

Exercise 1 - Designing Health Insurance Form using GUI Components

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CSE-A

Aim

Generate a Health Insurance registration form to register the patient details under each group.

Patient Details - Title, Patient Name, Patient Phone Number (Mobile or Landline use Checkbox), Address, Age, DOB, Gender, Marital Status

Employer Details - Patient Employer, Employment Status (full time, parttime, unemployed, retired, student, other Checkbox)

Emergency contact Details - Name, Relationship, Address, Phone Number

Use Submit (Button) to submit the details and display the contents. Use the Reset button to clear the form. Display using Table layout.

Code

activity_main.xml

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

    <LinearLayout
```

```
android:layout_width="match_parent"
android:layout_height="match_parent"
android:layout_marginLeft="16dp"
android:layout_marginRight="16dp"
android:layout_marginBottom="8dp"
android:orientation="vertical"
tools:context=".MainActivity">
```

```
<TextView
    android:id="@+id/titleTextView"
    android:layout_width="match_parent"
    android:layout_height="128dp"
    android:gravity="center"
    android:text="Health Insurance Registration"
    android:textSize="32sp"
    android:textStyle="bold"
    android:typeface="serif" >
```

```
<TextView
    android:id="@+id/title"
    android:layout_width="match_parent"
    android:layout_height="32dp"
    android:gravity="left"
    android:text="Patient Details"
    android:textSize="22sp"
    android:textStyle="bold"
    android:typeface="serif" >
```

```
<TextView
    android:id="@+id/name"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Name"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<EditText
```

```
    android:id="@+id/editName"
    android:layout_width="match_parent"
    android:layout_height="54dp"
    android:hint="Name:"
    android:inputType="text"
    android:textColor="#0000FF"
    android:typeface="sans" >
```

```
<TextView
    android:id="@+id/number"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Number"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<RadioGroup
    android:id="@+id/radio_group_id"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="4dp">
```

```
    <RadioButton
        android:id="@+id/phone_radio_button_id"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Phone" >
```

```
    <RadioButton
        android:id="@+id/landline_radio_button_id"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Landline" >
```

```
/RadioGroup>
```

```
<EditText
    android:id="@+id/editNumber"
    android:layout_width="match_parent"
```

```
    android:layout_height="54dp"
    android:hint="Number:"
    android:inputType="phone" >
```

```
<TextView
    android:id="@+id/address"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Address"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<EditText
    android:id="@+id/editAddress"
    android:layout_width="match_parent"
    android:layout_height="54dp"
    android:hint="Address:"
    android:inputType="text"
    android:textColor="#0000FF"
    android:typeface="sans" >
```

```
<TextView
    android:id="@+id/age"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Age"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<EditText
    android:id="@+id/editAge"
    android:layout_width="match_parent"
    android:layout_height="54dp"
    android:hint="Age:"
    android:inputType="number"
```

```
        android:textColor="#0000FF"
        android:typeface="sans" >
```

```
<TextView
    android:id="@+id/dob"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="DOB"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<DatePicker
    android:id="@+id/dobPicker"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="center" >
```

```
<TextView
    android:id="@+id/gender"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Gender"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<RadioGroup
    android:id="@+id/gender_group"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="4dp">
```

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

```

        android:layout_height="wrap_content"
        android:text="Male" >

<RadioButton
    android:id="@+id/female"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Female" >
/FormGroup>
<TextView
    android:id="@+id/marital_status"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Marital Status"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >

<Spinner
    android:id="@+id/marital_status_spinner"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:entries="@array/marital_status_options" >

<TextView
    android:id="@+id/employer"
    android:layout_width="match_parent"
    android:layout_height="32dp"
    android:layout_marginTop="48dp"
    android:gravity="left"
    android:text="Employer Details"
    android:textSize="22sp"
    android:textStyle="bold"
    android:typeface="serif" >

<TextView
    android:id="@+id/employer_name"
    android:layout_width="match_parent"
    android:layout_height="26dp"

```

```
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Employer Name"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<EditText
    android:id="@+id/editEmployerName"
    android:layout_width="match_parent"
    android:layout_height="54dp"
    android:hint="Employer Name:"
    android:inputType="text"
    android:textColor="#0000FF"
    android:typeface="sans" >
```

```
<TextView
    android:id="@+id/employment_status"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Employment Status"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<Spinner
    android:id="@+id/employment_status_spinner"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:entries="@array/employment_status_options" >
```

```
<TextView
    android:id="@+id/emergency"
    android:layout_width="match_parent"
    android:layout_height="32dp"
    android:layout_marginTop="48dp"
    android:gravity="left"
    android:text="Emergency Details"
```

```
    android:textSize="22sp"
    android:textStyle="bold"
    android:typeface="serif" >
```

```
<TextView
    android:id="@+id/emergency_name"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Emergency Contact Name"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<EditText
    android:id="@+id/edit_emergency_name"
    android:layout_width="match_parent"
    android:layout_height="54dp"
    android:hint="Employer Contact Name:"
    android:inputType="text"
    android:textColor="#0000FF"
    android:typeface="sans" >
```

```
<TextView
    android:id="@+id/emergency_relationship"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Relationship"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<EditText
    android:id="@+id/edit_emergency_relationship"
    android:layout_width="match_parent"
    android:layout_height="54dp"
    android:hint="Relationship:"
    android:inputType="text"
```



```
        android:textColor="#0000FF"
        android:typeface="sans" >
```

```
<TextView
    android:id="@+id/emergency_address"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Address"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<EditText
    android:id="@+id/edit_emergency_address"
    android:layout_width="match_parent"
    android:layout_height="54dp"
    android:hint="Address:"
    android:inputType="text"
    android:textColor="#0000FF"
    android:typeface="sans" >
```

```
<TextView
    android:id="@+id/emergency_phone"
    android:layout_width="match_parent"
    android:layout_height="26dp"
    android:layout_marginTop="16dp"
    android:gravity="left"
    android:text="Phone"
    android:textSize="18sp"
    android:textStyle="bold"
    android:typeface="normal" >
```

```
<EditText
    android:id="@+id/edit_emergency_phone"
    android:layout_width="match_parent"
    android:layout_height="54dp"
    android:hint="Phone Number:"
    android:inputType="phone"
    android:textColor="#0000FF"
```

```

        android:typeface="sans" >

<Button
    android:id="@+id/submit"
    android:layout_width="match_parent"
    android:layout_height="64dp"
    android:layout_marginTop="32dp"
    android:backgroundTint="#4CAF50"
    android:gravity="center"
    android:hint="Register"
    android:onClick="openTableActivity" >

<Button

    android:id="@+id/reset"
    android:layout_width="match_parent"
    android:layout_height="64dp"
    android:layout_marginTop="16dp"
    android:backgroundTint="#F44336"
    android:gravity="center"
    android:hint="Reset"
    android:onClick="resetFormFields" >
/LinearLayout>
/ScrollView>

```

MainActivity.java

```

package com.example.a1;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.DatePicker;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.Spinner;

import java.util.Calendar;

```

```

public class MainActivity extends AppCompatActivity {

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

    public void openTableActivity(View view) {
        Intent intent = new Intent(this, TableActivity.class);

        intent.putExtra("name", ((EditText)
findViewById(R.id.editName)).getText().toString());
        if (((RadioButton)
findViewById(R.id.phone_radio_button_id)).isChecked())
            intent.putExtra("number_type", "Phone");
        else if (((RadioButton)
findViewById(R.id.phone_radio_button_id)).isChecked())
            intent.putExtra("number_type", "Landline");
        intent.putExtra("number", ((EditText)
findViewById(R.id.editNumber)).getText().toString());
        intent.putExtra("address", ((EditText)
findViewById(R.id.editAddress)).getText().toString());
        intent.putExtra("age", ((EditText)
findViewById(R.id.editAge)).getText().toString());

        DatePicker datePicker = findViewById(R.id.dobPicker);
        int day = datePicker.getDayOfMonth();
        int month = datePicker.getMonth();
        int year = datePicker.getYear();
        Calendar calendar = Calendar.getInstance();
        calendar.set(year, month, day);
        intent.putExtra("dob", calendar.getTime().toString());

        if (((RadioButton) findViewById(R.id.male)).isChecked())
intent.putExtra("gender", "Male");
        else if (((RadioButton) findViewById(R.id.female)).isChecked())
            intent.putExtra("gender", "Female");
        intent.putExtra("marital_status", ((Spinner)
findViewById(R.id.marital_status_spinner)).getSelectedItem().toString());
    }
}

```

```

        intent.putExtra("employer_name", ((EditText)
findViewById(R.id.editEmployerName)).getText().toString());
        intent.putExtra("employment_status", ((Spinner)
findViewById(R.id.employment_status_spinner)).getSelectedItem().toString());

        intent.putExtra("emergency_name", ((EditText)
findViewById(R.id.edit_emergency_name)).getText().toString());
        intent.putExtra("emergency_relationship", ((EditText)
findViewById(R.id.edit_emergency_relationship)).getText().toString());
        intent.putExtra("emergency_address", ((EditText)
findViewById(R.id.edit_emergency_address)).getText().toString());
        intent.putExtra("emergency_phone", ((EditText)
findViewById(R.id.edit_emergency_phone)).getText().toString());

        startActivity(intent);
    }
    public void resetFormFields(View view) {
        ((EditText) findViewById(R.id.editName)).setText("");
        ((RadioButton)
findViewById(R.id.phone_radio_button_id)).setChecked(false);
        ((RadioButton)
findViewById(R.id.landline_radio_button_id)).setChecked(false);
        ((EditText) findViewById(R.id.editNumber)).setText("");
        ((EditText) findViewById(R.id.editAddress)).setText("");
        ((EditText) findViewById(R.id.editAge)).setText("");
        ((DatePicker) findViewById(R.id.dobPicker)).updateDate(1970, 0, 1);
        ((RadioButton) findViewById(R.id.male)).setChecked(false);
        ((RadioButton) findViewById(R.id.female)).setChecked(false);
        ((Spinner) findViewById(R.id.marital_status_spinner)).setSelection(0);

        ((EditText) findViewById(R.id.editEmployerName)).setText("");
        ((Spinner)
findViewById(R.id.employment_status_spinner)).setSelection(0);

        ((EditText) findViewById(R.id.edit_emergency_name)).setText("");
        ((EditText)
findViewById(R.id.edit_emergency_relationship)).setText(""); ((EditText)
findViewById(R.id.edit_emergency_address)).setText(""); ((EditText)
findViewById(R.id.edit_emergency_phone)).setText(""); }
    }

```

activity_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:stretchColumns="*">

    <TableRow>

        <TextView
            android:id="@+id/textView_title1"
            android:layout_width="100dp"
            android:layout_height="wrap_content"
            android:text="Patient details"
            android:textAlignment="center"
            android:textSize="48px"
            android:textStyle="bold" >
    /TableRow>

    <TableRow>

        <TextView
            android:id="@+id/textView_name"
            android:layout_width="100dp"
            android:layout_height="wrap_content"
            android:text="Name" >

        <TextView
            android:id="@+id/textView_name_value"
            android:layout_width="match_parent"
            android:layout_height="wrap_content" >
    /TableRow>

    <TableRow>

        <TextView
            android:id="@+id/textView_number"
            android:layout_width="100dp"
            android:layout_height="wrap_content"
```

```

        android:text="Number" >

<TextView
    android:id="@+id/textView_number_value"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_address"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Address" >

    <TextView
        android:id="@+id/textView_address_value"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_age"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Age" >

    <TextView
        android:id="@+id/textView_age_value"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_dob"
        android:layout_width="100dp"

```

```

        android:layout_height="wrap_content"
        android:text="DOB" >

<TextView
    android:id="@+id/textView_dob_value"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_gender"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Gender" >

    <TextView
        android:id="@+id/textView_gender_value"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_marital_status"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Marital Status" >

    <TextView
        android:id="@+id/textView_marital_status_value"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_title2"

```

```

        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="32px"
        android:text="Employer details"
        android:textAlignment="center"
        android:textSize="48px"
        android:textStyle="bold" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_employer_name"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Employer Name" >

    <TextView
        android:id="@+id/textView_employer_name_value"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_employment_status"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Employment Status" >

    <TextView
        android:id="@+id/textView_employment_status_value"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_title3"

```



```

        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="32px"
        android:text="Emergency details"
        android:textAlignment="center"
        android:textSize="48px"
        android:textStyle="bold" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_emergency_name"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Emergency name" >

    <TextView
        android:id="@+id/textView_emergency_name_value"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_emergency_relationship"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Emergency relationship" >

    <TextView
        android:id="@+id/textView_emergency_relationship_value"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_emergency_address"

```

```

        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Emergency address" >

<TextView
    android:id="@+id/textView_emergency_address_value"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >
/TableRow>

<TableRow>

    <TextView
        android:id="@+id/textView_emergency_phone"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Emergency phone" >

    <TextView
        android:id="@+id/textView_emergency_phone_value"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
/TableRow>

/TableRow>

```

TableActivity.java

```

package com.example.a1;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;

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

```

```

        Intent intent = getIntent();
        Bundle extras = intent.getExtras();
        if (extras == null) return;

        ((TextView)
findViewById(R.id.textView_name_value)).setText(extras.getString("name"));
        ((TextView)
findViewById(R.id.textView_number_value)).setText(extras.getString("number"));
        ((TextView)
findViewById(R.id.textView_address_value)).setText(extras.getString("address")
);
        ((TextView)
findViewById(R.id.textView_age_value)).setText(extras.getString("age"));
        ((TextView)
findViewById(R.id.textView_dob_value)).setText(extras.getString("dob"));
        ((TextView)
findViewById(R.id.textView_gender_value)).setText(extras.getString("gender"));
        ((TextView)
findViewById(R.id.textView_marital_status_value)).setText(extras.getString("ma
rital_status"));
        ((TextView)
findViewById(R.id.textView_employer_name_value)).setText(extras.getString("emp
loyer_name"));
        ((TextView)
findViewById(R.id.textView_employment_status_value)).setText(extras.getString(
"employment_status"));

        ((TextView)
findViewById(R.id.textView_emergency_name_value)).setText(extras.getString("em
ergency_name"));
        ((TextView)
findViewById(R.id.textView_emergency_relationship_value)).setText(extras.getSt
ring("emergency_relationship"));
        ((TextView)
findViewById(R.id.textView_emergency_address_value)).setText(extras.getString(
"emergency_address"));
        ((TextView)
findViewById(R.id.textView_emergency_phone_value)).setText(extras.getString("e
mergency_phone"));

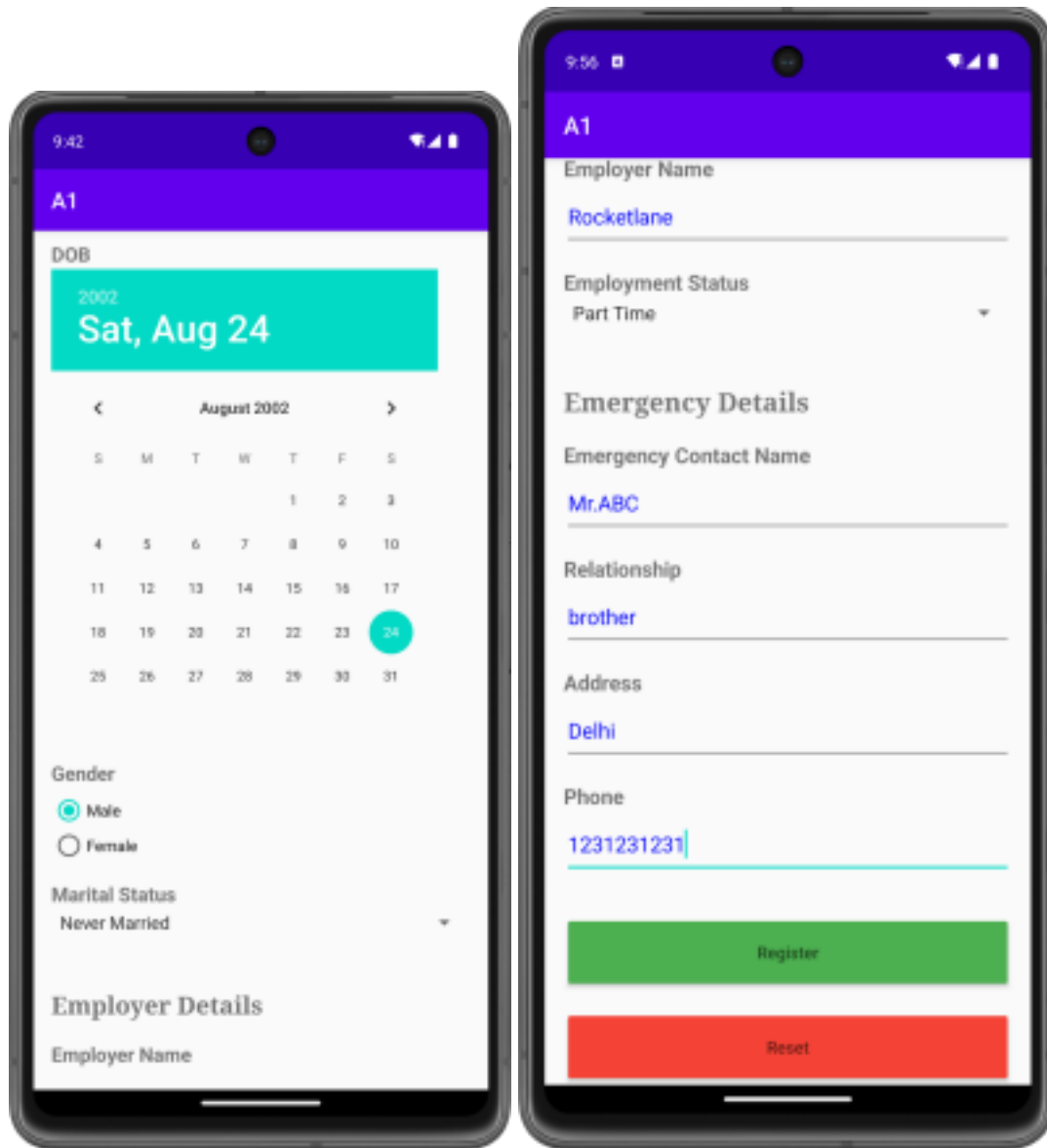
```

```
}  
}
```

strings.xml

```
<resources>  
    <string name="app_name">A1 /string>  
    <string-array name="marital_status_options">  
        <item>Never Married /item>  
        <item>Married /item>  
        <item>Widowed /item>  
        <item>Divorced /item>  
        <item>Separated /item>  
    /string-array>  
  
    <string-array name="employment_status_options">  
        <item>Full Time /item>  
        <item>Part Time /item>  
        <item>Unemployed /item>  
        <item>Retired /item>  
        <item>Student /item>  
        <item>Other /item>  
    /string-array>  
    <string name="title_activity_table">All Details /string>  
  
/resources>
```

Output



Learning outcomes

Basic GUI components and layouts that are available
Passing data between activities

Exercise 2 - Keyboard application

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205001100

CSE-A

Aim

To implement a keyboard application using Android Studio

Code

activity_main.xml

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

    <TextView
        android:id="@+id/text_bar"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="6dp"
        android:layout_marginTop="24dp"
        android:layout_marginRight="6dp"
        android:hint="Enter text..."
        android:text=""
        android:textSize="24sp" />

    <GridLayout
        android:id="@+id/keyboard"
        android:layout_width="match_parent"
```

```

        android:layout_height="200dp"
        android:layout_alignParentBottom="true"
        android:background="#202020"
        android:padding="1dp" />
</RelativeLayout>

```

MainActivity.java

```

package com.example.qwerty;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.content.res.ResourcesCompat;
import android.os.Bundle;
import android.util.DisplayMetrics;
import android.view.Gravity;
import android.widget.Button;
import android.widget.GridLayout;
import android.widget.TextView;
import android.graphics.Typeface;

public class MainActivity extends AppCompatActivity {
    private final String[][] letterKeys = {
        {"Q", "W", "E", "R", "T", "Y", "U", "I", "O", "P"},
        {"A", "S", "D", "F", "G", "H", "J", "K", "L"},
        {"↑", "Z", "X", "C", "V", "B", "N", "M", "←"},
        {"?123", ",", " ", ".", "□"}
    };
    private final String[][] numberKeys = {
        {"1", "2", "3", "4", "5", "6", "7", "8", "9", "0"},
        {"@", "#", "₹", "_", "&", "-", "+", "(", ")", "/"},
        {"*", "\", """, ".:", ";", "!", "?", "<", ">", "=", "←"},
        {"ABC", " ", " ", " ", " ", " ", " ", "□"}
    };
    private TextView textBar;

    private GridLayout keyboard;
    private DisplayMetrics displayMetrics;
    private Boolean isCaps = false;
    private Typeface customFont;

```

```

private void init() {
    textBar = findViewById(R.id.text_bar);
    textBar.setText("");
    keyboard = findViewById(R.id.keyboard);

    displayMetrics = new DisplayMetrics();
    getWindowManager().getDefaultDisplay().getMetrics(displayMetrics);

    customFont = ResourcesCompat.getFont(this, R.font.oswald);
}
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    init();
    initKeyboard(letterKeys);
}

private void initKeyboard(String[][] keys) {
    keyboard.removeAllViews();

    int rowIndex = 0;
    for (String[] row : keys) {
        int colIndex = 0;
        int width = displayMetrics.widthPixels / (row.length + 4);

        for (String letter : row) {
            addButtonToKeyboard(letter, width, rowIndex, colIndex);
            colIndex++;
        }
        rowIndex++;
    }
}

private boolean isChar(String key) {
    return key.length() == 1 && Character.isLetter(key.charAt(0));
}

private void addButtonToKeyboard(String key, int width, int row, int col) {
    Button button = new Button(this);
    if (isChar(key)) button.setText(key.toLowerCase());
}

```



```

else {
    button.setText(key);
    button.setTypeface(customFont);
    button.setWidth(0);
    button.setPadding(0, 0, 0, 0);
}

GridLayout.LayoutParams params = new GridLayout.LayoutParams();
params.width = width;
params.height = GridLayout.LayoutParams.WRAP_CONTENT;
params.rowSpec = GridLayout.spec(row);
params.columnSpec = GridLayout.spec(col);
params.setGravity(Gravity.FILL);

button.setLayoutParams(params);
button.setClickable(true);
setHandler(button, key);

keyboard.addView(button);
}

private void setHandler(Button button, String key) {
    if (key.length() == 1 && Character.isLetter(key.charAt(0))) {
        button.setOnClickListener(view -> {
            if (isCaps) textBar.append(key.toUpperCase());
            else textBar.append(key.toLowerCase());
        });
        return;
    }

    switch (key) {
        case "↑":
            button.setOnClickListener(view -> isCaps = !isCaps);
            break;
        case "←":
            button.setOnClickListener(view -> {
                CharSequence currentText = textBar.getText();
                if (currentText.length() != 0) {
                    CharSequence newText = currentText.subSequence(0, currentText.length() - 1);
                    textBar.setText(newText);
                }
            });
    }
}

```

```

        break;
    case "?123":
        button.setOnClickListener(view -> initKeyboard(numberKeys));
        break;
    case "ABC":
        button.setOnClickListener(view -> initKeyboard(letterKeys));
        break;
    case "□":
        button.setOnClickListener(view -> textBar.append("\n"));
        break;
    default:
        button.setOnClickListener(view -> {
            CharSequence currentText = textBar.getText();
            CharSequence newText = currentText.subSequence(0, currentText.length() - 1);
            textBar.setText(newText);
            textBar.append(String.valueOf(key.charAt(0)));
            textBar.append("|");
        }
    );
    break;
}

}

}

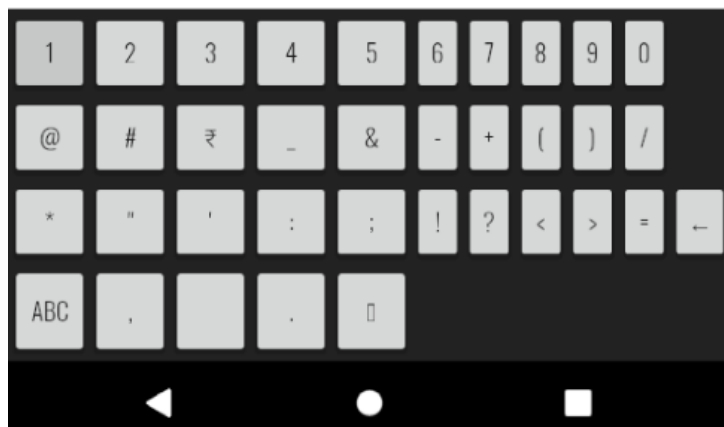
```

Output

Android Emulator - Pixel_2_API_30:5554



ERROR_404|



Learning outcomes

Thus a keyboard was implemented using Android Studio