Mobile Computing Lab

Assignment No. : 1

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 28/08/2024

Aim : 40 Programs in C, CPP and Java

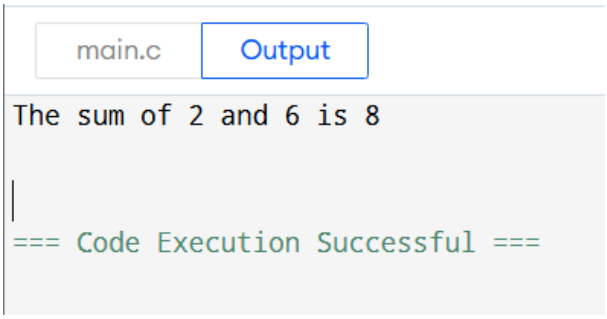
Question: Write a C program to add two numbers (2 and 6) and display its sum.

Solution:

Using C:

```c
//PrathmeshSb
#include <stdio.h>
int main() {
    int num1 = 2, num2 = 6, sum;
    sum = num1 + num2;
    printf("The sum of %d and %d is %d\n", num1, num2, sum);
    return 0;
}
```

Output:



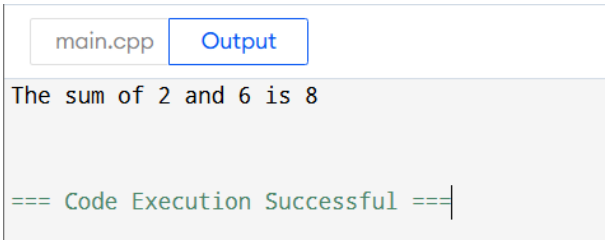
Using CPP:

```cpp
//PrathmeshSb
#include <iostream>
using namespace std;

int main() {
    int num1 = 2, num2 = 6, sum;
    sum = num1 + num2;
    cout <<"The sum of "<<num1<<"and"<<num2<<"is "<<sum<<endl;
```

```
        return 0;
    }
```

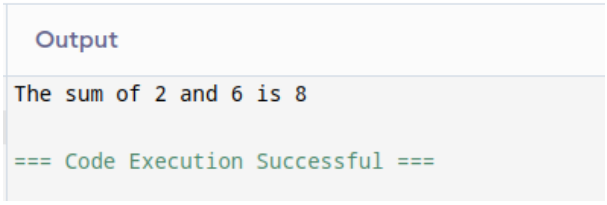
Output:



Using Java:

```
//PrathmeshSb
public class AddTwoNumbers {
    public static void main(String[] args) {
        int num1 = 2, num2 = 6, sum;
        sum = num1 + num2;
        System.out.println("The sum of "+num1+" and "+num2+" is "+sum);
    }
}
```

Output:



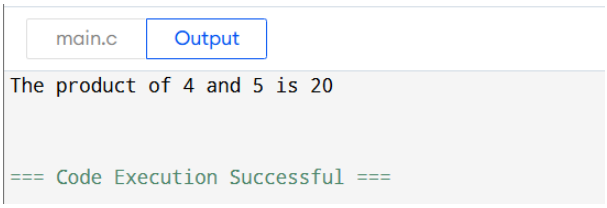
Question: Write a program to multiply two numbers (4 and 5) and display its product.

Solution:

Using C:

```
//PrathmeshSb
#include <stdio.h>
int main() {
    int num1 = 4, num2 = 5, product;
    product = num1 * num2;
    printf("The product of %d and %d is %d\n",num1, num2,product);
    return 0;
}
```

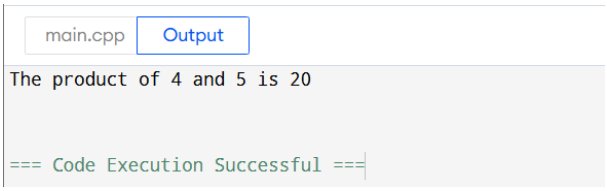
Output:



Using CPP:

```
//PrathmeshSb
#include <iostream>
using namespace std;
int main() {
    int num1 = 4, num2 = 5, product;
    product = num1 * num2;
    cout<<"The product of"<<num1<<" and "<<num2<<" is "<<product;
    return 0;
}
```

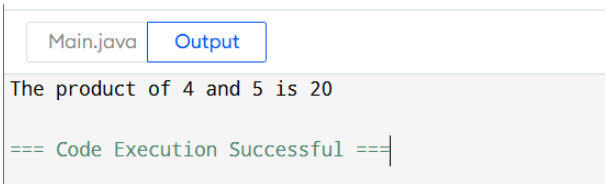
Output:



Using Java:

```
    //PrathmeshSb
   public class MultiplyTwoNumbers {
    public static void main(String[] args) {
        int num1 = 4, num2 = 5, product;
        product = num1 * num2;
        System.out.println("The product of"+num1+"and "+num2+"is "+product);
    }
}
```

Output:



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Mobile Computing Lab

Assignment No.: 2

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 04/09/2024

Aim: To Compare different mobile development platforms including cross platform development platforms

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Mobile Computing Lab

Assignment No.: 3

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 25/09/2024

Aim: Detailed comparative analysis of 1G, 2G, 3G, 4G, 5G.

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Mobile Computing Lab

Assignment No.: 4

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 09/10/2024

Aim: Use various controls like Edit View, buttons, radio buttons, checkboxes, AutoCompleteTextView, Image Button, and Toggle Button on Mobile to develop the UI.

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"
    android:scrollbars="vertical">

    <!-- Name Field -->
    <TextView
        android:id="@+id/nameLabel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Full Name:"
        android:textSize="18sp"/>

    <EditText
        android:id="@+id/etName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter full name"
        android:inputType="textPersonName"/>

    <!-- Email Field -->
    <TextView
        android:id="@+id/emailLabel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Email Address:"
        android:textSize="18sp"/>

    <EditText
        android:id="@+id/etEmail"
```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter email address"
        android:inputType="textEmailAddress"/>

    <!-- Phone Field -->
    <TextView
        android:id="@+id/phoneLabel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Phone Number:"
        android:textSize="18sp"/>

    <EditText
        android:id="@+id/etPhone"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter phone number"
        android:inputType="phone"/>

    <!-- Gender Selection -->
    <TextView
        android:id="@+id/genderLabel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Gender:"
        android:textSize="18sp"/>

    <RadioGroup
        android:id="@+id/radioGroupGender"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">

        <RadioButton
            android:id="@+id/radioMale"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Male"/>

        <RadioButton
            android:id="@+id/radioFemale"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Female"/>

    </RadioGroup>
```

```
    <!-- Course Selection -->
    <TextView
        android:id="@+id/courseLabel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Select Course:"
        android:textSize="18sp"/>

    <AutoCompleteTextView
        android:id="@+id/autoCompleteCourse"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Choose your course"/>

    <!-- Accept Terms -->
    <CheckBox
        android:id="@+id/checkTerms"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="I accept the terms and conditions"
        android:layout_marginTop="16dp"/>

    <!-- Submit Button -->
    <Button
        android:id="@+id/btnSubmit"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Register"
        android:layout_marginTop="16dp"/>

</LinearLayout>
```

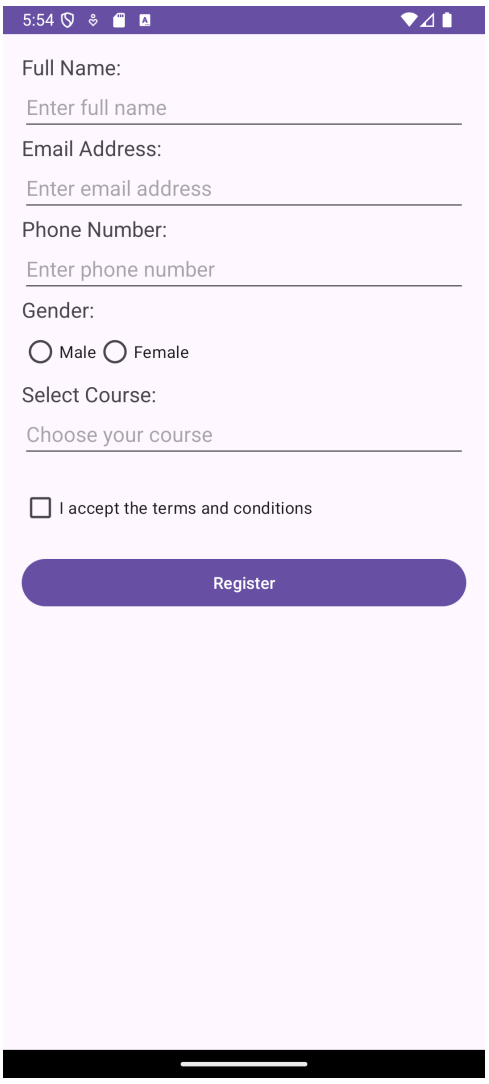
Main_activity.java :

```
    package com.example.studentregistration;

import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.AutoCompleteTextView;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;
```

```
public class MainActivity extends AppCompatActivity {

    private EditText etName, etEmail, etPhone;
    private RadioGroup radioGroupGender;
    private AutoCompleteTextView autoCompleteCourse;
    private CheckBox checkTerms;
    private Button btnSubmit;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Initializing the components
        etName = findViewById(R.id.etName);
        etEmail = findViewById(R.id.etEmail);
        etPhone = findViewById(R.id.etPhone);
        radioGroupGender = findViewById(R.id.radioGroupGender);
        autoCompleteCourse = findViewById(R.id.autoCompleteCourse);
        checkTerms = findViewById(R.id.checkTerms);
        btnSubmit = findViewById(R.id.btnSubmit);

        // Predefined course list for AutoCompleteTextView
        String[] courses = new String[]{"Computer Science",
        "Mechanical Engineering", "Electrical Engineering",
        "Civil Engineering", "Mathematics"};

        // Creating an ArrayAdapter for the AutoCompleteTextView
        ArrayAdapter<String> adapter =
        new ArrayAdapter<>(this, android.R.layout.simple_dropdown_item_1line
        , courses);

        // Setting the adapter to the AutoCompleteTextView
        autoCompleteCourse.setAdapter(adapter);

        // Submit Button click listener
        btnSubmit.setOnClickListener(v -> {
            // Getting the form values
            String name = etName.getText().toString();
            String email = etEmail.getText().toString();
            String phone = etPhone.getText().toString();
            int selectedGenderId = radioGroupGender.getCheckedRadioButtonId();
            RadioButton selectedGender = findViewById(selectedGenderId);
            String gender = selectedGender != null ? selectedGender.getText().
            toString() : "Not selected";
            String course = autoCompleteCourse.getText().toString();
            boolean isTermsAccepted = checkTerms.isChecked();
```

```
            // Check if all fields are filled correctly
            if (name.isEmpty() || email.isEmpty() || phone.isEmpty() ||
            course.isEmpty() || !isTermsAccepted) {
                Toast.makeText(MainActivity.this, "Please fill all fields
                and accept the terms", Toast.LENGTH_SHORT).show();
                return;
            }

            // Show registration data in a Toast
            String registrationData = "Name: " + name + "\nEmail: " + email +
            "\nPhone: " + phone +
                    "\nGender: " + gender + "\nCourse: " + course;
            Toast.makeText(MainActivity.this, "Registration Successful!\n"
            + registrationData, Toast.LENGTH_LONG).show();
        });
    }
}
```

Output :


5:54
Full Name:
Enter full name
Email Address:
Enter email address
Phone Number:
Enter phone number
Gender:
Male
Female
Select Course:
Choose your course
I accept the terms and conditions
Register

Mobile Computing Lab

Assignment No.: 5

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 14/10/2024

Aim: Design a simple calculator using Android/ other as a separate module of previous.

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"
    android:gravity="center">

    <!-- Display for the calculator -->
    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="32sp"
        android:gravity="end"
        android:inputType="none"
        android:focusable="false"
        android:layout_marginBottom="20dp" />

    <!-- Buttons for numbers and operations -->
    <GridLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:columnCount="4"
        android:orientation="horizontal"
        android:rowCount="5">

        <!-- Row 1 -->
        <Button android:id="@+id/button1" android:text="1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content" />
        <Button android:id="@+id/button2" android:text="2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content" />
```

```
<Button android:id="@+id/button3" android:text="3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
<Button android:id="@+id/buttonAdd" android:text="+"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />

<!-- Row 2 -->
<Button android:id="@+id/button4" android:text="4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
<Button android:id="@+id/button5" android:text="5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
<Button android:id="@+id/button6" android:text="6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
<Button android:id="@+id/buttonSubtract" android:text="-"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />

<!-- Row 3 -->
<Button android:id="@+id/button7" android:text="7"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
<Button android:id="@+id/button8" android:text="8"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
<Button android:id="@+id/button9" android:text="9"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
<Button android:id="@+id/buttonMultiply" android:text="*"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />

<!-- Row 4 -->
<Button android:id="@+id/buttonClear" android:text="C"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
<Button android:id="@+id/button0" android:text="0"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
<Button android:id="@+id/buttonEquals" android:text="="
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
<Button android:id="@+id/buttonDivide" android:text="/"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
```

```
    </GridLayout>
</LinearLayout>
```

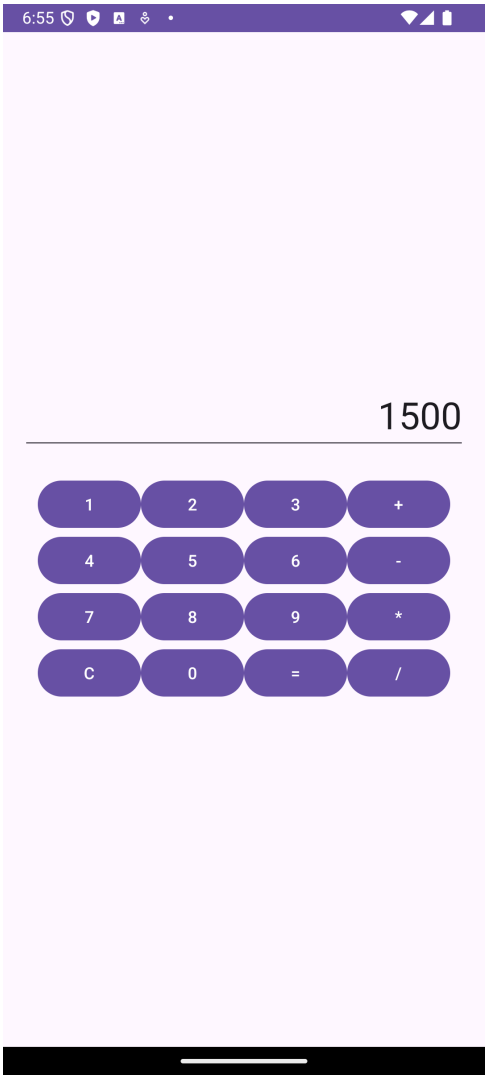
MainActivity.java :

```
    package com.example.simplecalculator;

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 editText;
    private String currentInput = "";
    private String lastOperator = "";
    private double firstOperand = 0;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Initialize the EditText
        editText = findViewById(R.id.editText);

        // Number buttons (0-9)
        int[] numberButtonIds = new int[]{
                R.id.button0, R.id.button1, R.id.button2, R.id.button3,
                R.id.button4, R.id.button5, R.id.button6, R.id.button7,
                R.id.button8, R.id.button9
        };

        for (int id : numberButtonIds) {
            Button button = findViewById(id);
            button.setOnClickListener(this::onNumberButtonClick);
        }

        // Operator buttons (+, -, *, /)
findViewById(R.id.buttonAdd).setOnClickListener(this::onOperatorButtonClick);
findViewById(R.id.buttonSubtract).setOnClickListener(this::onOperatorButtonClick);
findViewById(R.id.buttonMultiply).setOnClickListener(this::onOperatorButtonClick);
findViewById(R.id.buttonDivide).setOnClickListener(this::onOperatorButtonClick);
```

```
        // Equals button
findViewById(R.id.buttonEquals).setOnClickListener(this::onEqualsButtonClick);

        // Clear button
        findViewById(R.id.buttonClear).setOnClickListener(v -> {
            currentInput = "";
            firstOperand = 0;
            lastOperator = "";
            editText.setText("");
        });
    }

    private void onNumberButtonClick(View v) {
        Button button = (Button) v;
        currentInput += button.getText().toString();
        editText.setText(currentInput);
    }

    private void onOperatorButtonClick(View v) {
        Button button = (Button) v;
        if (!currentInput.isEmpty()) {
            firstOperand = Double.parseDouble(currentInput);
            currentInput = "";
            lastOperator = button.getText().toString();
        }
    }

    private void onEqualsButtonClick(View v) {
        if (!currentInput.isEmpty() && !lastOperator.isEmpty()) {
            double secondOperand = Double.parseDouble(currentInput);
            double result = 0;

            switch (lastOperator) {
                case "+":
                    result = firstOperand + secondOperand;
                    break;
                case "-":
                    result = firstOperand - secondOperand;
                    break;
                case "*":
                    result = firstOperand * secondOperand;
                    break;
                case "/":
                    if (secondOperand != 0) {
                        result = firstOperand / secondOperand;
                    } else {
Toast.makeText(this, "Cannot divide by zero", Toast.LENGTH_SHORT).show();
```

```
                    return;
                }
                break;
            }

            currentInput = String.valueOf(result);
            editText.setText(currentInput);
            firstOperand = result;
            lastOperator = "";
        }
    }
}
```

Output :



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Mobile Computing Lab

Assignment No.: 6

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 21/10/2024

Aim: Create a simple temperature converter application using Android/other as a separate module of previous.

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:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Temperature Converter"
        android:textSize="24sp"
        android:textStyle="bold"
        android:layout_gravity="center" />

    <EditText
        android:id="@+id/inputTemperature"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter temperature"
        android:inputType="numberDecimal"
        android:layout_marginTop="16dp" />

    <Spinner
        android:id="@+id/inputUnit"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />

    <Spinner
        android:id="@+id/outputUnit"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />

    <Button
```

```
        android:id="@+id/convertButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Convert"
        android:layout_marginTop="16dp" />

    <Button
        android:id="@+id/clearButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Clear"
        android:layout_marginTop="8dp" />

    <TextView
        android:id="@+id/resultTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:visibility="gone" />

    <TextView
        android:id="@+id/historyTextView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp" />

</LinearLayout>
```

MainActivity.java :

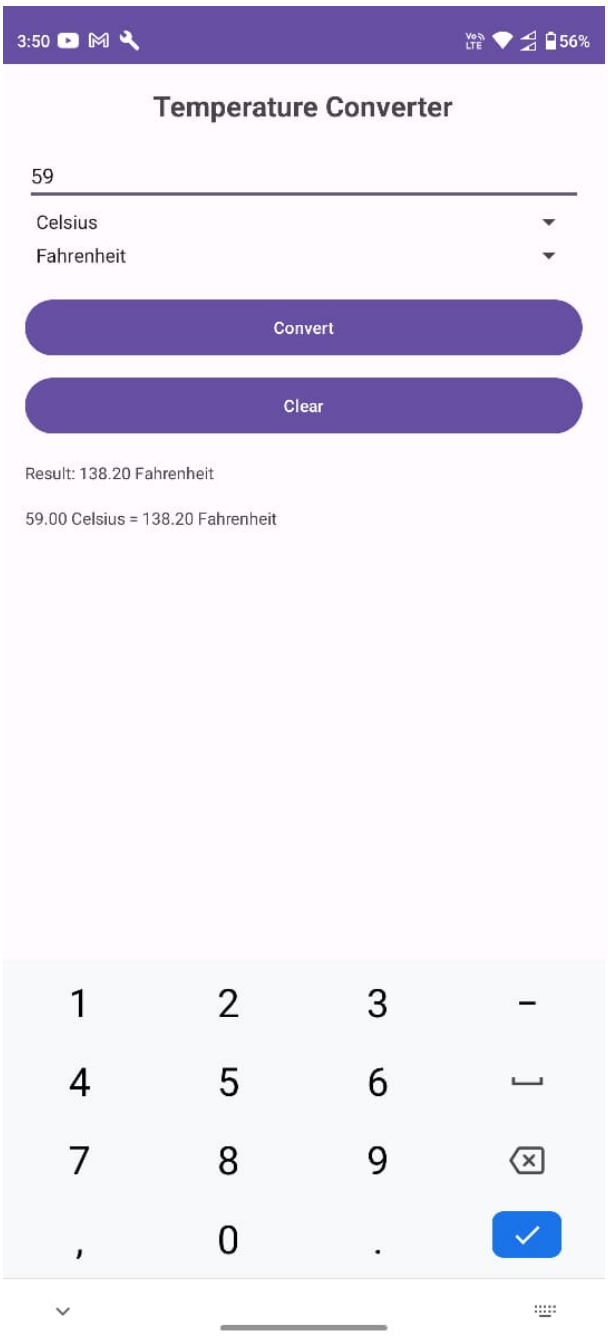
```
package com.example.myapplication;

import android.os.Bundle;
import android.view.View;
import android.view.animation.AlphaAnimation;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

import java.util.ArrayList;
import java.util.List;

public class MainActivity extends AppCompatActivity {
```

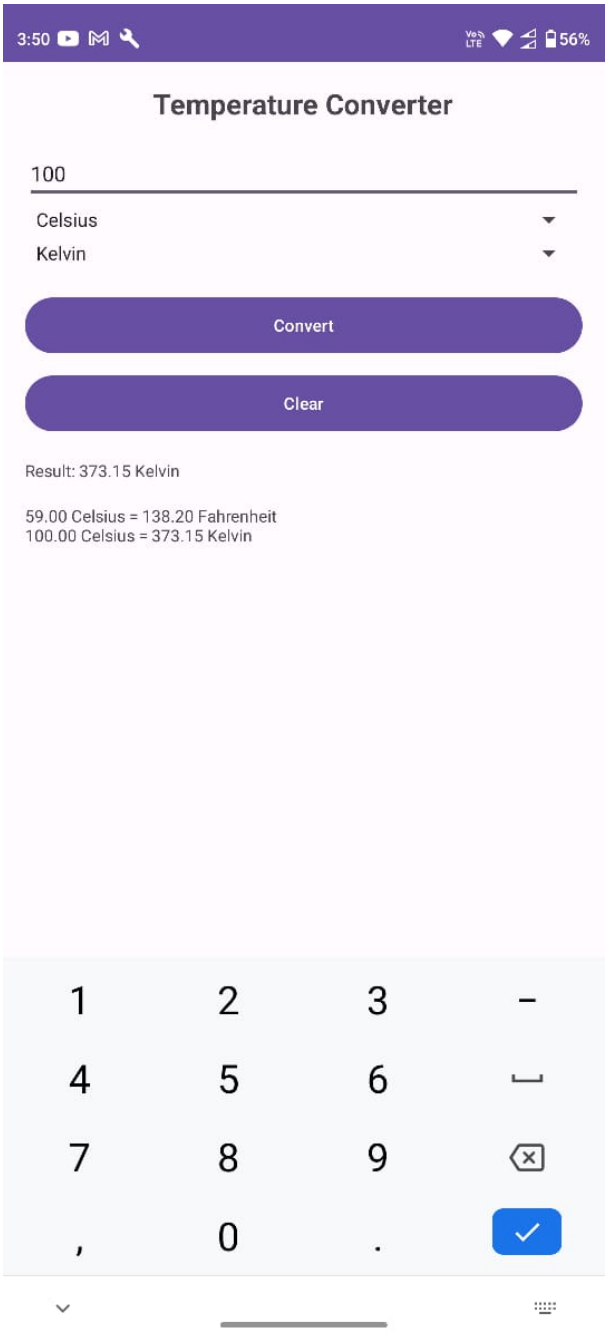
```
private EditText inputTemperature;
private Spinner inputUnit, outputUnit;
private TextView resultTextView, historyTextView;
private Button convertButton, clearButton;
private final String[] units = {"Celsius", "Fahrenheit", "Kelvin"};
private List<String> conversionHistory;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    inputTemperature = findViewById(R.id.inputTemperature);
    inputUnit = findViewById(R.id.inputUnit);
    outputUnit = findViewById(R.id.outputUnit);
    resultTextView = findViewById(R.id.resultTextView);
    historyTextView = findViewById(R.id.historyTextView);
    convertButton = findViewById(R.id.convertButton);
    clearButton = findViewById(R.id.clearButton);
    conversionHistory = new ArrayList<>();

    ArrayAdapter<String> adapter = new ArrayAdapter<>(this,
        android.R.layout.simple_spinner_item, units);
    adapter.setDropDownViewResource
    (android.R.layout.simple_spinner_dropdown_item);
    inputUnit.setAdapter(adapter);
    outputUnit.setAdapter(adapter);

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

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

private void convertTemperature() {
    String input = inputTemperature.getText().toString();

    if (input.isEmpty()) {
```

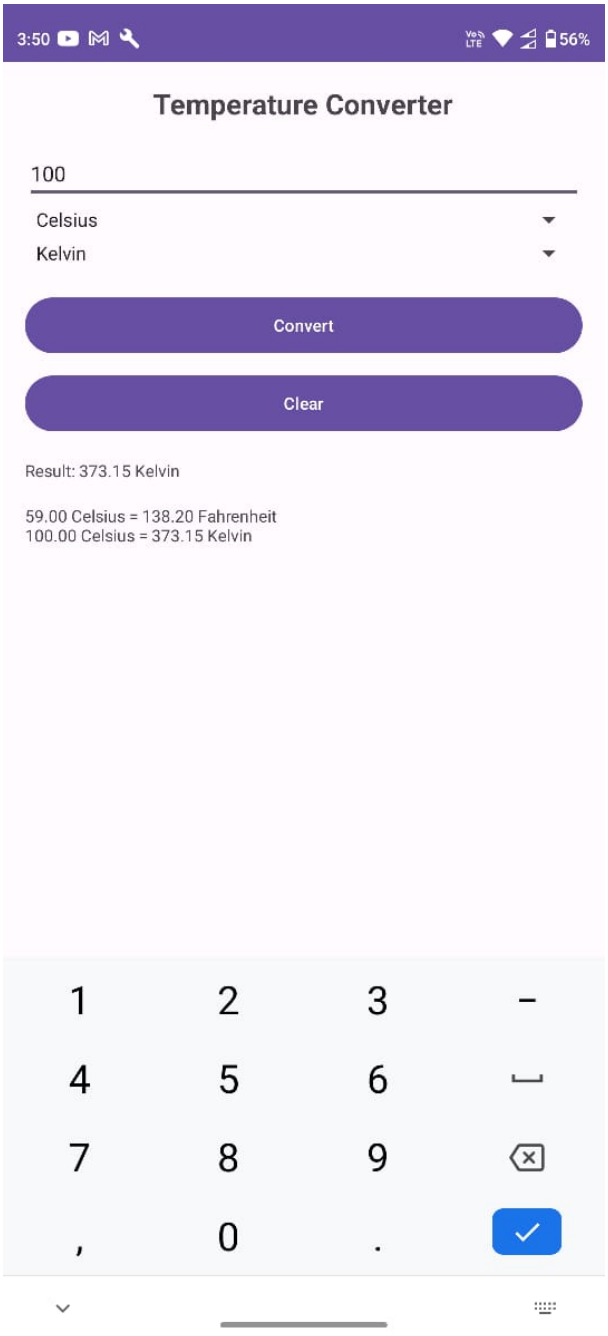
```
            inputTemperature.setError("Please enter a temperature");
            return;
        }

        double inputTemp = Double.parseDouble(input);
        String inputUnitStr = inputUnit.getSelectedItem().toString();
        String outputUnitStr = outputUnit.getSelectedItem().toString();
        double result;

        switch (inputUnitStr) {
            case "Fahrenheit":
                inputTemp = (inputTemp - 32) * 5 / 9;
                break;
            case "Kelvin":
                inputTemp = inputTemp - 273.15;
                break;
        }

        switch (outputUnitStr) {
            case "Fahrenheit":
                result = (inputTemp * 9 / 5) + 32;
                break;
            case "Kelvin":
                result = inputTemp + 273.15;
                break;
            default:
                result = inputTemp; // Celsius
                break;
        }

        resultTextView.setText(String.format("Result: %.2f %s",
        result, outputUnitStr));
        resultTextView.setVisibility(View.VISIBLE);
        animateResult(resultTextView);

        saveToHistory(inputTemp, inputUnitStr, result, outputUnitStr);
    }

    private void animateResult(View view) {
        AlphaAnimation fadeAnimation = new AlphaAnimation(0.0f, 1.0f);
        fadeAnimation.setDuration(500);
        view.startAnimation(fadeAnimation);
    }

    private void saveToHistory(double inputTemp, String inputUnitStr,
    double result, String outputUnitStr) {
        String conversionEntry = String.format("%.2f %s =
        %.2f %s", inputTemp, inputUnitStr, result, outputUnitStr);
```

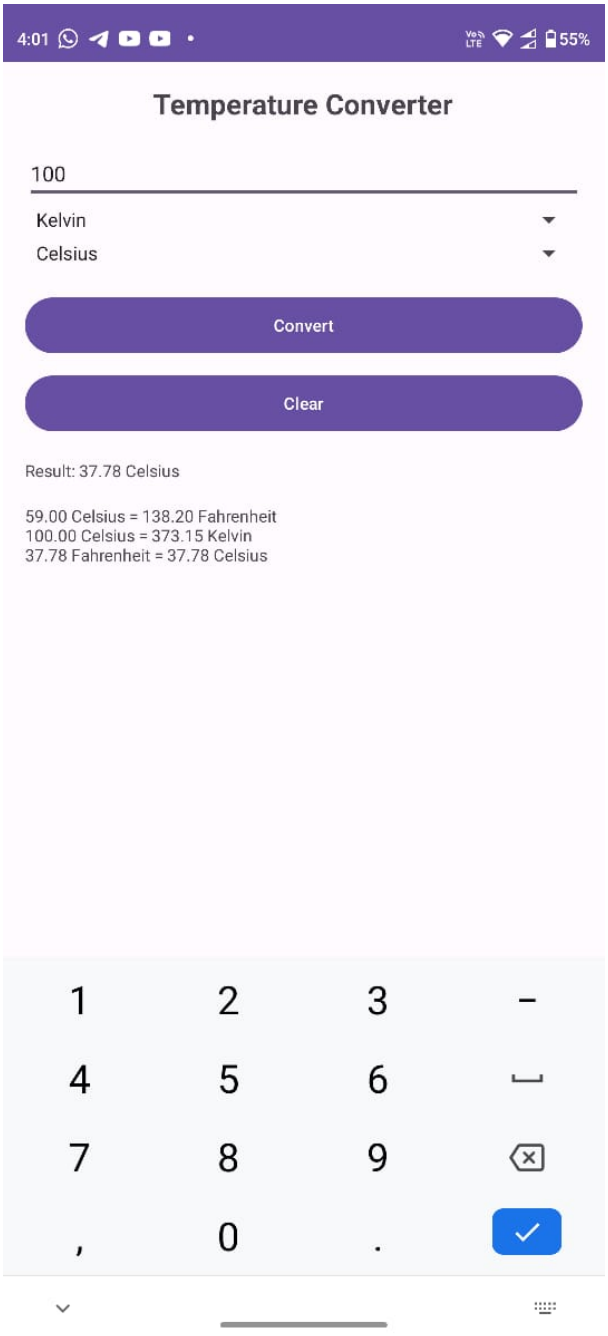
```
        conversionHistory.add(conversionEntry);
        updateHistoryDisplay();
    }

    private void updateHistoryDisplay() {
        StringBuilder historyBuilder = new StringBuilder();
        for (String entry : conversionHistory) {
            historyBuilder.append(entry).append("\n");
        }
        historyTextView.setText(historyBuilder.toString());
    }

    private void clearInputs() {
        inputTemperature.setText("");
        resultTextView.setVisibility(View.GONE);
        historyTextView.setText("");
        conversionHistory.clear();
    }
}
```

Output :


3:50
56%
Temperature Converter
59
Celsius
Fahrenheit
Convert
Clear
Result: 138.20 Fahrenheit
59.00 Celsius = 138.20 Fahrenheit
1
2
3
-
4
5
6
7
8
9
,
0
.


3:50
56%
Temperature Converter
100
Celsius
Kelvin
Convert
Clear
Result: 373.15 Kelvin
59.00 Celsius = 138.20 Fahrenheit
100.00 Celsius = 373.15 Kelvin
1 2 3 -
4 5 6
7 8 9
, 0 .


3:50
56%
Temperature Converter
100
Celsius
Kelvin
Convert
Clear
Result: 373.15 Kelvin
59.00 Celsius = 138.20 Fahrenheit
100.00 Celsius = 373.15 Kelvin
1 2 3 -
4 5 6
7 8 9
, 0 .


4:01
55%
Temperature Converter
100
Kelvin
Celsius
Convert
Clear
Result: 37.78 Celsius
59.00 Celsius = 138.20 Fahrenheit
100.00 Celsius = 373.15 Kelvin
37.78 Fahrenheit = 37.78 Celsius

.

Mobile Computing Lab

Assignment No.: 7

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 23/10/2024

Aim: Write a Program to generate Calendar using Android/other.

Code for Calendar Application

activity_main.xml

```
<!-- activity_main.xml -->
<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">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:gravity="center_vertical">
        <Button
            android:id="@+id/buttonPrev"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="<" />
        <TextView
            android:id="@+id/textViewMonthYear"
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:gravity="center"
            android:textSize="18sp"
            android:textStyle="bold" />
        <Button
            android:id="@+id/buttonNext"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text=">" />
    </LinearLayout>

    <GridView
        android:id="@+id/gridView"
```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:numColumns="7"
        android:verticalSpacing="8dp"
        android:horizontalSpacing="8dp" />
</LinearLayout>
```

MainActivity.java

```
// MainActivity.java
package com.example.calendarevents;

import android.app.AlertDialog;
import android.content.Context;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ArrayAdapter;
import android.widget.BaseAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.GridView;
import android.widget.ListView;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
import java.util.ArrayList;
import java.util.Calendar;
import java.util.HashMap;

public class MainActivity extends AppCompatActivity {

    private GridView gridView;
    private CalendarAdapter calendarAdapter;
    private Calendar calendar;
    private TextView textViewMonthYear;
    private HashMap<String, ArrayList<String>> events;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        gridView = findViewById(R.id.gridView);
        textViewMonthYear = findViewById(R.id.textViewMonthYear);
        Button buttonPrev = findViewById(R.id.buttonPrev);
        Button buttonNext = findViewById(R.id.buttonNext);
```

```
        calendar = Calendar.getInstance();
        events = new HashMap<>();
        updateCalendar();

        buttonPrev.setOnClickListener(v -> {
            calendar.add(Calendar.MONTH, -1);
            updateCalendar();
        });

        buttonNext.setOnClickListener(v -> {
            calendar.add(Calendar.MONTH, 1);
            updateCalendar();
        });
    }

    private void updateCalendar() {
        int month = calendar.get(Calendar.MONTH);
        int year = calendar.get(Calendar.YEAR);
        textViewMonthYear.setText(String.format("%s %d",
        calendar.getDisplayName(Calendar.MONTH, Calendar.
        LONG, getResources().getConfiguration().locale), year));

        calendarAdapter = new CalendarAdapter(this, calendar, events);
        gridView.setAdapter(calendarAdapter);
    }

    private class CalendarAdapter extends BaseAdapter {
        private final Context context;
        private final Calendar calendar;
        private final HashMap<String, ArrayList<String>> events;
        private final String[] days;

        public CalendarAdapter(Context context, Calendar calendar,
        HashMap<String, ArrayList<String>> events) {
            this.context = context;
            this.calendar = (Calendar) calendar.clone();
            this.events = events;
            this.days = getDaysOfMonth();
        }

        private String[] getDaysOfMonth() {
            String[] daysOfWeek =
            {"Mon", "Tue", "Wed", "Thu", "Fri", "Sat", "Sun"};
            int daysInMonth = calendar.getActualMaximum(Calendar.DAY_OF_MONTH);
            calendar.set(Calendar.DAY_OF_MONTH, 1);
            int firstDayOfWeek = (calendar.get(Calendar.DAY_OF_WEEK) + 5) % 7;
            String[] days = new String[42];
            for (int i = 0; i < 7; i++) {
```

```
                days[i] = daysOfWeek[i];
            }
            for (int i = 0; i < firstDayOfWeek; i++) {
                days[i + 7] = "";
            }
            for (int i = 1; i <= daysInMonth; i++) {
                days[firstDayOfWeek + i + 6] = String.valueOf(i);
            }
            return days;
        }

        @Override
        public int getCount() {
            return days.length;
        }

        @Override
        public Object getItem(int position) {
            return days[position];
        }

        @Override
        public long getItemId(int position) {
            return position;
        }

        @Override
        public View getView(int position, View convertView, ViewGroup parent) {
            if (convertView == null) {
                LayoutInflater inflater = LayoutInflater.from(context);
                convertView = inflater.inflate(R.layout.grid_item, parent, false);
            }

            TextView dayText = convertView.findViewById(R.id.dayText);
            String day = days[position];
            dayText.setText(day);
            if (position % 7 == 5 || position % 7 == 6) {
dayText.setTextColor(getResources().getColor(android.R.color.holo_red_dark));
            } else {
dayText.setTextColor(getResources().getColor(android.R.color.black));
            }

            convertView.setOnClickListener(v -> {
                if (!day.isEmpty()) {
String date = String.format("%d-%02d-%s",
calendar.get(Calendar.YEAR), calendar.get(Calendar.MONTH) + 1, day);
                    showEventDialog(date);
                }
```

```
            });

            return convertView;
        }

        private void showEventDialog(String date) {
            AlertDialog.Builder builder = new AlertDialog.Builder(context);
            builder.setTitle("Choose Action")
        .setMessage("Add or View events?")
        .setPositiveButton("Add Event", (dialog, which) -> addEvent(date))
        .show();
        }

        private void addEvent(String date) {
            AlertDialog.Builder builder = new AlertDialog.Builder(context);
            builder.setTitle("Add Event");
            final EditText input = new EditText(context);
            input.setHint("Event details");
            builder.setView(input);
            builder.setPositiveButton("OK", (dialog, which) -> {
                String eventText = input.getText().toString().trim();
                if (!eventText.isEmpty()) {
ArrayList<String> eventList = events.getOrDefault(date, new ArrayList<>());
                    eventList.add(eventText);
                    events.put(date, eventList);
                    notifyDataSetChanged();
                }
            });
builder.setNegativeButton("Cancel", (dialog, which) -> dialog.cancel());
            builder.show();
        }

        private void viewEvents(String date) {
            ArrayList<String> eventList = events.get(date);
            if (eventList == null || eventList.isEmpty()) {
                eventList = new ArrayList<>();
                eventList.add("No events");
            }

            AlertDialog.Builder builder = new AlertDialog.Builder(context);
            builder.setTitle("Events on " + date);
            ListView listView = new ListView(context);
listView.setAdapter(new ArrayAdapter<>
(context, android.R.layout.simple_list_item_1, eventList));
            builder.setView(listView);
builder.setPositiveButton("Close", (dialog, which) -> dialog.dismiss());
            builder.show();
        }
```

```
    }
}
```

grid_item.xml

```
<!-- res/layout/grid_item.xml -->
<TextView xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/dayText"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:padding="8dp"
    android:textSize="18sp"
    android:textColor="#000000" />
```

Output:

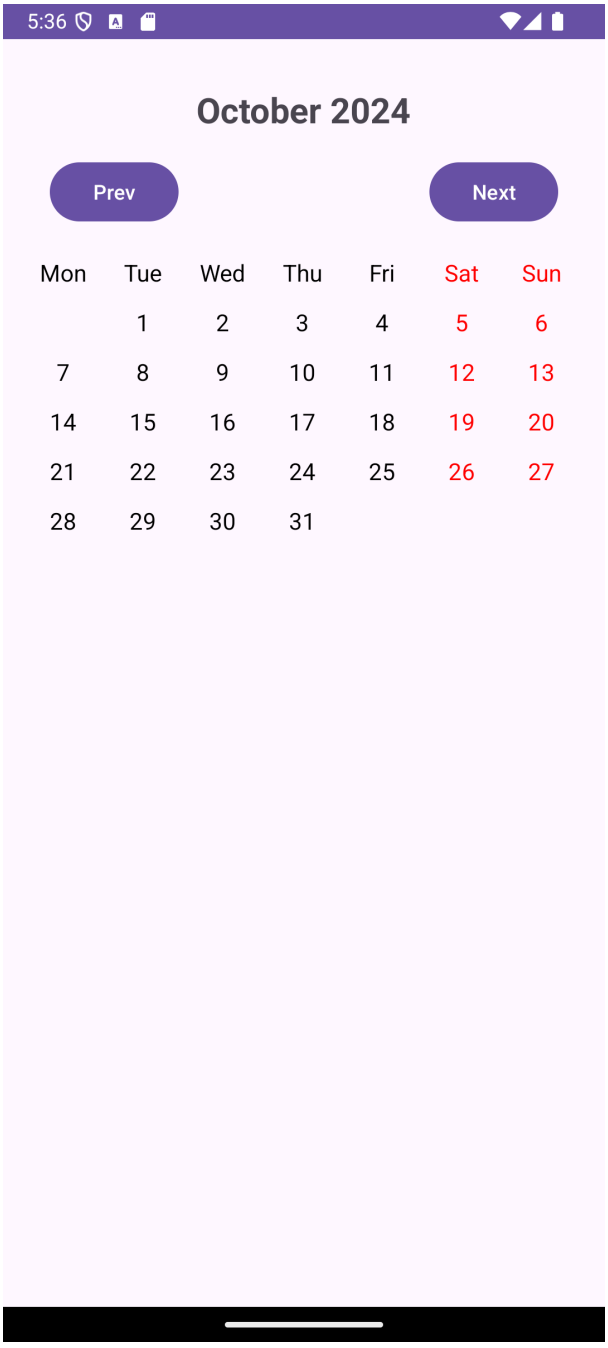


Figure 1: Calendar

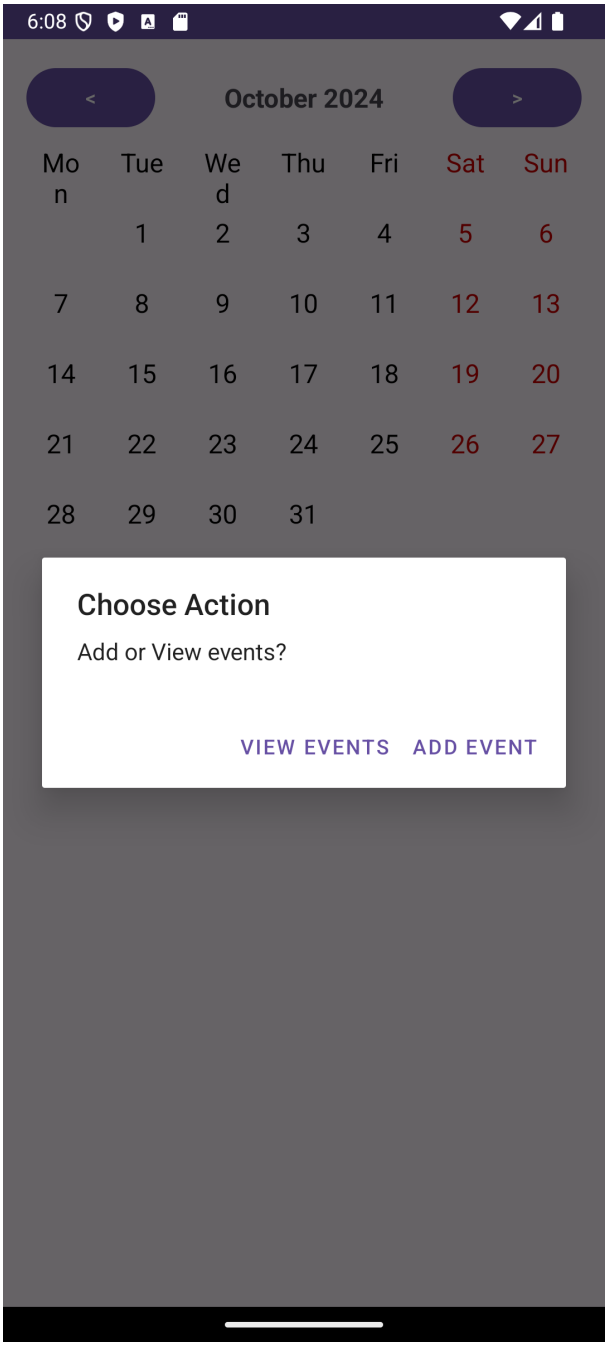


Figure 2: Choose Action

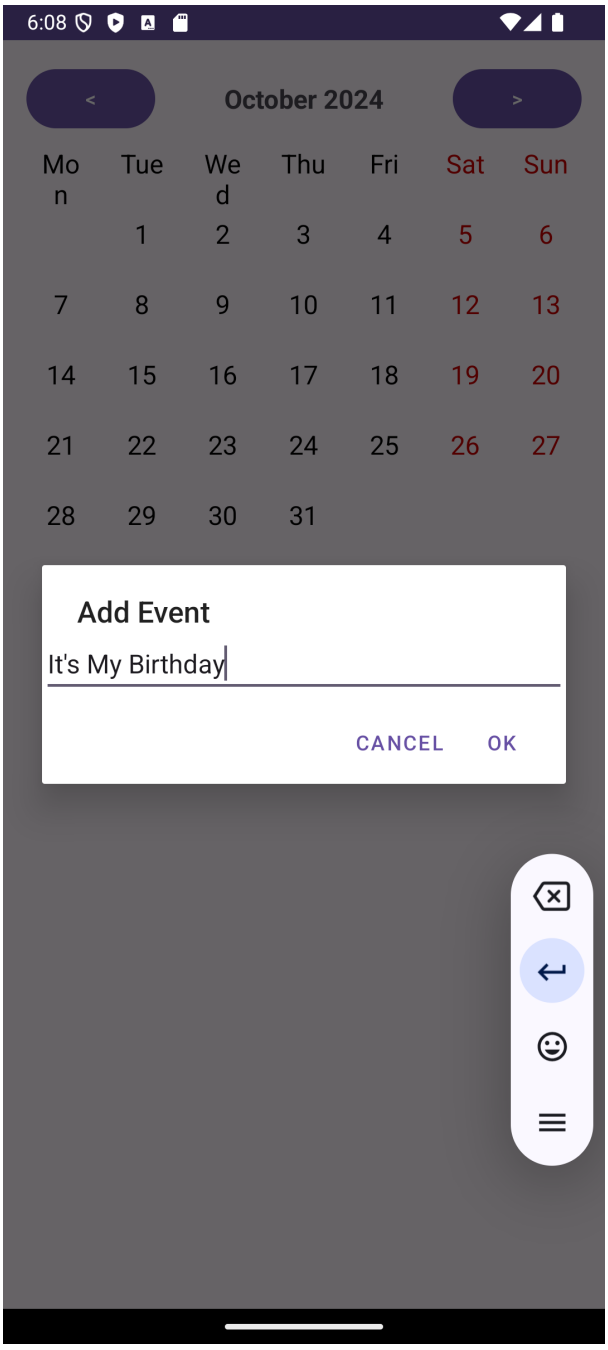


Figure 3: Add Event

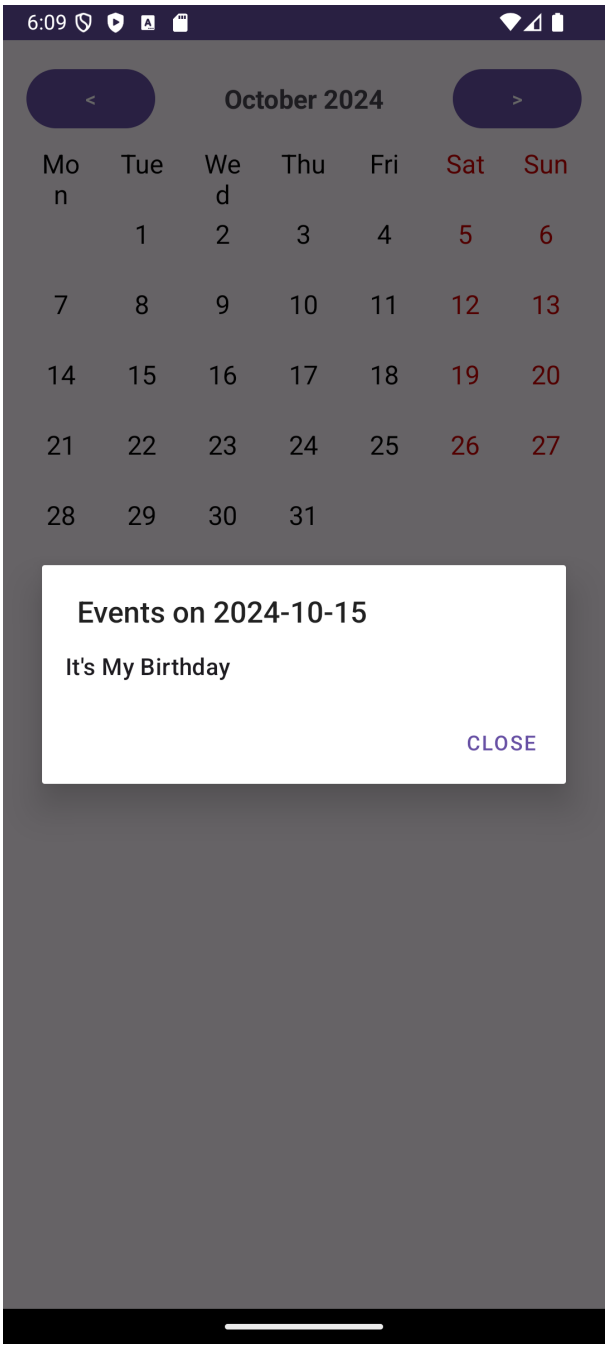


Figure 4: View Event

Mobile Computing Lab

Assignment No.: 8

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 06/11/2024

Aim: Design a simple to-do list using Android/other.

activity_main.xml

```
<!-- res/layout/activity_main.xml -->
<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">
    <!-- Task Input Field -->
    <EditText
        android:id="@+id/editTextTask"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter a new task"
        android:padding="8dp"/>
    <!-- Add Task Button -->
    <Button
        android:id="@+id/buttonAddTask"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Add Task"
        android:layout_marginTop="8dp"/>
    <!-- ListView to Display Tasks -->
    <ListView
        android:id="@+id/listViewTasks"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:dividerHeight="8dp"
        android:layout_marginTop="16dp"/>
</LinearLayout>
```

MainActivity.java

```
// MainActivity.java
package com.example.todolist;
```

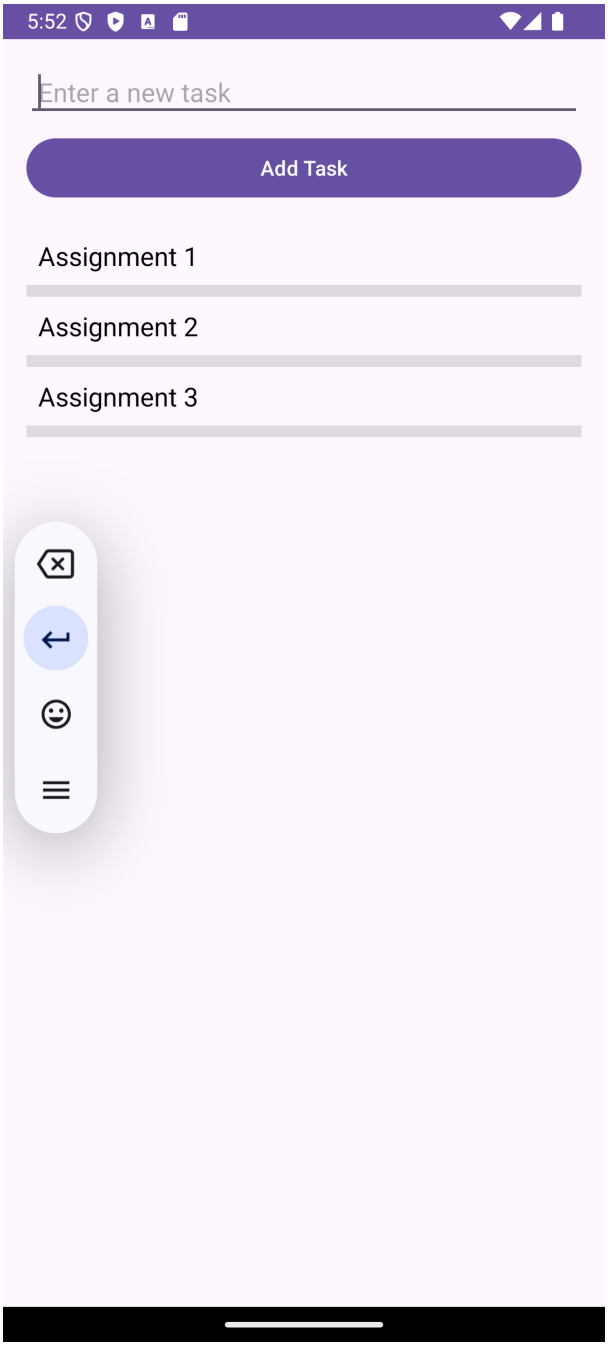
```
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.BaseAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ListView;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {
    private EditText editTextTask;
    private ArrayList<String> tasks;
    private TodoAdapter todoAdapter;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        editTextTask = findViewById(R.id.editTextTask);
        Button buttonAddTask = findViewById(R.id.buttonAddTask);
        ListView listViewTasks = findViewById(R.id.listViewTasks);

        tasks = new ArrayList<>();
        todoAdapter = new TodoAdapter(tasks);
        listViewTasks.setAdapter(todoAdapter);

        buttonAddTask.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String task = editTextTask.getText().toString().trim();
                if (!task.isEmpty()) {
                    tasks.add(task);
                    todoAdapter.notifyDataSetChanged();
                    editTextTask.setText("");
                }
            }
        });
    }

    // Inner class for custom adapter
    private class TodoAdapter extends BaseAdapter {
        private final ArrayList<String> tasks;

        public TodoAdapter(ArrayList<String> tasks) {
```

```
            this.tasks = tasks;
        }

        @Override
        public int getCount() {
            return tasks.size();
        }

        @Override
        public Object getItem(int position) {
            return tasks.get(position);
        }

        @Override
        public long getItemId(int position) {
            return position;
        }

        @Override
        public View getView(int position, View convertView, ViewGroup parent) {
            if (convertView == null) {
        LayoutInflater inflater = LayoutInflater.from(parent.getContext());
        convertView = inflater.inflate(R.layout.list_item, parent, false);
            }

            TextView textViewTask = convertView.findViewById(R.id.textViewTask);
            textViewTask.setText(tasks.get(position));

            return convertView;
        }
    }
}
```

list_item.xml

```
<!-- res/layout/list_item.xml -->
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical"
    android:padding="8dp">
    <TextView
        android:id="@+id/textViewTask"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:textColor="#000000"/>
</LinearLayout>
```

Output:


5:52
Enter a new task
Add Task
Assignment 1
Assignment 2
Assignment 3

Mobile Computing Lab

Assignment No.: 9

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 13/11/2024

Aim: Demo of all lauouts.

Home Page

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">
    <Button
        android:id="@+id/linearButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Linear Layout" />
    <Button
        android:id="@+id/relativeButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Relative Layout" />
    <Button
        android:id="@+id/constraintButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Constraint Layout" />
    <Button
        android:id="@+id/tableButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Table Layout" />

    <Button
        android:id="@+id/frameButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Frame Layout" />
    <Button
```

```
        android:id="@+id/listButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="List View" />
    <Button
        android:id="@+id/gridButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Grid View" />
    <Button
        android:id="@+id/webButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Web View" />
    <Button
        android:id="@+id/scrollButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Scroll View" />
</LinearLayout>
```

MainActivity.java

```
package com.example.layoutdemo;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
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 linearButton = findViewById(R.id.linearButton);
        Button relativeButton = findViewById(R.id.relativeButton);
        Button constraintButton = findViewById(R.id.constraintButton);
        Button tableButton = findViewById(R.id.tableButton);
        Button frameButton = findViewById(R.id.frameButton);
        Button listButton = findViewById(R.id.listButton);
        Button gridButton = findViewById(R.id.gridButton);
        Button webButton = findViewById(R.id.webButton);
```

```
        Button scrollButton = findViewById(R.id.scrollButton);

        linearButton.setOnClickListener(v ->
        startActivity(new Intent(this, LayoutLinearActivity.class)));
        relativeButton.setOnClickListener(v ->
        startActivity(new Intent(this, LayoutRelativeActivity.class)));
        constraintButton.setOnClickListener(v ->
        startActivity(new Intent(this, LayoutConstraintActivity.class)));
        tableButton.setOnClickListener(v ->
        startActivity(new Intent(this, LayoutTableActivity.class)));
        frameButton.setOnClickListener(v ->
        startActivity(new Intent(this, LayoutFrameActivity.class)));
        listButton.setOnClickListener(v ->
        startActivity(new Intent(this, LayoutListActivity.class)));
        gridButton.setOnClickListener(v ->
        startActivity(new Intent(this, LayoutGridActivity.class)));
        webButton.setOnClickListener(v ->
        startActivity(new Intent(this, LayoutWebActivity.class)));
        scrollButton.setOnClickListener(v ->
        startActivity(new Intent(this, LayoutScrollActivity.class)));
    }
}
```

Output:

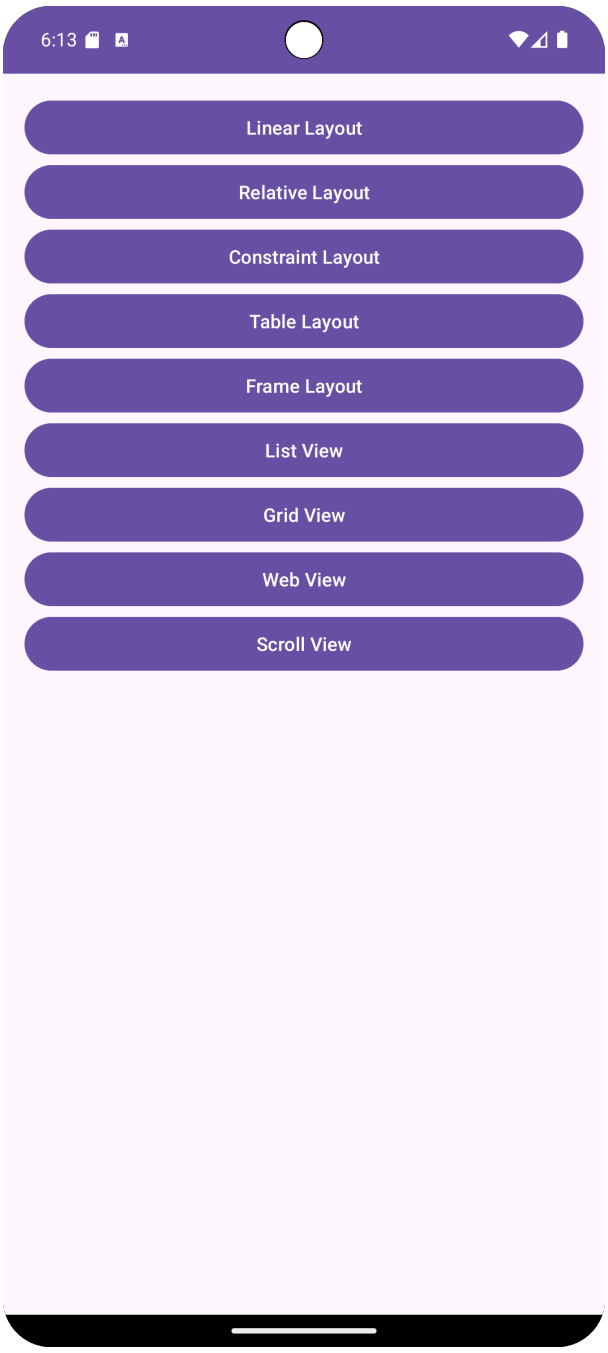


Figure 5: Home Page

Linear layout

layout_linear.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:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="This is a Linear Layout" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button 1" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button 2" />
</LinearLayout>
```

linearlayout.java

```
package com.example.layoutdemo;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;

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

Output :

Figure 6: Linear Layout

Relative layout

layout_relative.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"
    android:padding="16dp">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="This is a Relative Layout" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/textView"
        android:layout_marginTop="20dp"
        android:text="Button below text" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:text="Button on right" />
</RelativeLayout>
```

relativelayout.java

```
package com.example.layoutdemo;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;

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

Output :

Figure 7: Relative Layout

Constraint layout

layout_constraint.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
             android:layout_width="match_parent"
             android:layout_height="match_parent">

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

constraintlayout.java

```
package com.example.layoutdemo;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;

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

Output:

Figure 8: Constraint Layout

Table layout

layout_table.xml

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

    <TableRow>
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Row 1, Col 1" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Row 1, Col 2" />
    </TableRow>

    <TableRow>
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Row 2, Col 1" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Row 2, Col 2" />
    </TableRow>
</TableLayout>
```

tablelayout.java

```
package com.example.layoutdemo;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;

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

Output :

Frame layout

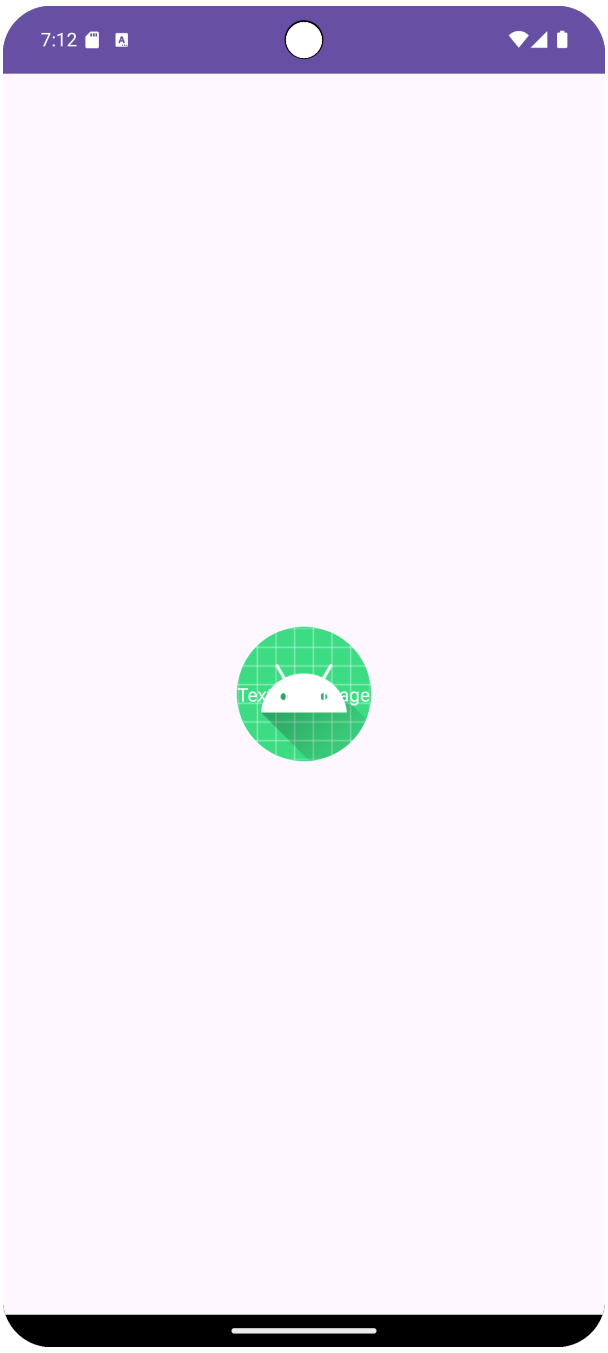
layout_frame.xml

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

    <ImageView
        android:layout_width="100dp"
        android:layout_height="100dp"
        android:src="@mipmap/ic_launcher"
        android:layout_gravity="center" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Text over Image"
        android:layout_gravity="center"
        android:textColor="#FFFFFF" />
</FrameLayout>
```

framelayout.java

```
package com.example.layoutdemo;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;

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

Output :



List View layout

layout_list.xml

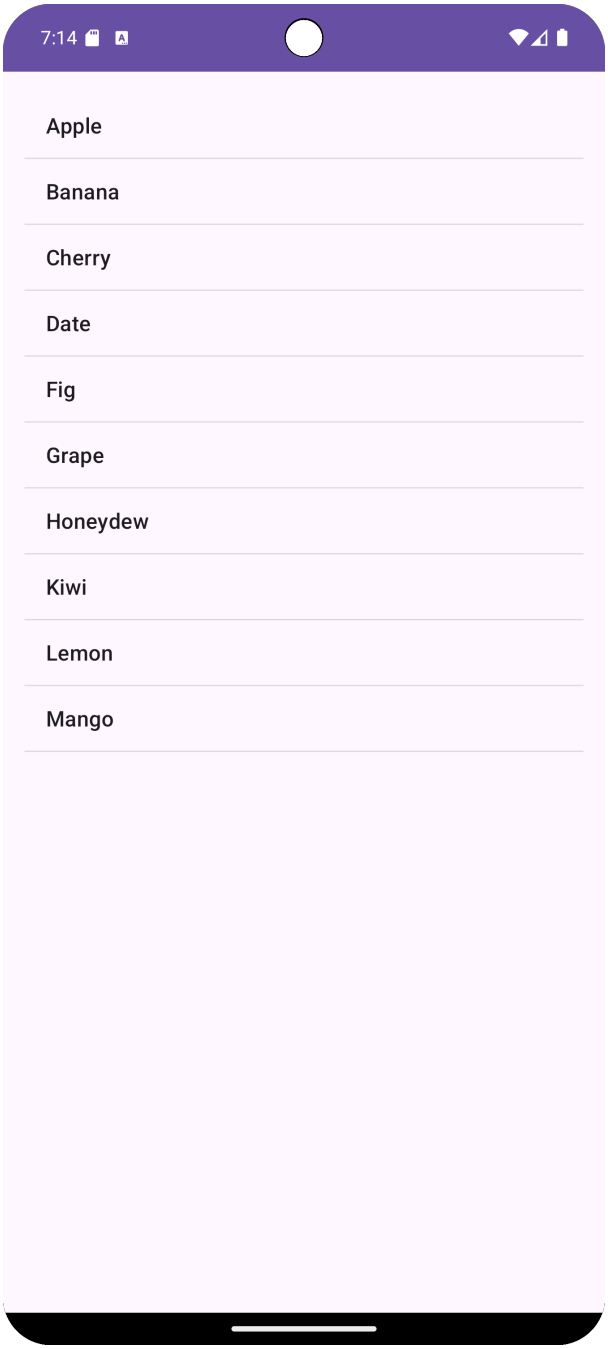
```
<?xml version="1.0" encoding="utf-8"?>
<ListView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    android:id="@+id/listView" />
```

listlayout.java

```
package com.example.layoutdemo;

import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import androidx.appcompat.app.AppCompatActivity;

public class LayoutListActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.layout_list);

        // Find the ListView from the layout
        ListView listView = findViewById(R.id.listView);

        // Sample data for the list
        String[] sampleData = {
                "Apple",
                "Banana",
                "Cherry",
                "Date",
                "Fig",
                "Grape",
                "Honeydew",
                "Kiwi",
                "Lemon",
                "Mango"
        };

        // Create an ArrayAdapter to bind the sample data to the ListView
        ArrayAdapter<String> adapter = new ArrayAdapter<>
        (this, android.R.layout.simple_list_item_1, sampleData);
```

```
        // Set the adapter to the ListView
        listView.setAdapter(adapter);
    }
}
```

Output:



Grid View layout

layout_grid.xml

```
<?xml version="1.0" encoding="utf-8"?>
<GridLayout 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:ignore="ExtraText">
    <GridView
        android:id="@+id/gridView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:numColumns="2"
    android:verticalSpacing="10dp"
    android:horizontalSpacing="10dp"
    android:stretchMode="columnWidth" />
</GridLayout>
```

gridlayout.java

```
package com.example.layoutdemo;

import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.GridView;
import androidx.appcompat.app.AppCompatActivity;

public class LayoutGridActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.layout_grid);
        GridView gridView = findViewById(R.id.gridView);
        String[] studentNames = {
                "Prathmesh",
                "Shekhar",
                "Chintan",
                "Shubham"
        };
        ArrayAdapter<String> adapter = new ArrayAdapter<>
        (this, android.R.layout.simple_list_item_1, studentNames);
        gridView.setAdapter(adapter);
    }
}
```

Output :

Web View layout

layout_web.xml

```
<?xml version="1.0" encoding="utf-8"?>
<WebView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/webView" />
```

weblayout.java

```
package com.example.layoutdemo;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;

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

Output :

Scroll View layout

layout_scroll.xml

```
<?xml version="1.0" encoding="utf-8"?>
<ScrollView 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="wrap_content"
        android:orientation="vertical">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Scroll View Example" />

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Button 1" />

        <!-- Add more elements to allow scrolling -->
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Button 2" />

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Button 3" />

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Button 4" />

        <!-- Repeat more if necessary -->

    </LinearLayout>
</ScrollView>
```

scrolllayout.java

```
package com.example.layoutdemo;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;

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

Output :

Mobile Computing Lab

Assignment No.: 10

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 27/11/2024

Aim: Write a Program for Simple quiz competition Android/other.

activitymain.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="20dp">

    <TextView
        android:id="@+id/question_text"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Question will appear here"
        android:textSize="18sp" />

    <RadioGroup
        android:id="@+id/answers_group"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical">

        <RadioButton
            android:id="@+id/answer_1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Option 1" />

        <RadioButton
            android:id="@+id/answer_2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Option 2" />

        <RadioButton
            android:id="@+id/answer_3"
            android:layout_width="wrap_content"
```

```
            android:layout_height="wrap_content"
            android:text="Option 3" />

        <RadioButton
            android:id="@+id/answer_4"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Option 4" />
    </RadioGroup>

    <Button
        android:id="@+id/submit_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Submit Answer" />

    <TextView
        android:id="@+id/score_text"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Score: 0"
        android:textSize="18sp"
        android:layout_marginTop="20dp"/>
</LinearLayout>
```

MainActivity.java

```
  package com.example.quizapplication;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    private TextView questionText, scoreText;
    private RadioGroup answersGroup;
    private Button submitButton;
```

```
private int currentQuestionIndex = 0;
private int score = 0;


private String[] questions = {
        "What is the capital of France?",
        "Which planet is known as the Red Planet?",
        "Who wrote 'Hamlet'?"
};

private String[][] options = {
        {"Berlin", "Madrid", "Paris", "Rome"},
        {"Earth", "Mars", "Venus", "Jupiter"},
        {"Shakespeare", "Dickens", "Hemingway", "Fitzgerald"}
};

private int[] correctAnswers = {2, 1, 0}; // Correct answer indices

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);


    questionText = findViewById(R.id.question_text);
    answersGroup = findViewById(R.id.answers_group);
    submitButton = findViewById(R.id.submit_button);
    scoreText = findViewById(R.id.score_text);


    loadNextQuestion();


    submitButton.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            checkAnswer();
            loadNextQuestion();
        }
    });
}


private void loadNextQuestion() {
    if (currentQuestionIndex < questions.length) {
        questionText.setText(questions[currentQuestionIndex]);
```

```
            RadioButton answer1 = findViewById(R.id.answer_1);
            RadioButton answer2 = findViewById(R.id.answer_2);
            RadioButton answer3 = findViewById(R.id.answer_3);
            RadioButton answer4 = findViewById(R.id.answer_4);

            answer1.setText(options[currentQuestionIndex][0]);
            answer2.setText(options[currentQuestionIndex][1]);
            answer3.setText(options[currentQuestionIndex][2]);
            answer4.setText(options[currentQuestionIndex][3]);

            answersGroup.clearCheck(); // Clear previous selection
        } else {

            Toast.makeText(MainActivity.this, "Quiz Finished! Your Score: "
            + score, Toast.LENGTH_LONG).show();
        }
    }


    private void checkAnswer() {
        int selectedAnswerId = answersGroup.getCheckedRadioButtonId();
        RadioButton selectedAnswer = findViewById(selectedAnswerId);

        if (selectedAnswer != null) {
            int selectedAnswerIndex = answersGroup.indexOfChild(selectedAnswer);
            String resultMessage;

            if (selectedAnswerIndex == correctAnswers[currentQuestionIndex]) {
                score++;
                resultMessage = "Correct!";
            } else {
                resultMessage = "Incorrect!";
            }


            Intent intent = new Intent(MainActivity.this, ResultActivity.class);
            intent.putExtra("result", resultMessage);
            intent.putExtra("score", score);
            startActivity(intent);
        }


        currentQuestionIndex++;
    }
}
```

activity result.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:gravity="center"
    android:padding="20dp">

    <!-- Displaying result (Correct/Incorrect) -->
    <TextView
        android:id="@+id/result_message"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Correct/Incorrect"
        android:textSize="22sp"
        android:textColor="#000000"/>

    <!-- Displaying the score -->
    <TextView
        android:id="@+id/score_message"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Score: 0"
        android:textSize="18sp"
        android:textColor="#000000"
        android:layout_marginTop="20dp"/>

    <!-- Button to go back to the quiz page -->
    <Button
        android:id="@+id/next_question_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Next Question"
        android:textSize="18sp"
        android:layout_marginTop="30dp"/>
</LinearLayout>
```

ResultActivity.java

```
    package com.example.quizapplication;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
```

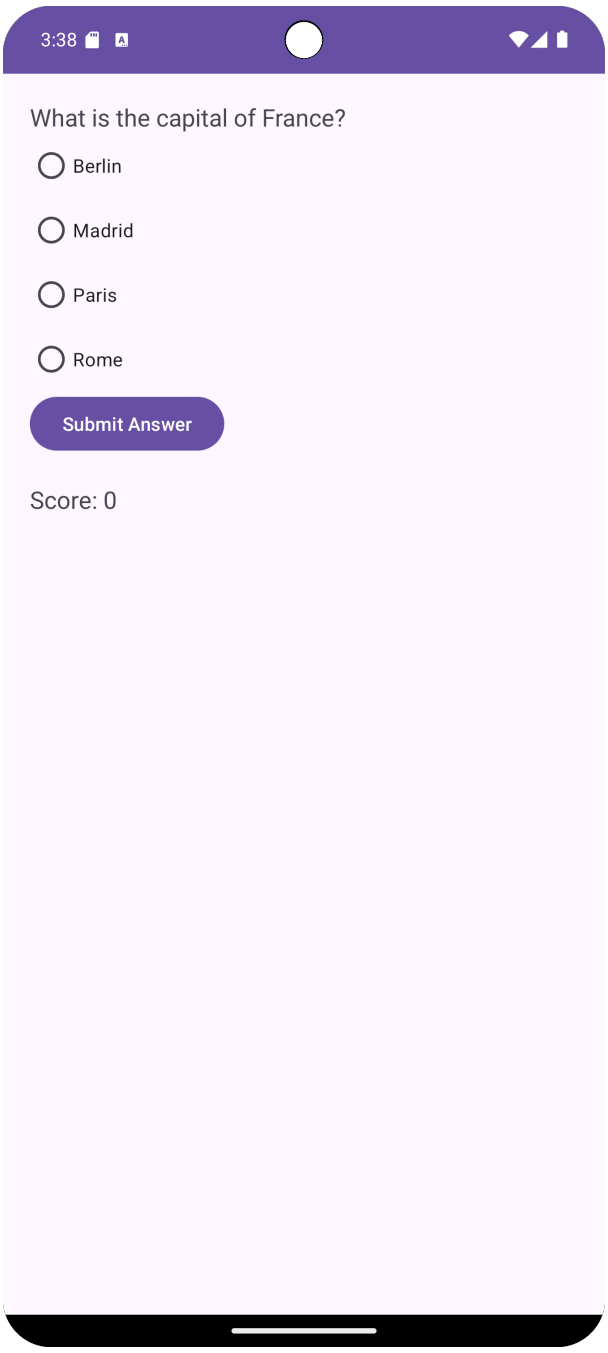
```
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class ResultActivity extends AppCompatActivity {

    private TextView resultMessage, scoreMessage;
    private Button nextQuestionButton;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_result);


        resultMessage = findViewById(R.id.result_message);
        scoreMessage = findViewById(R.id.score_message);
        nextQuestionButton = findViewById(R.id.next_question_button);


        Intent intent = getIntent();
        String result = intent.getStringExtra("result");
        int score = intent.getIntExtra("score", 0);
```

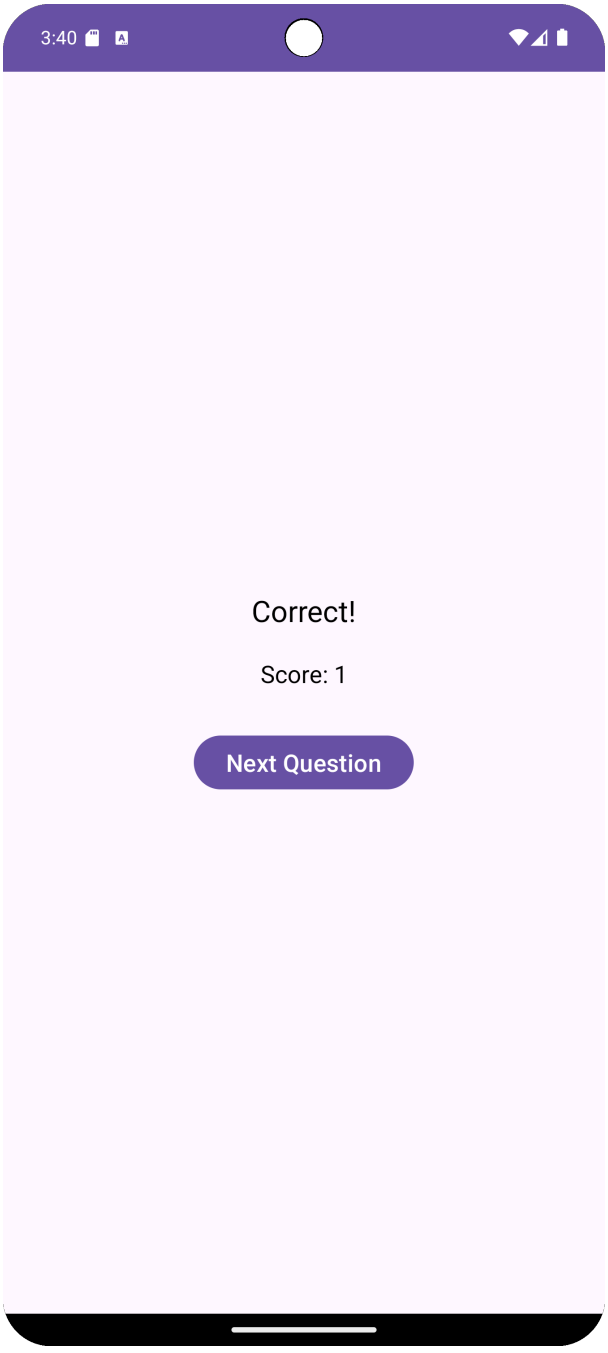
```
package com.example.quizapplication;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class ResultActivity extends AppCompatActivity {

    private TextView resultMessage, scoreMessage;
    private Button nextQuestionButton;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_result);

        // Initialize UI components
        resultMessage = findViewById(R.id.result_message);
        scoreMessage = findViewById(R.id.score_message);
        nextQuestionButton = findViewById(R.id.next_question_button);
```

```
        // Get the data from the intent (Correct/Incorrect and Score)
        Intent intent = getIntent();
        String result = intent.getStringExtra("result");
        int score = intent.getIntExtra("score", 0);  // Current score

        // Display the result and score
        resultMessage.setText(result);
        scoreMessage.setText("Score: " + score);

        // Set the listener for "Next Question" button
        nextQuestionButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // Go back to MainActivity to load the next question
                finish();
            }
        });
    }
}
```

```
        resultMessage.setText(result);
        scoreMessage.setText("Score: " + score);


        nextQuestionButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                finish();
            }
        });
    }
}
```

Output:


3:38
What is the capital of France?
Berlin
Madrid
Paris
Rome
Submit Answer
Score: 0


3:40
Correct!
Score: 1
Next Question

.

Mobile Computing Lab

Assignment No.: 11

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 28/11/2024

Aim: Write a Program to demonstrate simple Animation Android/other.

activitymain.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">

    <!-- Button to trigger translation animation -->
    <Button
        android:id="@+id/translate_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Translate"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"/>

    <!-- Button to trigger rotation animation -->
    <Button
        android:id="@+id/rotate_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Rotate"
        android:layout_below="@id/translate_button"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="20dp"/>

    <!-- Button to trigger scaling animation -->
    <Button
        android:id="@+id/scale_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Scale"
        android:layout_below="@id/rotate_button"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="20dp"/>
```

```
    <!-- TextView to display animation description -->
    <TextView
        android:id="@+id/animation_description"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Click a button to see animation description."
        android:layout_below="@id/scale_button"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="30dp"/>

    <!-- View to animate -->
    <TextView
        android:id="@+id/animated_text"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Animate Me!"
        android:textSize="24sp"
        android:layout_centerInParent="true"/>

</RelativeLayout>
```

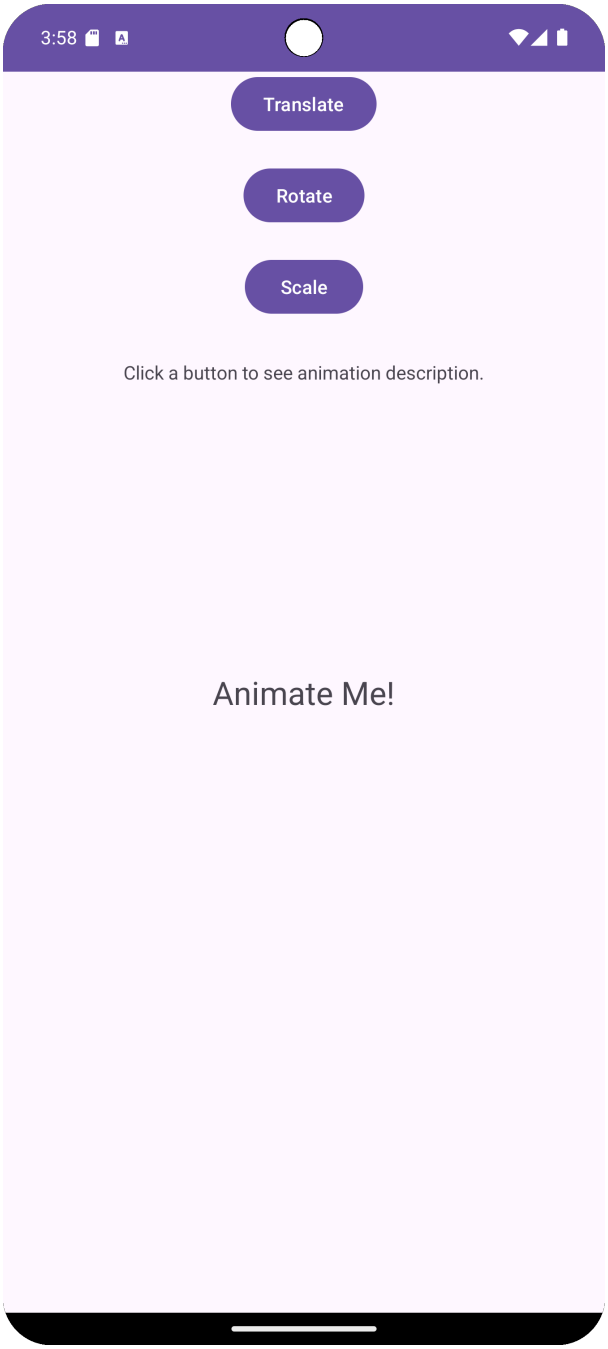
MainActivity.java

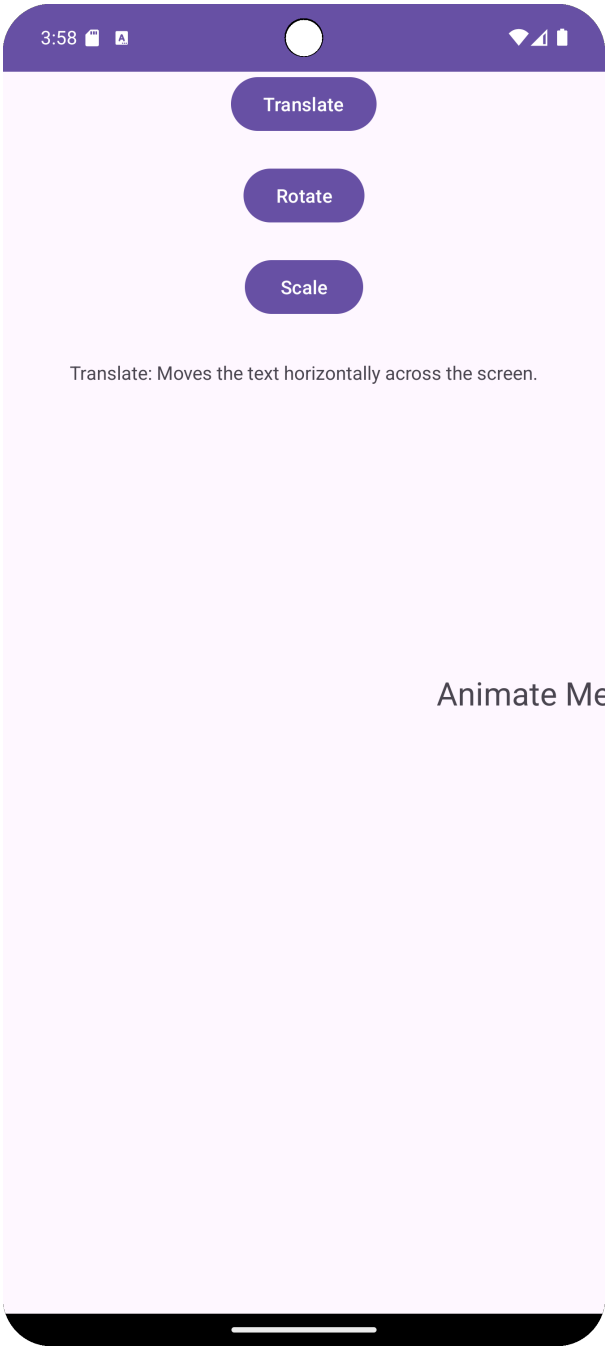
```
  package com.example.animation;

import android.os.Bundle;
import android.view.animation.Animation;
import android.view.animation.RotateAnimation;
import android.view.animation.ScaleAnimation;
import android.view.animation.TranslateAnimation;
import android.view.animation.AnimationSet;
import android.widget.Button;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    private TextView animatedText, animationDescription;
    private Button translateButton, rotateButton, scaleButton;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
```

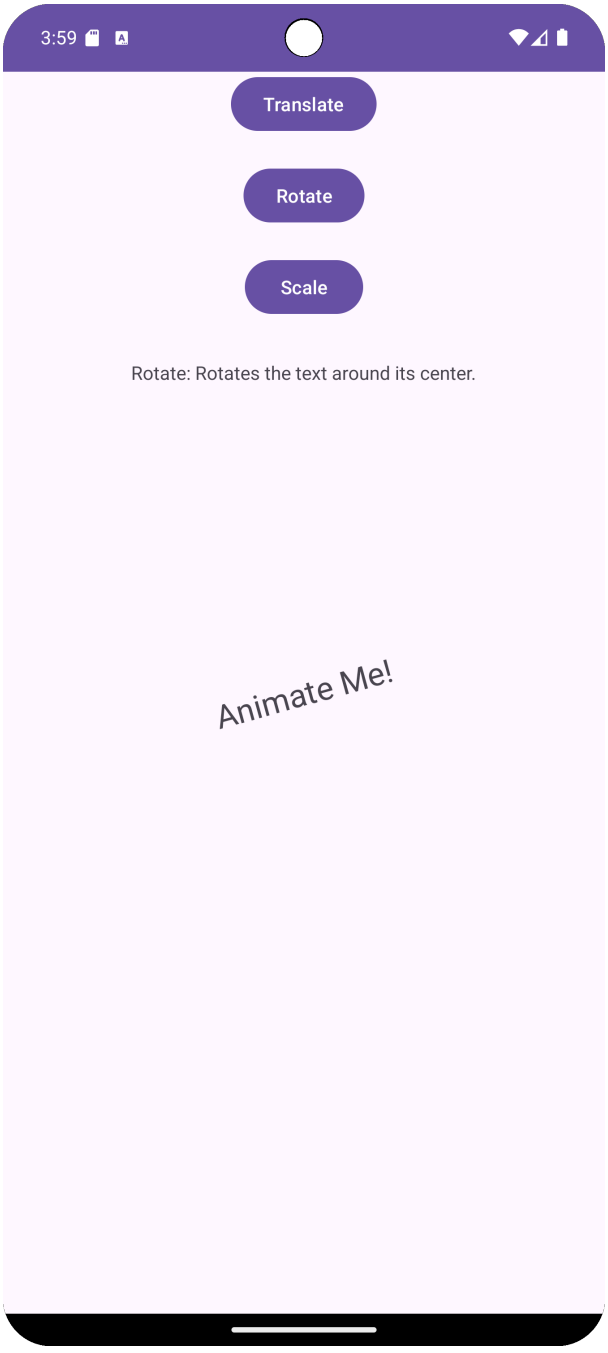
```
animatedText = findViewById(R.id.animated_text);
animationDescription = findViewById(R.id.animation_description);
translateButton = findViewById(R.id.translate_button);
rotateButton = findViewById(R.id.rotate_button);
scaleButton = findViewById(R.id.scale_button);


translateButton.setOnClickListener(v -> {

    TranslateAnimation translateAnimation = new TranslateAnimation(
            0, 500, 0, 0); // Move horizontally by 500 pixels
    translateAnimation.setDuration(1000); // Duration of 1 second
    animatedText.startAnimation(translateAnimation);


    animationDescription.setText("Translate: Moves the text
    horizontally across the screen.");
});


rotateButton.setOnClickListener(v -> {

    RotateAnimation rotateAnimation = new RotateAnimation(
            0, 360,
            Animation.RELATIVE_TO_SELF, 0.5f,
            Animation.RELATIVE_TO_SELF, 0.5f);
    rotateAnimation.setDuration(1000);
    animatedText.startAnimation(rotateAnimation);


    animationDescription.setText("Rotate: Rotates the text
    around its center.");
});


scaleButton.setOnClickListener(v -> {
   ScaleAnimation scaleAnimation = new ScaleAnimation(
            1f, 1.5f, // Scale from 1x to 1.5x on X-axis
            1f, 1.5f, // Scale from 1x to 1.5x on Y-axis
            Animation.RELATIVE_TO_SELF, 0.5f,
            Animation.RELATIVE_TO_SELF, 0.5f); /
    scaleAnimation.setDuration(1000); // Duration of 1 second
    animatedText.startAnimation(scaleAnimation);


    animationDescription.setText("Scale: Scales the
    text up by 1.5x in size.");
```

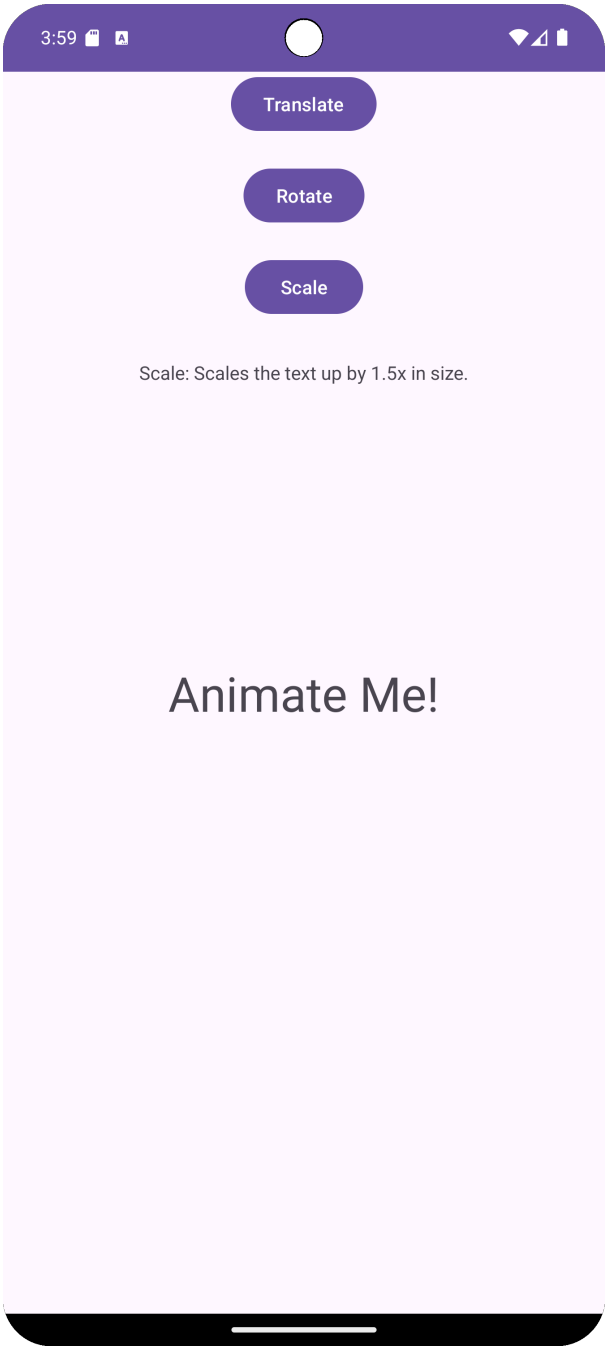
```
        });
    }
}
```

Output:


3:58
Translate
Rotate
Scale
Click a button to see animation description.
Animate Me!


3:58
Translate
Rotate
Scale
Translate: Moves the text horizontally across the screen.
Animate Me


3:59
Translate
Rotate
Scale
Rotate: Rotates the text around its center.
Animate Me!


3:59
Translate
Rotate
Scale
Scale: Scales the text up by 1.5x in size.
Animate Me!

.

Mobile Computing Lab

Assignment No.: 12

Name: Prathmesh S. Bhise
Roll No.: 24201006
Date: 29/11/2024

Aim: Write a Program to insert and display data from database using Android/other.

activitymain.xml

```
<ScrollView
    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="wrap_content"
        android:orientation="vertical">

        <!-- Name Input -->
        <EditText
            android:id="@+id/etName"
            android:layout_width="match_parent"
            android:layout_height="56dp"
            android:hint="Full Name"
            android:padding="10dp"
            android:backgroundTint="@color/design_default_color_primary"
            android:layout_marginBottom="16dp" />

        <!-- Email Input -->
        <EditText
            android:id="@+id/etEmail"
            android:layout_width="match_parent"
            android:layout_height="56dp"
            android:hint="Email"
            android:padding="10dp"
            android:inputType="textEmailAddress"
            android:backgroundTint="@color/design_default_color_primary"
            android:layout_marginBottom="16dp" />

        <!-- Age Input -->
        <EditText
```

```
            android:id="@+id/etAge"
            android:layout_width="match_parent"
            android:layout_height="56dp"
            android:hint="Age"
            android:padding="10dp"
            android:inputType="number"
            android:backgroundTint="@color/design_default_color_primary"
            android:layout_marginBottom="16dp" />

        <!-- Student ID Input -->
        <EditText
            android:id="@+id/etStudentID"
            android:layout_width="match_parent"
            android:layout_height="56dp"
            android:hint="Student ID"
            android:padding="10dp"
            android:backgroundTint="@color/design_default_color_primary"
            android:layout_marginBottom="16dp" />

        <!-- Course Input -->
        <EditText
            android:id="@+id/etCourse"
            android:layout_width="match_parent"
            android:layout_height="56dp"
            android:hint="Course"
            android:padding="10dp"
            android:backgroundTint="@color/design_default_color_primary"
            android:layout_marginBottom="16dp" />

        <!-- Register Button -->
        <Button
            android:id="@+id/btnRegister"
            android:layout_width="match_parent"
            android:layout_height="56dp"
            android:text="Register"
            android:textSize="18sp"
            android:layout_marginTop="20dp"
            android:backgroundTint="@color/design_default_color_secondary" />

    </LinearLayout>
</ScrollView>
```

MainActivity.java

```
  package com.example.registrationapp;

import android.os.AsyncTask;
```

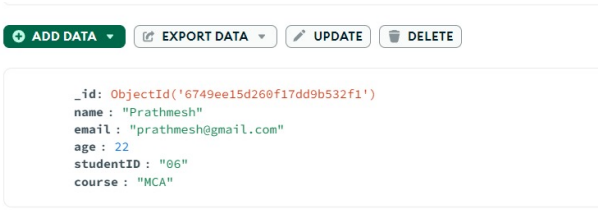
```
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

import com.example.registrationapp.R;
import com.mongodb.client.MongoClient;
import com.mongodb.client.MongoCollection;
import com.mongodb.client.MongoDatabase;

import org.bson.Document;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Initialize UI components
        EditText etName = findViewById(R.id.etName);
        EditText etEmail = findViewById(R.id.etEmail);
        EditText etAge = findViewById(R.id.etAge);
        EditText etStudentID = findViewById(R.id.etStudentID);
        EditText etCourse = findViewById(R.id.etCourse);
        Button btnRegister = findViewById(R.id.btnRegister);

        // Set onClickListener for Register button
        btnRegister.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String name = etName.getText().toString();
                String email = etEmail.getText().toString();
                String age = etAge.getText().toString();
                String studentID = etStudentID.getText().toString();
                String course = etCourse.getText().toString();

                // Validate input
                if (name.isEmpty() ||
email.isEmpty() || age.isEmpty() || studentID.isEmpty() || course.isEmpty()) {
                    Toast.makeText(MainActivity.this,
"Please fill all fields", Toast.LENGTH_SHORT).show();
                } else {
                    // Insert registration data in background
                    new InsertRegistrationTask().execute(name, email, age,
 studentID, course);
```

```
                }
            }
        });
    }

    private class InsertRegistrationTask extends
    AsyncTask<String, Void, Boolean> {
        @Override
        protected Boolean doInBackground(String... params) {
            String name = params[0];
            String email = params[1];
            int age = Integer.parseInt(params[2]);
            String studentID = params[3];
            String course = params[4];

            // Connect to MongoDB
            MongoClient mongoClient = MongoDBConnection.getMongoClient();
            MongoDatabase database = mongoClient.getDatabase("collegedb");
            MongoCollection<Document> collection =
database.getCollection("students");

            // Create document for the student
            Document registration = new Document("name", name)
                    .append("email", email)
                    .append("age", age)
                    .append("studentID", studentID)
                    .append("course", course);

            try {
                collection.insertOne(registration);
                return true; // Successful insertion
            } catch (Exception e) {
                e.printStackTrace();
                return false; // Insertion failed
            } finally {
                mongoClient.close();
            }
        }
        @Override
        protected void onPostExecute(Boolean result) {
            if (result) {
                Toast.makeText(MainActivity.this,
 "Registration Successful!", Toast.LENGTH_SHORT).show();
            } else {
                Toast.makeText(MainActivity.this,
 "Registration Failed!", Toast.LENGTH_SHORT).show();
            }
        }
```

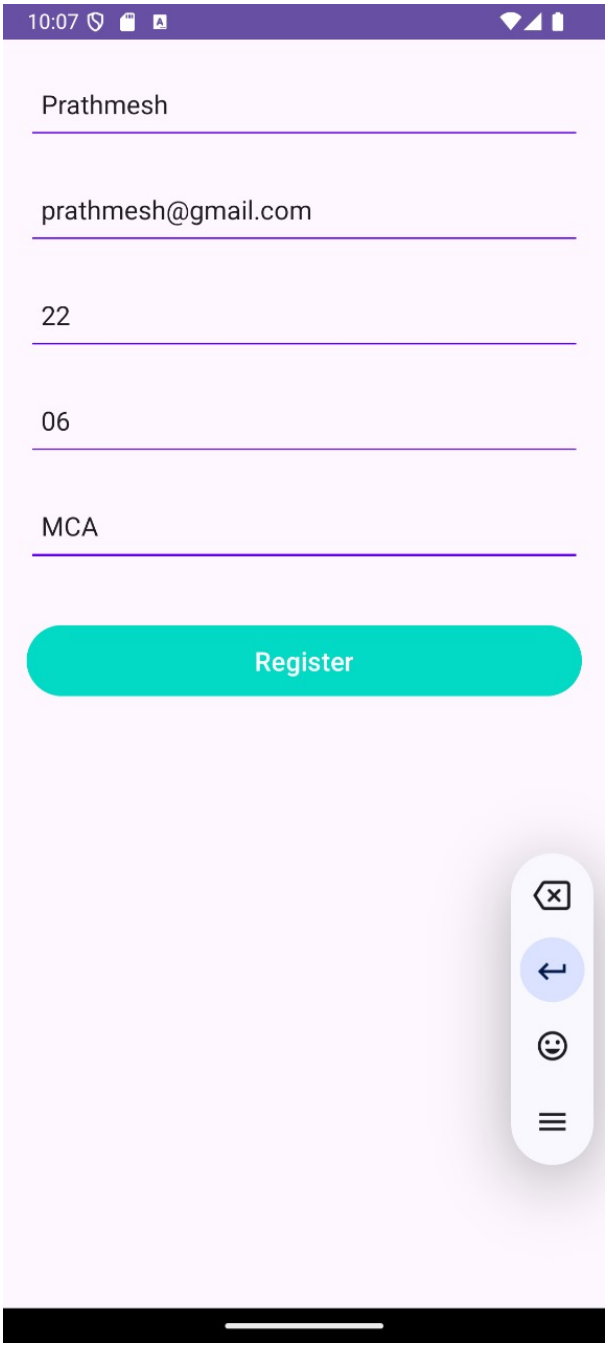
```
    }
}
```

MongoDBConnection.java

```
    package com.example.registrationapp;

import com.mongodb.client.MongoClient;
import com.mongodb.client.MongoClients;

public class MongoDBConnection {
    // MongoDB connection string
    private static final String CONNECTION_STRING = "mongodb://localhost:27017/";

    // Method to get MongoClient instance
    public static MongoClient getMongoClient() {

        return MongoClients.create(CONNECTION_STRING);
    }
}
```


ADD DATA
EXPORT DATA
UPDATE
DELETE
_id: ObjectId('6749ee15d260f17dd9b532f1')
name : "Prathmesh"
email : "prathmesh@gmail.com"
age : 22
studentID : "06"
course : "MCA"

Output:


10:07
Prathmesh
prathmesh@gmail.com
22
06
MCA
Register