Date: 25-02-2021

Aim:
App 4: To create Android App that can help user view department details.

Description of App:
The app will contain two text fields and a submit button initially.The two text fields are used to take in the input of name and email of the student and on submit, fragment 1 get created and a radio group appears with an option to choose the department.
On submitting, the second fragment opens with the description of the department. Back button will redirect back to first fragment.

Device Specifications:

App runs on the minSDK version of 16 and Android version 11 using Pixel 3A API emulator and samsung device. Only default libraries were used.

Technical Concepts Learnt:
Learnt Layout functionalities in Linear and Frame Layout. Was able to handle button onClick events. Dynamic Fragments were used and alternated with information from one fragment carried onto other.

Source Code:
Activity_main.xml:

```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">


    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="#F3F03A"
        android:gravity="center_horizontal"
```

```xml
    android:orientation="vertical"
    android:paddingTop="30dp"
    android:paddingBottom="80dp"
    android:textAlignment="center">

    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:gravity="center"
        android:paddingLeft="30dp"
        android:paddingRight="30dp"
        android:text="Department details:"
        android:textColor="#000000"
        android:textSize="20sp" />

    <EditText
        android:id="@+id/name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:ems="10"
        android:hint="Enter Name"
        android:inputType="textPersonName"
        android:textColor="#322C2C" />

    <EditText
        android:id="@+id/email"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:ems="10"
        android:hint="Enter Email ID"
        android:inputType="textEmailAddress"
        android:textColor="#231E1E" />

    <Button
        android:id="@+id/MainButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#FF0000"
        android:onClick="handleMainSubmit"
        android:text="Submit"
        android:textColor="#040303"
        app:backgroundTint="#FF0000" />
</LinearLayout>

<FrameLayout
    android:id="@+id/fragmentContainer"
```

```xml
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_margin="5dp" />
</LinearLayout>
```

Fragment_1.xml:
```xml
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".Fragment1">


    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:gravity="center_horizontal"
        android:orientation="vertical"
        android:textAlignment="center">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Select Courses" />


        <RadioGroup
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:orientation="horizontal">

            <RadioButton
                android:id="@+id/radioButton"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="CSE" />

            <RadioButton
                android:id="@+id/radioButton2"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="ECE" />

            <RadioButton
                android:id="@+id/radioButton3"
                android:layout_width="wrap_content"
```

```xml
                android:layout_height="wrap_content"
                android:text="EEE" />

            <RadioButton
                android:id="@+id/radioButton4"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Mechanical" />

            <RadioButton
                android:id="@+id/radioButton5"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Civil" />

        </RadioGroup>

        <Button
            android:id="@+id/Fragment1Button"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:onClick="Fragment1Submit"
            android:text="Submit" />

    </LinearLayout>

</FrameLayout>
```

Fragment_2.xml:

```xml
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".Fragment2">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:gravity="center_horizontal"
        android:orientation="vertical"
        android:textAlignment="center">

        <TextView
            android:id="@+id/main_output"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
```

```xml
                    android:text="Output Runtime" />

            <Button
                android:id="@+id/Fragment1Button"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_weight="1"
                android:onClick="handleMainSubmit"
                android:text="Back" />

        </LinearLayout>

    </FrameLayout>
```

Fragment1.java:

```java
package com.example.fragment_app;

import android.content.Context;
import android.os.Bundle;

import androidx.annotation.NonNull;
import androidx.fragment.app.Fragment;
import androidx.fragment.app.FragmentManager;
import androidx.fragment.app.FragmentTransaction;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

/**
 * A simple {@link Fragment} subclass.
 * Use the {@link Fragment1#newInstance} factory method to
 * create an instance of this fragment.
 */
public class Fragment1 extends Fragment {

    // TODO: Rename parameter arguments, choose names that match
    // the fragment initialization parameters, e.g. ARG_ITEM_NUMBER
    private static final String ARG_PARAM1 = "param1";
    private static final String ARG_PARAM2 = "param2";

    // TODO: Rename and change types of parameters
    private String mParam1;
    private String mParam2;


    public Fragment1() {
        // Required empty public constructor
    }
```

```java
    public static Fragment1 newInstance(String param1, String param2) {
        Fragment1 fragment = new Fragment1();
        Bundle args = new Bundle();
        args.putString(ARG_PARAM1, param1);
        args.putString(ARG_PARAM2, param2);
        fragment.setArguments(args);
        return fragment;
    }

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        if (getArguments() != null) {
            mParam1 = getArguments().getString(ARG_PARAM1);
            mParam2 = getArguments().getString(ARG_PARAM2);
        }

    }

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_1, container, false);

    }

}
```

Fragment2.java:

```java
package com.example.fragment_app;

import android.os.Bundle;

import androidx.fragment.app.Fragment;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;

/**
 * A simple {@link Fragment} subclass.
 * Use the {@link Fragment2#newInstance} factory method to
 * create an instance of this fragment.
 */
```

```java
public class Fragment2 extends Fragment {

    // TODO: Rename parameter arguments, choose names that match
    // the fragment initialization parameters, e.g. ARG_ITEM_NUMBER
    private static final String ARG_PARAM1 = "param1";
    private static final String ARG_PARAM2 = "param2";

    // TODO: Rename and change types of parameters
    private String mParam1;
    private String mParam2;

    String Data;

    public Fragment2(String data) {
        // Required empty public constructor
        Data = data;
    }

    public Fragment2() {
    }

    /**
     * Use this factory method to create a new instance of
     * this fragment using the provided parameters.
     *
     * @param param1 Parameter 1.
     * @param param2 Parameter 2.
     * @return A new instance of fragment Fragment2.
     */
    // TODO: Rename and change types and number of parameters
    public static Fragment2 newInstance(String param1, String param2) {
        Fragment2 fragment = new Fragment2();
        Bundle args = new Bundle();
        args.putString(ARG_PARAM1, param1);
        args.putString(ARG_PARAM2, param2);
        fragment.setArguments(args);
        return fragment;
    }

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        if (getArguments() != null) {
            mParam1 = getArguments().getString(ARG_PARAM1);
            mParam2 = getArguments().getString(ARG_PARAM2);
        }
    }

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
```

```java
        // Inflate the layout for this fragment
        TextView tv1;
        View view = inflater.inflate(R.layout.fragment_2, container, false);
        tv1 = view.findViewById(R.id.main_output);
        tv1.setText(Data);
        return view;

//        return inflater.inflate(R.layout.fragment_2, container, false);
    }
}
```

MainActivity.java

```java
package com.example.fragment_app;

import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.FragmentManager;
import androidx.fragment.app.FragmentTransaction;

import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.CheckBox;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    String name, email;
    Fragment1 sampleFragment1;
    Fragment2 sampleFragment2;
    FragmentManager fragmentManager;

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

    private void addFragment() {

        fragmentManager = getSupportFragmentManager();
        FragmentTransaction fragmentTransaction =
fragmentManager.beginTransaction();
        sampleFragment1 = new Fragment1();
        fragmentTransaction.replace(R.id.fragmentContainer, sampleFragment1);
        fragmentTransaction.commit();
        Toast.makeText(this, "Welcome "+ name + " !", Toast.LENGTH_SHORT).show();
```

```java
    }

    private void addFragment2(String Data) {
        FragmentTransaction fragmentTransaction =
fragmentManager.beginTransaction();
        sampleFragment2 = new Fragment2(Data);
        fragmentTransaction.replace(R.id.fragmentContainer, sampleFragment2);
        fragmentTransaction.commit();
    }

    public void handleMainSubmit(View view) {
        EditText nam = (EditText) findViewById(R.id.name);
        name = (nam.getText().toString());

        EditText emailView = (EditText) findViewById(R.id.email);
        email = (emailView.getText().toString());
        View b = findViewById(R.id.MainButton);
        b.setVisibility(View.GONE);
        addFragment();
    }

    public void Fragment1Submit(View view) {
        Toast.makeText(this, "Welcome!", Toast.LENGTH_SHORT).show();

        RadioButton bt1 =
sampleFragment1.getView().findViewById(R.id.radioButton);
        RadioButton bt2 =
sampleFragment1.getView().findViewById(R.id.radioButton2);
        RadioButton bt3 =
sampleFragment1.getView().findViewById(R.id.radioButton3);
        RadioButton bt4 =
sampleFragment1.getView().findViewById(R.id.radioButton4);
        RadioButton bt5 =
sampleFragment1.getView().findViewById(R.id.radioButton5);
        String result = "Name - " + name + "\nEmail - " + email;

        if (bt1.isChecked())
            result += "\n" + "The Department of Computer Science and Engineering
with its cohesive team of faculty members, offers a sound program at the UG as
well as the PG levels. The curriculum is a blend of the conventional and
theradical. It is updated regularly to keep up with the growing demands and the
changing trends of the software industry and research laboratories. Core courses
include Programming Languages, Computer Architecture,System Software, Networking
Technologies and Artificial Intelligence.\n";

        if (bt2.isChecked())
            result += "\n" + "The Department of Electrical and Electronics
Engineering, NIT, Tiruchirappalli was started in the year 1964. It offers one
Under-Graduate programme (B.Tech.), two Post-Graduate programmes (M.Tech. in
Power Systems and Power Electronics) and also research programmes (M.S. and Ph.D.)
in the various fields of Electrical and Electronics Engineering. After the
```

```java
institute became NIT, the department has grown not only in terms of student and
faculty strength, but also in improving the laboratory facilities.\n";

        if (bt3.isChecked())
            result += "\n" + "The Electronics and Communication Engineering (ECE)
Department was established in the year 1968. The department offers Undergraduate
(UG), Post Graduate (PG), M.S.(By Research) and Ph.D degree programs that provide
students with the knowledge and tools they need to succeed in the Electronics and
Communication Engineering. Research in the department focuses on high-impact
various disciplines: Communication systems, Wireless networks, Signal and Image
Processing, RF MEMS and MIC, Microwave antennas. \n";

        if (bt4.isChecked())
            result += "\n" + "One among the first three departments to be
established in 1964 in the institute, the Mechanical Engineering Department of
NITT has had the reputation of being among the finest in the country and is
dedicated towards the advancement of technology and science.\n";

        if (bt5.isChecked())
            result += "One among the first three departments to be established in
1964 in the institute, the Mechanical Engineering Department of NITT has had the
reputation of being among the finest in the country and is dedicated towards the
advancement of technology and science.\n";


        addFragment2(result);
    }
}
```
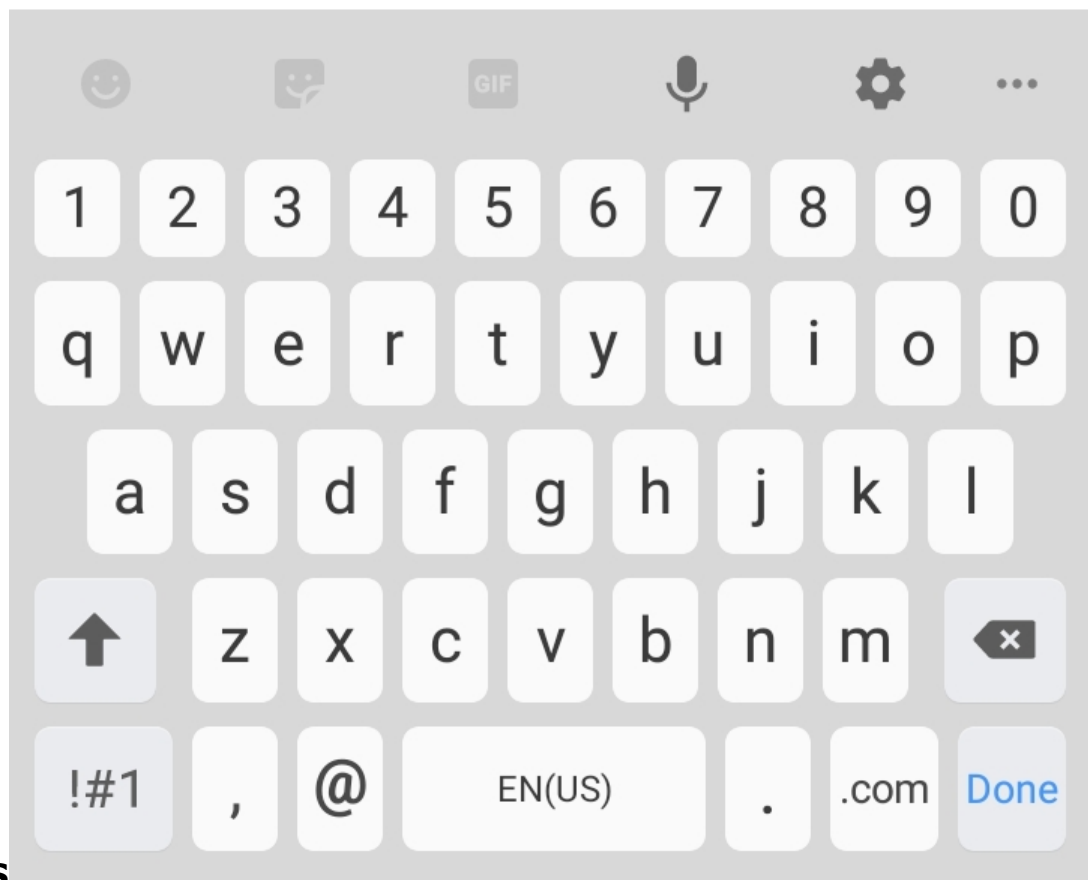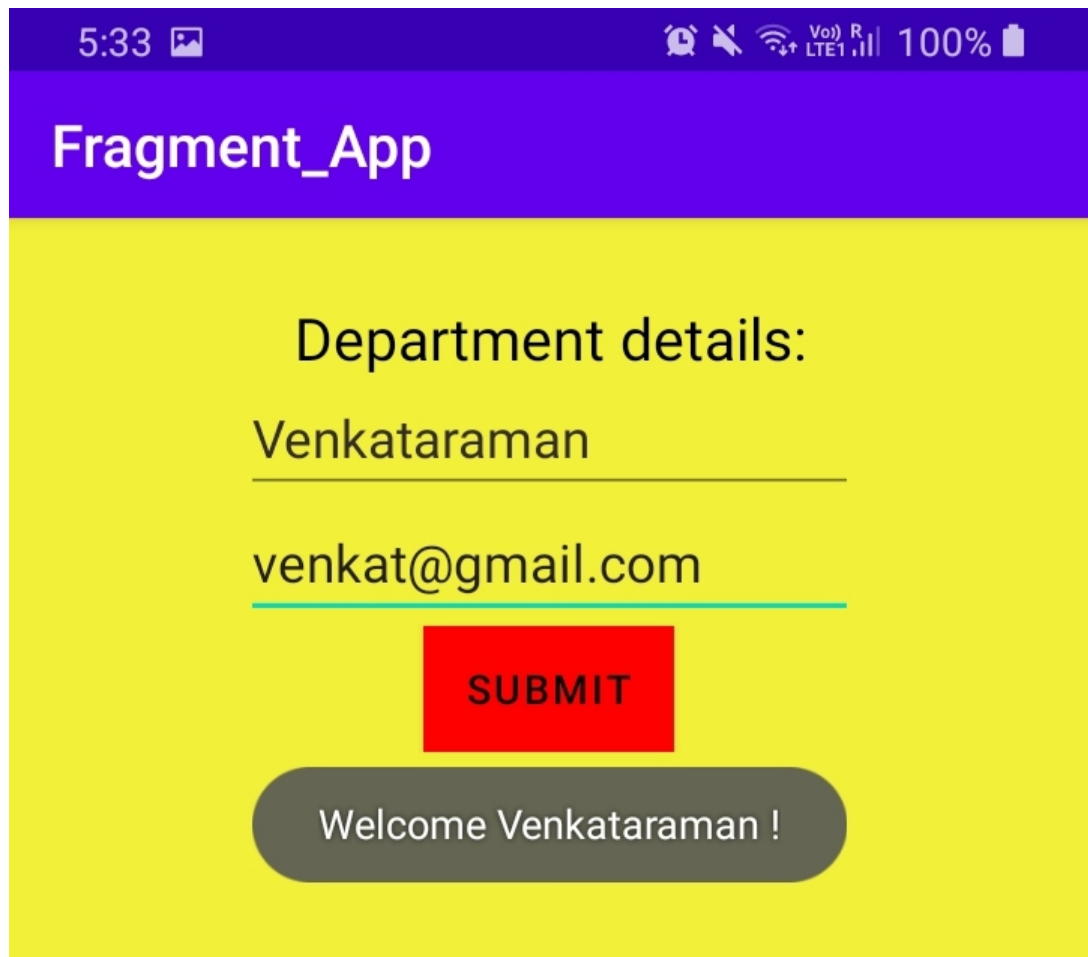
SCREENSHOTS:

Fragment_App

Department details:

Venkataraman

venkat@gmail.com

Select Courses

⭘ CSE ⭘ ECE ⭘ EEE ⭘ Mechanical ⭘ Civil

SUBMIT

Department details:

Venkataraman

venkat@gmail.com

Select Courses

○ CSE ◉ ECE ○ EEE ○ Mechanical ○ Civil

SUBMIT

Fragment_App

Department details:

Venkataraman

venkat@gmail.com

Name - Venkataraman
Email - venkat@gmail.com
The Department of Electrical and Electronics Engineering,
NIT, Tiruchirappalli was started in the year 1964. It
offers one Under-Graduate programme (B.Tech.), two
Post-Graduate programmes (M.Tech. in Power Systems
and Power Electronics) and also research programmes
(M.S. and Ph.D.) in the various fields of Electrical and
Electronics Engineering. After the institute became NIT,
the department has grown not only in terms of student
and faculty strength, but also in improving the laboratory
facilities.

BACK

Welcome!

Fragment_App

Department details:

Venkataraman

venkat@gmail.com|

Select Courses

◯ CSE ◯ ECE ◯ EEE ◯ Mechanical ◯ Civil

SUBMIT

Welcome Venkataraman !

Outcomes:
Android app for department details using fragments used successfully.