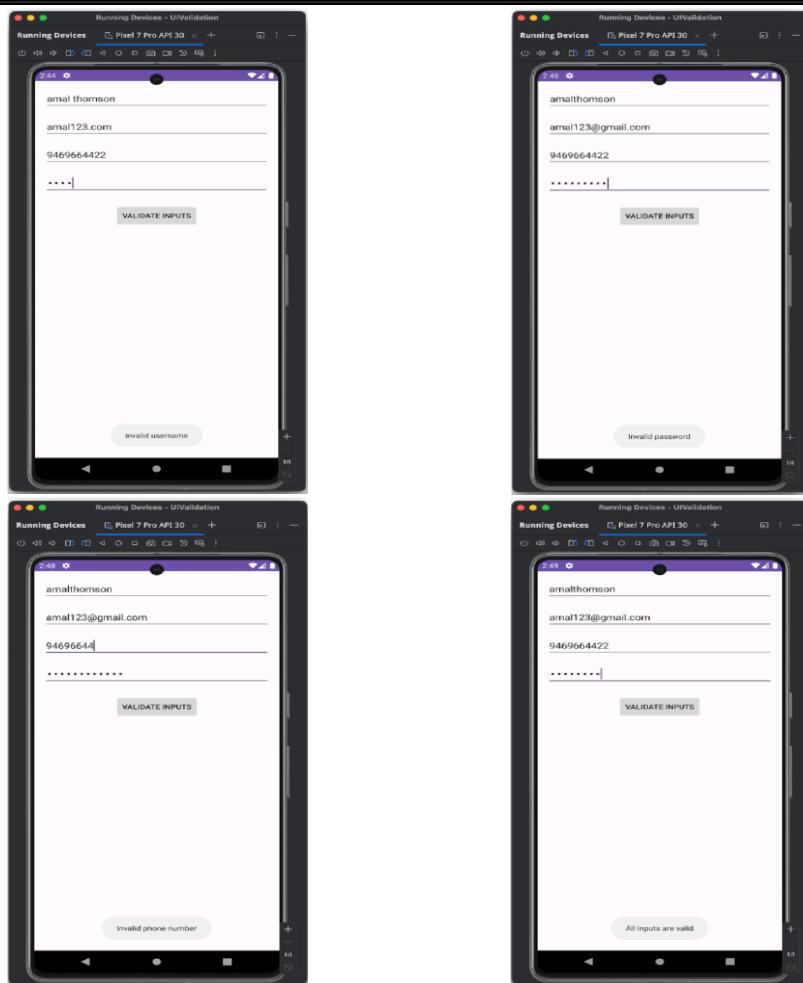
    private boolean isValidUsername(String username) {
        return username.matches("^[a-zA-Z]+$");
    }

    private boolean isValidEmail(String email) {
        String emailPattern = "^[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\\.[a-zA-Z]{2,}$";
        return Pattern.matches(emailPattern, email);
    }

    private boolean isValidPhoneNumber(String phone) {
        String phonePattern = "^[0-9]{10}$";
        return Pattern.matches(phonePattern, phone);
    }

    private boolean is_validPassword(String password) {
        return password.matches("^(?=.*[a-z])(?=.*[A-Z])(?=.*[\\d])(?=.*[@#$%^&+=]).{8,}$");
    }
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO1 was obtained.

Experiment No.: 5

Aim

Design a registration activity and store registration details in local memory of phone using Intents and Shared Preferences.

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:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    android:paddingLeft="16dp"
    android:paddingTop="16dp"   android:paddingRight="16dp"
    android:paddingBottom="16dp"   tools:context=".MainActivity">

    <EditText
        android:id="@+id/email"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"      android:hint="Email"/>

    <EditText
        android:id="@+id/password"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/email"
        android:layout_marginTop="8dp"      android:hint="Password"
        android:inputType="textPassword"/>

    <Button
        android:id="@+id/save"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/password"
        android:layout_marginTop="16dp"
        android:text="Save"/>
</RelativeLayout>

```

activity_second.xml

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    android:paddingLeft="16dp"
    android:paddingTop="16dp"   android:paddingRight="16dp"
    android:paddingBottom="16dp"   tools:context=".SecondActivity">

    <TextView
        android:id="@+id/display"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>
</RelativeLayout>

```

MainActivity.java

```

package com.example.sharedpreferences; 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 androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {

    private EditText email, password;
    private Button save;    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);      email =
        findViewById(R.id.email);      password =
        findViewById(R.id.password);      save =
        findViewById(R.id.save);
        save.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                saveData();
            }
        });
    }
    private void saveData() {
        String SPemail = email.getText().toString();
        String SPpassword = password.getText().toString();
        SharedPreferences sharedpreferences = getSharedPreferences("mypref",
            MODE_PRIVATE);
        SharedPreferences.Editor editor = sharedpreferences.edit();
        editor.putString("email", SPemail);      editor.putString("password",
        SPpassword);
        editor.apply();
        Intent intent = new Intent(MainActivity.this, SecondActivity.class);
        startActivity(intent);
    }
}

```

SecondActivity.java package

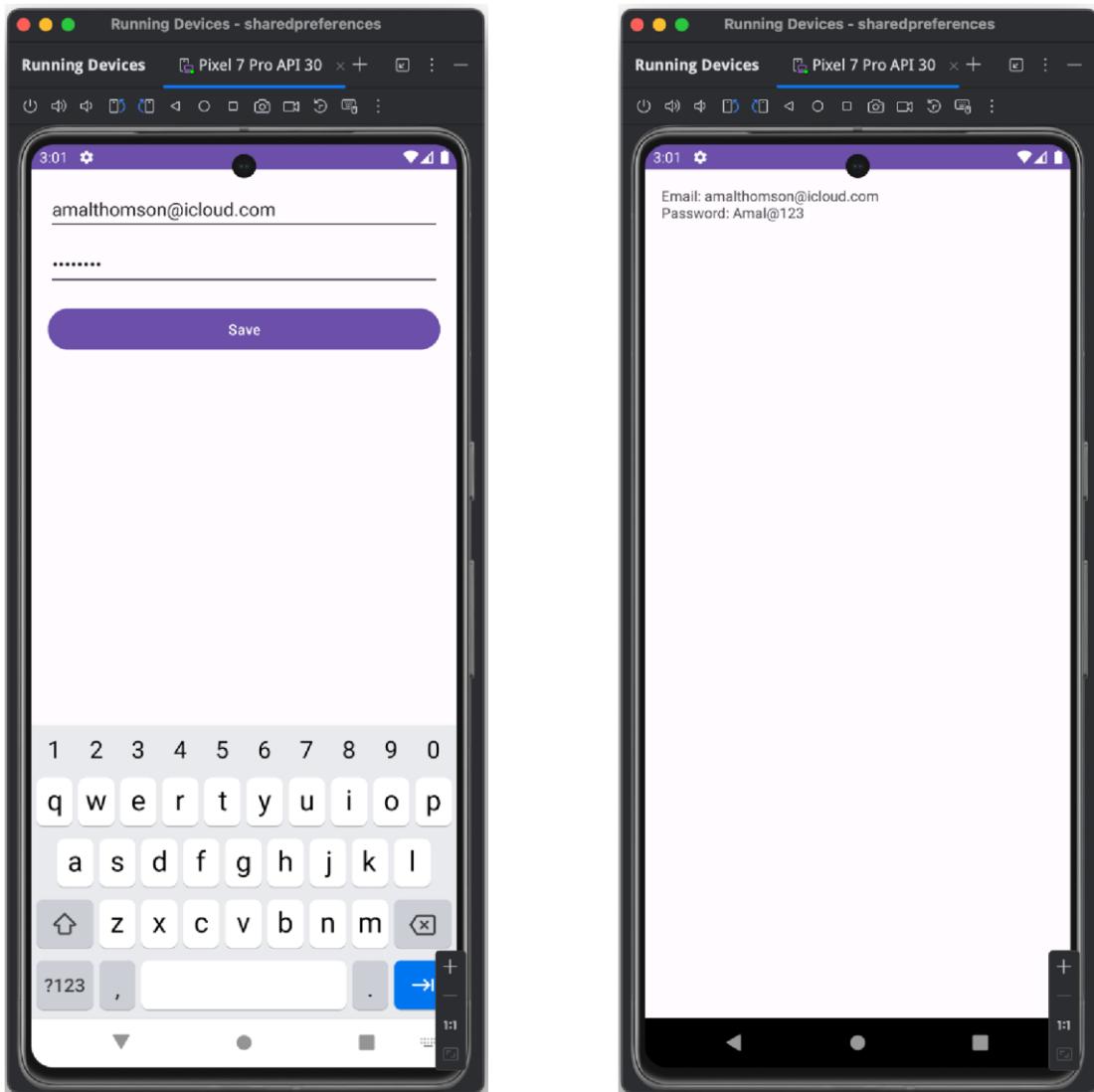
```

com.example.sharedpreferences; import
android.content.SharedPreferences; import
android.os.Bundle; import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

```

```
public class SecondActivity extends AppCompatActivity {  
    private TextView displayTextView;  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_second);    displayTextView  
        = findViewById(R.id.display);  
        SharedPreferences sharedpreferences = getSharedPreferences("mypref",  
            MODE_PRIVATE);  
        String email = sharedpreferences.getString("email", "");    String  
        password = sharedpreferences.getString("password", "");  
        displayTextView.setText("Email: " + email + "\nPassword: " + password);  
    }  
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO₂ was obtained.

Experiment No.: 6

Amal Jyothi College of Engineering (Autonomous), Kanjirappally

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**ativity_main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    android:paddingLeft="16dp"
    android:paddingTop="16dp"    android:paddingRight="16dp"
    android:paddingBottom="16dp"    android:background="#1877f2"
    tools:context=".MainActivity">
    <ImageView
        android:id="@+id/profileImage"
        android:layout_width="100dp"
        android:layout_height="100dp"    android:src="@drawable/fb"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="16dp"/>
    <TextView
        android:id="@+id/username"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Amal Thomson"
        android:textColor="#ffffff"    android:textSize="18sp"
        android:layout_below="@+id/profileImage"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="8dp"/>
    <Button
        android:id="@+id/postButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Create Post"    android:textColor="#ffffff"
        android:layout_below="@+id/username"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="16dp"/>
```

```
<EditText  
    android:id="@+id/postEditText"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_below="@+id/postButton"  
    android:hint="What's on your mind?"  
    android:textColor="#ffffff"  
    android:layout_marginTop="16dp"  
    android:padding="8dp"/> <Button  
    android:id="@+id/photoButton"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="Add Photo"  
    android:textColor="#ffffff"  
    android:layout_below="@+id/postEditText"  
    android:layout_marginTop="8dp"/>  
<Button  
    android:id="@+id/checkInButton"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="Check In"  
    android:textColor="#ffffff"  
    android:layout_below="@+id/photoButton"  
    android:layout_marginTop="8dp"/>  
</RelativeLayout>
```

MainActivity.java package
com.example.facebookui; 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 postEditText;
 @Override
 protected void onCreate(Bundle savedInstanceState) {
 super.onCreate(savedInstanceState);
 setContentView(R.layout.activity_main);
 Button postButton = findViewById(R.id.postButton);

```
Button photoButton = findViewById(R.id.photoButton);
Button checkInButton = findViewById(R.id.checkInButton);
EditText postEditText = findViewById(R.id.postEditText);

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

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

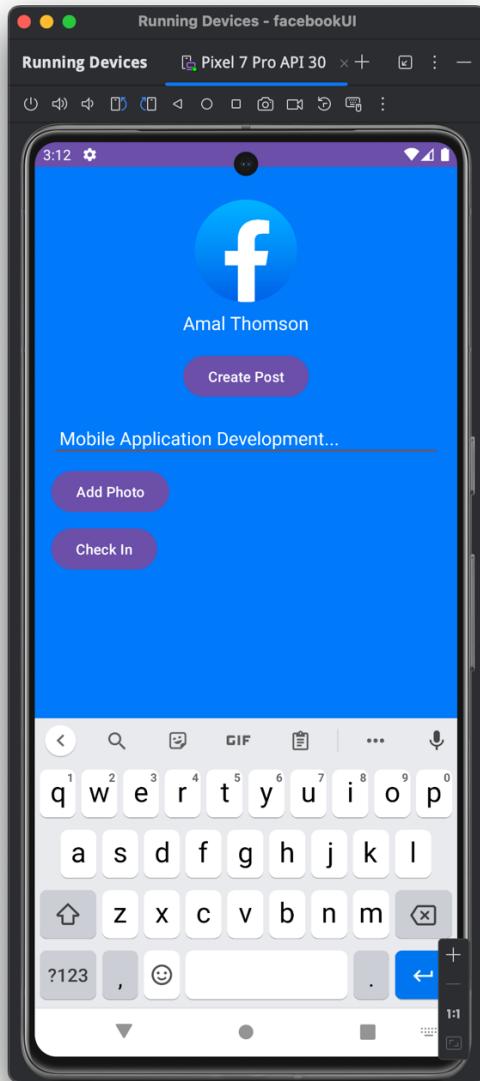
checkInButton.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        checkIn();
    }
});

private void createPost() {
    String postText = postEditText.getText().toString().trim();
    if (!postText.isEmpty()) {
        Toast.makeText(this, "Post created: " + postText, Toast.LENGTH_SHORT).show();
        postEditText.getText().clear();    } else {
        Toast.makeText(this, "Please enter something to post.", Toast.LENGTH_SHORT).show();
    }
}

private void addPhoto() {
    Toast.makeText(this, "Adding a photo", Toast.LENGTH_SHORT).show();
}

private void checkIn() {
    Toast.makeText(this, "Checked In", Toast.LENGTH_SHORT).show();
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO₂ was obtained.

Experiment No.: 7

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

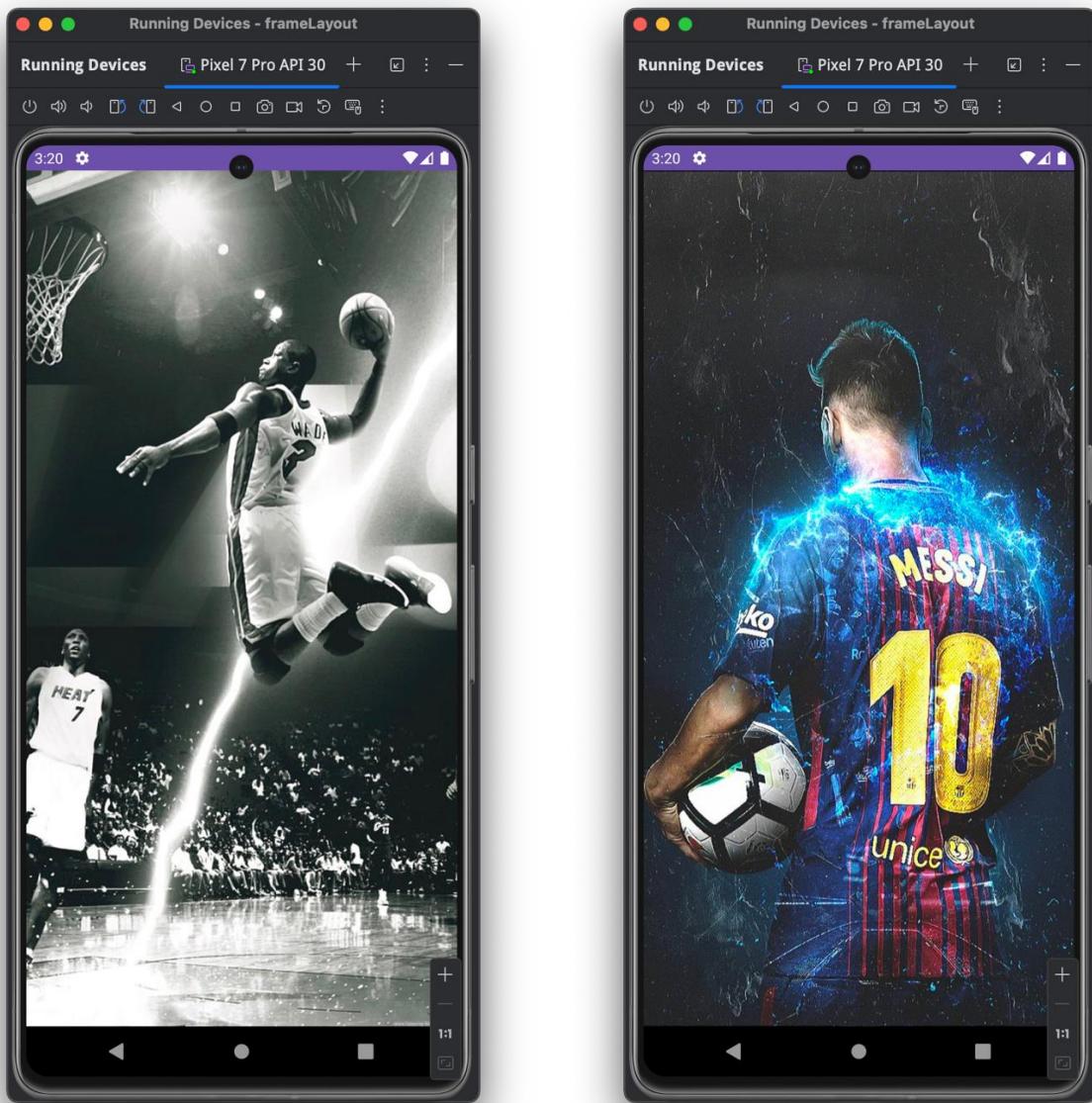
```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    tools:context=".MainActivity">
    <ImageView
        android:id="@+id/img1"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:src="@drawable/img2"      android:scaleType="fitXY"
    />
    <ImageView
        android:id="@+id/img2"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:src="@drawable/img1"
        android:scaleType="fitXY" />
</FrameLayout>
```

MainActivity.java

```
package com.example.frameLayout;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle; import
android.view.View; import
android.widget.ImageView;
public class MainActivity extends AppCompatActivity {
```

```
ImageView img1, img2;  
@Override  
protected void onCreate(Bundle savedInstanceState) {  
super.onCreate(savedInstanceState);  
setContentView(R.layout.activity_main);    img1 =  
findViewById(R.id.img1);    img2 =  
findViewById(R.id.img2);  
img1.setOnClickListener(new View.OnClickListener() {  
    @Override    public void  
onClick(View v) {  
img2.setVisibility(View.VISIBLE);  
    img1.setVisibility(View.GONE);  
}  
});  
img2.setOnClickListener(new View.OnClickListener() {  
    @Override    public void  
onClick(View v) {  
img1.setVisibility(View.VISIBLE);  
    img2.setVisibility(View.GONE);  
}  
});  
}  
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO₂ was obtained.

Experiment No.: 8

Aim

Implement Adapters and perform exception handling.

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:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    tools:context=".MainActivity">
    <EditText
        android:id="@+id/dividendEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Dividend"
        android:inputType="numberDecimal"
        android:layout_marginBottom="16dp"/>
    <EditText
        android:id="@+id/divisorEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Divisor"
        android:inputType="numberDecimal"
        android:layout_below="@+id/dividendEditText"/>
    <Button    android:id="@+id/divideButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Divide Numbers"
        android:layout_below="@+id/divisorEditText"
        android:layout_centerInParent="true"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.atry; import
android.os.Bundle; import android.view.View; import
android.widget.Button; import android.widget.EditText;
```

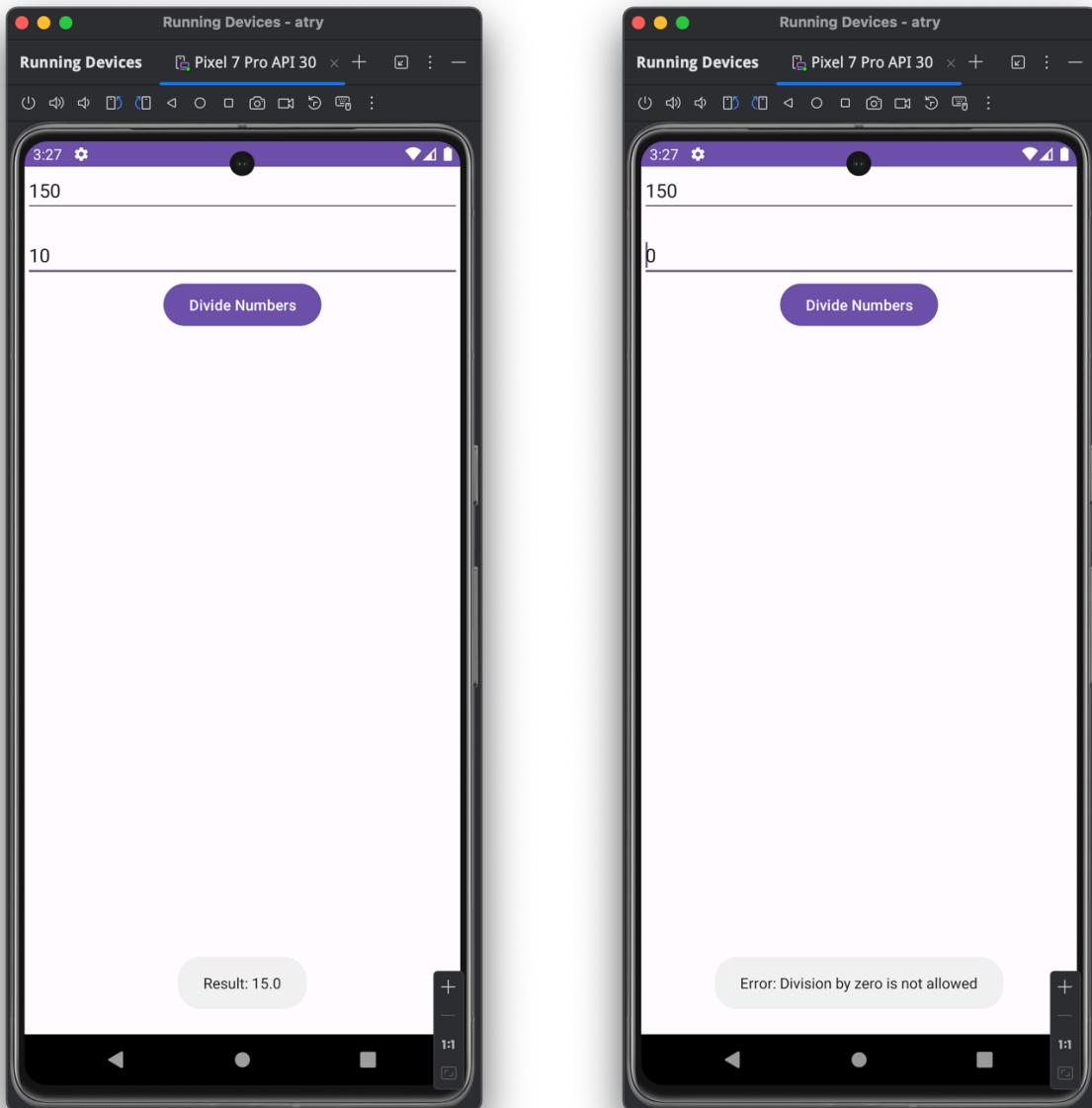
Amal Jyothi College of Engineering (Autonomous), Kanjirappally

```
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);    final EditText dividendEditText
        = findViewById(R.id.dividendEditText);    final EditText divisorEditText =
        findViewById(R.id.divisorEditText);    Button divideButton =
        findViewById(R.id.divideButton);    divideButton.setOnClickListener(new
        View.OnClickListener() {
            @Override
            public void onClick(View view) {
                try {
                    double dividend = Double.parseDouble(dividendEditText.getText().toString());
                    double divisor = Double.parseDouble(divisorEditText.getText().toString());    double
                    result = divideNumbers(dividend, divisor);
                    showToast("Result: " + result);
                } catch (NumberFormatException e) {
                    showToast("Please enter valid numbers");
                } catch (ArithmaticException e) {
                    showToast("Error: " + e.getMessage());
                } catch (Exception e) {
                    showToast("An unexpected error occurred");
                }
            }
        });
    }

    private double divideNumbers(double dividend, double divisor) {
        if (divisor == 0) {
            throw new ArithmaticException("Division by zero is not allowed");
        }
        return dividend / divisor;
    }

    private void showToast(String message) {
        Toast.makeText(this, message, Toast.LENGTH_SHORT).show();
    }
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO3 was obtained.

Experiment No.: 9

Aim

Implement Intent to navigate between multiple 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">
    <Button
        android:id="@+id	btn"
        android:layout_width="150dp"
        android:layout_height="50dp"      android:text="Go to
        Google"
        app:layout_constraintBottom_toBottomOf="parent"
        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="0.499" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

activity_second.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=".SecondActivity">
    <TextView    android:id="@+id	btnS1"
    android:layout_width="132dp"
    android:layout_height="48dp"
    android:text="Welcome"    android:textSize="80px"
    app:layout_constraintBottom_toBottomOf="parent"
    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="0.459" />
    <TextView      android:id="@+id(btnS2"
        android:layout_width="308dp"
        android:layout_height="43dp"      android:text="Intent Text
Successful"      android:textSize="80px"
        app:layout_constraintBottom_toBottomOf="@+id	btnS1"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.494"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.697" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java package

```

com.example.intent;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri; 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 btn =
        findViewById(R.id.btn);      btn.setOnClickListener(new
        View.OnClickListener() {          @Override
            public void onClick(View v) {
                Intent i = new Intent(Intent.ACTION_VIEW, Uri.parse("https://www.google.com"));
                startActivity(i);
            }
        });
    }
}
```

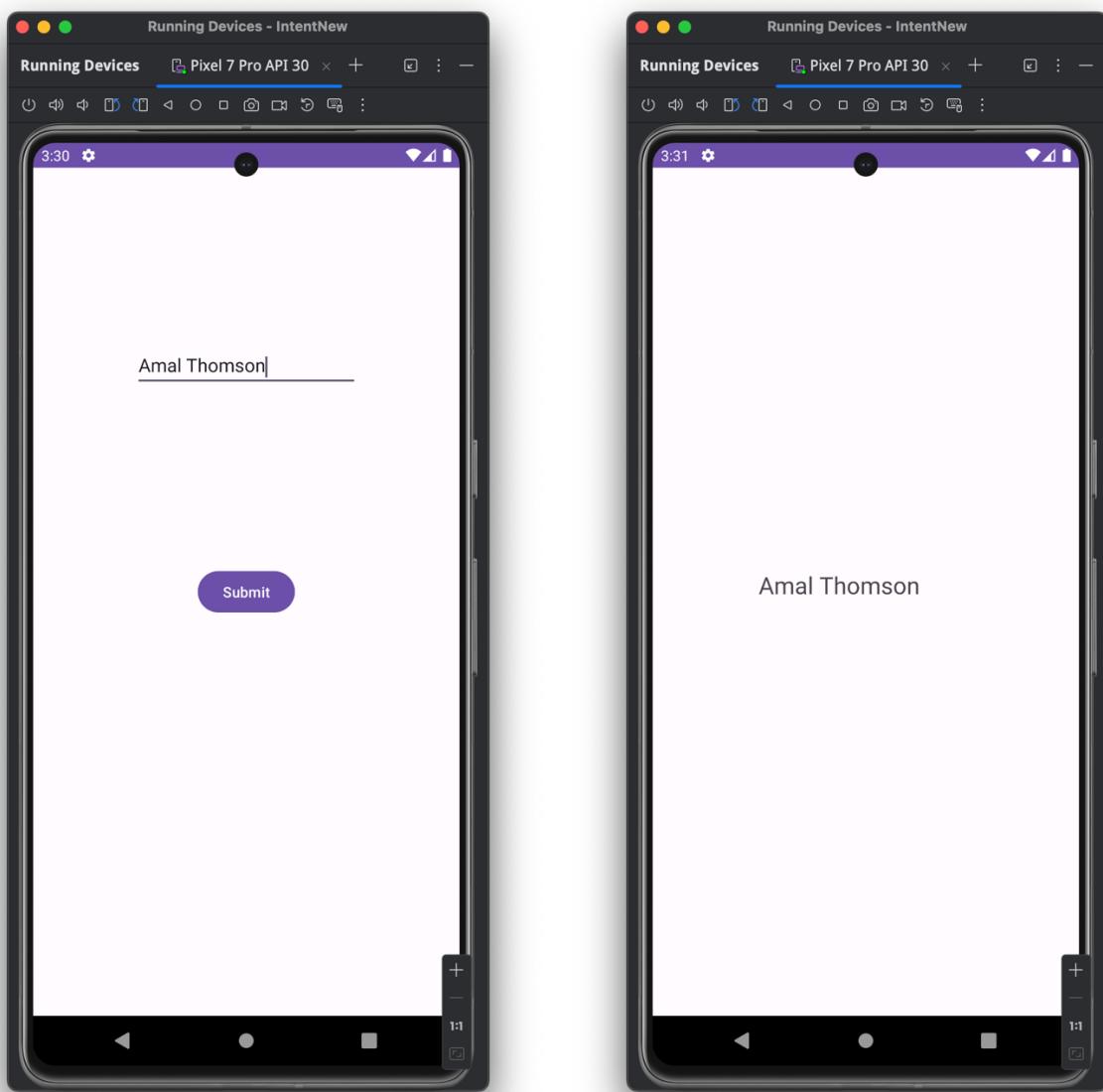
SecondActivity.java package

```

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

```
public class SecondActivity extends AppCompatActivity {  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_second);  
    }  
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO3 was obtained.

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_main.xml

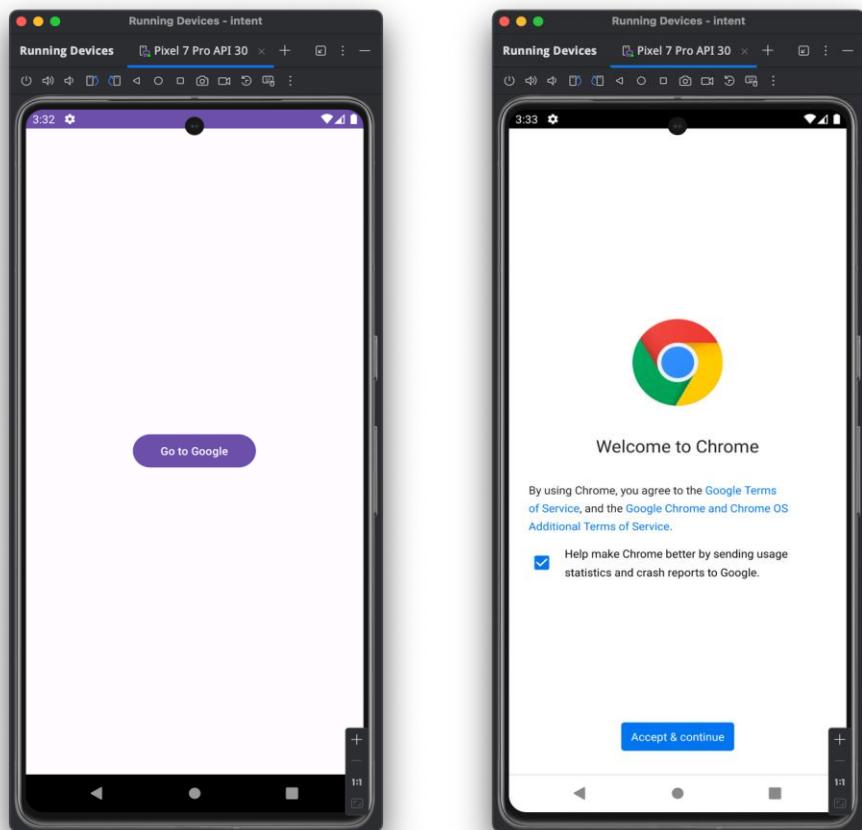
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    tools:context=".MainActivity">
    <Button
        android:id="@+id	btn"
        android:layout_width="150dp"
        android:layout_height="50dp"      android:text="Go to
        Google"
        app:layout_constraintBottom_toBottomOf="parent"
        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="0.499" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java package

```
com.example.intent;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri; 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  
        btn = findViewById(R.id.btn);  
        btn.setOnClickListener(new View.OnClickListener() {  
            @Override  
            public void onClick(View v) {  
                Intent i = new Intent(Intent.ACTION_VIEW, Uri.parse("https://www.google.com"));  
                startActivity(i);  
            }  
        });  
    }  
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO3 was obtained.

Experiment No.: 11

Aim

Implement 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>
```

options.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item
        android:id="@+id/it1"
        android:title="Search" />
    <item
        android:id="@+id/it2"
        android:title="Upload" />
```

```

<item
    android:id="@+id/it3"
    android:title="Copy" />
<item
    android:id="@+id/it4"
    android:title="Print" />
<item
    android:id="@+id/it5"
    android:title="Print" />
<item
    android:id="@+id/it6"
    android:title="Bookmark" />
</menu>

```

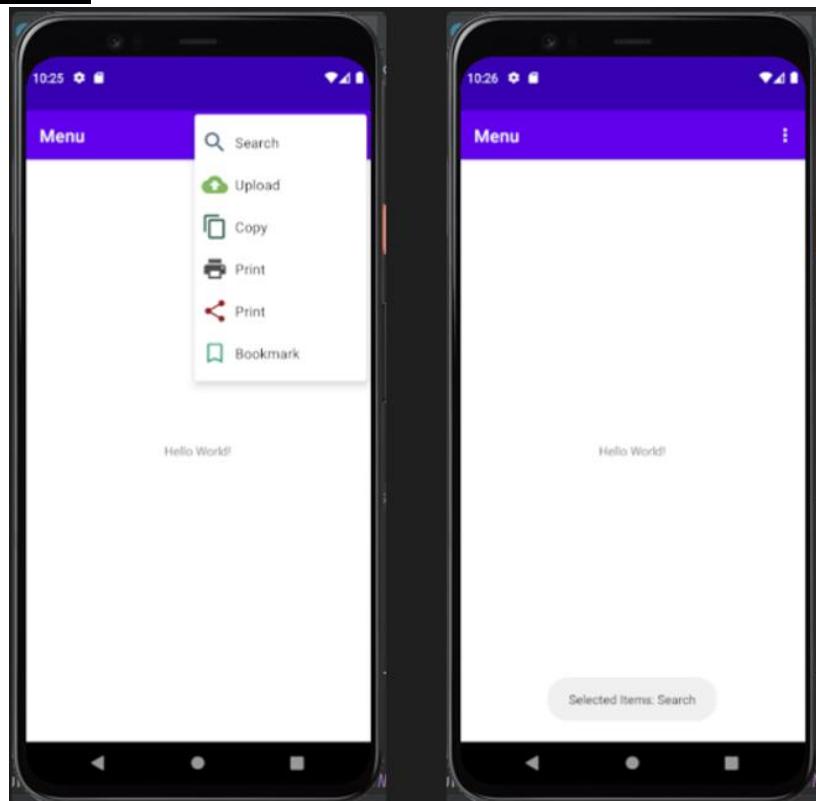
```

MainActivity.java package com.example.om; import
androidx.annotation.NonNull; import
androidx.appcompat.app.AppCompatActivity; import
androidx.appcompat.view.menu.MenuBuilder; import
android.annotation.SuppressLint; 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);
    }
    @SuppressLint("RestrictedApi")
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.options, menu); if (menu
        instanceof MenuBuilder) { MenuBuilder m =
        (MenuBuilder) menu;
        m.setOptionalIconsVisible(true);
    }
    return super.onCreateOptionsMenu(menu);
}
@Override

```

```
public boolean onOptionsItemSelected(@NonNull MenuItem item) {  
    "Selected Items: " + item.getTitle(), Toast.LENGTH_SHORT).show();  
    if (item.getItemId() == R.id.it1) {  
        return true;  
    } else if (item.getItemId() == R.id.it2) {  
        return true;  
    } else if (item.getItemId() == R.id.it3) {  
        return true;  
    } else if (item.getItemId() == R.id.it4) {  
        return true;  
    } else if (item.getItemId() == R.id.it5) {  
        return true;  
    } else if (item.getItemId() == R.id.it6) {  
        return true;    } else {  
        return super.onOptionsItemSelected(item);  
    }  
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO3 was obtained.

Experiment No.: 12

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/dayLists"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />
</RelativeLayout>
```

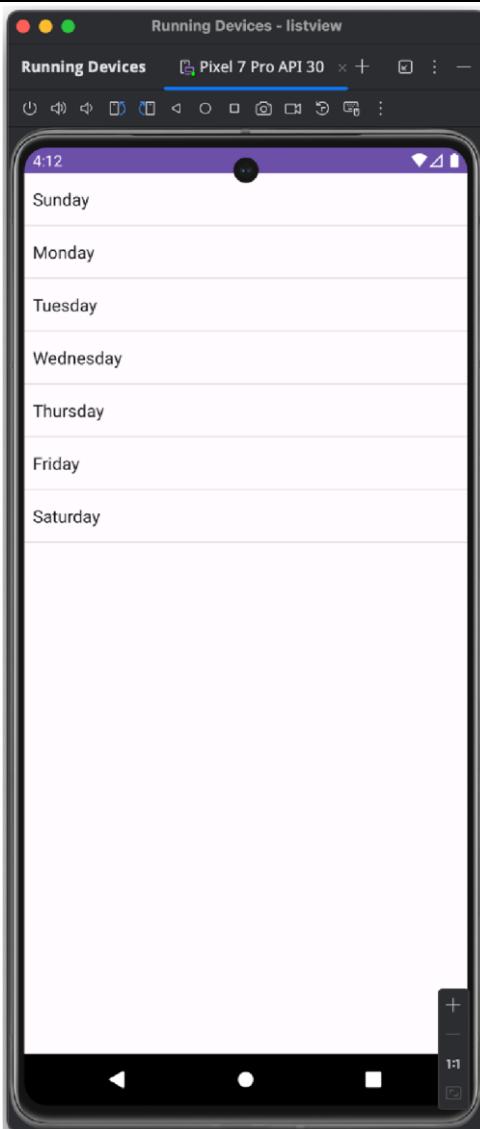
MainActivity.java package

```
com.example.days;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle; import
android.view.View; import
android.widget.AdapterView; import
android.widget.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.dayLists);
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 i, long l) {
    TextView temp=(TextView) view;
    Toast.makeText(this,"You
clicked"+temp.getText()+"at"+i,Toast.LENGTH_LONG).show();
}
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO3 was obtained.

Experiment No.: 13

Aim

Develop an application that use GridView with images and display Alert box on selection.

CO4

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

Procedure

activity_main.xml

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

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```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    tools:context=".MainActivity">
    <GridView
        android:id="@+id/gridview"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:columnWidth="100dp"
        android:gravity="center"      android:numColumns="2"
        android:verticalSpacing="10dp"
        android:horizontalSpacing="10dp"
        android:divider="#000"
        android:dividerHeight="10dp" />
</RelativeLayout>
```

grid_view.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"    android:orientation="vertical"
    android:gravity="center">
    <ImageView
        android:id="@+id/fruit_image"
        android:layout_width="100dp"
        android:layout_height="100dp"
        android:scaleType="centerCrop" />
    <TextView
        android:id="@+id/fruit_name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:layout_marginTop="5dp" />
</LinearLayout>
```

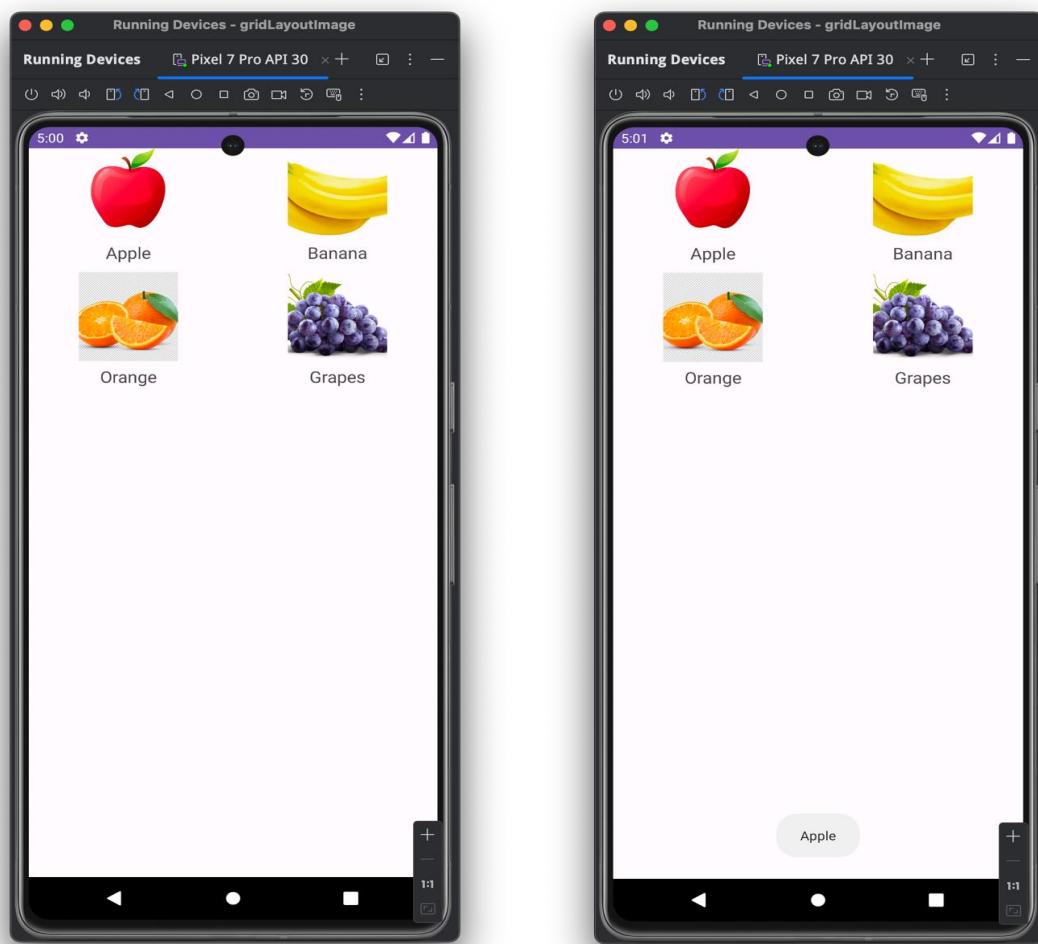
MainActivity.java

```
package com.example.gridlayoutimage; import
android.os.Bundle; import android.view.View; import
android.view.ViewGroup; import android.widget.BaseAdapter;
import android.widget.GridView; import
android.widget.ImageView; import android.widget.TextView;
import android.widget.Toast; import
androidx.appcompat.app.AppCompatActivity; public class
```

```
MainActivity extends AppCompatActivity {   String[] fruitNames
= {"Apple", "Banana", "Orange", "Grapes"};   int[] fruitImages =
{R.drawable.apple, R.drawable.banana,
R.drawable.orange, R.drawable.grapes};
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);      GridView
gridView = findViewById(R.id.gridview);
CustomAdapter customAdapter = new CustomAdapter();
gridView.setAdapter(customAdapter);
}
private class CustomAdapter extends BaseAdapter {
@Override
public int getCount() {
return fruitNames.length;
}
@Override
public Object getItem(int position) {
return null;
}
@Override
public long getItemId(int position) {
return 0;
}
@Override     public View getView(int position, View convertView,
 ViewGroup parent) {
View view = getLayoutInflater().inflate(R.layout.grid_view, null);
TextView fruitName = view.findViewById(R.id.fruit_name);
ImageView fruitImage = view.findViewById(R.id.fruit_image);
fruitName.setText(fruitNames[position]);
fruitImage.setImageResource(fruitImages[position]);      fruitImage.setOnClickListener(new
View.OnClickListener() {
@Override
public void onClick(View v) {
Toast.makeText(MainActivity.this, fruitNames[position],
Toast.LENGTH_SHORT).show();
}
});
return
view;
}
}
}
```

{

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO24 was obtained.

Experiment No.: 14

Aim

Develop an application that implements Spinner component and perform event handling.

CO4

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

Procedure

activity_main.xml

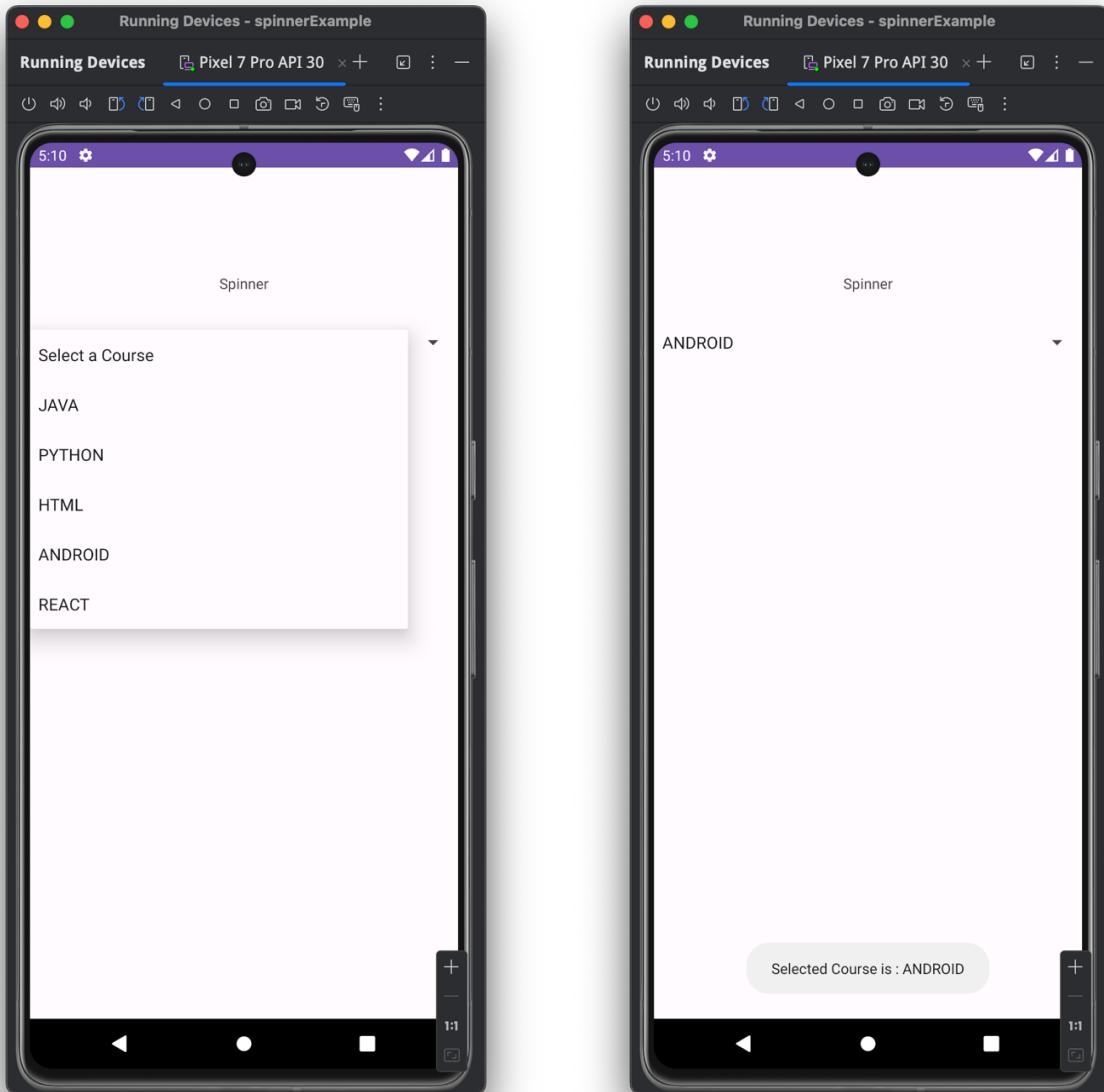
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Spinner"
        android:layout_marginTop="102dp"
        android:gravity="center" />
    <Spinner
        android:id="@+id/spinner"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="35dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.spinnerexample; 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.Toast;
public class MainActivity extends AppCompatActivity {
    Spinner spinner;
    String[] courses = {"Select a Course", "JAVA", "PYTHON", "HTML", "ANDROID",
    "REACT"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);    spinner =
        findViewById(R.id.spinner);
        ArrayAdapter<String> aa = new ArrayAdapter<>(this,
        android.R.layout.simple_spinner_item, courses);
```

```
aa.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
spinner.setAdapter(aa);
spinner.setOnItemSelectedListener(new AdapterView.OnItemSelectedListener() {
    @Override
    public void onItemSelected(AdapterView<?> adapterView, View view, int i, long l) {
if (i != 0) {
        Toast.makeText(getApplicationContext(), "Selected Course is : " + courses[i],
Toast.LENGTH_LONG).show();
    }
}
@Override
public void onNothingSelected(AdapterView<?> adapterView) {
}
});
}
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO4 was obtained.

Experiment No.: 15

Aim

Develop application using Fragments.

CO4

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

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:padding="16dp">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:orientation="vertical"      android:gravity="center">
        <Button
            android:id="@+id/FragmentOne"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"      android:text="Fragment
One" />
        <Button
            android:id="@+id/FragmentTwo"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"      android:text="Fragment
Two" />
    </LinearLayout>
    <FrameLayout
        android:id="@+id/fragment"
        android:layout_width="match_parent"
        android:layout_height="0dp"/>
</LinearLayout>
```

fragment_one.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:gravity="center">
    <TextView
        android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
    android:text="Active Fragment is FragmentOne"
        android:textSize="24sp"/>
</LinearLayout>
```

fragment_two.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:gravity="center">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Active Fragment is FragmentTwo"
        android:textSize="24sp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.fragmemtandroid; 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 FragmentOne = findViewById(R.id.FragmentOne);
        Button FragmentTwo = findViewById(R.id.FragmentTwo);
        FragmentOne.setOnClickListener(new View.OnClickListener() {
            @Override      public void
            onClick(View v) {
                loadFragment(new FragmentOne());
            }
        });
        FragmentTwo.setOnClickListener(new View.OnClickListener() {
            @Override      public void
            onClick(View v) {
                loadFragment(new FragmentTwo());
            }
        });
    }
}
```

```
private void loadFragment(androidx.fragment.app.Fragment fragment) {  
    getSupportFragmentManager().beginTransaction()  
        .replace(R.id.fragment, fragment)  
        .commit();  
}  
}
```

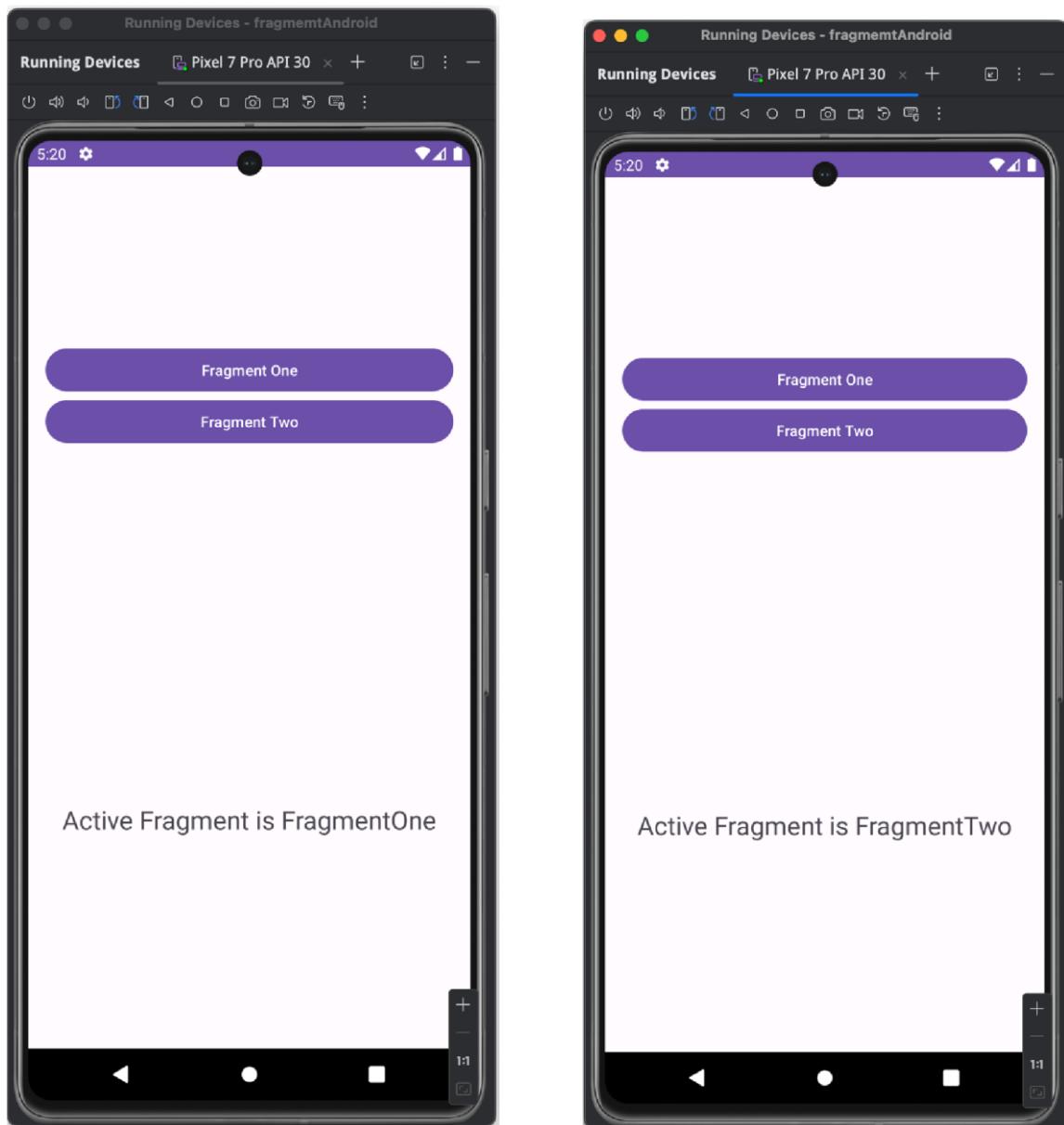
FragmentOne.java

```
package com.example.fragmemtandroid;  
import android.os.Bundle; import  
android.view.LayoutInflater; import  
android.view.View; import  
android.view.ViewGroup; import  
androidx.fragment.app.Fragment; public class  
FragmentOne extends Fragment { public  
FragmentOne() {  
}  
@Override  
public View onCreateView(LayoutInflater inflater, ViewGroup container,  
Bundle savedInstanceState) {  
    return inflater.inflate(R.layout.fragment_one, container, false);  
}  
}
```

FragmentTwo.java

```
package com.example.fragmemtandroid;  
import android.os.Bundle; import  
android.view.LayoutInflater; import  
android.view.View; import  
android.view.ViewGroup; import  
androidx.fragment.app.Fragment; public class  
FragmentTwo extends Fragment { public  
FragmentTwo() {  
}  
@Override  
public View onCreateView(LayoutInflater inflater, ViewGroup container,  
Bundle savedInstanceState) {  
    return inflater.inflate(R.layout.fragment_two, container, false);  
}  
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO4 was obtained.

Experiment No.: 16

Aim

Implement Navigation drawer.

Amal Jyothi College of Engineering (Autonomous), Kanjirappally

C04

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

Procedure**activity_main.xml**

```
<?xml version="1.0" encoding="utf-8"?> <androidx.drawerlayout.widget.DrawerLayout
    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:id="@+id/drawerLayout"
    tools:context=".MainActivity">
    <androidx.appcompat.widget.Toolbar
        android:id="@+id/toolbar"
        android:layout_width="match_parent"
        android:layout_height="?attr actionBarSize"
        app:popupTheme="@style/ThemeOverlay.AppCompat.Light"/>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">
        </LinearLayout>
    <com.google.android.material.navigation.NavigationView
        android:layout_width="wrap_content"
        android:layout_height="match_parent"      android:layout_gravity="start"
        app:menu="@menu/navigation_menu"/>
</androidx.drawerlayout.widget.DrawerLayout>
```

navigation_menu.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item
        android:id="@+id/ac"
        android:title="My Account"
        android:icon="@drawable/account"/>
        <item
            android:id="@+id/se"
            android:title="Settings"
            android:icon="@drawable/settings"/>
```

```

<item      android:id="@+id/lg"
android:title="Logout"
android:icon="@drawable/logout"/>
</menu>

strings.xml <resources>
    <string name="app_name">A Sample Navigation Drawer</string>
    <string name="nav_open">Open</string>
    <string name="nav_close">Close</string>
</resources>

```

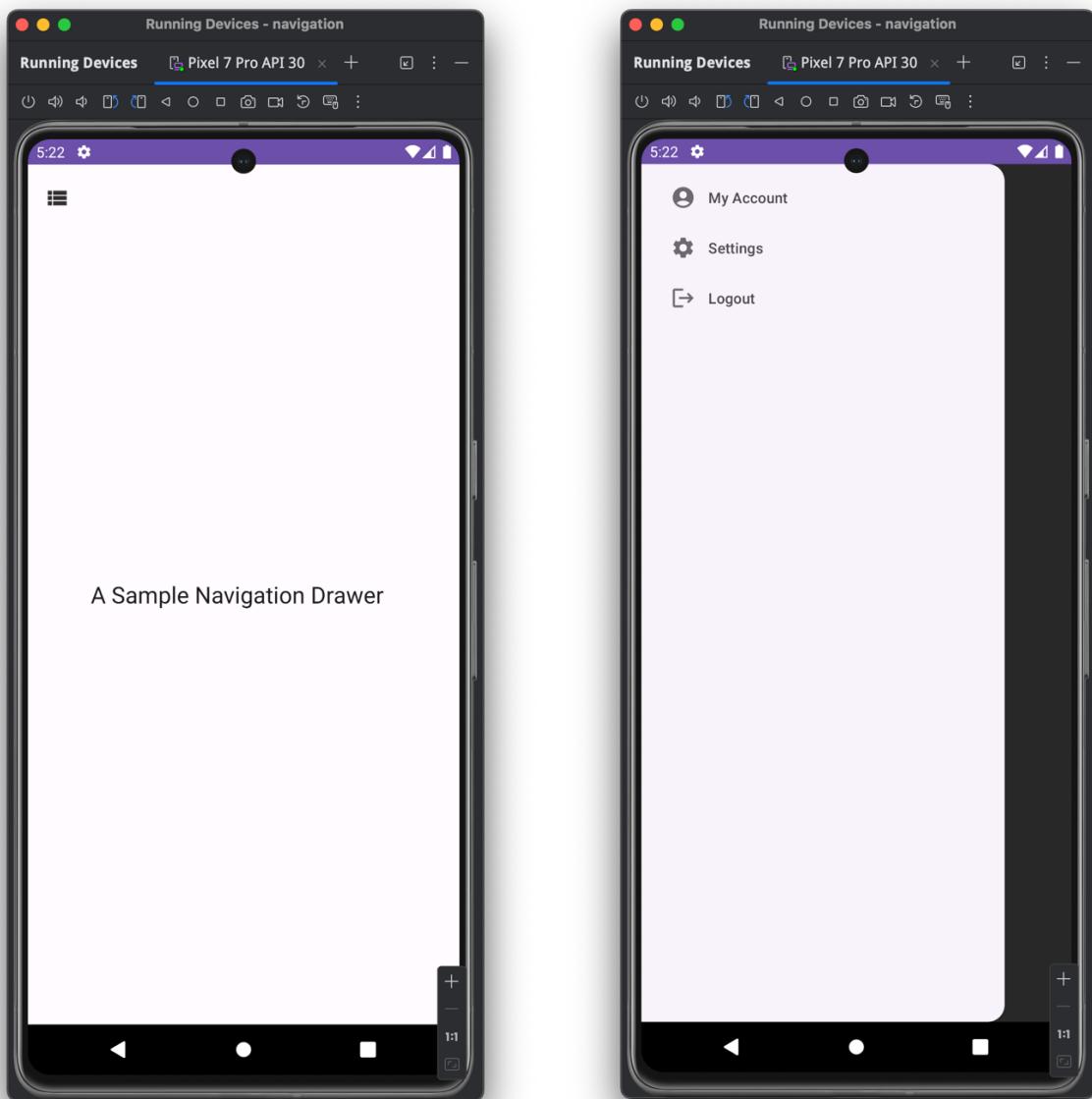
```

MainActivity.java package com.example.navigation;
import androidx.annotation.NonNull; import
androidx.appcompat.app.ActionBar; import
androidx.appcompat.app.ActionBarDrawerToggle; import
androidx.appcompat.app.AppCompatActivity; import
androidx.drawerlayout.widget.DrawerLayout; import
androidx.appcompat.widget.Toolbar; import
android.os.Bundle; import android.view.MenuItem;
public class MainActivity extends AppCompatActivity {
    DrawerLayout drawerLayout;
    ActionBarDrawerToggle actionBarDrawerToggle;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);    drawerLayout =
        findViewById(R.id.drawerLayout);    actionBarDrawerToggle
        = new ActionBarDrawerToggle(this,           drawerLayout,
        R.string.nav_open, R.string.nav_close);
        drawerLayout.addDrawerListener(actionBarDrawerToggle);
        actionBarDrawerToggle.syncState();
        Toolbar toolbar = findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);
        getSupportActionBar().setDisplayHomeAsUpEnabled(true);
        getSupportActionBar().setHomeAsUpIndicator(R.drawable.icon);
    }
    @Override    public boolean onOptionsItemSelected(@NonNull
MenuItem item) {    if
(item.getItemId() == actionBarDrawerToggle.onOptionsItemSelected(item))
    {
        return true;
    }
}

```

```
        return super.onOptionsItemSelected(item);  
    }  
}  
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO4 was obtained.

Experiment No.: 17

Aim

Create database using SQLite and perform INSERT and SELECT.

C05

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:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    android:padding="16dp"
    tools:context=".MainActivity">
    <TextView      android:id="@+id/text"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Insert and Select"
        android:textSize="36dp"/>
    <EditText      android:id="@+id/id"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:layout_below="@id/text"
        android:hint="ID" />
    <EditText
        android:id="@+id/name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/id"
        android:layout_marginTop="16dp"      android:hint="Name"
    />
    <EditText android:id="@+id/dept"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        "
        android:layout_below="@+id/name"
```

```
        android:layout_marginTop="16dp"
        android:hint="Department" />
    <EditText
        android:id="@+id/phone"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/dept"
        android:layout_marginTop="16dp"
        android:hint="Phone Number" />
    <LinearLayout
        android:id="@+id/buttonContainer"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:layout_below="@+id/phone"
        android:layout_marginTop="25dp">
        <Button
            android:id="@+id/insert"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:layout_height="wrap_content"
            android:textSize="12dp"
            android:text="Insert"
            android:onClick="dbInsert"/>
        <Button      android:id="@+id/read"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:layout_height="wrap_content"
            android:textSize="12dp"
            android:text="Read"
            android:onClick="dbRead"/>
    </LinearLayout>  <TextView
        android:id="@+id/view"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/buttonContainer"
        android:layout_marginTop="16dp"
        android:hint="Employee Details"/>
</RelativeLayout>
```

dbHelper.java

```
package com.example.employeedb;
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, "empDB.db", null, 1);
}
@Override
public void onCreate(SQLiteDatabase db) {
    db.execSQL("CREATE TABLE tbl_Emp (id INTEGER PRIMARY KEY
AUTOINCREMENT, name VARCHAR(10), dept VARCHAR(20), phone VARCHAR(20))");
}
@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
}
}

```

MainActivity.java

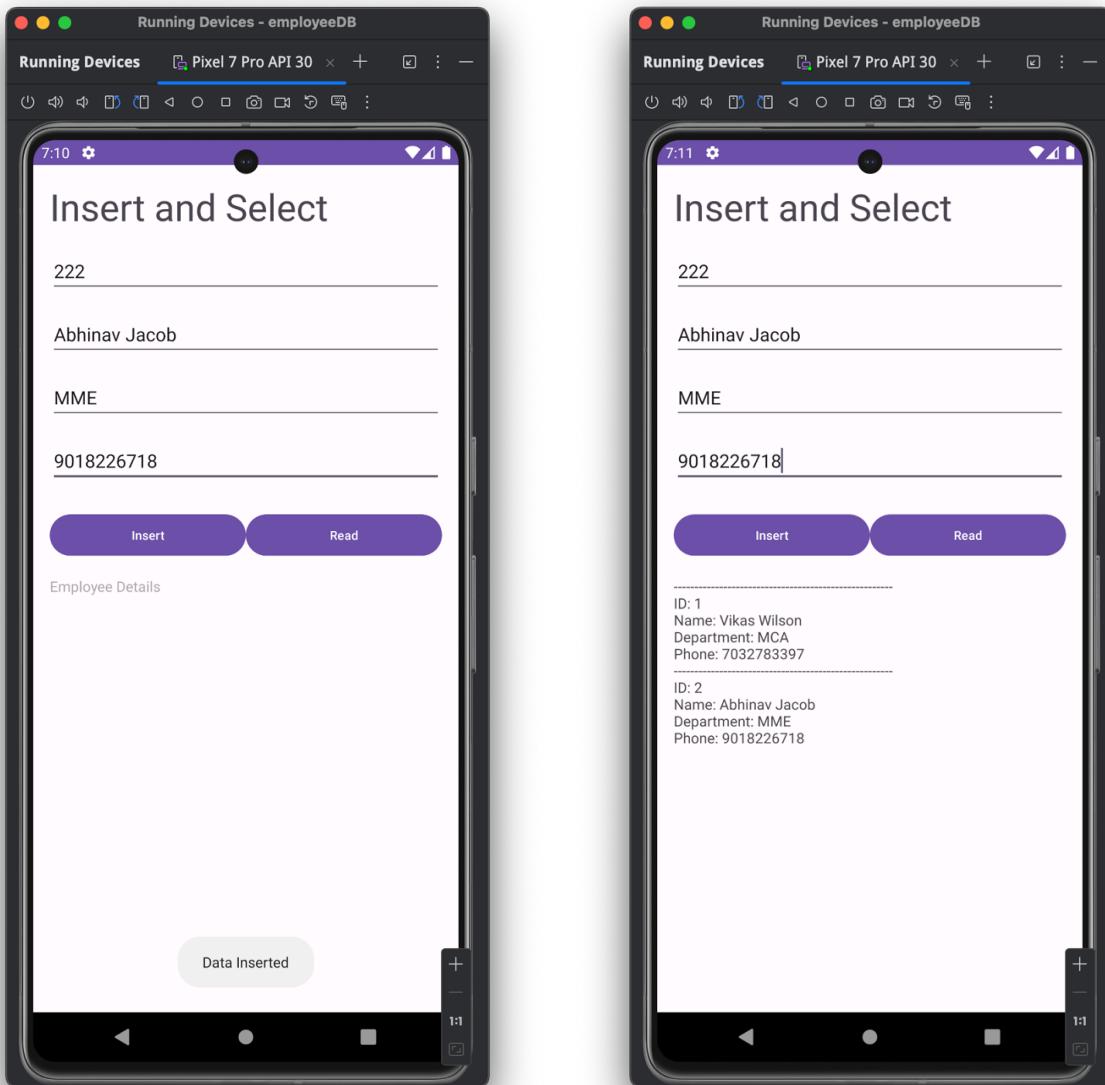
```

package com.example.employeedb;
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.EditText; import
android.widget.TextView; import
android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    EditText id, name, dept, phone;
    TextView display;
    dbHelper dbHelper = new dbHelper(this);
    SQLiteDatabase db;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState); setContentView(R.layout.activity_main);
        db = dbHelper.getReadableDatabase();
        db = dbHelper.getWritableDatabase();
        id = findViewById(R.id.id);      name =
        findViewById(R.id.name);      dept =
        findViewById(R.id.dept);      phone =

```

```
findViewById(R.id.phone);      display =
findViewById(R.id.view);
}
public void dbInsert(View view) {
String n = name.getText().toString();
String d = dept.getText().toString();
String p = phone.getText().toString();
ContentValues data = new ContentValues();
data.put("name", n);
data.put("dept", d);
data.put("phone", p);
db.insert("tbl_Emp", null, data);
Toast.makeText(this, "Data Inserted", Toast.LENGTH_SHORT).show();
}
public void dbRead(View view) {
StringBuffer buffer = new StringBuffer();
Cursor cursor = db.rawQuery("Select * from tbl_Emp", null);
while (cursor.moveToFirst()){
    buffer.append("-----"+"\n");
    buffer.append("ID: "+cursor.getString(0)+"\n");      buffer.append("Name:
"+cursor.getString(1)+"\n");      buffer.append("Department:
"+cursor.getString(2)+"\n");      buffer.append("Phone:
"+cursor.getString(3)+"\n");
}
    display.setText(buffer.toString());
}
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO5 was obtained.

Experiment No.: 18

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:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"    android:padding="16dp"
    tools:context=".MainActivity">
    <TextView      android:id="@+id/text"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text=" Employee Database"
        android:textSize="36dp"/>
    <EditText      android:id="@+id/id"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:layout_below="@+id/text"
        android:hint="ID" />
    <EditText
        android:id="@+id/name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/id"
        android:layout_marginTop="16dp"      android:hint="Name"
    />
    <EditText
        android:id="@+id/dept"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

```
    android:layout_below="@+id/name"
    android:layout_marginTop="16dp"      android:hint="Department"
  />
  <EditText
    android:id="@+id/phone"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@+id/dept"
    android:layout_marginTop="16dp"
    android:hint="Phone Number" />
  <LinearLayout
    android:id="@+id/buttonContainer"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_below="@+id/phone"
    android:layout_marginTop="25dp">
    <Button
      android:id="@+id/insert"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:layout_height="wrap_content"
      android:textSize="12dp"
      android:text="Insert"
      android:onClick="dbInsert"/>
    <Button      android:id="@+id/read"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:layout_height="wrap_content"
      android:textSize="12dp"
      android:text="Read"
      android:onClick="dbRead"/>
    <Button
      android:id="@+id/update"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:layout_height="wrap_content"
      android:textSize="12dp"
      android:text="Update"
      android:onClick="dbUpdate"/>      <Button
      android:id="@+id/delete"
      android:layout_width="0dp"
```

```

    android:layout_weight="1"
    android:layout_height="wrap_content"
    android:textSize="12dp"
    android:text="Delete"
    android:onClick="dbDelete"/>
</LinearLayout>
<TextView
    android:id="@+id/view"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@+id/buttonContainer"
    android:layout_marginTop="16dp"      android:hint="Employee
Details"/>
</RelativeLayout>

```

dbHelper.java

```

package com.example.employeedb;
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, "empDB.db", null, 1);
}
@Override
public void onCreate(SQLiteDatabase db) {
    db.execSQL("CREATE TABLE tbl_Emp (id INTEGER PRIMARY KEY
AUTOINCREMENT, name VARCHAR(10), dept VARCHAR(20), phone VARCHAR(20))");
}
@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
}
}

```

MainActivity.java

```

package com.example.employeedb;
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.EditText; import

```

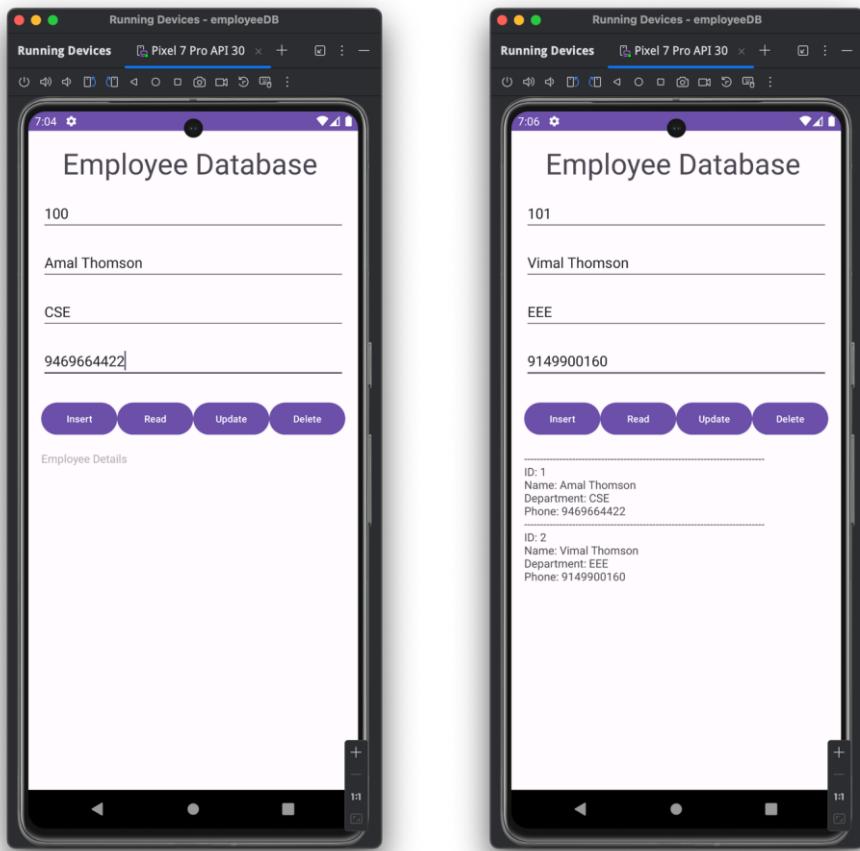
```
android.widget.TextView; import  
android.widget.Toast;  
public class MainActivity extends AppCompatActivity {  
    EditText id, name, dept, phone;  
    TextView display;  
    dbHelper dbHelper = new dbHelper(this);  
    SQLiteDatabase db;  
    @Override  
        protected void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_main);      db =  
    dbHelper.getReadableDatabase();      db =  
    dbHelper.getWritableDatabase();      id =  
    findViewById(R.id.id);      name =  
    findViewById(R.id.name);      dept =  
    findViewById(R.id.dept);      phone =  
    findViewById(R.id.phone);  
    display = findViewById(R.id.view);  
    }  
    public void dbInsert(View view) {  
String n = name.getText().toString();  
    String d = dept.getText().toString();  
    String p = phone.getText().toString();  
ContentValues data = new ContentValues();  
    data.put("name", n);  
data.put("dept", d);  
data.put("phone", p);  
    db.insert("tbl_Emp", null, data);  
    Toast.makeText(this, "Data Inserted", Toast.LENGTH_SHORT).show();  
    }  
    public void dbRead(View view) {  
StringBuffer buffer = new StringBuffer();  
    Cursor cursor = db.rawQuery("Select * from tbl_Emp", null);  
while (cursor.moveToNext()){  
    buffer.append("-----"+"\n");  
    buffer.append("ID: "+cursor.getString(0)+"\n");  
buffer.append("Name: "+cursor.getString(1)+"\n");  
buffer.append("Department: "+cursor.getString(2)+"\n");  
buffer.append("Phone: "+cursor.getString(3)+"\n");  
    }  
    display.setText(buffer.toString());  
    }

---


```

```
public void dbUpdate(View view) {  
    String i = id.getText().toString();  
    String n = name.getText().toString();  
    String d = dept.getText().toString();  
    String p = phone.getText().toString();  
    ContentValues data = new ContentValues();  
    data.put("id", i);      data.put("name", n);  
    data.put("dept", d);    data.put("phone", p);  
    db.update("tbl_Emp", data, "id="+i, null);  
    Toast.makeText(this, "Data Updated", Toast.LENGTH_SHORT).show();  
}  
  
public void dbDelete(View view) {  
    String i = id.getText().toString();  
    db.delete("tbl_Emp", "id="+i, null);  
    Toast.makeText(this, "Data Deleted", Toast.LENGTH_SHORT).show();  
}  
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO5 was obtained.