

Ex. No. : 04

Date :

Register No. : 221701051

Name :SELVAHARIBALAN S

Android Fragments

Aim

Develop an android application to create two activities named as Student Basic Details (Register No., Name, Department) and Student Mark Details (SSLC, HSC, UG). Write an android code to combine these two activities in a single screen using an android fragment.

Procedure:

Step 1 : File → New Project

Provide the application name (e.g., "AndroidFragments") and click "Next".

Step 2 : Select the target Android devices

Select the minimum SDK to run the application. Click "Next".

Step 3 : Choose the activity for the application

By default, choose "Blank Activity". Click "Next".

Step 4 : Enter activity name and click "Finish".

Step 5 : Edit the program

Create multiple fragments and define their layouts and logic separately.

Manage fragment transactions in MainActivity.kt to switch between them.

Step 6 : Run the application

Two ways to run the application:

1. Running through emulator
2. Running through mobile device

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AndroidFragments"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

Activity_main.xml

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

    <!-- App Title Bar -->
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="@color/purple_500"
        android:padding="16dp"
        android:text="Android Fragments"
        android:textColor="@android:color/white"
        android:textSize="18sp"
        android:textStyle="bold" />

    <!-- Container for the Basic Details Fragment -->
    <FrameLayout
        android:id="@+id/fragment_container_basic_details"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1" />

    <FrameLayout
        android:id="@+id/fragment_container_mark_details"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1" />

</LinearLayout>
```

fragment_basic_details.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">

    <!-- Section Title -->
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Student Details"
        android:textSize="20sp"
        android:textStyle="bold"
        android:gravity="center"
        android:layout_marginBottom="8dp" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Basic Details"
        android:textSize="18sp"
        android:gravity="center"
        android:layout_marginBottom="16dp" />

    <!-- Register Number -->
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:layout_marginBottom="8dp">

        <TextView
```

```

        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Register No."
        android:textSize="14sp" />

<EditText
    android:id="@+id/editTextRegisterNumber"
    android:layout_width="match_parent"
    android:layout_height="48dp"
    android:hint="Register Number"
    android:inputType="text"
    android:background="@null"
    android:textSize="14sp"
    android:minHeight="48dp"
    android:paddingTop="8dp"
    android:paddingBottom="8dp" />
</LinearLayout>

<View
    android:layout_width="match_parent"
    android:layout_height="1dp"
    android:background="#CCCCCC"
    android:layout_marginBottom="8dp" />

<!-- Name -->
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginBottom="8dp">

    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Name"
        android:textSize="14sp" />

```

```

<EditText
    android:id="@+id/editTextName"
    android:layout_width="match_parent"
    android:layout_height="48dp"
    android:hint="Name"
    android:inputType="textPersonName"
    android:background="@null"
    android:textSize="14sp"
    android:minHeight="48dp"
    android:paddingTop="8dp"
    android:paddingBottom="8dp" />
</LinearLayout>

<View
    android:layout_width="match_parent"
    android:layout_height="1dp"
    android:background="#CCCCCC"
    android:layout_marginBottom="8dp" />

<!-- Department -->
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Department"
        android:textSize="14sp" />

    <EditText
        android:id="@+id/editTextDepartment"
        android:layout_width="match_parent"
        android:layout_height="48dp"
        android:hint="Department"
        android:inputType="text"

```

```

        android:background="@null"
        android:textSize="14sp"
        android:minHeight="48dp"
        android:paddingTop="8dp"
        android:paddingBottom="8dp" />
    </LinearLayout>

    <View
        android:layout_width="match_parent"
        android:layout_height="1dp"
        android:background="#CCCCCC" />

</LinearLayout>

```

fragment_mark_details.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">

    <!-- Section Title -->

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Mark Details"
        android:textSize="20sp"
        android:textStyle="bold"
        android:gravity="center"
        android:layout_marginBottom="16dp" />

    <!-- SSLC Mark -->

```

```

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginBottom="8dp">

    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="S.S.L.C."
        android:textSize="14sp" />

    <EditText
        android:id="@+id/editTextSSLCMark"
        android:layout_width="match_parent"
        android:layout_height="48dp"
        android:hint="S.S.L.C. Mark"
        android:inputType="numberDecimal"
        android:background="@null"
        android:textSize="14sp"
        android:minHeight="48dp"
        android:paddingTop="8dp"
        android:paddingBottom="8dp" />

</LinearLayout>

<View
    android:layout_width="match_parent"
    android:layout_height="1dp"
    android:background="#CCCCCC"
    android:layout_marginBottom="8dp" />

<!-- HSC Mark -->
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginBottom="8dp">

```



```

<TextView
    android:layout_width="100dp"
    android:layout_height="wrap_content"
    android:text="H.Sc."
    android:textSize="14sp" />

<EditText
    android:id="@+id/editTextHSCMark"
    android:layout_width="match_parent"
    android:layout_height="48dp"
    android:hint="H.Sc. Mark"
    android:inputType="numberDecimal"
    android:background="@null"
    android:textSize="14sp"
    android:minHeight="48dp"
    android:paddingTop="8dp"
    android:paddingBottom="8dp" />
</LinearLayout>

<View
    android:layout_width="match_parent"
    android:layout_height="1dp"
    android:background="#CCCCCC"
    android:layout_marginBottom="8dp" />

<!-- UG CGPA -->
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="U.G."
        android:textSize="14sp" />

```

```

<EditText
    android:id="@+id/editTextUGCGPA"
    android:layout_width="match_parent"
    android:layout_height="48dp"
    android:hint="U.G. CGPA"
    android:inputType="numberDecimal"
    android:background="@null"
    android:textSize="14sp"
    android:minHeight="48dp"
    android:paddingTop="8dp"
    android:paddingBottom="8dp" />
</LinearLayout>

<View
    android:layout_width="match_parent"
    android:layout_height="1dp"
    android:background="#CCCCCC" />

</LinearLayout>

```

MainActivity.kt

```

package com.example.android.fragments

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

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
}

```

```

        // Only load the fragments if this is the first creation of the
        activity

        if (savedInstanceState == null) {

            // Add the basic details fragment

            supportFragmentManager.beginTransaction()

                .add(R.id.fragment_container_basic_details,
                BasicDetailsFragment())

                .commit()

            // Add the mark details fragment

            supportFragmentManager.beginTransaction()

                .add(R.id.fragment_container_mark_details,
                MarkDetailsFragment())

                .commit()

        }

    }
}

```

BasicDetailsFragment.kt

```

package com.example.android.fragments

import android.os.Bundle
import android.view.LayoutInflater
import android.view.View
import android.view.ViewGroup
import android.widget.EditText
import android.fragment.app.Fragment

class BasicDetailsFragment : Fragment() {

    private lateinit var registerNumberEditText: EditText

    private lateinit var nameEditText: EditText

    private lateinit var departmentEditText: EditText

```

```

override fun onCreateView(
    inflater: LayoutInflater,
    container: ViewGroup?,
    savedInstanceState: Bundle?
): View? {
    // Inflate the layout for this fragment

    val view = inflater.inflate(R.layout.fragment_basic_details, container,
false)

    // Initialize the EditText fields

    registerNumberEditText = view.findViewById(R.id.editTextRegisterNumber)
    nameEditText = view.findViewById(R.id.editTextName)
    departmentEditText = view.findViewById(R.id.editTextDepartment)

    return view
}

// Method to get the entered register number
fun getRegisterNumber(): String {
    return registerNumberEditText.text.toString()
}

// Method to get the entered name
fun getName(): String {
    return nameEditText.text.toString()
}

// Method to get the entered department
fun getDepartment(): String {
    return departmentEditText.text.toString()
}
}

```

MarkDetailsFragment.kt

```
package com.example.android.fragments

import android.os.Bundle
import android.view.LayoutInflater
import android.view.View
import android.view.ViewGroup
import android.widget.EditText
import android.fragment.app.Fragment

class MarkDetailsFragment : Fragment() {

    private lateinit var sslcMarkEditText: EditText
    private lateinit var hscMarkEditText: EditText
    private lateinit var ugcgpaEditText: EditText

    override fun onCreateView(
        inflater: LayoutInflater,
        container: ViewGroup?,
        savedInstanceState: Bundle?
    ): View? {
        // Inflate the layout for this fragment
        val view = inflater.inflate(R.layout.fragment_mark_details, container,
false)

        // Initialize the EditText fields
        sslcMarkEditText = view.findViewById(R.id.editTextSSLCMark)
        hscMarkEditText = view.findViewById(R.id.editTextHSCMark)
        ugcgpaEditText = view.findViewById(R.id.editTextUGCGPA)
    }
}
```

```

        return view
    }

    // Method to get the entered SSLC mark
    fun getSSLCMark(): String {
        return sslcMarkEditText.text.toString()
    }

    // Method to get the entered HSC mark
    fun getHSCMark(): String {
        return hscMarkEditText.text.toString()
    }

    // Method to get the entered UG CGPA
    fun getUGCGPA(): String {
        return ugcgpaEditText.text.toString()
    }
}

```

Output

The screenshot shows an Android application interface with a purple header bar containing the time '12:45', signal strength, and battery icons. The title 'Android Fragments' is displayed in the header. Below the header, the application is divided into two main sections: 'Student Details' and 'Mark Details'. The 'Student Details' section is titled 'Basic Details' and contains three input fields: 'Register No.' (labeled 'Register Number'), 'Name', and 'Department'. The 'Mark Details' section contains three input fields: 'S.S.L.C.' (labeled 'S.S.L.C. Mark'), 'H.Sc.', and 'U.G.' (labeled 'U.G. CGPA'). A horizontal line is visible below the 'Mark Details' section.

Student Details	
Basic Details	
Register No.	Register Number
Name	Name
Department	Department

Mark Details	
S.S.L.C.	S.S.L.C. Mark
H.Sc.	H.Sc. Mark
U.G.	U.G. CGPA

Result:

To design a Kotlin application that utilizes fragments to manage multiple UI components within a single activity.