

## EXERCISE 1

### APPLICATION USING GUI COMPONENTS, FONT, COLOURS, LAYOUT MANAGERS AND EVENT LISTENERS

#### AIM:

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

#### COMPONENTS USED:

##### ANDROID WIDGETS:

- TextView
- EditText
- CheckBox
- Button
- RadioButton
- RadioGroup
- Spinner

##### LAYOUTS USED:

- LinearLayout (Vertical)
- TableLayout

#### ACTIVITY AND INTENTS USED:

##### Activities:

- MainActivity JAVA Class
- ViewActivity JAVA Class

##### Intents:

- Intent between MainActivity JAVA Class (sender) and ViewActivity JAVA Class (receiver)

**CODE:**  
**activity\_main.xml**

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

    <TextView
        android:id="@+id/text_view_hir"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="16dp"
        android:gravity="center"
        android:text="@string/hir"
        android:textColor="#06135C"
        android:textSize="24sp"
        android:textStyle="bold" />

    <ScrollView
        android:layout_width="match_parent"
        android:layout_height="match_parent" >

        <TableLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_margin="15dp">

            <TextView
                android:id="@+id/text_view_pd"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_marginStart="25dp"
                android:layout_marginEnd="40dp"
                android:gravity="center"
                android:text="@string/pd"
                android:textColor="#057DCD"
                android:textSize="20sp"
                android:textStyle="bold" />

            <TableRow
                android:layout_width="match_parent"
                android:layout_height="match_parent"
                android:minHeight="50dp">
```

```
<TextView
    android:id="@+id/text_view_name"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:gravity="center|left"
    android:text="@string/name"
    android:textColor="#06135C"
    android:textSize="14sp"
    android:textStyle="bold" />

<EditText
    android:id="@+id/edit_text_name"
    android:layout_width="250dp"
    android:layout_height="match_parent"
    android:layout_marginStart="25dp"

    android:inputType="text|textPersonName"
    android:minHeight="50dp"
    android:text=""
    android:textColor="#057DCD"
    android:textSize="14sp"
    android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="120dp"
    android:minHeight="100dp">

    <TextView
        android:id="@+id/text_view_phone"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:layout_marginTop="12dp"
        android:gravity="left"
        android:text="@string/phone"
        android:textColor="#06135C"
        android:textSize="14sp"
        android:textStyle="bold" />

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:orientation="vertical">
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <CheckBox
        android:id="@+id/check_box_mobile"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="@string/mobile"
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

    <EditText
        android:id="@+id/edit_text_mobile"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:enabled="false"
        android:inputType="phone"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

</LinearLayout>

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

    <CheckBox
        android:id="@+id/check_box_landline"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="@string/landline"
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold"/>

    <EditText
        android:id="@+id/edit_text_landline"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:enabled="false"
        android:inputType="phone"
        android:text=""
        android:textColor="#057DCD"
```

```
                android:textSize="14sp"
                android:textStyle="bold" />
            </LinearLayout>
        </LinearLayout>

    </TableRow>

    <TableRow
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginTop="0dp"
        android:minHeight="50dp">

        <TextView
            android:id="@+id/text_view_address"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginStart="25dp"
            android:gravity="center|left"
            android:text="@string/address"
            android:textColor="#06135C"
            android:textSize="14sp"
            android:textStyle="bold" />

        <EditText
            android:id="@+id/edit_text_address"
            android:layout_width="50dp"
            android:layout_height="match_parent"
            android:layout_marginStart="25dp"
            android:inputType="text|textPostalAddress"
            android:minHeight="50dp"
            android:text=""
            android:textColor="#057DCD"
            android:textSize="14sp"
            android:textStyle="bold" />

    </TableRow>

    <TableRow
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginTop="0dp"
        android:minHeight="50dp">

        <TextView
            android:id="@+id/text_view_age"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginStart="25dp"
```

```
        android:gravity="center|left"
        android:text="@string/age"
        android:textColor="#06135C"
        android:textSize="14sp"
        android:textStyle="bold" />

<EditText
    android:id="@+id/edit_text_age"
    android:layout_width="50dp"
    android:layout_height="match_parent"
    android:layout_marginStart="25dp"
    android:inputType="number"
    android:minHeight="50dp"
    android:text=""
    android:textColor="#057DCD"
    android:textSize="14sp"
    android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="0dp"
    android:minHeight="50dp">

    <TextView
        android:id="@+id/text_view_dob"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="center|left"
        android:text="@string/dob"
        android:textColor="#06135C"
        android:textSize="14sp"
        android:textStyle="bold"
        tools:layout_marginTop="12dp" />

    <EditText
        android:id="@+id/edit_text_dob"
        android:layout_width="50dp"
        android:layout_height="match_parent"
        android:layout_marginStart="25dp"
        android:gravity="center"
        android:inputType="text"
        android:minHeight="50dp"
        android:text="DD/MM/YYYY"
        android:textColor="#057DCD"
        android:textSize="14sp"
```

```
        android:textStyle="bold" />
</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="0dp"
    android:minHeight="150dp">

    <TextView
        android:id="@+id/text_view_gender"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:layout_marginTop="12dp"
        android:gravity="center|left"
        android:text="Gender"
        android:textColor="#06135C"
        android:textSize="14sp"
        android:textStyle="bold" />

    <RadioGroup
        android:id="@+id/radio_group_gender"
        android:layout_width="50dp"
        android:layout_height="match_parent"
        android:layout_marginStart="25dp">

        <RadioButton
            android:id="@+id/radio_button_female"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Female"
            android:textColor="#057DCD"
            android:textSize="14sp"
            android:textStyle="bold" />

        <RadioButton
            android:id="@+id/radio_button_male"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="0dp"
            android:text="Male"
            android:textColor="#057DCD"
            android:textSize="14sp"
            android:textStyle="bold" />

        <RadioButton
            android:id="@+id/radio_button_others"
            android:layout_width="match_parent"
```

```
        android:layout_height="wrap_content"
        android:layout_marginTop="0dp"
        android:text="@string/others"
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

    </RadioGroup>

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="0dp"
    android:minHeight="50dp">

    <TextView
        android:id="@+id/text_view_marital_status"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/marital_status"
        android:textColor="#06135C"
        android:textSize="14sp"
        android:textStyle="bold" />

    <Spinner
        android:id="@+id/spinner_marital_status"
        android:layout_width="50dp"
        android:layout_height="match_parent"
        android:layout_marginStart="25dp"

    android:gravity="center|center_horizontal|center_vertical"
        android:textAlignment="center" />

</TableRow>

<TextView
    android:id="@+id/text_view_ed"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:layout_marginTop="25dp"
    android:layout_marginEnd="40dp"
    android:gravity="center"
    android:text="@string/ed"
    android:textColor="#057DCD"
```



```
        android:textSize="20sp"
        android:textStyle="bold" />

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="50dp">

    <TextView
        android:id="@+id/text_view_employer"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/employer"
        android:textColor="#06135C"
        android:textSize="14sp"
        android:textStyle="bold" />

    <EditText
        android:id="@+id/edit_text_employer"
        android:layout_width="250dp"
        android:layout_height="match_parent"
        android:layout_marginStart="25dp"

        android:inputType="text|textPersonName"
        android:minHeight="50dp"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:minHeight="140dp">

    <TextView
        android:id="@+id/text_view_employment_status"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:layout_marginTop="12dp"
        android:gravity="left"
        android:text="@string/employment_status"
        android:textColor="#06135C"
        android:textSize="14sp"
```

```
        android:textStyle="bold" />

<LinearLayout
    android:layout_width="250dp"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:orientation="vertical">

    <CheckBox
        android:id="@+id/check_box_full_time"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/full_time"
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

    <CheckBox
        android:id="@+id/check_box_part_time"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/part_time"
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

    <CheckBox
        android:id="@+id/check_box_unemployed"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/unemployed"
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

    <CheckBox
        android:id="@+id/check_box_retired"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/retired"
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

    <CheckBox
        android:id="@+id/check_box_student"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/student"
```

```
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

        <CheckBox
            android:id="@+id/check_box_other"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="@string/other"
            android:textColor="#057DCD"
            android:textSize="14sp"
            android:textStyle="bold" />

    </LinearLayout>

</TableRow>

<TextView
    android:id="@+id/text_view_ecd"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:layout_marginTop="25dp"
    android:layout_marginEnd="40dp"
    android:gravity="center"
    android:text="@string/ecd"
    android:textColor="#057DCD"
    android:textSize="20sp"
    android:textStyle="bold" />

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="50dp">

    <TextView
        android:id="@+id/text_view_contact_name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="15dp"
        android:gravity="center|left"
        android:text="@string/name"
        android:textColor="#06135C"
        android:textSize="14sp"
        android:textStyle="bold" />

    <EditText
        android:id="@+id/edit_text_contact_name"
        android:layout_width="250dp"
```

```
        android:layout_height="match_parent"
        android:layout_marginStart="25dp"

        android:inputType="text|textPersonName"
        android:minHeight="50dp"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="50dp">

    <TextView
        android:id="@+id/text_view_address_text_area"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="15dp"
        android:gravity="center|left"
        android:text="@string/address"
        android:textColor="#06135C"
        android:textSize="14sp"
        android:textStyle="bold" />

    <EditText
        android:id="@+id/edit_text_address_text_area"
        android:layout_width="250dp"
        android:layout_height="match_parent"
        android:layout_marginStart="25dp"

        android:gravity="top|left"
        android:inputType="textMultiLine"
        android:lines="6"
        android:minHeight="60dp"
        android:overScrollMode="always"
        android:scrollbarStyle="insideInset"
        android:scrollbars="vertical"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
```

```
android:layout_width="match_parent"  
android:layout_height="match_parent"  
android:minHeight="50dp">
```

```
<TextView  
    android:id="@+id/text_view_relationship"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="15dp"  
    android:gravity="center|left"  
    android:text="@string/relationship"  
    android:textColor="#06135C"  
    android:textSize="14sp"  
    android:textStyle="bold" />
```

```
<EditText  
    android:id="@+id/edit_text_relationship"  
    android:layout_width="250dp"  
    android:layout_height="match_parent"  
    android:layout_marginStart="25dp"  
  
    android:inputType="text"  
    android:minHeight="60dp"  
    android:text=""  
    android:textColor="#057DCD"  
    android:textSize="14sp"  
    android:textStyle="bold" />
```

```
</TableRow>
```

```
<TableRow  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"  
    android:minHeight="50dp">
```

```
<TextView  
    android:id="@+id/text_view_phno"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="15dp"  
    android:gravity="center|left"  
    android:text="@string/phone"  
    android:textColor="#06135C"  
    android:textSize="14sp"  
    android:textStyle="bold" />
```

```
<EditText  
    android:id="@+id/edit_text_phno"  
    android:layout_width="250dp"
```

```
        android:layout_height="match_parent"
        android:layout_marginStart="25dp"

        android:inputType="phone"
        android:minHeight="50dp"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="14sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="50dp">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:minHeight="150dp">

        <Button
            android:id="@+id/button_reset"
            android:layout_width="100dp"
            android:layout_height="50dp"
            android:layout_marginStart="30dp"
            android:layout_marginTop="38dp"
            android:backgroundTint="#057DCD"
            android:text="@string/reset"
            android:textSize="14sp"
            android:textStyle="bold"
            app:layout_constraintBottom_toBottomOf="parent"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintHorizontal_bias="0.0"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toTopOf="parent"
            app:layout_constraintVertical_bias="0.385" />

    </LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical"
    android:layout_marginStart="25dp"
    android:minHeight="150dp">
```

```
        <Button
            android:id="@+id/button_submit"
            android:layout_width="100dp"
            android:layout_height="50dp"
            android:layout_marginStart="90dp"
            android:layout_marginTop="38dp"
            android:backgroundTint="#057DCD"
            android:text="@string/submit"
            android:textSize="14sp"
            android:textStyle="bold"
            app:layout_constraintBottom_toBottomOf="parent"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintHorizontal_bias="0.873"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toTopOf="parent"
            app:layout_constraintVertical_bias="0.385" />

    </LinearLayout>

</TableRow>

</TableLayout>

</ScrollView>

</LinearLayout>
```

#### **activity\_main4.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=".MainActivity4" >

    <TextView
        android:id="@+id/text_view_hir"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="16dp"
        android:gravity="center"
        android:text="@string/hir"
        android:textColor="#06135C"
        android:textSize="24sp"
        android:textStyle="bold" />
```

```
<TextView
    android:id="@+id/text_view_sd"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:layout_marginEnd="40dp"
    android:gravity="center"
    android:text="@string/sd"
    android:textColor="#057DCD"
    android:textSize="24sp"
    android:textStyle="bold" />

<TableLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="15dp">

    <TextView
        android:id="@+id/text_view_pdets"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:layout_marginTop="15dp"
        android:layout_marginBottom="15dp"
        android:gravity="left"
        android:text="@string/pd"
        android:textColor="#057DCD"
        android:textSize="18sp"
        android:textStyle="bold" />

    <TableRow
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:minHeight="30dp">

        <TextView
            android:id="@+id/text_view_submitted_name"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginStart="25dp"
            android:gravity="left"
            android:text="@string/name"
            android:textColor="#06135C"
            android:textSize="16sp"
            android:textStyle="bold" />

        <TextView
            android:id="@+id/submitted_name"
```



```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:inputType="text"
        android:gravity="left"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_mobile"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/mobile"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/submitted_mobile"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:inputType="text"
        android:gravity="left"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_landline"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/landline"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/submitted_landline"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:inputType="text"
        android:gravity="left"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_address"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/address"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/submitted_address"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:inputType="text"
        android:gravity="left"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="16sp"
```

```
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_age"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/age"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/submitted_age"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:inputType="text"
        android:gravity="left"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_dob"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/dob"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />
```

```
<TextView
    android:id="@+id/submitted_dob"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:inputType="text"
    android:gravity="left"
    android:text=""
    android:textColor="#057DCD"
    android:textSize="16sp"
    android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_gender"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/gender"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/submitted_gender"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:inputType="text"
        android:gravity="left"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">
```

```
<TextView
    android:id="@+id/text_view_submitted_marital_status"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:gravity="left"
    android:text="@string/sub_marital_status"
    android:textColor="#06135C"
    android:textSize="16sp"
    android:textStyle="bold" />

<TextView
    android:id="@+id/submitted_marital_status"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:inputType="text"
    android:gravity="left"
    android:text=""
    android:textColor="#057DCD"
    android:textSize="16sp"
    android:textStyle="bold" />

</TableRow>

<TextView
    android:id="@+id/text_view_edets"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:layout_marginTop="25dp"
    android:layout_marginBottom="15dp"
    android:gravity="left"
    android:text="@string/ed"
    android:textColor="#057DCD"
    android:textSize="18sp"
    android:textStyle="bold" />

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_employer"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
```

```
        android:gravity="left"
        android:text="@string/employer"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />

<TextView
    android:id="@+id/submitted_employer"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:inputType="text"
    android:gravity="left"
    android:text=""
    android:textColor="#057DCD"
    android:textSize="16sp"
    android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_employment_status"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/sub_employment_status"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/submitted_employment_status"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:inputType="text"
        android:gravity="left"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>
```

```
<TextView
    android:id="@+id/text_view_ecdets"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:layout_marginTop="25dp"
    android:layout_marginBottom="15dp"
    android:gravity="left"
    android:text="@string/ecd"
    android:textColor="#057DCD"
    android:textSize="18sp"
    android:textStyle="bold" />

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_contact_name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/name"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/submitted_contact_name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:inputType="text"
        android:gravity="left"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">
```

```
<TextView
    android:id="@+id/text_view_submitted_address_text_area"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:gravity="left"
    android:text="@string/address"
    android:textColor="#06135C"
    android:textSize="16sp"
    android:textStyle="bold" />

<TextView
    android:id="@+id/submitted_address_text_area"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="25dp"
    android:inputType="text"
    android:gravity="left"
    android:text=""
    android:textColor="#057DCD"
    android:textSize="16sp"
    android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_relationship"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/relationship"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/submitted_relationship"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:inputType="text"
        android:gravity="left"
        android:text=""
```



```
        android:textColor="#057DCD"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="30dp">

    <TextView
        android:id="@+id/text_view_submitted_phno"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:gravity="left"
        android:text="@string/phone"
        android:textColor="#06135C"
        android:textSize="16sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/submitted_phno"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="25dp"
        android:inputType="text"
        android:gravity="left"
        android:text=""
        android:textColor="#057DCD"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

</TableLayout>

</LinearLayout>
```

### string.xml

```
<resources>
    <string name="app_name">Exercise 1</string>
    <string name="hir">Health Insurance Registration</string>
    <string name="pd">Patient Details</string>
    <string name="name">Name</string>
    <string name="phone">Phone</string>
```

```
<string name="mobile">Mobile</string>
<string name="landline">Landline</string>
<string name="address">Address</string>
<string name="age">Age</string>
<string name="dob">DOB</string>
<string name="gender">Gender</string>
<string name="female">Female</string>
<string name="male">Male</string>
<string name="others">Others</string>
<string name="marital_status">Marital\nStatus</string>
<string name="next">Next</string>
<string name="ed">Employer Details</string>
<string name="employer">Employer</string>
<string name="employment_status">Employment\nStatus</string>
<string name="full_time">Full-Time</string>
<string name="part_time">Part-Time</string>
<string name="unemployed">Unemployed</string>
<string name="retired">Retired</string>
<string name="student">Student</string>
<string name="other">Other</string>
<string name="ecd">Emergency Contact Details</string>
<string name="relationship">Relationship</string>
<string name="reset">Reset</string>
<string name="submit">Submit</string>
<string name="sd">Submitted Details</string>
<string name="sub_marital_status">Marital Status</string>
<string name="sub_employment_status">Employment Status</string>
</resources>
```

### MainActivity.java

```
package com.example.exercise1;

import static com.example.exercise1.R.id.button_submit;
import static com.example.exercise1.R.id.check_box_mobile;
import static com.example.exercise1.R.id.radio_group_gender;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.EditText;
```

```
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Spinner;

public class MainActivity extends AppCompatActivity {
    String[] sp_item_marital_status = {"--Select--", "Married", "Single"};
    String name, mobile, landline, address, age, dob, gender, marital_status,
    employer, employment_status, contact_name, address_text_area, relationship,
    phno;

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

        EditText et_name = (EditText) findViewById(R.id.edit_text_name);

        EditText et_mobile = (EditText) findViewById(R.id.edit_text_mobile);
        EditText et_landline = (EditText)
        findViewById(R.id.edit_text_landline);

        CheckBox cb_mobile = findViewById(R.id.check_box_mobile);
        cb_mobile.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view)
            {
                if(cb_mobile.isChecked())
                {
                    et_mobile.setEnabled(true);
                }
                else
                {
                    et_mobile.setEnabled(false);
                }
            }
        });

        CheckBox cb_landline = findViewById(R.id.check_box_landline);
        cb_landline.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view)
            {
                if(cb_landline.isChecked())
                {
                    et_landline.setEnabled(true);
                }
                else
                {
                    et_landline.setEnabled(false);
                }
            }
        });
    }
}
```

```
        }  
    }  
});  
  
    EditText et_address = (EditText)  
findViewById(R.id.edit_text_address);  
    EditText et_age = (EditText) findViewById(R.id.edit_text_age);  
    EditText et_dob = (EditText) findViewById(R.id.edit_text_dob);  
  
    RadioGroup rg_gender = findViewById(R.id.radio_group_gender);  
  
    Spinner sp_marital_status = (Spinner)  
findViewById(R.id.spinner_marital_status);  
    ArrayAdapter sp_item = new ArrayAdapter(this,  
androidx.appcompat.R.layout.support_simple_spinner_dropdown_item,  
sp_item_marital_status);  
  
sp_item.setDropDownViewResource(androidx.appcompat.R.layout.support_simple_sp  
inner_dropdown_item);  
    sp_marital_status.setAdapter(sp_item);  
  
    EditText et_employer = (EditText)  
findViewById(R.id.edit_text_employer);  
  
    CheckBox cb_full_time = findViewById(R.id.check_box_full_time);  
    CheckBox cb_part_time = findViewById(R.id.check_box_part_time);  
    CheckBox cb_unemployed = findViewById(R.id.check_box_unemployed);  
    CheckBox cb_retired = findViewById(R.id.check_box_retired);  
    CheckBox cb_student = findViewById(R.id.check_box_student);  
    CheckBox cb_other = findViewById(R.id.check_box_other);  
  
    EditText et_contact_name = (EditText)  
findViewById(R.id.edit_text_contact_name);  
    EditText et_address_text_area = (EditText)  
findViewById(R.id.edit_text_address_text_area);  
    EditText et_relationship = (EditText)  
findViewById(R.id.edit_text_relationship);  
    EditText et_phno = (EditText) findViewById(R.id.edit_text_phno);  
  
    Button button_submit = (Button) findViewById(R.id.button_submit);  
    button_submit.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View view) {  
            name = et_name.getText().toString();  
  
            mobile = et_mobile.getText().toString();  
            landline = et_landline.getText().toString();  
  
            address = et_address.getText().toString();  
        }  
    });  
}
```

```
age = et_age.getText().toString();
dob = et_dob.getText().toString();

int rid = rg_gender.getCheckedRadioButtonId();
if(rid == -1)
{
    //No selected button
    System.out.println("rid = -1");
    gender = "None Selected";
}
else if(rid == R.id.radio_button_female)
{
    System.out.println(rid);
    gender = "Female";
}
else if(rid == R.id.radio_button_male)
{
    System.out.println(rid);
    gender = "Male";
}
else if(rid == R.id.radio_button_others)
{
    System.out.println(rid);
    gender = "Others";
}

marital_status =
sp_marital_status.getSelectedItem().toString();

employer = et_employer.getText().toString();

employment_status = "";
if(cb_full_time.isChecked()) employment_status += "Full
Time\n";
if(cb_part_time.isChecked()) employment_status += "Part
Time\n";
if(cb_unemployed.isChecked()) employment_status +=
"Unemployed\n";
if(cb_retired.isChecked()) employment_status += "Retired\n";
if(cb_student.isChecked()) employment_status += "Student\n";
if(cb_other.isChecked()) employment_status += "Other";

contact_name = et_contact_name.getText().toString();
address_text_area =
et_address_text_area.getText().toString();
relationship = et_relationship.getText().toString();
phno = et_phno.getText().toString();
```

```
        Intent i = new Intent(MainActivity.this,
MainActivity4.class);
        i.putExtra("name_key", name);
        i.putExtra("mobile_key", mobile);
        i.putExtra("landline_key", landline);
        i.putExtra("address_key", address);
        i.putExtra("age_key", age);
        i.putExtra("dob_key", dob);
        i.putExtra("gender_key", gender);
        i.putExtra("marital_status_key", marital_status);
        i.putExtra("employer_key", employer);
        i.putExtra("employment_status_key", employment_status);
        i.putExtra("contact_name_key", contact_name);
        i.putExtra("address_text_area_key", address_text_area);
        i.putExtra("relationship_key", relationship);
        i.putExtra("phno_key", phno);
        startActivity(i);
    }
});
```

```
Button button_reset = (Button) findViewById(R.id.button_reset);
button_reset.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        et_name.setText("");
        cb_mobile.setChecked(false);
        et_mobile.setText("");
        et_mobile.setEnabled(false);
        cb_landline.setChecked(false);
        et_landline.setText("");
        et_landline.setEnabled(false);
        et_address.setText("");
        et_age.setText("");
        et_dob.setText("DD/MM/YYYY");
        rg_gender.clearCheck();
        sp_marital_status.setAdapter(sp_item);

        et_employer.setText("");
        cb_full_time.setChecked(false);
        cb_part_time.setChecked(false);
        cb_unemployed.setChecked(false);
        cb_retired.setChecked(false);
        cb_student.setChecked(false);
        cb_other.setChecked(false);

        et_contact_name.setText("");
        et_address_text_area.setText("");
        et_relationship.setText("");
        et_phno.setText("");
    }
});
```

```
    }  
    });  
}  
}
```

### MainActivity4.java

```
package com.example.exercise1;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.widget.TextView;  
  
public class MainActivity4 extends AppCompatActivity {  
    String name, mobile, landline, address, age, dob, gender, marital_status,  
    employer, employment_status, contact_name, address_text_area, relationship,  
    phno;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main4);  
  
        TextView submitted_name = (TextView)  
        findViewById(R.id.submitted_name);  
        TextView submitted_mobile = (TextView)  
        findViewById(R.id.submitted_mobile);  
        TextView submitted_landline = (TextView)  
        findViewById(R.id.submitted_landline);  
        TextView submitted_address = (TextView)  
        findViewById(R.id.submitted_address);  
        TextView submitted_age = (TextView) findViewById(R.id.submitted_age);  
        TextView submitted_dob = (TextView) findViewById(R.id.submitted_dob);  
        TextView submitted_gender = (TextView)  
        findViewById(R.id.submitted_gender);  
        TextView submitted_marital_status = (TextView)  
        findViewById(R.id.submitted_marital_status);  
        TextView submitted_employer = (TextView)  
        findViewById(R.id.submitted_employer);  
        TextView submitted_employment_status = (TextView)  
        findViewById(R.id.submitted_employment_status);  
        TextView submitted_contact_name = (TextView)  
        findViewById(R.id.submitted_contact_name);  
        TextView submitted_address_text_area = (TextView)  
        findViewById(R.id.submitted_address_text_area);
```

```
        TextView submitted_relationship = (TextView)
findViewById(R.id.submitted_relationship);
        TextView submitted_phno = (TextView)
findViewById(R.id.submitted_phno);

        Intent i = getIntent();
        name = i.getStringExtra("name_key");
        mobile = i.getStringExtra("mobile_key");
        landline = i.getStringExtra("landline_key");
        address = i.getStringExtra("address_key");
        age = i.getStringExtra("age_key");
        dob = i.getStringExtra("dob_key");
        gender = i.getStringExtra("gender_key");
        marital_status = i.getStringExtra("marital_status_key");
        employer = i.getStringExtra("employer_key");
        employment_status = i.getStringExtra("employment_status_key");
        contact_name = i.getStringExtra("contact_name_key");
        address_text_area = i.getStringExtra("address_text_area_key");
        relationship = i.getStringExtra("relationship_key");
        phno = i.getStringExtra("phno_key");

        submitted_name.setText(name);
        submitted_mobile.setText(mobile);
        submitted_landline.setText(landline);
        submitted_address.setText(address);
        submitted_age.setText(age);
        submitted_dob.setText(dob);
        submitted_gender.setText(gender);
        submitted_marital_status.setText(marital_status);
        submitted_employer.setText(employer);
        submitted_employment_status.setText(employment_status);
        submitted_contact_name.setText(contact_name);
        submitted_address_text_area.setText(address_text_area);
        submitted_relationship.setText(relationship);
        submitted_phno.setText(phno);
    }
}
```



OUTPUT :

12:10

Health Insurance Registration

Patient Details

Name

Phone

☐ Mobile

☐ Landline

Address

Age

DOB

DD/MM/YYYY

Gender

☐ Female

☐ Male

☐ Others

Marital Status

--Select--

Employer Details

Employer

Employment Status

☐ Full-Time

☐ Part-Time

☐ Unemployed

☐ Retired

☐ Student

☐ Other

12:10

Health Insurance Registration

Employer Details

Employer

Employment Status

☐ Full-Time

☐ Part-Time

☐ Unemployed

☐ Retired

☐ Student

☐ Other

Emergency Contact Details

Name

Address

Relationship

Phone

Reset

Submit

12:13

Health Insurance Registration

Patient Details

Name

Shruti Sriram

Phone

☒ Mobile 9445419336

☐ Landline

Address

Tulive Urbanville

Age

21

DOB

28/06/2002

Gender

☒ Female

☐ Male

☐ Others

Marital Status

Single

Employer Details

Employer

Sriram

Employment Status

☒ Full-Time

☐ Part-Time

12:13

Health Insurance Registration

Employer Details

Employer

Sriram

Employment Status

☒ Full-Time

☐ Part-Time

☐ Unemployed

☐ Retired

☐ Student

☐ Other

Emergency Contact Details

Name

Sriram

Address

Tulive Urbanville

Relationship

Father

Phone

9840293101

Reset

Submit

12:13

Health Insurance Registration

Submitted Details

Patient Details

Name

Shruti Sriram

Mobile

9445419336

Landline

Address

Tulive Urbanville

Age

21

DOB

28/06/2002

Gender

Female

Marital Status

Single

Employer Details

Employer

Sriram

Employment Status

Full Time

Emergency Contact Details

Name

Sriram

Address

Tulive Urbanville

Relationship

Father

Phone

9840293101

**BEST PRACTICES:**

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

**LEARNING OUTCOMES:**

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to link the main activity and view activity.
- I learnt to run the emulator and debugger.

## EXERCISE 2

### SIMULATION OF A KEYBOARD

**AIM:**

Create an Android mobile application which simulates a virtual keyboard.

**COMPONENTS USED:****ANDROID WIDGETS:**

- TextView

**LAYOUTS USED:**

- LinearLayout (Vertical)

**ACTIVITY AND INTENTS USED:****Activities:**

- MainActivity JAVA Class

**Intents:**

- Intent between MainActivity JAVA Class (sender) and ViewActivity JAVA Class (receiver)

**CODE:****activity\_main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_gravity="left"
    android:orientation="vertical"
    android:padding="0dp"
    tools:context=".MainActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="480dp"
        android:orientation="vertical">

        <TextView
            android:id="@+id/text_view_screen"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginLeft="40dp"
            android:layout_marginTop="80dp"
            android:layout_marginRight="40dp"
            android:clickable="true"
```

```
        android:gravity="center|center_vertical|center_horizontal"  
        android:text=""  
        android:textSize="16sp"  
        android:textStyle="bold" />
```

```
</LinearLayout>
```

```
<LinearLayout  
    android:layout_width="match_parent"  
    android:layout_height="60dp">  
  
    <TextView  
        android:id="@+id/r1_b1"  
        android:layout_width="30dp"  
        android:layout_height="56dp"  
        android:layout_marginStart="10dp"  
        android:background="#dddddd"  
        android:gravity="center"  
        android:padding="0dp"  
        android:text="@string/button_q"  
        android:textColor="#000000"  
        android:textSize="16sp"  
        android:textStyle="bold"  
        android:clickable="true" />  
  
    <TextView  
        android:id="@+id/r1_b2"  
        android:layout_width="30dp"  
        android:layout_height="56dp"  
        android:layout_marginStart="10dp"  
        android:background="#dddddd"  
        android:gravity="center"  
        android:padding="0dp"  
        android:text="@string/button_w"  
        android:textColor="#000000"  
        android:textSize="16sp"  
        android:textStyle="bold"  
        android:clickable="true" />  
  
    <TextView  
        android:id="@+id/r1_b3"  
        android:layout_width="30dp"  
        android:layout_height="56dp"  
        android:layout_marginStart="10dp"  
        android:background="#dddddd"  
        android:gravity="center"  
        android:padding="0dp"  
        android:text="@string/button_e"  
        android:textColor="#000000"
```

```
android:textSize="16sp"  
android:textStyle="bold"  
android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r1_b4"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_r"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r1_b5"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_t"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r1_b6"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_y"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r1_b7"  
    android:layout_width="30dp"
```

```
android:layout_height="56dp"  
android:layout_marginStart="10dp"  
android:background="#dddddd"  
android:gravity="center"  
android:padding="0dp"  
android:text="@string/button_u"  
android:textColor="#000000"  
android:textSize="16sp"  
android:textStyle="bold"  
android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r1_b8"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_i"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r1_b9"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_o"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r1_b10"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_p"  
    android:textColor="#000000"
```

```
        android:textSize="16sp"
        android:textStyle="bold"
        android:clickable="true" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="60dp">

    <TextView
        android:id="@+id/r2_b1"
        android:layout_width="30dp"
        android:layout_height="56dp"
        android:layout_marginStart="30dp"
        android:background="#dddddd"
        android:gravity="center"
        android:padding="0dp"
        android:text="@string/button_a"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:clickable="true" />

    <TextView
        android:id="@+id/r2_b2"
        android:layout_width="30dp"
        android:layout_height="56dp"
        android:layout_marginStart="10dp"
        android:background="#dddddd"
        android:gravity="center"
        android:padding="0dp"
        android:text="@string/button_s"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:clickable="true" />

    <TextView
        android:id="@+id/r2_b3"
        android:layout_width="30dp"
        android:layout_height="56dp"
        android:layout_marginStart="10dp"
        android:background="#dddddd"
        android:gravity="center"
        android:padding="0dp"
        android:text="@string/button_d"
        android:textColor="#000000"
        android:textSize="16sp"
```

```
android:textStyle="bold"  
android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r2_b4"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_f"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r2_b5"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_g"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r2_b6"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_h"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r2_b7"  
    android:layout_width="30dp"  
    android:layout_height="56dp"
```



```
        android:layout_marginStart="10dp"
        android:background="#dddddd"
        android:gravity="center"
        android:padding="0dp"
        android:text="@string/button_j"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:clickable="true" />

<TextView
    android:id="@+id/r2_b8"
    android:layout_width="30dp"
    android:layout_height="56dp"
    android:layout_marginStart="10dp"
    android:background="#dddddd"
    android:gravity="center"
    android:padding="0dp"
    android:text="@string/button_k"
    android:textColor="#000000"
    android:textSize="16sp"
    android:textStyle="bold"
    android:clickable="true" />

<TextView
    android:id="@+id/r2_b9"
    android:layout_width="30dp"
    android:layout_height="56dp"
    android:layout_marginStart="10dp"
    android:background="#dddddd"
    android:gravity="center"
    android:padding="0dp"
    android:text="@string/button_l"
    android:textColor="#000000"
    android:textSize="16sp"
    android:textStyle="bold"
    android:clickable="true" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="60dp">

    <TextView
        android:id="@+id/r3_b1"
        android:layout_width="45dp"
        android:layout_height="56dp"
        android:layout_marginStart="10dp"
```

```
android:background="#dddddd"  
android:gravity="center"  
android:padding="0dp"  
android:text="@string/button_shift"  
android:textColor="#000000"  
android:textSize="16sp"  
android:textStyle="bold"  
android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r3_b2"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="15dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_z"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r3_b3"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_x"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r3_b4"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_c"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"
```

```
        android:clickable="true" />

<TextView
    android:id="@+id/r3_b5"
    android:layout_width="30dp"
    android:layout_height="56dp"
    android:layout_marginStart="10dp"
    android:background="#dddddd"
    android:gravity="center"
    android:padding="0dp"
    android:text="@string/button_v"
    android:textColor="#000000"
    android:textSize="16sp"
    android:textStyle="bold"
    android:clickable="true" />

<TextView
    android:id="@+id/r3_b6"
    android:layout_width="30dp"
    android:layout_height="56dp"
    android:layout_marginStart="10dp"
    android:background="#dddddd"
    android:gravity="center"
    android:padding="0dp"
    android:text="@string/button_b"
    android:textColor="#000000"
    android:textSize="16sp"
    android:textStyle="bold"
    android:clickable="true" />

<TextView
    android:id="@+id/r3_b7"
    android:layout_width="30dp"
    android:layout_height="56dp"
    android:layout_marginStart="10dp"
    android:background="#dddddd"
    android:gravity="center"
    android:padding="0dp"
    android:text="@string/button_n"
    android:textColor="#000000"
    android:textSize="16sp"
    android:textStyle="bold"
    android:clickable="true" />

<TextView
    android:id="@+id/r3_b8"
    android:layout_width="30dp"
    android:layout_height="56dp"
    android:layout_marginStart="10dp"
```

```
        android:background="#dddddd"
        android:gravity="center"
        android:padding="0dp"
        android:text="@string/button_m"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:clickable="true" />

<TextView
    android:id="@+id/button_del"
    android:layout_width="45dp"
    android:layout_height="56dp"
    android:layout_marginStart="15dp"
    android:background="#dddddd"
    android:gravity="center"
    android:padding="0dp"
    android:text="@string/button_del"
    android:textColor="#000000"
    android:textSize="16sp"
    android:textStyle="bold"
    android:clickable="true" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="60dp">

    <TextView
        android:id="@+id/r4_b1"
        android:layout_width="45dp"
        android:layout_height="56dp"
        android:layout_marginStart="10dp"
        android:background="#dddddd"
        android:gravity="center"
        android:padding="0dp"
        android:text="@string/button_123"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:clickable="true" />

    <TextView
        android:id="@+id/r4_b2"
        android:layout_width="30dp"
        android:layout_height="56dp"
        android:layout_marginStart="15dp"
        android:background="#dddddd"
```

```
android:gravity="center"  
android:padding="0dp"  
android:text="@string/button_comma"  
android:textColor="#000000"  
android:textSize="16sp"  
android:textStyle="bold"  
android:clickable="true" />
```

```
<TextView  
    android:id="@+id/button_space"  
    android:layout_width="190dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_space"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/r4_b4"  
    android:layout_width="30dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="10dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_period"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
<TextView  
    android:id="@+id/button_enter"  
    android:layout_width="45dp"  
    android:layout_height="56dp"  
    android:layout_marginStart="15dp"  
    android:background="#dddddd"  
    android:gravity="center"  
    android:padding="0dp"  
    android:text="@string/button_enter"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:clickable="true" />
```

```
</LinearLayout>
```

```
</LinearLayout>
```

### **string.xml**

```
<resources>
    <string name="app_name">Exercise 2</string>
    <string name="button_a">a</string>
    <string name="button_b">b</string>
    <string name="button_c">c</string>
    <string name="button_d">d</string>
    <string name="button_e">e</string>
    <string name="button_f">f</string>
    <string name="button_g">g</string>
    <string name="button_h">h</string>
    <string name="button_i">i</string>
    <string name="button_j">j</string>
    <string name="button_k">k</string>
    <string name="button_l">l</string>
    <string name="button_m">m</string>
    <string name="button_n">n</string>
    <string name="button_o">o</string>
    <string name="button_p">p</string>
    <string name="button_q">q</string>
    <string name="button_r">r</string>
    <string name="button_s">s</string>
    <string name="button_t">t</string>
    <string name="button_u">u</string>
    <string name="button_v">v</string>
    <string name="button_w">w</string>
    <string name="button_x">x</string>
    <string name="button_y">y</string>
    <string name="button_z">z</string>
    <string name="button_shift">Shift</string>
    <string name="button_del">Del</string>
    <string name="button_123">123</string>
    <string name="button_comma">,</string>
    <string name="button_space">Space</string>
    <string name="button_period">.</string>
    <string name="button_enter">Enter</string>
</resources>
```

### **MainActivity.java**

```
package com.example.exercise2;
```

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

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

public class MainActivity extends AppCompatActivity {

    public int shift = 0;
    public int number = 0;
    public String screen = "";

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

        TextView text_view_screen = (TextView)
        findViewById(R.id.text_view_screen);

        //Button q|Q|1
        TextView r1_b1 = (TextView) findViewById(R.id.r1_b1);
        r1_b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                screen += r1_b1.getText().toString();
                text_view_screen.setText(screen);
            }
        });

        //Button w|W|2
        TextView r1_b2 = (TextView) findViewById(R.id.r1_b2);
        r1_b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                screen += r1_b2.getText().toString();
                text_view_screen.setText(screen);
            }
        });

        //Button e|E|3
        TextView r1_b3 = (TextView) findViewById(R.id.r1_b3);
        r1_b3.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                screen += r1_b3.getText().toString();
                text_view_screen.setText(screen);
            }
        });
    }
}
```

```
    }  
});  
//Button r|R|4  
TextView r1_b4 = (TextView) findViewById(R.id.r1_b4);  
r1_b4.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        screen += r1_b4.getText().toString();  
        text_view_screen.setText(screen);  
    }  
});  
//Button t|T|5  
TextView r1_b5 = (TextView) findViewById(R.id.r1_b5);  
r1_b5.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        screen += r1_b5.getText().toString();  
        text_view_screen.setText(screen);  
    }  
});  
//Button y|Y|6  
TextView r1_b6 = (TextView) findViewById(R.id.r1_b6);  
r1_b6.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        screen += r1_b6.getText().toString();  
        text_view_screen.setText(screen);  
    }  
});  
//Button u|U|7  
TextView r1_b7 = (TextView) findViewById(R.id.r1_b7);  
r1_b7.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        screen += r1_b7.getText().toString();  
        text_view_screen.setText(screen);  
    }  
});  
//Button i|I|8  
TextView r1_b8 = (TextView) findViewById(R.id.r1_b8);  
r1_b8.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        screen += r1_b8.getText().toString();  
        text_view_screen.setText(screen);  
    }  
});  
//Button o|O|9  
TextView r1_b9 = (TextView) findViewById(R.id.r1_b9);
```



```
r1_b9.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r1_b9.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button p|P|0
TextView r1_b10 = (TextView) findViewById(R.id.r1_b10);
r1_b10.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r1_b10.getText().toString();
        text_view_screen.setText(screen);
    }
});

//Button a|A|-
TextView r2_b1 = (TextView) findViewById(R.id.r2_b1);
r2_b1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r2_b1.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button s|S|/
TextView r2_b2 = (TextView) findViewById(R.id.r2_b2);
r2_b2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r2_b2.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button d|D|(
TextView r2_b3 = (TextView) findViewById(R.id.r2_b3);
r2_b3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r2_b3.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button f|F|)
TextView r2_b4 = (TextView) findViewById(R.id.r2_b4);
r2_b4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
```

```
        screen += r2_b4.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button g|G|#
TextView r2_b5 = (TextView) findViewById(R.id.r2_b5);
r2_b5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r2_b5.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button i|H|$
TextView r2_b6 = (TextView) findViewById(R.id.r2_b6);
r2_b6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r2_b6.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button j|J|%
TextView r2_b7 = (TextView) findViewById(R.id.r2_b7);
r2_b7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r2_b7.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button k|K|&
TextView r2_b8 = (TextView) findViewById(R.id.r2_b8);
r2_b8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r2_b8.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button l|L|@
TextView r2_b9 = (TextView) findViewById(R.id.r2_b9);
r2_b9.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r2_b9.getText().toString();
        text_view_screen.setText(screen);
    }
});
});
```

```
//Button Shift|_  
TextView r3_b1 = (TextView) findViewById(R.id.r3_b1);  
  
//Button z|Z|*  
TextView r3_b2 = (TextView) findViewById(R.id.r3_b2);  
r3_b2.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        screen += r3_b2.getText().toString();  
        text_view_screen.setText(screen);  
    }  
});  
//Button x|X|+  
TextView r3_b3 = (TextView) findViewById(R.id.r3_b3);  
r3_b3.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        screen += r3_b3.getText().toString();  
        text_view_screen.setText(screen);  
    }  
});  
//Button c|C|=  
TextView r3_b4 = (TextView) findViewById(R.id.r3_b4);  
r3_b4.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        screen += r3_b4.getText().toString();  
        text_view_screen.setText(screen);  
    }  
});  
//Button v|V|?  
TextView r3_b5 = (TextView) findViewById(R.id.r3_b5);  
r3_b5.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        screen += r3_b5.getText().toString();  
        text_view_screen.setText(screen);  
    }  
});  
//Button b|B|!  
TextView r3_b6 = (TextView) findViewById(R.id.r3_b6);  
r3_b6.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        screen += r3_b6.getText().toString();  
        text_view_screen.setText(screen);  
    }  
});
```

```
//Button n|N|"
TextView r3_b7 = (TextView) findViewById(R.id.r3_b7);
r3_b7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r3_b7.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button m|M|'
TextView r3_b8 = (TextView) findViewById(R.id.r3_b8);
r3_b8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r3_b8.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button Del
TextView button_del = (TextView) findViewById(R.id.button_del);
button_del.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        int n = screen.length();
        screen = screen.substring(0, n - 1);
        text_view_screen.setText(screen);
    }
});

//Button 123|abc
TextView r4_b1 = (TextView) findViewById(R.id.r4_b1);
//Button ,|;
TextView r4_b2 = (TextView) findViewById(R.id.r4_b2);
r4_b2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r4_b2.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button Space
TextView button_space = (TextView) findViewById(R.id.button_space);
button_space.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += " ";
        text_view_screen.setText(screen);
    }
});
```

```
//Button .|:
TextView r4_b4 = (TextView) findViewById(R.id.r4_b4);
r4_b4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += r4_b4.getText().toString();
        text_view_screen.setText(screen);
    }
});
//Button Enter
TextView button_enter = (TextView) findViewById(R.id.button_enter);
button_enter.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        screen += "\n";
        text_view_screen.setText(screen);
    }
});

//Button Shift|_
r3_b1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if(shift == 0 && number == 0)
        {
            shift = 1;
            r1_b1.setText("Q");
            r1_b2.setText("W");
            r1_b3.setText("E");
            r1_b4.setText("R");
            r1_b5.setText("T");
            r1_b6.setText("Y");
            r1_b7.setText("U");
            r1_b8.setText("I");
            r1_b9.setText("O");
            r1_b10.setText("P");

            r2_b1.setText("A");
            r2_b2.setText("S");
            r2_b3.setText("D");
            r2_b4.setText("F");
            r2_b5.setText("G");
            r2_b6.setText("H");
            r2_b7.setText("J");
            r2_b8.setText("K");
            r2_b9.setText("L");

            r3_b2.setText("Z");
            r3_b3.setText("X");
```

```
        r3_b4.setText("C");
        r3_b5.setText("V");
        r3_b6.setText("B");
        r3_b7.setText("N");
        r3_b8.setText("M");
    }
    else if(shift == 1 && number == 0)
    {
        shift = 0;
        r1_b1.setText("q");
        r1_b2.setText("w");
        r1_b3.setText("e");
        r1_b4.setText("r");
        r1_b5.setText("t");
        r1_b6.setText("y");
        r1_b7.setText("u");
        r1_b8.setText("i");
        r1_b9.setText("o");
        r1_b10.setText("p");

        r2_b1.setText("a");
        r2_b2.setText("s");
        r2_b3.setText("d");
        r2_b4.setText("f");
        r2_b5.setText("g");
        r2_b6.setText("h");
        r2_b7.setText("j");
        r2_b8.setText("k");
        r2_b9.setText("l");

        r3_b2.setText("z");
        r3_b3.setText("x");
        r3_b4.setText("c");
        r3_b5.setText("v");
        r3_b6.setText("b");
        r3_b7.setText("n");
        r3_b8.setText("m");
    }
    else
    {
        screen += r3_b1.getText().toString();
        text_view_screen.setText(screen);
    }
}

});

//Button 123|abc
r4_b1.setOnClickListener(new View.OnClickListener() {
    @Override
```

```
public void onClick(View view) {
    if(number == 0)
    {
        number = 1;
        r1_b1.setText("1");
        r1_b2.setText("2");
        r1_b3.setText("3");
        r1_b4.setText("4");
        r1_b5.setText("5");
        r1_b6.setText("6");
        r1_b7.setText("7");
        r1_b8.setText("8");
        r1_b9.setText("9");
        r1_b10.setText("0");

        r2_b1.setText("-");
        r2_b2.setText("/");
        r2_b3.setText("(");
        r2_b4.setText(")");
        r2_b5.setText("#");
        r2_b6.setText("$");
        r2_b7.setText("%");
        r2_b8.setText("&");
        r2_b9.setText("@");

        r3_b1.setText("_");
        r3_b2.setText("*");
        r3_b3.setText("+");
        r3_b4.setText("=");
        r3_b5.setText("?");
        r3_b6.setText("!");
        r3_b7.setText("\\");
        r3_b8.setText("'");

        r4_b1.setText("abc");
        r4_b2.setText(";");
        r4_b4.setText(":");
    }
    else
    {
        number = 0;
        r1_b1.setText("q");
        r1_b2.setText("w");
        r1_b3.setText("e");
        r1_b4.setText("r");
        r1_b5.setText("t");
        r1_b6.setText("y");
        r1_b7.setText("u");
        r1_b8.setText("i");
    }
}
```

```
        r1_b9.setText("o");
        r1_b10.setText("p");

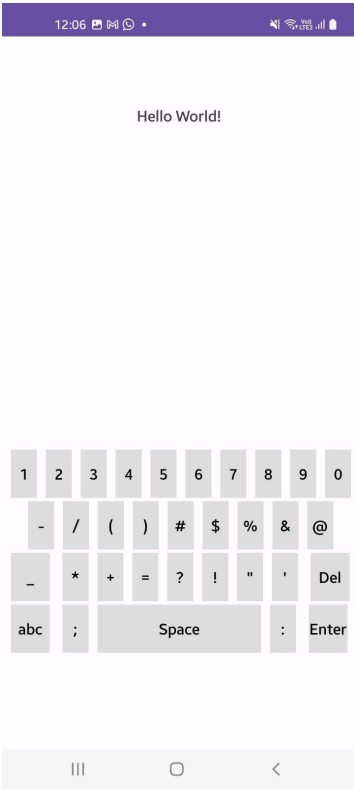
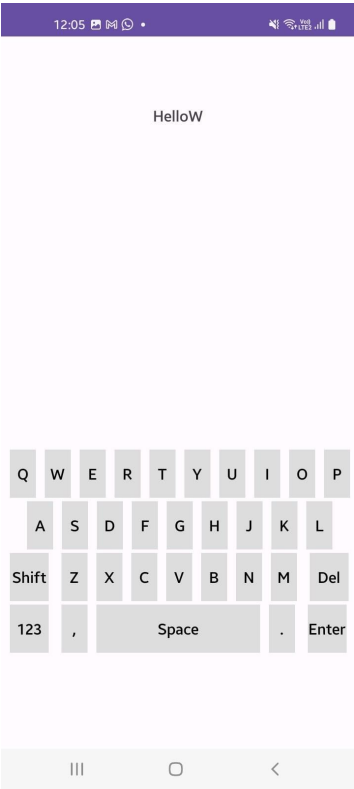
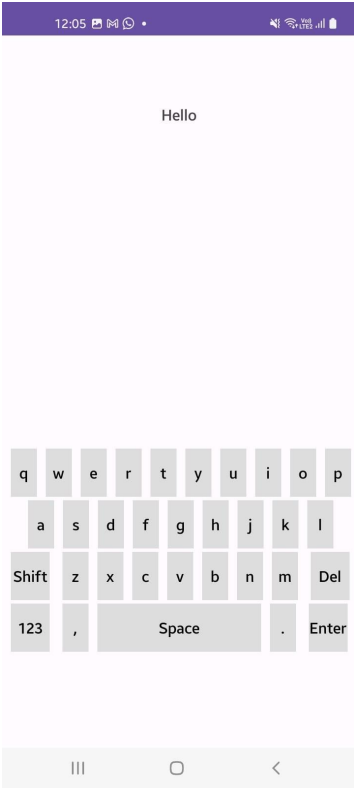
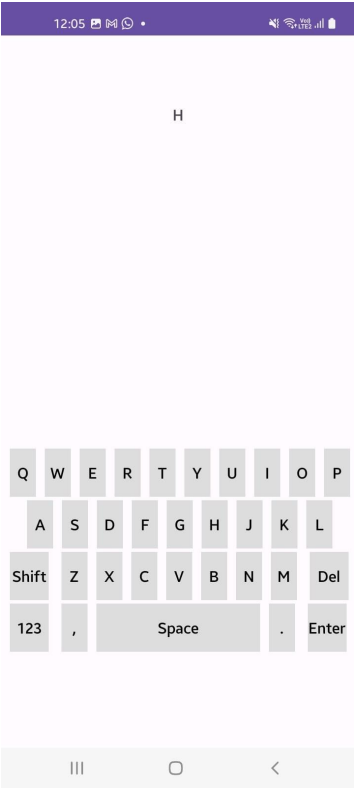
        r2_b1.setText("a");
        r2_b2.setText("s");
        r2_b3.setText("d");
        r2_b4.setText("f");
        r2_b5.setText("g");
        r2_b6.setText("h");
        r2_b7.setText("j");
        r2_b8.setText("k");
        r2_b9.setText("l");

        r3_b1.setText("Shift");
        r3_b2.setText("z");
        r3_b3.setText("x");
        r3_b4.setText("c");
        r3_b5.setText("v");
        r3_b6.setText("b");
        r3_b7.setText("n");
        r3_b8.setText("m");

        r4_b1.setText("123");
        r4_b2.setText(",");
        r4_b4.setText(".");
    }
}
});
}
```



OUTPUT :



**BEST PRACTICES:**

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

**LEARNING OUTCOMES:**

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to use event handlers.
- I learnt to link the main activity and view activity.
- I learnt to run the emulator and debugger.

### EXERCISE 3

#### APPLICATION DEVELOPMENT USING BASIC GRAPHICAL PRIMITIVES

**AIM:**

Design a CAR using Shape drawables with the help of relevant shapes such as Line, Circle, Rectangle and Arc.

**COMPONENTS USED:****ANDROID WIDGETS:**

- ImageView
- Button
- Checkbox
- TextView
- EditText

**LAYOUTS USED:**

- LinearLayout (Vertical)
- LinearLayout (Horizontal)

**ACTIVITY USED:****Activities:**

- MainActivity JAVA Class

**CODE:****car\_shape.xml**

```
<?xml version="1.0" encoding="utf-8"?>
  <layer-list xmlns:android="http://schemas.android.com/apk/res/android">
    <!-- Car Body -->

    <item
      android:top="-8dp"
      android:start="28dp"
      android:end="32dp" >
      <shape
        android:shape="rectangle">
          <corners
            android:topLeftRadius="13dp"
            android:bottomLeftRadius="2dp"
            android:topRightRadius="17dp"
            android:bottomRightRadius="2dp"/>
          <solid android:color="#000000" /> <!-- Black Window Frame -->
          <size
            android:width="25dp"
            android:height="12dp" />
        </shape>
      </item>

    <item
```

```
        android:top="-6dp"
        android:start="30dp"
        android:end="34dp" >
        <shape
            android:shape="rectangle">
            <corners
                android:topLeftRadius="13dp"
                android:bottomLeftRadius="2dp"
                android:topRightRadius="17dp"
                android:bottomRightRadius="2dp"/>
            <solid android:color="#ccddff" /> <!-- Light Bluish Grey
Windows -->
            <size
                android:width="25dp"
                android:height="12dp" />
        </shape>
    </item>

    <item
        android:top="-8dp"
        android:start="48dp"
        android:end="52dp" >
        <shape
            android:shape="rectangle">
            <solid android:color="#000000" /> <!-- Black Window Separator
-->
            <size
                android:width="2dp"
                android:height="12dp" />
        </shape>
    </item>

    <item
        android:top="8dp"
        android:start="22dp"
        android:end="18dp" >
        <shape
            android:shape="rectangle">
            <corners
                android:topLeftRadius="18dp"
                android:bottomLeftRadius="5dp"
                android:topRightRadius="30dp"
                android:bottomRightRadius="5dp"/>
            <solid android:color="#77aaee" /> <!-- Blue Car Body -->
            <size
                android:width="60dp"
                android:height="20dp" />
        </shape>
    </item>
```

```
<item
    android:top="8dp"
    android:start="49dp"
    android:end="53dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#ccddff" /> <!-- Light Bluish Grey Door
Separator -->
        <size
            android:width="1dp"
            android:height="12dp" />
        </shape>
    </item>

<item
    android:top="11dp"
    android:bottom="14dp"
    android:start="55dp"
    android:end="41dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#ccddff" /> <!-- Light Bluish Grey
Front Door Handle -->
        <corners
            android:topLeftRadius="30dp"
            android:bottomLeftRadius="5dp"
            android:topRightRadius="30dp"
            android:bottomRightRadius="5dp"/>
        </shape>
    </item>

<item
    android:top="11dp"
    android:bottom="14dp"
    android:start="33dp"
    android:end="63dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#ccddff" /> <!-- Light Bluish Grey Back
Door Handle -->
        <corners
            android:topLeftRadius="30dp"
            android:bottomLeftRadius="5dp"
            android:topRightRadius="30dp"
            android:bottomRightRadius="5dp"/>
        </shape>
    </item>
```

```
<item
  android:top="18dp"
  android:bottom="-6dp"
  android:start="59dp"
  android:end="28dp" >
  <shape
    android:shape="rectangle">
    <solid android:color="#000000" /> <!-- Black Front Wheel -->
    <corners
      android:topLeftRadius="30dp"
      android:bottomLeftRadius="30dp"
      android:topRightRadius="30dp"
      android:bottomRightRadius="30dp"/>
    </shape>
  </item>

<item
  android:top="23dp"
  android:bottom="-1dp"
  android:start="64dp"
  android:end="33dp" >
  <shape
    android:shape="rectangle">
    <solid android:color="#ccddff" /> <!-- Light Bluish Grey
Front Wheel Inner-->
    <corners
      android:topLeftRadius="30dp"
      android:bottomLeftRadius="30dp"
      android:topRightRadius="30dp"
      android:bottomRightRadius="30dp"/>
    </shape>
  </item>

<item
  android:top="18dp"
  android:bottom="-6dp"
  android:start="27dp"
  android:end="60dp" >
  <shape
    android:shape="rectangle">
    <solid android:color="#000000" /> <!-- Black Back Wheel -->
    <corners
      android:topLeftRadius="30dp"
      android:bottomLeftRadius="30dp"
      android:topRightRadius="30dp"
      android:bottomRightRadius="30dp"/>
    </shape>
  </item>
```

```
<item
    android:top="23dp"
    android:bottom="-1dp"
    android:start="32dp"
    android:end="65dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#ccddff" /> <!-- Light Bluish Grey Back
Wheel Inner-->
        <corners
            android:topLeftRadius="30dp"
            android:bottomLeftRadius="30dp"
            android:topRightRadius="30dp"
            android:bottomRightRadius="30dp"/>
        </shape>
    </item>
</layer-list>
```

#### **activity\_main.xml**

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

    <!-- Car Image -->
    <ImageView
        android:id="@+id/car_image_view"
        android:layout_width="150dp"
        android:layout_height="100dp"
        android:layout_marginTop="250dp"
        android:src="@drawable/car_shape" />

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:layout_marginTop="70dp">

        <!-- Backward Button -->
        <Button
            android:id="@+id/backward_button"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginStart="30dp"
            android:backgroundTint="#000000"
            app:icon="@android:drawable/ic_media_rew"
```

```
        app:iconGravity="end"
        app:iconPadding="2dp"
        app:iconSize="32dp"
        app:iconTint="#77AAEE" />

<!-- Flip Button -->
<Button
    android:id="@+id/flip_button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="45dp"
    android:backgroundTint="#000000"
    android:text="Flip"
    android:textColor="#77AAEE"
    android:textSize="12sp"
    android:textStyle="bold" />

<!-- Forward Button -->
<Button
    android:id="@+id/forward_button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="45dp"
    android:backgroundTint="#000000"
    app:icon="@android:drawable/ic_media_ff"
    app:iconGravity="end"
    app:iconPadding="2dp"
    app:iconSize="32dp"
    app:iconTint="#77AAEE" />
</LinearLayout>

</LinearLayout>
```

### MainActivity.java

```
package com.example.exercise3;

import androidx.appcompat.app.AppCompatActivity;

import android.animation.ObjectAnimator;
import android.os.Bundle;
import android.view.View;
import android.view.animation.Animation;
import android.view.animation.ScaleAnimation;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
```



```
public int point = 0; //To check which point
                        //Point A - only forward
                        //Point B - only backward
public int flipped = 0; //To check if car is flipped

public int click = 0; //To check zooming

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

    ImageView car = (ImageView) findViewById(R.id.car_image_view);

    //Move forward
    Button forward_button = (Button) findViewById(R.id.forward_button);
    forward_button.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            if(point == 0 && flipped == 1)
            {
                point = 1;
                car.animate().rotationYBy(-180);
                flipped = 0;
                ObjectAnimator carAnimator = ObjectAnimator.ofFloat(car,
"translationX", 0, 450);
                carAnimator.setDuration(5000);
                carAnimator.start();
            }
            else if(point == 0)
            {
                point = 1;
                ObjectAnimator carAnimator = ObjectAnimator.ofFloat(car,
"translationX", 0, 450);
                carAnimator.setDuration(5000);
                carAnimator.start();
            }
        }
    });

    //Move backward
    Button backward_button = (Button) findViewById(R.id.backward_button);
    backward_button.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            if(point == 1 && flipped == 0)
            {
                point = 0;
                car.animate().rotationYBy(180);
            }
        }
    });
}
```

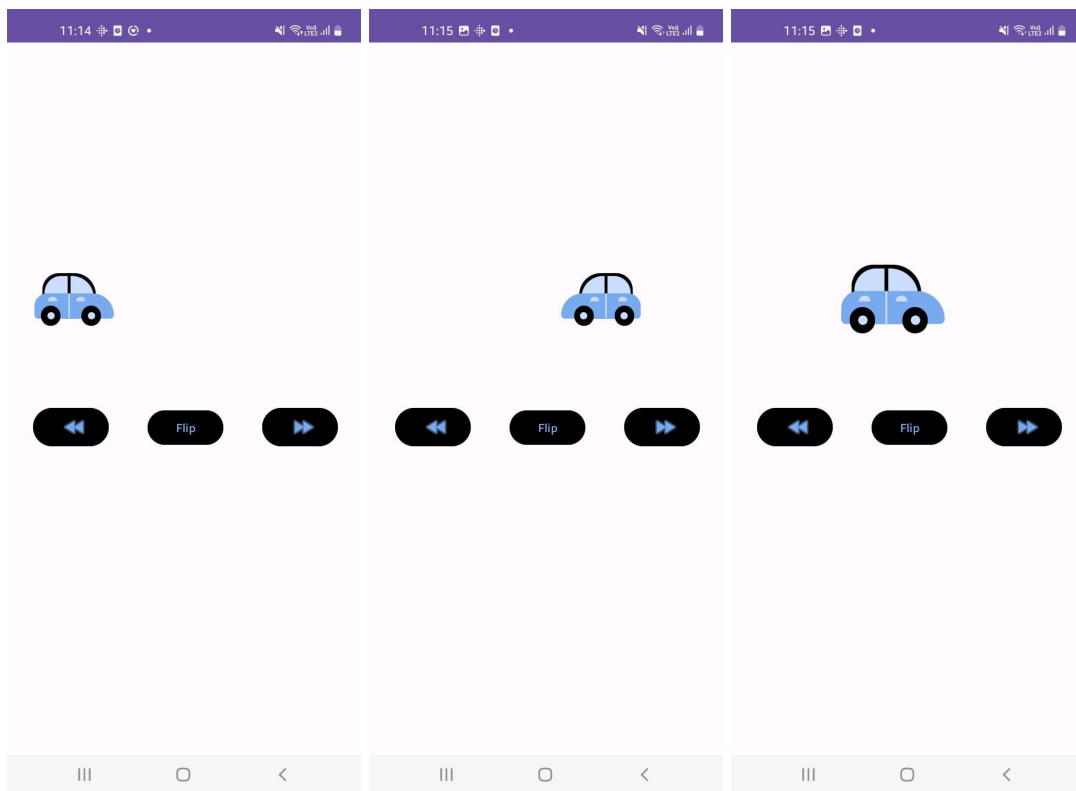
```
        flipped = 1;
        ObjectAnimator carAnimator = ObjectAnimator.ofFloat(car,
"translationX", 450, 0);
        carAnimator.setDuration(5000);
        carAnimator.start();
    }
    else if(point == 1)
    {
        point = 0;
        ObjectAnimator carAnimator = ObjectAnimator.ofFloat(car,
"translationX", 450, 0);
        carAnimator.setDuration(5000);
        carAnimator.start();
    }
}
});

//Flip
Button flip_button = (Button) findViewById(R.id.flip_button);
flip_button.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if(flipped == 0)
        {
            flipped = 1;
            ObjectAnimator flipIn = ObjectAnimator.ofFloat(car,
"rotationY", 0f, 180f);
            flipIn.setDuration(2000);
            flipIn.start();
        }
        else
        {
            flipped = 0;
            ObjectAnimator flipOut = ObjectAnimator.ofFloat(car,
"rotationY", 180f, 0f);
            flipOut.setDuration(2000);
            flipOut.start();
        }
    }
});

//Zoom
car.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if(click == 0)
        {
            click = 1;
            car.setScaleX(1.5f);
        }
    }
});
```

```
        car.setScaleY(1.5f);  
    }  
    else  
    {  
        click = 0;  
        car.setScaleX(1.0f);  
        car.setScaleY(1.0f);  
    }  
    }  
});  
}  
}
```

#### OUTPUT:



#### CODE:

##### Card-Flipping

##### card\_front.xml

```
<?xml version="1.0" encoding="utf-8"?>  
<layer-list xmlns:android="http://schemas.android.com/apk/res/android">  
    <!-- Car Body -->  
  
    <item  
        android:top="-8dp"
```

```
    android:start="28dp"
    android:end="32dp" >
    <shape
        android:shape="rectangle">
        <corners
            android:topLeftRadius="13dp"
            android:bottomLeftRadius="2dp"
            android:topRightRadius="17dp"
            android:bottomRightRadius="2dp"/>
        <solid android:color="#000000" /> <!-- Black Window Frame -->
        <size
            android:width="25dp"
            android:height="12dp" />
    </shape>
</item>

<item
    android:top="-6dp"
    android:start="30dp"
    android:end="34dp" >
    <shape
        android:shape="rectangle">
        <corners
            android:topLeftRadius="13dp"
            android:bottomLeftRadius="2dp"
            android:topRightRadius="17dp"
            android:bottomRightRadius="2dp"/>
        <solid android:color="#ccddff" /> <!-- Light Bluish Grey Windows
-->

        <size
            android:width="25dp"
            android:height="12dp" />
    </shape>
</item>

<item
    android:top="-8dp"
    android:start="48dp"
    android:end="52dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#000000" /> <!-- Black Window Separator -->
        <size
            android:width="2dp"
            android:height="12dp" />
    </shape>
</item>

<item
```

```
        android:top="8dp"
        android:start="22dp"
        android:end="18dp" >
        <shape
            android:shape="rectangle">
            <corners
                android:topLeftRadius="18dp"
                android:bottomLeftRadius="5dp"
                android:topRightRadius="30dp"
                android:bottomRightRadius="5dp"/>
            <solid android:color="#77aaee" /> <!-- Blue Car Body -->
            <size
                android:width="60dp"
                android:height="20dp" />
        </shape>
    </item>

    <item
        android:top="8dp"
        android:start="49dp"
        android:end="53dp" >
        <shape
            android:shape="rectangle">
            <solid android:color="#ccddff" /> <!-- Light Bluish Grey Door
Separator -->
            <size
                android:width="1dp"
                android:height="12dp" />
            </shape>
        </item>

        <item
            android:top="11dp"
            android:bottom="14dp"
            android:start="55dp"
            android:end="41dp" >
            <shape
                android:shape="rectangle">
                <solid android:color="#ccddff" /> <!-- Light Bluish Grey Front
Door Handle -->
                <corners
                    android:topLeftRadius="30dp"
                    android:bottomLeftRadius="5dp"
                    android:topRightRadius="30dp"
                    android:bottomRightRadius="5dp"/>
                </shape>
            </item>

            <item
```

```
        android:top="11dp"
        android:bottom="14dp"
        android:start="33dp"
        android:end="63dp" >
        <shape
            android:shape="rectangle">
            <solid android:color="#ccddff" /> <!-- Light Bluish Grey Back
Door Handle -->
            <corners
                android:topLeftRadius="30dp"
                android:bottomLeftRadius="5dp"
                android:topRightRadius="30dp"
                android:bottomRightRadius="5dp"/>
        </shape>
    </item>

    <item
        android:top="18dp"
        android:bottom="-6dp"
        android:start="59dp"
        android:end="28dp" >
        <shape
            android:shape="rectangle">
            <solid android:color="#000000" /> <!-- Black Front Wheel -->
            <corners
                android:topLeftRadius="30dp"
                android:bottomLeftRadius="30dp"
                android:topRightRadius="30dp"
                android:bottomRightRadius="30dp"/>
        </shape>
    </item>

    <item
        android:top="23dp"
        android:bottom="-1dp"
        android:start="64dp"
        android:end="33dp" >
        <shape
            android:shape="rectangle">
            <solid android:color="#ccddff" /> <!-- Light Bluish Grey Front
Wheel Inner-->
            <corners
                android:topLeftRadius="30dp"
                android:bottomLeftRadius="30dp"
                android:topRightRadius="30dp"
                android:bottomRightRadius="30dp"/>
        </shape>
    </item>
```

```
<item
    android:top="18dp"
    android:bottom="-6dp"
    android:start="27dp"
    android:end="60dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#000000" /> <!-- Black Back Wheel -->
        <corners
            android:topLeftRadius="30dp"
            android:bottomLeftRadius="30dp"
            android:topRightRadius="30dp"
            android:bottomRightRadius="30dp"/>
        </shape>
    </item>

<item
    android:top="23dp"
    android:bottom="-1dp"
    android:start="32dp"
    android:end="65dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#ccddff" /> <!-- Light Bluish Grey Back
Wheel Inner-->
        <corners
            android:topLeftRadius="30dp"
            android:bottomLeftRadius="30dp"
            android:topRightRadius="30dp"
            android:bottomRightRadius="30dp"/>
        </shape>
    </item>
</layer-list>
```

#### card\_back.xml

```
<?xml version="1.0" encoding="utf-8"?>
<layer-list xmlns:android="http://schemas.android.com/apk/res/android">
    <!-- Car Body -->

    <item
        android:top="-8dp"
        android:start="28dp"
        android:end="32dp" >
        <shape
            android:shape="rectangle">
            <corners
                android:topLeftRadius="13dp"
                android:bottomLeftRadius="2dp"
```

```
        android:topRightRadius="17dp"
        android:bottomRightRadius="2dp"/>
    <solid android:color="#000000" /> <!-- Black Window Frame -->
    <size
        android:width="25dp"
        android:height="12dp" />
    </shape>
</item>

<item
    android:top="-6dp"
    android:start="30dp"
    android:end="34dp" >
    <shape
        android:shape="rectangle">
        <corners
            android:topLeftRadius="13dp"
            android:bottomLeftRadius="2dp"
            android:topRightRadius="17dp"
            android:bottomRightRadius="2dp"/>
        <solid android:color="#ccffdd" /> <!-- Light Greenish Grey
Windows -->
        <size
            android:width="25dp"
            android:height="12dp" />
        </shape>
    </item>

<item
    android:top="-8dp"
    android:start="48dp"
    android:end="52dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#000000" /> <!-- Black Window Separator -->
        <size
            android:width="2dp"
            android:height="12dp" />
        </shape>
    </item>

<item
    android:top="8dp"
    android:start="22dp"
    android:end="18dp" >
    <shape
        android:shape="rectangle">
        <corners
            android:topLeftRadius="18dp"
```



```
        android:bottomLeftRadius="5dp"
        android:topRightRadius="30dp"
        android:bottomRightRadius="5dp"/>
    <solid android:color="#77eeaa" /> <!-- Green Car Body -->
    <size
        android:width="60dp"
        android:height="20dp" />
    </shape>
</item>

<item
    android:top="8dp"
    android:start="49dp"
    android:end="53dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#ccffdd" /> <!-- Light Greenish Grey Door
Separator -->
        <size
            android:width="1dp"
            android:height="12dp" />
        </shape>
    </item>

    <item
        android:top="11dp"
        android:bottom="14dp"
        android:start="55dp"
        android:end="41dp" >
        <shape
            android:shape="rectangle">
            <solid android:color="#ccffdd" /> <!-- Light Greenish Grey Front
Door Handle -->
            <corners
                android:topLeftRadius="30dp"
                android:bottomLeftRadius="5dp"
                android:topRightRadius="30dp"
                android:bottomRightRadius="5dp"/>
            </shape>
        </item>

    <item
        android:top="11dp"
        android:bottom="14dp"
        android:start="33dp"
        android:end="63dp" >
        <shape
            android:shape="rectangle">
```

```

    <solid android:color="#ccffdd" /> <!-- Light Greenish Grey Back
Door Handle -->
    <corners
        android:topLeftRadius="30dp"
        android:bottomLeftRadius="5dp"
        android:topRightRadius="30dp"
        android:bottomRightRadius="5dp"/>
    </shape>
</item>

<item
    android:top="18dp"
    android:bottom="-6dp"
    android:start="59dp"
    android:end="28dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#000000" /> <!-- Black Front Wheel -->
        <corners
            android:topLeftRadius="30dp"
            android:bottomLeftRadius="30dp"
            android:topRightRadius="30dp"
            android:bottomRightRadius="30dp"/>
        </shape>
    </item>

<item
    android:top="23dp"
    android:bottom="-1dp"
    android:start="64dp"
    android:end="33dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#ccffdd" /> <!-- Light Greenish Grey Front
Wheel Inner-->
        <corners
            android:topLeftRadius="30dp"
            android:bottomLeftRadius="30dp"
            android:topRightRadius="30dp"
            android:bottomRightRadius="30dp"/>
        </shape>
    </item>

<item
    android:top="18dp"
    android:bottom="-6dp"
    android:start="27dp"
    android:end="60dp" >
    <shape
```

```
        android:shape="rectangle">
        <solid android:color="#000000" /> <!-- Black Back Wheel -->
        <corners
            android:topLeftRadius="30dp"
            android:bottomLeftRadius="30dp"
            android:topRightRadius="30dp"
            android:bottomRightRadius="30dp"/>
    </shape>
</item>

<item
    android:top="23dp"
    android:bottom="-1dp"
    android:start="32dp"
    android:end="65dp" >
    <shape
        android:shape="rectangle">
        <solid android:color="#ccffdd" /> <!-- Light Greenish Grey Back
Wheel Inner-->
        <corners
            android:topLeftRadius="30dp"
            android:bottomLeftRadius="30dp"
            android:topRightRadius="30dp"
            android:bottomRightRadius="30dp"/>
    </shape>
</item>
</layer-list>
```

#### **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">

    <ImageView
        android:id="@+id/card_front"
        android:layout_width="300dp"
        android:layout_height="300dp"
        android:layout_margin="50dp"
        android:background="#ccddff"
        android:scaleType="fitCenter"
        android:src="@drawable/card_front"
        android:visibility="visible" />

    <ImageView
        android:id="@+id/card_back"
        android:layout_width="300dp"
```

```
        android:layout_height="300dp"
        android:layout_margin="50dp"
        android:background="#ccffdd"
        android:scaleType="fitCenter"
        android:src="@drawable/card_back"
        android:visibility="invisible"/>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="400dp">

    <Button
        android:id="@+id/flip_in_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:layout_gravity="center|center_horizontal|center_vertical"
        android:layout_marginStart="40dp"
        android:backgroundTint="#000000"
        android:gravity="center|center_horizontal|center_vertical"
        android:text="Flip In"
        android:textSize="20sp"
        android:textStyle="bold"
        android:typeface="monospace" />

    <Button
        android:id="@+id/flip_out_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:layout_gravity="center|center_horizontal|center_vertical"
        android:layout_marginStart="40dp"
        android:backgroundTint="#000000"
        android:gravity="center|center_horizontal|center_vertical"
        android:text="Flip Out"
        android:textSize="20sp"
        android:textStyle="bold"
        android:typeface="monospace" />

</LinearLayout>

</RelativeLayout>

MainActivity.java
package com.example.exercise3_card_flip;

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

```
import android.animation.ObjectAnimator;
import android.os.Bundle;
import android.view.View;
import android.view.animation.Animation;
import android.view.animation.RotateAnimation;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.LinearLayout;

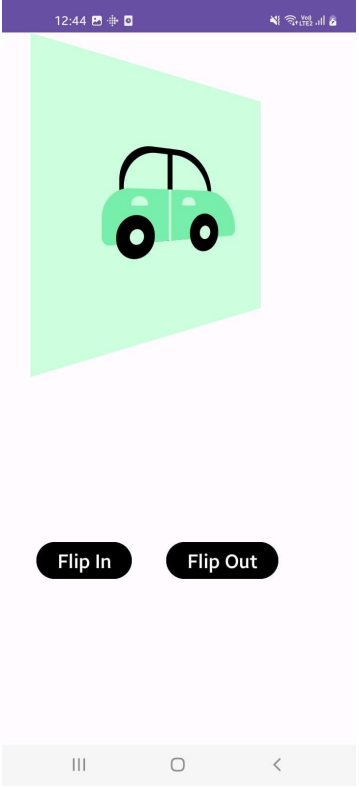
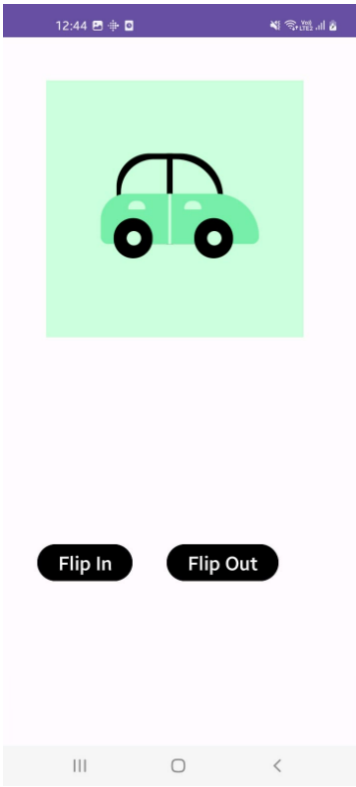
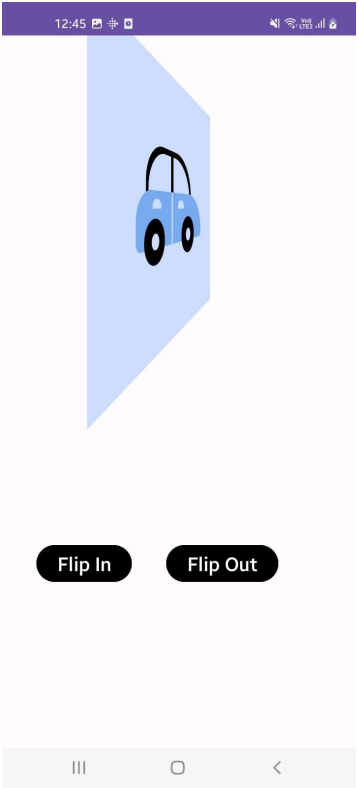
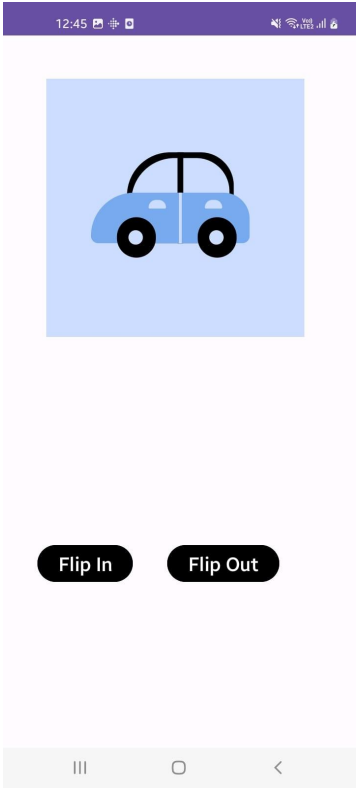
public class MainActivity extends AppCompatActivity {
    public int flip_in_click = 0;
    public int flip_out_click = 0;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Button flip_in_button = (Button) findViewById(R.id.flip_in_button);
        Button flip_out_button = (Button) findViewById(R.id.flip_out_button);
        ImageView card_front = (ImageView) findViewById(R.id.card_front);
        ImageView card_back = (ImageView) findViewById(R.id.card_back);

        flip_out_button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if(flip_out_click == 0)
                {
                    flip_out_click = 1;
                    ObjectAnimator flipOut =
ObjectAnimator.ofFloat(card_back, "rotationY", 180f, 0f);
                    flipOut.setDuration(1000);
                    flipOut.start();
                    card_back.setVisibility(View.VISIBLE);
                    card_front.setVisibility(View.INVISIBLE);
                }
                else
                {
                    flip_out_click = 0;
                    ObjectAnimator flipIn =
ObjectAnimator.ofFloat(card_front, "rotationY", 0f, 180f);
                    flipIn.setDuration(1000);
                    flipIn.start();
                    card_front.setVisibility(View.VISIBLE);
                    card_back.setVisibility(View.INVISIBLE);
                }
            }
        });
    }
}
```

```
flip_in_button.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        if(flip_in_click == 0)  
        {  
            flip_in_click = 1;  
            ObjectAnimator flipIn = ObjectAnimator.ofFloat(card_back,  
"rotationY", 0f, 180f);  
            flipIn.setDuration(1000);  
            flipIn.start();  
            card_back.setVisibility(View.VISIBLE);  
            card_front.setVisibility(View.INVISIBLE);  
        }  
        else  
        {  
            flip_in_click = 0;  
            ObjectAnimator flipOut =  
ObjectAnimator.ofFloat(card_front, "rotationY", 180f, 0f);  
            flipOut.setDuration(1000);  
            flipOut.start();  
            card_front.setVisibility(View.VISIBLE);  
            card_back.setVisibility(View.INVISIBLE);  
        }  
    }  
});  
}
```

OUTPUT :



**CODE:**  
**To Do List**

**activity\_main.xml**

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

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="100dp">

        <TextView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_margin="20dp"
            android:gravity="center|center_vertical|center_horizontal"
            android:text="To Do List"
            android:textColor="#4488aa"
            android:textSize="40sp"
            android:textStyle="bold"
            android:typeface="monospace" />

    </LinearLayout>
    <LinearLayout
        android:id="@+id/tasks"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:layout_gravity="center"
        android:layout_margin="20dp"
        android:nestedScrollingEnabled="true">

    </LinearLayout>

    <!-- #4488aa-->
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:layout_margin="20dp">

        <TextView
            android:layout_width="wrap_content"
```



```
        android:layout_height="wrap_content"
        android:text="Task: "
        android:textColor="#4488aa"
        android:textSize="18sp"
        android:textStyle="bold"
        android:typeface="monospace" />

    <EditText
        android:id="@+id/new_task"
        android:layout_width="180dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:text=""
        android:textColor="#000000"
        android:textSize="18sp"
        android:textStyle="bold"
        android:typeface="monospace" />

    <Button
        android:id="@+id/add_task"
        android:layout_width="75dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:backgroundTint="#4488aa"
        android:textSize="18sp"
        android:text="+"
        android:textStyle="bold"/>

</LinearLayout>

</LinearLayout>

MainActivity.java
package com.example.to_do_list;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.EditText;
import android.widget.LinearLayout;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    @Override
```

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

    LinearLayout tasks = (LinearLayout) findViewById(R.id.tasks);
    Button add_task = (Button) findViewById(R.id.add_task);
    add_task.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            CheckBox cb = new CheckBox(getApplicationContext());
            EditText new_task = (EditText) findViewById(R.id.new_task);
            String task = new_task.getText().toString();
            if(!task.equals(""))
            {
                LinearLayout new_task_container = new
LinearLayout(getApplicationContext());

new_task_container.setOrientation(LinearLayout.HORIZONTAL);

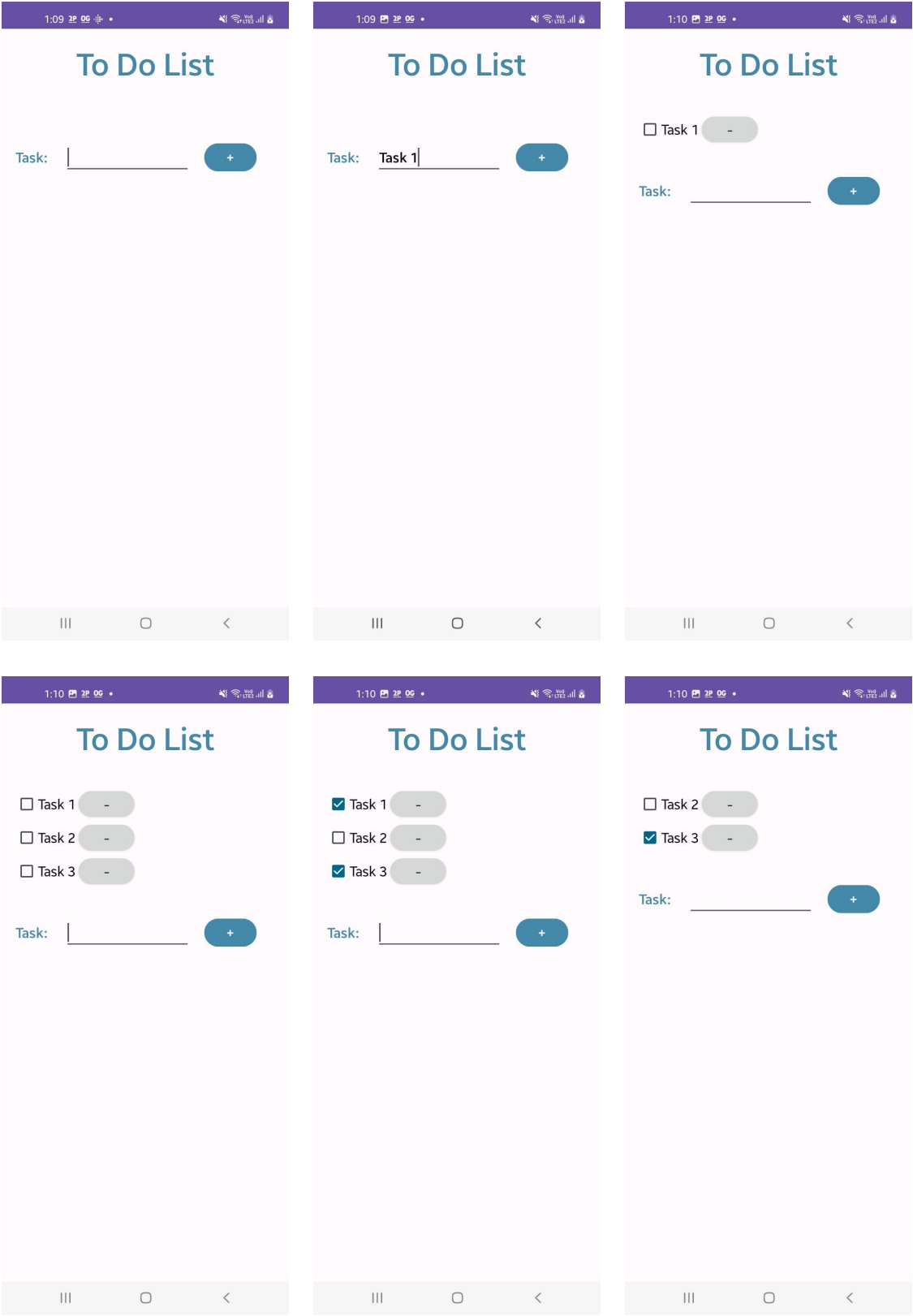
                cb.setText(task);
                cb.setTextSize(18.0f);
                new_task_container.addView(cb);
                new_task.setText("");

                Button remove_task = new Button(getApplicationContext());
                remove_task.setText("-");
                remove_task.setTextSize(18.0f);
                new_task_container.addView(remove_task);

                remove_task.setOnClickListener(new View.OnClickListener()
{
                    @Override
                    public void onClick(View view) {
                        tasks.removeView(new_task_container);
                    }
                });

                tasks.addView(new_task_container);
            }
        }
    });
}
```

OUTPUT :



**BEST PRACTICES:**

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

**LEARNING OUTCOMES:**

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to use event handlers.
- I learnt to create drawables.
- I learnt how to modify the view dynamically.
- I learnt to run the emulator and debugger.

## EXERCISE 4

### ANDROID APPLICATION DEVELOPMENT USING DATABASE

#### AIM:

Develop a Product information application in Android that enables to perform CRUD operations on data stored in SQLite Database.

#### COMPONENTS USED:

##### ANDROID WIDGETS:

- TextView
- EditText
- RadioGroup
- RadioButton
- Spinner
- Button

##### LAYOUTS USED:

- LinearLayout (Vertical)
- LinearLayout (Horizontal)
- TableLayout
- ConstraintLayout

#### ACTIVITY AND INTENTS USED:

##### Activities:

- MainActivity JAVA Class
- InsertActivity JAVA Class
- UpdateActivity JAVA Class
- DeleteActivity JAVA Class
- RetrieveActivity JAVA Class
- DisplayActivity JAVA Class

##### Intents:

- Intent between MainActivity JAVA Class (sender) and InsertActivity JAVA Class (receiver)
- Intent between MainActivity JAVA Class (sender) and UpdateActivity JAVA Class (receiver)
- Intent between MainActivity JAVA Class (sender) and DeleteActivity JAVA Class (receiver)
- Intent between MainActivity JAVA Class (sender) and RetrieveActivity JAVA Class (receiver)
- Intent between RetrieveActivity JAVA Class (sender) and DisplayActivity JAVA Class (receiver)
- Intent between MainActivity JAVA Class (sender) and DisplayActivity JAVA Class (receiver)

**CODE:**  
**activity\_main.xml**

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

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="150dp"
        android:orientation="horizontal">

        <TextView
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:gravity="center|center_vertical|center_horizontal"
            android:text="Product Information"
            android:textColor="#000000"
            android:textSize="40sp"
            android:textStyle="bold"
            android:typeface="monospace" />

    </LinearLayout>

    <Button
        android:id="@+id/button_insert"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="80dp"
        android:layout_gravity="center|center_horizontal"
        android:backgroundTint="#578004"
        android:text="Insert"
        android:textColor="#000000"
        android:textSize="20sp"
        android:textStyle="bold"
        android:typeface="monospace" />

    <Button
        android:id="@+id/button_update"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="25dp"
        android:layout_gravity="center|center_horizontal"
        android:backgroundTint="#578004"
```

```
        android:text="Update"
        android:textColor="#000000"
        android:textSize="20sp"
        android:textStyle="bold"
        android:typeface="monospace" />

<Button
    android:id="@+id/button_delete"
    android:layout_width="200dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="25dp"
    android:layout_gravity="center|center_horizontal"
    android:backgroundTint="#578004"
    android:text="Delete"
    android:textColor="#000000"
    android:textSize="20sp"
    android:textStyle="bold"
    android:typeface="monospace" />

<Button
    android:id="@+id/button_retrieve"
    android:layout_width="200dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="25dp"
    android:layout_gravity="center|center_horizontal"
    android:backgroundTint="#578004"
    android:text="Retrieve"
    android:textColor="#000000"
    android:textSize="20sp"
    android:textStyle="bold"
    android:typeface="monospace" />

<Button
    android:id="@+id/button_retrieve_all"
    android:layout_width="200dp"
    android:layout_height="wrap_content"
    android:layout_gravity="center|center_horizontal"
    android:layout_marginTop="25dp"
    android:backgroundTint="#578004"
    android:text="Retrieve All"
    android:textColor="#000000"
    android:textSize="20sp"
    android:textStyle="bold"
    android:typeface="monospace" />
</LinearLayout>
```

## activity\_insert.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=".InsertActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="80dp"
        android:orientation="horizontal">

        <TextView
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:gravity="center|center_vertical|center_horizontal"
            android:text="Insert"
            android:textColor="#578004"
            android:textSize="36sp"
            android:textStyle="bold"
            android:typeface="monospace" />

    </LinearLayout>

    <TableLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="50dp">

        <TableRow
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:minHeight="80dp">

            <TextView
                android:id="@+id/product_id"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_marginStart="24dp"
                android:gravity="center|left"
                android:text="Product\nID"
                android:textColor="#000000"
                android:textSize="16sp"
                android:textStyle="bold"
                android:typeface="monospace" />

        </TableRow>

    </TableLayout>

</LinearLayout>
```



```
<EditText
    android:id="@+id/entered_product_id"
    android:layout_width="200dp"
    android:layout_height="match_parent"
    android:layout_marginStart="24dp"
    android:inputType="number"
    android:minHeight="80dp"
    android:text=""
    android:textColor="#578004"
    android:textSize="16sp"
    android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="80dp">

    <TextView
        android:id="@+id/product_name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="24dp"
        android:gravity="center|left"
        android:text="Product\nName"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace" />

    <Spinner
        android:id="@+id/entered_product_name"
        android:layout_width="50dp"
        android:layout_height="match_parent"
        android:layout_marginStart="24dp"
        android:gravity="center|center_horizontal|center_vertical"
        android:textAlignment="center"
        android:textColor="#578004"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
```

```
android:minHeight="150dp">

<TextView
    android:id="@+id/product_brand"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="24dp"
    android:layout_marginTop="10dp"
    android:gravity="center|left"
    android:text="Product\nBrand"
    android:textColor="#000000"
    android:textSize="16sp"
    android:textStyle="bold"
    android:typeface="monospace" />

<RadioGroup
    android:id="@+id/brand"
    android:layout_width="50dp"
    android:layout_height="match_parent"
    android:layout_marginStart="24dp">

    <RadioButton
        android:id="@+id/brand1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Brand 1"
        android:textColor="#578004"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace" />

    <RadioButton
        android:id="@+id/brand2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Brand 2"
        android:textColor="#578004"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace" />

    <RadioButton
        android:id="@+id/brand3"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Brand 3"
        android:textColor="#578004"
        android:textSize="16sp"
        android:textStyle="bold"
```

```
        android:typeface="monospace" />

    </RadioGroup>

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="80dp">

    <TextView
        android:id="@+id/product_description"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="24dp"
        android:gravity="center|left"
        android:text="Product\nDescription"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace" />

    <EditText
        android:id="@+id/entered_product_description"
        android:layout_width="200dp"
        android:layout_height="match_parent"
        android:layout_marginStart="24dp"
        android:inputType="text"
        android:minHeight="80dp"
        android:text=""
        android:textColor="#578004"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:minHeight="80dp">

    <TextView
        android:id="@+id/product_price"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="24dp"
        android:gravity="center|left"
        android:text="Product\nPrice"
```

```
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace" />

<EditText
    android:id="@+id/entered_product_price"
    android:layout_width="200dp"
    android:layout_height="match_parent"
    android:layout_marginStart="24dp"
    android:inputType="number"
    android:minHeight="80dp"
    android:text=""
    android:textColor="#578004"
    android:textSize="16sp"
    android:textStyle="bold" />

</TableRow>

</TableLayout>

<androidx.constraintlayout.widget.ConstraintLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <Button
        android:id="@+id/cancel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="77dp"
        android:layout_marginTop="16dp"
        android:layout_marginEnd="228dp"
        android:layout_marginBottom="38dp"
        android:backgroundTint="#578004"
        android:text="Cancel"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.2" />

    <Button
        android:id="@+id/insert"
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_marginStart="222dp"
        android:layout_marginTop="15dp"
        android:layout_marginEnd="83dp"
        android:layout_marginBottom="39dp"
        android:backgroundTint="#578004"
        android:text="Insert"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.22" />

<TextView
    android:id="@+id/error"
    android:layout_width="wrap_content"
    android:layout_height="32dp"
    android:layout_marginStart="205dp"
    android:layout_marginTop="64dp"
    android:layout_marginEnd="206dp"
    android:layout_marginBottom="19dp"
    android:gravity="center|center_vertical|center_horizontal"
    android:textColor="#990000"
    android:textSize="16sp"
    android:textStyle="bold|italic"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>
```

### activity\_update.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=".UpdateActivity">

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="80dp"
    android:orientation="horizontal">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:gravity="center|center_vertical|center_horizontal"
        android:text="Update"
        android:textColor="#578004"
        android:textSize="36sp"
        android:textStyle="bold"
        android:typeface="monospace" />

</LinearLayout>

<TableLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="50dp">

    <TableRow
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginTop="50dp"
        android:minHeight="80dp">

        <TextView
            android:id="@+id/product_id"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginStart="24dp"
            android:gravity="center|left"
            android:text="Product\nID"
            android:textColor="#000000"
            android:textSize="16sp"
            android:textStyle="bold"
            android:typeface="monospace" />

        <EditText
            android:id="@+id/entered_product_id"
            android:layout_width="200dp"
            android:layout_height="match_parent"
            android:layout_marginStart="24dp"
            android:inputType="number"
            android:minHeight="80dp">
```

```
        android:text=""
        android:textColor="#578004"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="10dp"
    android:minHeight="80dp">

    <TextView
        android:id="@+id/product_price"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="24dp"
        android:gravity="center|left"
        android:text="Product\nPrice"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace" />

    <EditText
        android:id="@+id/entered_product_price"
        android:layout_width="200dp"
        android:layout_height="match_parent"
        android:layout_marginStart="24dp"
        android:inputType="number"
        android:minHeight="80dp"
        android:text=""
        android:textColor="#578004"
        android:textSize="16sp"
        android:textStyle="bold" />

</TableRow>

</TableLayout>

<androidx.constraintlayout.widget.ConstraintLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <Button
        android:id="@+id/cancel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
android:layout_marginStart="77dp"
android:layout_marginTop="16dp"
android:layout_marginEnd="228dp"
android:layout_marginBottom="38dp"
android:backgroundTint="#578004"
android:text="Cancel"
android:textColor="#000000"
android:textSize="16sp"
android:textStyle="bold"
android:typeface="monospace"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="1.0"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.2" />
```

<Button

```
android:id="@+id/update"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginStart="222dp"
android:layout_marginTop="15dp"
android:layout_marginEnd="83dp"
android:layout_marginBottom="39dp"
android:backgroundTint="#578004"
android:text="Update"
android:textColor="#000000"
android:textSize="16sp"
android:textStyle="bold"
android:typeface="monospace"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.0"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.2" />
```

<TextView

```
android:id="@+id/error"
android:layout_width="wrap_content"
android:layout_height="32dp"
android:layout_marginStart="140dp"
android:layout_marginTop="64dp"
android:layout_marginEnd="271dp"
android:layout_marginBottom="19dp"
android:gravity="center|center_vertical|center_horizontal"
android:textColor="#990000"
android:textSize="16sp"
```



```
        android:textStyle="bold|italic"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.341" />

</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>

activity_delete.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=".DeleteActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="80dp"
        android:orientation="horizontal">

        <TextView
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:gravity="center|center_vertical|center_horizontal"
            android:text="Delete"
            android:textColor="#578004"
            android:textSize="36sp"
            android:textStyle="bold"
            android:typeface="monospace" />

    </LinearLayout>

    <TableLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="50dp">

        <TableRow
            android:layout_width="match_parent"
            android:layout_height="match_parent"
```

```
android:layout_marginTop="50dp"  
android:minHeight="80dp">
```

```
<TextView  
    android:id="@+id/product_id"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="24dp"  
    android:gravity="center|left"  
    android:text="Product\nID"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:typeface="monospace" />
```

```
<EditText  
    android:id="@+id/entered_product_id"  
    android:layout_width="200dp"  
    android:layout_height="match_parent"  
    android:layout_marginStart="24dp"  
    android:inputType="number"  
    android:minHeight="80dp"  
    android:text=""  
    android:textColor="#578004"  
    android:textSize="16sp"  
    android:textStyle="bold" />
```

```
</TableRow>
```

```
</TableLayout>
```

```
<androidx.constraintlayout.widget.ConstraintLayout  
    android:layout_width="match_parent"  
    android:layout_height="match_parent">
```

```
<Button  
    android:id="@+id/cancel"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="77dp"  
    android:layout_marginTop="16dp"  
    android:layout_marginEnd="228dp"  
    android:layout_marginBottom="38dp"  
    android:backgroundTint="#578004"  
    android:text="Cancel"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:typeface="monospace"
```

```
app:layout_constraintBottom_toBottomOf="parent"  
app:layout_constraintEnd_toEndOf="parent"  
app:layout_constraintHorizontal_bias="1.0"  
app:layout_constraintStart_toStartOf="parent"  
app:layout_constraintTop_toTopOf="parent"  
app:layout_constraintVertical_bias="0.2" />
```

<Button

```
    android:id="@+id/delete"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="222dp"  
    android:layout_marginTop="15dp"  
    android:layout_marginEnd="83dp"  
    android:layout_marginBottom="39dp"  
    android:backgroundTint="#578004"  
    android:text="Delete"  
    android:textColor="#000000"  
    android:textSize="16sp"  
    android:textStyle="bold"  
    android:typeface="monospace"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.0"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.2" />
```

<TextView

```
    android:id="@+id/error"  
    android:layout_width="wrap_content"  
    android:layout_height="32dp"  
    android:layout_marginStart="140dp"  
    android:layout_marginTop="64dp"  
    android:layout_marginEnd="271dp"  
    android:layout_marginBottom="19dp"  
    android:gravity="center|center_vertical|center_horizontal"  
    android:textColor="#990000"  
    android:textSize="16sp"  
    android:textStyle="bold|italic"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.0"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.341" />
```

</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>

### activity\_retrieve.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=".RetrieveActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="80dp"
        android:orientation="horizontal">

        <TextView
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:gravity="center|center_vertical|center_horizontal"
            android:text="Retrieve"
            android:textColor="#578004"
            android:textSize="36sp"
            android:textStyle="bold"
            android:typeface="monospace" />

    </LinearLayout>

    <TableLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="15dp">

        <TableRow
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_margin="50dp"
            android:minHeight="80dp">

            <TextView
                android:id="@+id/product_id"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_marginStart="24dp"
                android:gravity="center|left"
                android:text="Product\nID"
```

```
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace" />

<EditText
    android:id="@+id/entered_product_id"
    android:layout_width="200dp"
    android:layout_height="match_parent"
    android:layout_marginStart="24dp"
    android:inputType="number"
    android:minHeight="80dp"
    android:text=""
    android:textColor="#578004"
    android:textSize="16sp"
    android:textStyle="bold" />

</TableRow>

</TableLayout>

<androidx.constraintlayout.widget.ConstraintLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <Button
        android:id="@+id/cancel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="77dp"
        android:layout_marginTop="16dp"
        android:layout_marginEnd="228dp"
        android:layout_marginBottom="38dp"
        android:backgroundTint="#578004"
        android:text="Cancel"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.2" />

    <Button
        android:id="@+id/retrieve"
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_marginStart="222dp"
        android:layout_marginTop="15dp"
        android:layout_marginEnd="83dp"
        android:layout_marginBottom="39dp"
        android:backgroundTint="#578004"
        android:text="Retrieve"
        android:textColor="#000000"
        android:textSize="16sp"
        android:textStyle="bold"
        android:typeface="monospace"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.2" />

<TextView
    android:id="@+id/error"
    android:layout_width="wrap_content"
    android:layout_height="32dp"
    android:layout_marginStart="140dp"
    android:layout_marginTop="64dp"
    android:layout_marginEnd="271dp"
    android:layout_marginBottom="19dp"
    android:gravity="center|center_vertical|center_horizontal"
    android:textColor="#990000"
    android:textSize="16sp"
    android:textStyle="bold|italic"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.341" />

</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>
```

### activity\_display.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=".DisplayActivity">

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="80dp"
    android:orientation="horizontal">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:gravity="center|center_vertical|center_horizontal"
        android:text="Record"
        android:textColor="#578004"
        android:textSize="36sp"
        android:textStyle="bold"
        android:typeface="monospace" />

</LinearLayout>

<ScrollView
    android:layout_width="match_parent"
    android:layout_height="wrap_content">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical">

        <TextView
            android:id="@+id/record"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="50dp"
            android:text=""
            android:textSize="16sp"
            android:textColor="#000000"
            android:textStyle="bold"
            android:typeface="monospace" />

        <Button
            android:id="@+id/back"
            android:layout_width="200dp"
            android:layout_height="50dp"
            android:layout_margin="50dp"
            android:layout_gravity="center"
            android:text="Back"
            android:textColor="#000000"
```

```
        android:textSize="16sp"
        android:textStyle="bold"
        android:backgroundTint="#578004" />

    </LinearLayout>

</ScrollView>

</LinearLayout>
```

### MainActivity.java

```
package com.example.exercise4;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

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

        //      Button create = (Button) findViewById(R.id.button_create);
        //      create.setOnClickListener(new View.OnClickListener() {
        //          @Override
        //          public void onClick(View view) {
        //
        //              DBHelper db = new DBHelper(getApplicationContext());
        //          }
        //      });

        Button insert = (Button) findViewById(R.id.button_insert);
        insert.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent i = new Intent(MainActivity.this,
InsertActivity.class);
                startActivity(i);
            }
        });
    }
}
```



```
Button update = (Button) findViewById(R.id.button_update);
update.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent i = new Intent(MainActivity.this,
UpdateActivity.class);
        startActivity(i);
    }
});

Button delete = (Button) findViewById(R.id.button_delete);
delete.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent i = new Intent(MainActivity.this,
DeleteActivity.class);
        startActivity(i);
    }
});

Button retrieve = (Button) findViewById(R.id.button_retrieve);
retrieve.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent i = new Intent(MainActivity.this,
RetrieveActivity.class);
        startActivity(i);
    }
});

Button retrieve_all = (Button)
findViewById(R.id.button_retrieve_all);
retrieve_all.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        DBHelper db = new DBHelper(getApplicationContext());

        Cursor record = db.retrieve_all_records();
        String record_details = "";
        while(record.moveToNext())
        {
            record_details += "ID: " + record.getString(0) + "\n";
            record_details += "Name: " + record.getString(1) + "\n";
            record_details += "Brand: " + record.getString(2) + "\n";
            record_details += "Description: " + record.getString(3) +
"\n";
            record_details += "Price: " + record.getString(4) +
"\n\n";
        }
    }
});
```

```
                Intent i = new Intent(MainActivity.this,
DisplayActivity.class);
                i.putExtra("record_details", record_details);
                startActivity(i);
            }
        });
    }
}
```

### **InsertActivity.java**

```
package com.example.exercise4;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioGroup;
import android.widget.Spinner;
import android.widget.TextView;
import android.widget.Toast;

public class InsertActivity extends AppCompatActivity {

    String brand = "";
    String name = "";
    String description = "";
    String[] product_items = {"--Select--", "Product 1", "Product 2",
"Product 3", "Product 4", "Product 5", "Product 6"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_insert);

        EditText product_id = (EditText)
findViewById(R.id.entered_product_id);

        Spinner product_name = (Spinner)
findViewById(R.id.entered_product_name);
        ArrayAdapter sp_item = new ArrayAdapter(this,
androidx.appcompat.R.layout.support_simple_spinner_dropdown_item,
product_items);
```

```
sp_item.setDropDownViewResource(androidx.appcompat.R.layout.support_simple_spinner_dropdown_item);
    product_name.setAdapter(sp_item);

    RadioGroup product_brand = findViewById(R.id.brand);

    EditText product_description = (EditText)
findViewById(R.id.entered_product_description);

    EditText product_price = (EditText)
findViewById(R.id.entered_product_price);
    TextView error = (TextView) findViewById(R.id.error);
    error.setText("");

    Button cancel = (Button) findViewById(R.id.cancel);
    cancel.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            Intent i = new Intent(InsertActivity.this,
MainActivity.class);
            startActivity(i);
        }
    });

    Button insert = (Button) findViewById(R.id.insert);
    insert.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            Boolean id_flag = true, id_len_flag = true;
            String id = product_id.getText().toString();
            try {
                int id_validation = Integer.parseInt(id);
                if(id_validation / 1000 == 0 || id_validation / 1000 > 9)
                {
                    id_len_flag = false;
                }
            }
            catch (NumberFormatException nfe)
            {
                id_flag = false;
            }

            if(id_flag == false || id_len_flag == false)
            {
                error.setText("Product ID must be 4 digits");
                product_id.setText("");
            }
            else
```

```
{
    name = product_name.getSelectedItem().toString();
    description = product_description.getText().toString();
    int rid = product_brand.getCheckedRadioButtonId();
    if(rid == R.id.brand1)
    {
        brand = "Brand 1";
    }
    else if(rid == R.id.brand2)
    {
        brand = "Brand 2";
    }
    else if(rid == R.id.brand3)
    {
        brand = "Brand 3";
    }
    String price = product_price.getText().toString();
    Boolean price_flag = true;
    try {
        int price_validation = Integer.parseInt(price);
    }
    catch(NumberFormatException nfe) {
        price_flag = false;
    }

    if(price_flag == false) error.setText("Price should be a
number");
    else
    {
        DBHelper db = new DBHelper(getApplicationContext());
        Boolean check_insert = db.insert_record(id, name,
brand, description, price);
        String x = id + " " + name + " " + brand + " " +
description + " " + price;
        if(check_insert == true)
        {
            Intent j = new Intent(InsertActivity.this,
MainActivity.class);
            startActivity(j);
        }
        else
        {
            error.setText("Record could not be inserted!");
            product_id.setText("");
            product_name.setAdapter(sp_item);
            product_brand.clearCheck();
            product_description.setText("");
            product_price.setText("");
        }
    }
}
```

```
        }  
    }  
});  
}  
}
```

### UpdateActivity.java

```
package com.example.exercise4;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.TextView;  
  
public class UpdateActivity extends AppCompatActivity {  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_update);  
  
        EditText product_id = (EditText)  
findViewById(R.id.entered_product_id);  
        EditText product_price = (EditText)  
findViewById(R.id.entered_product_price);  
        TextView error = (TextView) findViewById(R.id.error);  
  
        Button update = (Button) findViewById(R.id.update);  
        update.setOnClickListener(new View.OnClickListener() {  
            @Override  
            public void onClick(View view) {  
                String id = product_id.getText().toString();  
                String price = product_price.getText().toString();  
  
                DBHelper db = new DBHelper(getApplicationContext());  
  
                Boolean check = db.update_record(id, price);  
                if(check == true)  
                {  
                    Intent i = new Intent(UpdateActivity.this,  
MainActivity.class);
```

```
        startActivity(i);
    }
    else
    {
        error.setText("Could not update!");
        product_id.setText("");
        product_price.setText("");
    }
}
});

Button cancel = (Button) findViewById(R.id.cancel);
cancel.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent i = new Intent(UpdateActivity.this,
MainActivity.class);
        startActivity(i);
    }
});
}
}
```

### DeleteActivity.java

```
package com.example.exercise4;

import androidx.appcompat.app.AppCompatActivity;

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

public class DeleteActivity extends AppCompatActivity {

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

        EditText product_id = (EditText)
findViewById(R.id.entered_product_id);
        TextView error = (TextView) findViewById(R.id.error);

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

```
delete.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        String id = product_id.getText().toString();

        DBHelper db = new DBHelper(getApplicationContext());

        Boolean check = db.delete_record(id);
        if(check == true)
        {
            Intent i = new Intent>DeleteActivity.this,
MainActivity.class);
            startActivity(i);
        }
        else
        {
            error.setText("Could not delete!");
            product_id.setText("");
        }
    }
});

Button cancel = (Button) findViewById(R.id.cancel);
cancel.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent i = new Intent>DeleteActivity.this,
MainActivity.class);
        startActivity(i);
    }
});
}
}
```

### RetrieveActivity.java

```
package com.example.exercise4;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
```

```
public class RetrieveActivity extends AppCompatActivity {

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

        EditText product_id = (EditText)
findViewById(R.id.entered_product_id);
        TextView error = (TextView) findViewById(R.id.error);

        Button retrieve = (Button) findViewById(R.id.retrieve);
        retrieve.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String id = product_id.getText().toString();

                DBHelper db = new DBHelper(getApplicationContext());

                Cursor record = db.retrieve_record(id);
                if(record.getCount() != 1)
                {
                    error.setText("Could not retrieve!");
                    product_id.setText("");
                }
                else
                {
                    error.setText("Could retrieve!");
                    String record_details = "";
                    while(record.moveToNext())
                    {
                        record_details += "ID: " + record.getString(0) +
"\n";
                        record_details += "Name: " + record.getString(1) +
"\n";
                        record_details += "Brand: " + record.getString(2) +
"\n";
                        record_details += "Description: " +
record.getString(3) + "\n";
                        record_details += "Price: " + record.getString(4) +
"\n\n";
                    }

                    Intent i = new Intent(RetrieveActivity.this,
DisplayActivity.class);
                    i.putExtra("record_details", record_details);
                    startActivity(i);
                }
            }
        })
    }
}
```



```
    });  
  
    Button cancel = (Button) findViewById(R.id.cancel);  
    cancel.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View view) {  
            Intent i = new Intent(RetrieveActivity.this,  
MainActivity.class);  
            startActivity(i);  
        }  
    });  
}  
}
```

### DisplayActivity.java

```
package com.example.exercise4;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.TextView;  
  
public class DisplayActivity extends AppCompatActivity {  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_display);  
  
        TextView record = (TextView) findViewById(R.id.record);  
        Intent i = getIntent();  
        String record_display = i.getStringExtra("record_details");  
        record.setText(record_display);  
  
        Button back = (Button) findViewById(R.id.back);  
        back.setOnClickListener(new View.OnClickListener() {  
            @Override  
            public void onClick(View view) {  
                Intent i = new Intent(DisplayActivity.this,  
MainActivity.class);  
                startActivity(i);  
            }  
        });  
    }  
}
```

```
}
```

### DBHelper.java

```
package com.example.exercise4;

import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;

import android.content.ContentValues;
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.os.Bundle;
import android.database.Cursor;
public class DBHelper extends SQLiteOpenHelper {
    public DBHelper(@Nullable Context context) {
        super(context, "ProductDB.db", null, 1);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("CREATE TABLE product (" +
            "id INT PRIMARY KEY, " +
            "name Text, " +
            "brand Text, " +
            "description Text, " +
            "price INT)");
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int i, int i1) {
        db.execSQL("DROP TABLE IF EXISTS product");
    }

    //Insertion
    public Boolean insert_record(String id, String name, String brand, String
description, String price) {
        //To get db connection
        SQLiteDatabase db = this.getWritableDatabase();
        //To write into db
        ContentValues content_value = new ContentValues();
        content_value.put("id", id);
        content_value.put("name", name);
        content_value.put("brand", brand);
        content_value.put("description", description);
        content_value.put("price", price);
    }
}
```

```
//Execute insertion
Long result = db.insert("product", null, content_value);
if(result == -1) return false;
return true;
}

//Updation
public Boolean update_record(String id, String price) {
    //To get db connection
    SQLiteDatabase db = this.getWritableDatabase();
    //To write into db
    ContentValues content_value = new ContentValues();
    content_value.put("price", price);

    Cursor record = db.rawQuery("SELECT * FROM product WHERE id = ?", new
String []{id});

    //Execute updation if there is a record to be updated
    if(record.getCount() > 0)
    {
        int result = db.update("product", content_value, "id = ?", new
String []{id});
        if(result == -1) return false;
        else return true;
    }
    return false;
}

//Deletion
public Boolean delete_record(String id) {
    //To get db connection
    SQLiteDatabase db = this.getWritableDatabase();

    Cursor record = db.rawQuery("SELECT * FROM product WHERE id = ?", new
String []{id});

    //Execute deletion if there is a record to be deleted
    if(record.getCount() > 0)
    {
        int result = db.delete("product", "id = ?", new String []{id});
        if(result == -1) return false;
        else return true;
    }
    return false;
}

//Retrieval
public Cursor retrieve_record(String id) {
    //To get db connection
```

```
        SQLiteDatabase db = this.getWritableDatabase();

        Cursor record = db.rawQuery("SELECT * FROM product WHERE id = ?", new
String []{id});
        return record;
    }

    //Retrieve all
    public Cursor retrieve_all_records() {
        //To get db connection
        SQLiteDatabase db = this.getWritableDatabase();

        Cursor records = db.rawQuery("SELECT * FROM product", null);
        return records;
    }
}
```

OUTPUT :

11:15

Product Information

Insert

Update

Delete

Retrieve

Retrieve All

11:15

Insert

Product ID

Product Name

Product Brand

Product Description

Product Price

--Select--

Brand 1

Brand 2

Brand 3

Cancel

Insert

11:18

Insert

Product ID

Product Name

Product Brand

Product Description

Product Price

1000

Product 1

Brand 1

Brand 2

Brand 3

Desc 1

1000

Cancel

Insert

11:16

Retrieve

Product ID

Cancel

Retrieve

11:29

Retrieve

Product ID

1000

Cancel

Retrieve

11:18

Record

ID: 1000

Name: Product 1

Brand: Brand 1

Description: Desc 1

Price: 1000

Back

11:19 100% 5G

## Insert

Product ID: 2000

Product Name: Product 2

Product Brand: ☐ Brand 1 ☒ Brand 2 ☐ Brand 3

Product Description: Desc 2

Product Price: 2000

Cancel Insert

11:19 100% 5G

## Record

ID: 1000  
Name: Product 1  
Brand: Brand 1  
Description: Desc 1  
Price: 1000

ID: 2000  
Name: Product 2  
Brand: Brand 2  
Description: Desc 2  
Price: 2000

Back

11:16 100% 5G

## Delete

Product ID: \_\_\_\_\_

Cancel Delete

11:20

Delete

Product ID

2000

Cancel

Delete

III

<

11:18

Record

ID: 1000

Name: Product 1

Brand: Brand 1

Description: Desc 1

Price: 1000

Back

III

<

11:16

Update

Product ID

Product Price

Cancel

Update

III

<

11:20

Update

Product ID

1000

Product Price

2500

Cancel

Update

III

<

11:20

Record

ID: 1000

Name: Product 1

Brand: Brand 1

Description: Desc 1

Price: 2500

Back

III

<

**BEST PRACTICES:**

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

**LEARNING OUTCOMES:**

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to use event handlers.
- I learnt to link the main activity and view activity.
- I learnt to perform CRUD operations using SQLite database.
- I learnt to run the emulator and debugger.



## EXERCISE 5

### ANDROID APPLICATION USING MULTITHREADING

#### AIM:

Develop an android application to perform multithreading. Define 3 threads to run concurrently when "start" button is clicked.

#### COMPONENTS USED:

##### ANDROID WIDGETS:

- TextView
- Button

##### LAYOUTS USED:

- LinearLayout (Vertical)
- TableLayout

#### ACTIVITY AND INTENTS USED:

##### Activities:

- MainActivity JAVA Class

##### Intents:

- Intent between MainActivity JAVA Class (sender) and ViewActivity JAVA Class (receiver)

#### CODE:

##### activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:layout_margin="24dp"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/title"
        android:layout_width="match_parent"
        android:layout_height="100dp"
        android:gravity="center|center_vertical|center_horizontal"
        android:textSize="40dp"
        android:text="Threads"
        android:textStyle="bold"
        android:typeface="monospace"
        android:textColor="#000000" />

    <TextView
```

```
        android:id="@+id/change_color"
        android:layout_width="match_parent"
        android:layout_height="100dp"
        android:gravity="center|center_vertical|center_horizontal"
        android:textSize="24sp"
        android:text="Color Changing"
        android:textStyle="bold"
        android:typeface="monospace"
        android:textColor="#000000" />

<TextView
    android:id="@+id/moving_banner"
    android:layout_width="match_parent"
    android:layout_height="100dp"
    android:gravity="center|center_vertical|center_horizontal"
    android:textSize="24sp"
    android:text="Banner"
    android:textStyle="bold"
    android:typeface="monospace"
    android:textColor="#000000" />

<TextView
    android:id="@+id/counter"
    android:layout_width="match_parent"
    android:layout_height="100dp"
    android:gravity="center|center_vertical|center_horizontal"
    android:textSize="24sp"
    android:text="Counter: 0"
    android:textStyle="bold"
    android:typeface="monospace"
    android:textColor="#000000" />

<TableLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TableRow
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginTop="100dp">

        <Button
            android:id="@+id/start"
            android:layout_width="110dp"
            android:layout_height="50dp"
            android:gravity="center|center_vertical|center_horizontal"
            android:textSize="14sp"
            android:text="Start"
            android:textStyle="bold"
```

```
        android:typeface="monospace"
        android:textColor="#ffffff"
        android:backgroundTint="#000000" />

    <Button
        android:id="@+id/resume"
        android:layout_width="110dp"
        android:layout_height="50dp"
        android:gravity="center|center_vertical|center_horizontal"
        android:layout_marginStart="15dp"
        android:textSize="14sp"
        android:text="Resume"
        android:textStyle="bold"
        android:typeface="monospace"
        android:textColor="#ffffff"
        android:backgroundTint="#000000" />

    <Button
        android:id="@+id/stop"
        android:layout_width="110dp"
        android:layout_height="50dp"
        android:gravity="center|center_vertical|center_horizontal"
        android:layout_marginStart="15dp"
        android:textSize="14sp"
        android:text="Stop"
        android:textStyle="bold"
        android:typeface="monospace"
        android:textColor="#ffffff"
        android:backgroundTint="#000000" />

</TableRow>

</TableLayout>

</LinearLayout>
```

### MainActivity.java

```
package com.example.exercise6;

import androidx.appcompat.app.AppCompatActivity;

import android.animation.ObjectAnimator;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.view.animation.TranslateAnimation;
import android.widget.Button;
import android.widget.TextView;
```

```
public class MainActivity extends AppCompatActivity {

    public static Boolean running = true;
    public static Object lock1 = new Object();
    public static Object lock2 = new Object();
    public static Object lock3 = new Object();
    public int count = 0;

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

        TextView change_color = findViewById(R.id.change_color);
        TextView moving_banner = findViewById(R.id.moving_banner);
        TextView counter = findViewById(R.id.counter);

        Runnable runnable1 = new Runnable() {
            @Override
            public void run() {
                while (true) {
                    synchronized (lock1) {
                        if (!running) {
                            try {
                                lock1.wait();
                            } catch (InterruptedException e) {
                                e.printStackTrace();
                            }
                        }
                    }

                    runOnUiThread(new Runnable() {
                        @Override
                        public void run() {
                            change_color.setTextColor(Color.parseColor("#00FF00"));
                        }
                    });

                    try {
                        Thread.sleep(500);
                    } catch (InterruptedException e) {
                        e.printStackTrace();
                    }

                    runOnUiThread(new Runnable() {
                        @Override
                        public void run() {
```

```
change_color.setTextColor(Color.parseColor("#FFFF00"));
    }
});

    try {
        Thread.sleep(500);
    } catch (InterruptedException e) {
        e.printStackTrace();
    }

    runOnUiThread(new Runnable() {
        @Override
        public void run() {
change_color.setTextColor(Color.parseColor("#FF0000"));
        }
    });

    try {
        Thread.sleep(500);
    } catch (InterruptedException e) {
        e.printStackTrace();
    }
}

}

};
Thread thread1 = new Thread(runnable1);

Runnable runnable2 = new Runnable() {
    @Override
    public void run() {
        while (true) {
            synchronized (lock2) {
                if (!running) {
                    try {
                        lock2.wait();
                    } catch (InterruptedException e) {
                        e.printStackTrace();
                    }
                }
            }

            runOnUiThread(new Runnable() {
                @Override
                public void run() {
                    ObjectAnimator left_to_right =
ObjectAnimator.ofFloat(moving_banner, "translationX", -200f, 200f);
                    left_to_right.setDuration(2000);
```

```
        left_to_right.start();
    }
    });

    try {
        Thread.sleep(500);
    } catch (InterruptedException e) {
        e.printStackTrace();
    }
}

}

};
Thread thread2 = new Thread(runnable2);

Runnable runnable3 = new Runnable() {
    @Override
    public void run() {
        while (true) {
            synchronized (lock3) {
                if (!running) {
                    try {
                        lock3.wait();
                    } catch (InterruptedException e) {
                        e.printStackTrace();
                    }
                }
            }

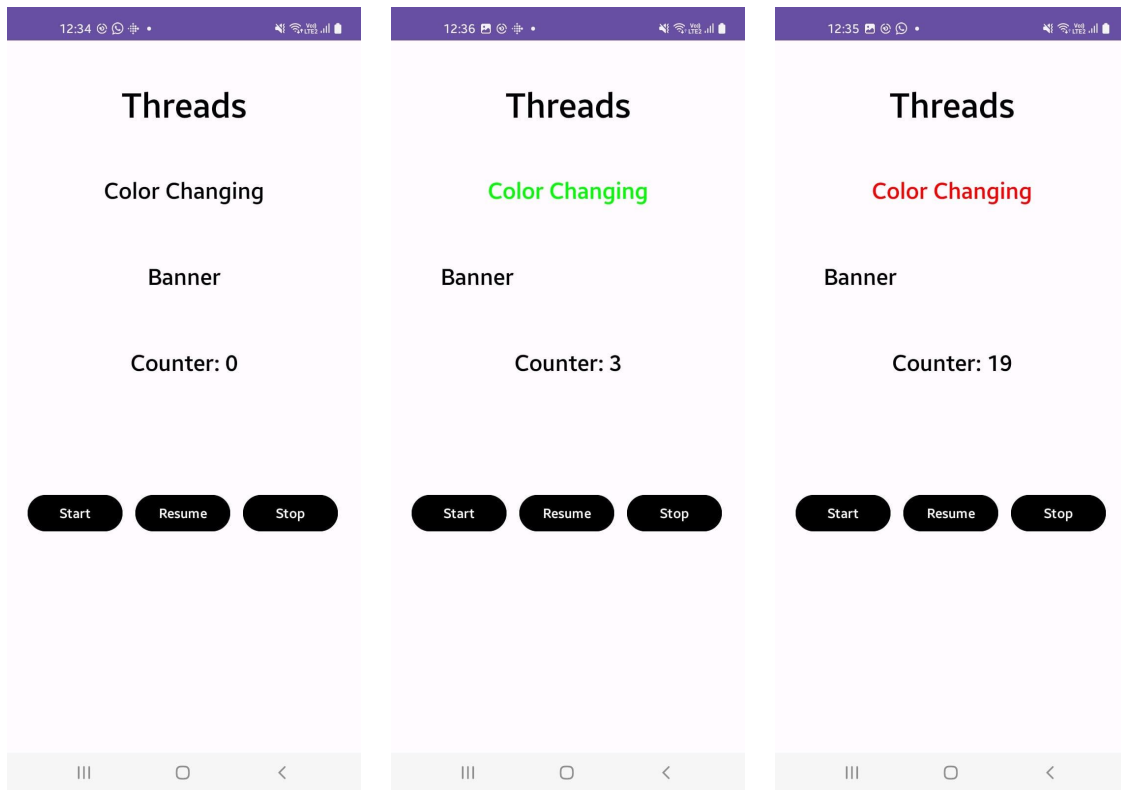
            runOnUiThread(new Runnable() {
                @Override
                public void run() {
                    counter.setText("Counter: " + count);
                    count++;
                    if(count > 1000) count = 0;
                }
            });

            try {
                Thread.sleep(500);
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }
};
Thread thread3 = new Thread(runnable3);

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

```
start.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        thread1.start();  
        thread2.start();  
        thread3.start();  
    }  
});  
  
Button resume = findViewById(R.id.resume);  
resume.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        running = true;  
        synchronized (lock1) {  
            lock1.notify();  
        }  
        synchronized (lock2) {  
            lock2.notify();  
        }  
        synchronized (lock3) {  
            lock3.notify();  
        }  
    }  
});  
  
Button stop = findViewById(R.id.stop);  
stop.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        running = false;  
    }  
});  
}  
}
```

**OUTPUT :**



**BEST PRACTICES:**

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

**LEARNING OUTCOMES:**

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to use event handlers.
- I learnt to spawn multiple threads and stop and resume them.
- I learnt to run the emulator and debugger.





## EXERCISE 6

### ANDROID APPLICATION FOR LOCATION TRACKING

#### AIM:

1. Develop an Android Application that uses Geographical Positioning System (GPS) to display the user's current location in terms of Latitude and Longitude.
2. Develop a mobile app to display the Geo location of a given place.

#### COMPONENTS USED:

##### ANDROID WIDGETS:

- TextView
- EditText
- Button

##### LAYOUTS USED:

- LinearLayout (Vertical)

#### ACTIVITY AND INTENTS USED:

##### Activities:

- MainActivity JAVA Class

##### Intents:

- Intent between MainActivity JAVA Class (sender) and ViewActivity JAVA Class (receiver)

#### CODE:

##### 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">

    <uses-permission android:name="android.permission.INTERNET" />
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"
/>
    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"
/>

    <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/Theme.Exercise5"
        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:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="40dp"
        android:gravity="center|center_horizontal|center_vertical"
        android:layout_gravity="center|center_horizontal|center_vertical"
        android:text="LOCATION FINDER"
        android:textSize="48dp"
        android:typeface="monospace"
        android:textStyle="bold"
        android:textColor="#000000"/>

    <TextView
        android:id="@+id/latitude"
        android:layout_width="wrap_content"
        android:layout_height="50dp"
        android:layout_marginStart="40dp"
        android:layout_marginTop="50dp"
        android:gravity="left"
        android:text="Latitude: "
        android:textSize="32dp"
        android:typeface="monospace"
        android:textStyle="bold"
        android:textColor="#55bb22"/>
```

```
<TextView
    android:id="@+id/longitude"
    android:layout_width="wrap_content"
    android:layout_height="50dp"
    android:layout_marginStart="40dp"
    android:layout_marginTop="30dp"
    android:gravity="left"
    android:text="Longitude: "
    android:textSize="32dp"
    android:typeface="monospace"
    android:textStyle="bold"
    android:textColor="#55bb22"/>

<TextView
    android:id="@+id/address"
    android:layout_width="wrap_content"
    android:layout_height="50dp"
    android:layout_marginStart="40dp"
    android:layout_marginTop="30dp"
    android:gravity="left"
    android:text="Address: "
    android:textSize="32dp"
    android:typeface="monospace"
    android:textStyle="bold"
    android:textColor="#55bb22"/>

<Button
    android:id="@+id/find"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="100dp"
    android:gravity="center"
    android:text="Find"
    android:textColor="#55bb22"
    android:textSize="32dp"
    android:textStyle="bold"
    android:typeface="monospace"
    android:backgroundTint="#000000"/>

</LinearLayout>
```

### MainActivity.java

```
package com.example.exercise5;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
```

```
import androidx.core.content.ContextCompat;

import android.Manifest;
import android.annotation.SuppressLint;
import android.content.pm.PackageManager;
import android.location.Address;
import android.location.Geocoder;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

import java.util.List;
import java.util.Locale;

public class MainActivity extends AppCompatActivity implements
LocationListener {

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

        //Checking and getting location access permissions
        if (ContextCompat.checkSelfPermission(MainActivity.this,
            Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
            ActivityCompat.requestPermissions(MainActivity.this, new
String[]{
                Manifest.permission.ACCESS_FINE_LOCATION
            }, 100);
        }
        ;

        Button find = (Button) findViewById(R.id.find);
        find.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                findLocation();
            }
        });
    }

    @SuppressWarnings("MissingPermission")
    private void findLocation() {
        try {
```

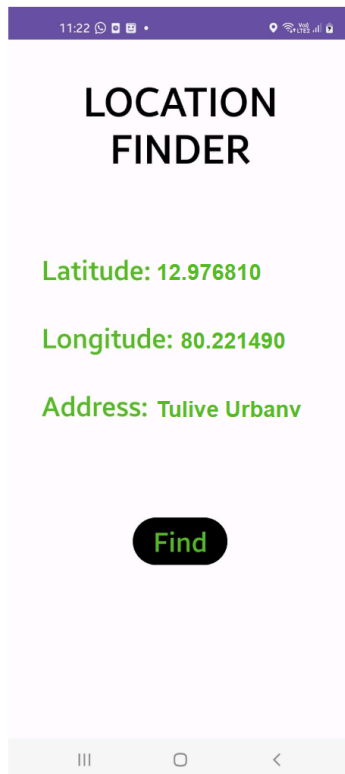
```
        LocationManager locationManager = (LocationManager)
this.getSystemService(LOCATION_SERVICE);

locationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER,
        5000, 5, MainActivity.this);
    } catch (Exception e) {
        e.printStackTrace();
    }
}

@Override
public void onLocationChanged(@NonNull Location location) {
    TextView latitude = (TextView) findViewById(R.id.latitude);
    TextView longitude = (TextView) findViewById(R.id.longitude);
    String get_latitude = latitude.getText().toString();
    latitude.setText(get_latitude + location.getLatitude());
    String get_longitude = longitude.getText().toString();
    longitude.setText(get_longitude + location.getLongitude());
    try {
        Geocoder geocoder = new Geocoder(MainActivity.this,
Locale.getDefault());
        List<Address> addresses =
geocoder.getFromLocation(location.getLatitude(), location.getLongitude(), 1);
        String address = addresses.get(0).getAddressLine(0);

        TextView current_address = (TextView) findViewById(R.id.address);
        current_address.setText(address);
    } catch (Exception e) {
        e.printStackTrace();
    }
}
}
```

OUTPUT :



CODE :

**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">

    <uses-permission android:name="android.permission.INTERNET" />
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"
/>
    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"
/>

    <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/Theme.Exercise6b"
        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:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="40dp"
        android:gravity="center|center_horizontal|center_vertical"
        android:layout_gravity="center|center_horizontal|center_vertical"
        android:text="LOCATION FINDER"
        android:textSize="48dp"
        android:typeface="monospace"
        android:textStyle="bold"
        android:textColor="#000000"/>

    <EditText
        android:id="@+id/address"
        android:layout_width="325dp"
        android:layout_height="50dp"
        android:layout_marginStart="40dp"
        android:layout_marginTop="30dp"
        android:gravity="left"
        android:text="Address"
        android:textSize="32dp"
        android:typeface="monospace"
        android:textStyle="bold"
        android:textColor="#55bb22"/>

    <TextView
        android:id="@+id/latitude"
```



```
        android:layout_width="wrap_content"
        android:layout_height="50dp"
        android:layout_marginStart="40dp"
        android:layout_marginTop="50dp"
        android:gravity="left"
        android:text="Latitude: "
        android:textSize="32dp"
        android:typeface="monospace"
        android:textStyle="bold"
        android:textColor="#55bb22"/>

<TextView
    android:id="@+id/longitude"
    android:layout_width="wrap_content"
    android:layout_height="50dp"
    android:layout_marginStart="40dp"
    android:layout_marginTop="30dp"
    android:gravity="left"
    android:text="Longitude: "
    android:textSize="32dp"
    android:typeface="monospace"
    android:textStyle="bold"
    android:textColor="#55bb22"/>

<Button
    android:id="@+id/find"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="100dp"
    android:gravity="center"
    android:text="Find"
    android:textColor="#55bb22"
    android:textSize="32dp"
    android:textStyle="bold"
    android:typeface="monospace"
    android:backgroundTint="#000000"/>

</LinearLayout>
```

### MainActivity.java

```
package com.example.exercise6b;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
```

```
import android.Manifest;
import android.annotation.SuppressLint;
import android.content.pm.PackageManager;
import android.location.Address;
import android.location.Geocoder;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

import java.util.List;
import java.util.Locale;

public class MainActivity extends AppCompatActivity implements
LocationListener {

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

        //Checking and getting location access permissions
        if(ContextCompat.checkSelfPermission(MainActivity.this,
            Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
            ActivityCompat.requestPermissions(MainActivity.this, new String[]
{
                Manifest.permission.ACCESS_FINE_LOCATION
            }, 100);
        };

        Button find = (Button) findViewById(R.id.find);
        find.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                findLocation();
            }
        });
    }

    @SuppressWarnings("MissingPermission")
    private void findLocation() {
        try {
            LocationManager locationManager = (LocationManager)
this.getSystemService(LOCATION_SERVICE);
```

```
locationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER,
    5000, 5, MainActivity.this);
    }
    catch (Exception e) {
        e.printStackTrace();
    }
}

@Override
public void onLocationChanged(@NonNull Location location) {
    TextView latitude = (TextView) findViewById(R.id.latitude);
    TextView longitude = (TextView) findViewById(R.id.longitude);
    try{
        Geocoder geocoder = new Geocoder(MainActivity.this,
        Locale.getDefault());

        TextView current_address = (TextView) findViewById(R.id.address);
        String address_name = current_address.getText().toString();

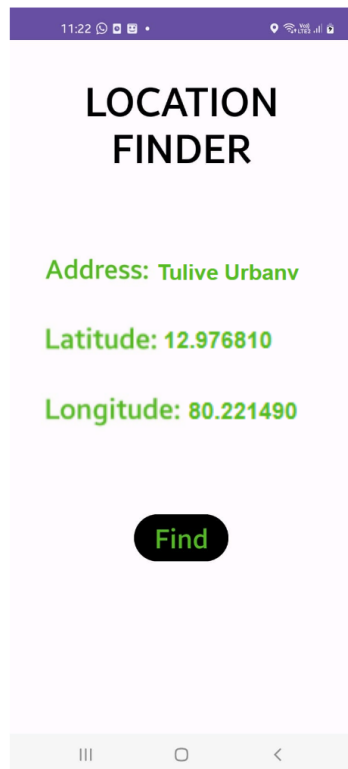
        List<Address> addresses =
geocoder.getFromLocationName(address_name, 1); // Here 1 represent max
location result to returned, by documents it recommended 1 to 5

        Address address_details = addresses.get(0);

        Double get_latitude = (double)
Math.round(address_details.getLatitude() * 100) / 100;
        Double get_longitude = (double)
Math.round(address_details.getLongitude() * 100) / 100;

        latitude.setText(String.valueOf(get_latitude));
        longitude.setText(String.valueOf(get_longitude));
    }
    catch (Exception e)
    {
        e.printStackTrace();
    }
}
}
```

**OUTPUT :**



**BEST PRACTICES:**

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

**LEARNING OUTCOMES:**

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to use event handlers.
- I learnt to get address from latitude and longitude and vice versa.
- I learnt to run the emulator and debugger.

## EXERCISE 7

### ANDROID APPLICATION TO WRITE/READ A FILE TO/FROM THE SD CARD

#### AIM:

Develop an Android Application to write/read some contents to/from the SD Card.

#### COMPONENTS USED:

##### ANDROID WIDGETS:

- TextView
- EditText
- Button

##### LAYOUTS USED:

- LinearLayout (Vertical)

#### ACTIVITY AND INTENTS USED:

##### Activities:

- MainActivity JAVA Class
- ReadActivity JAVA Class

##### Intents:

- Intent between MainActivity JAVA Class (sender) and ReadActivity JAVA Class (receiver)

#### CODE:

##### activity\_main.xml

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

    <EditText
        android:id="@+id/fileContents"
        android:layout_width="300dp"
        android:layout_height="50dp"
        android:layout_gravity="center"
        android:layout_marginTop="150dp"
        android:text="File Contents"
        android:textSize="24sp"
        android:typeface="monospace"
        android:textStyle="bold"
        android:textColor="#000000" />
```

```
<EditText
    android:id="@+id/fileName"
    android:layout_width="300dp"
    android:layout_height="50dp"
    android:layout_gravity="center"
    android:layout_marginTop="50dp"
    android:text="File Name"
    android:textSize="24sp"
    android:typeface="monospace"
    android:textStyle="bold"
    android:textColor="#000000" />
```

```
<Button
    android:id="@+id/write"
    android:layout_width="250dp"
    android:layout_height="50dp"
    android:layout_gravity="center"
    android:layout_marginTop="75dp"
    android:text="Write to File"
    android:textSize="20sp"
    android:typeface="monospace"
    android:textStyle="bold" />
```

```
<Button
    android:id="@+id/read"
    android:layout_width="250dp"
    android:layout_height="50dp"
    android:layout_gravity="center"
    android:layout_marginTop="50dp"
    android:text="Read from File"
    android:textSize="20sp"
    android:typeface="monospace"
    android:textStyle="bold" />
```

```
</LinearLayout>
```

#### **activity\_read.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=".ReadActivity">

    <TextView
        android:layout_width="400dp"
```

```
        android:layout_height="50dp"
        android:layout_gravity="center"
        android:layout_marginTop="100dp"
        android:text="Contents from File"
        android:gravity="center"
        android:textSize="32sp"
        android:typeface="monospace"
        android:textStyle="bold"
        android:textColor="#000000" />

<TextView
    android:id="@+id/contentsFromFile"
    android:layout_width="300dp"
    android:layout_height="200dp"
    android:layout_gravity="center"
    android:layout_marginTop="100dp"
    android:text=""
    android:textSize="18sp"
    android:typeface="monospace"
    android:textStyle="bold" />

</LinearLayout>
```

### MainActivity.java

```
package com.example.exercise7;

import androidx.appcompat.app.AppCompatActivity;

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

import java.io.File;
import java.io.FileInputStream;
import java.io.FileNotFoundException;
import java.io.FileOutputStream;
import java.io.IOException;

public class MainActivity extends AppCompatActivity {

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

```
EditText fileContents = (EditText) findViewById(R.id.fileContents);
EditText fileName = (EditText) findViewById(R.id.fileName);

Button write = (Button) findViewById(R.id.write);
write.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String writeFileContents = fileContents.getText().toString();
        String writeFileName = fileName.getText().toString();
        writeToFile(writeFileName, writeFileContents);
    }
});

Button read = (Button) findViewById(R.id.read);
read.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String readFileName = fileName.getText().toString();
        Intent i = new Intent(MainActivity.this, ReadActivity.class);
        i.putExtra("fileName", readFileName);
        startActivity(i);
    }
});
}

private void writeToFile(String writeFileName, String writeFileContents)
{
    File path = getApplicationContext().getFilesDir();

    try {
        FileOutputStream writer = new FileOutputStream(new File(path,
writeFileName));
        writer.write(writeFileContents.getBytes());
        writer.close();
        Toast.makeText(getApplicationContext(), "Written to file: " +
path + "/" + writeFileName, Toast.LENGTH_SHORT).show();
    }
    catch (Exception e) {
        e.printStackTrace();
    }
}
}
```

### **ReadActivity.java**

```
package com.example.exercise7;

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



```
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;

import java.io.File;
import java.io.FileInputStream;

public class ReadActivity extends AppCompatActivity {

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

        TextView contentsFromFile = (TextView)
        findViewById(R.id.contentsFromFile);

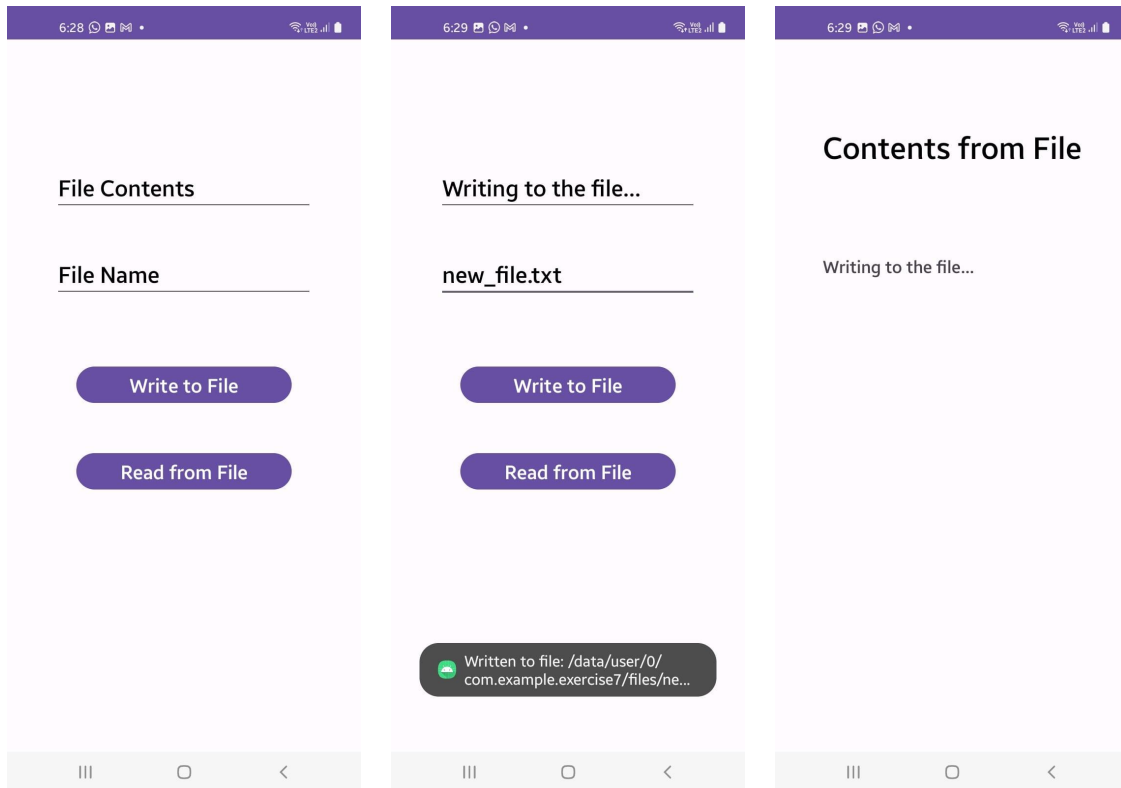
        Intent i = getIntent();

        String readFileName = i.getStringExtra("fileName");
        String readFileContents = readFromFile(readFileName);
        contentsFromFile.setText(readFileContents);
    }

    private String readFromFile(String readFileName) {
        File path = getApplicationContext().getFilesDir();
        File readFrom = new File(path + "/" + readFileName);
        byte[] content = new byte[(int) readFrom.length()];

        try {
            FileInputStream reader = new FileInputStream(readFrom);
            reader.read(content);
            return new String(content);
        }
        catch (Exception e) {
            e.printStackTrace();
            return e.toString();
        }
    }
}
```

**OUTPUT :**



**BEST PRACTICES:**

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

**LEARNING OUTCOMES:**

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to use event handlers.
- I learnt to link the main activity and view activity.
- I learnt to run the emulator and debugger.
- I learnt to perform file write and read operations.

## EXERCISE 8

### ANDROID APPLICATION TO SEND SMS AND NOTIFICATION

#### AIM:

Develop an Android Application to send SMS and Notification for the SMS.

#### COMPONENTS USED:

##### ANDROID WIDGETS:

- TextView
- EditText
- Button

##### LAYOUTS USED:

- LinearLayout (Vertical)
- LinearLayout (Horizontal)

#### ACTIVITY AND INTENTS USED:

##### Activities:

- MainActivity JAVA Class

##### Intents:

- Intent between MainActivity JAVA Class (sender) and ViewActivity JAVA Class (receiver)

#### CODE:

##### 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">

    <uses-feature
        android:name="android.hardware.telephony"
        android:required="false" />

    <uses-permission android:name="android.permission.POST_NOTIFICATIONS" />
    <uses-permission android:name="android.permission.SEND_SMS" />
    <uses-permission android:name="android.permission.READ_SMS" />
    <uses-permission android:name="android.permission.RECEIVE_SMS" />

    <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/Theme.Exercise8"
```

```
tools:targetApi="31">
<activity
    android:name=".MainActivity"
    android:exported="true"
    android:launchMode="singleTop">
    <intent-filter>
        <action android:name="android.intent.action.MAIN" />

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

<receiver android:name=".MessageReceiver"
    android:permission="android.permission.BROADCAST_SMS"
    android:exported="true">
    <intent-filter>
        <action
android:name="android.provider.Telephony.SMS_RECEIVED" />
    </intent-filter>
    </receiver>
</application>

</manifest>
```

#### **activity\_main.xml**

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

    <EditText
        android:id="@+id/contact"
        android:layout_width="350dp"
        android:layout_height="50dp"
        android:layout_marginTop="100dp"
        android:layout_gravity="center_horizontal"
        android:inputType="phone"
        android:textSize="20dp"
        android:hint="Contact Number"
        android:singleLine="true"
        android:background="@android:drawable/editbox_background" />

    <ScrollView
        android:layout_width="350dp"
```

```
        android:layout_height="300dp"
        android:layout_gravity="center_horizontal"
        android:gravity="center_vertical"
        android:layout_marginTop="50dp"
        android:background="@android:drawable/editbox_background">

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

        </LinearLayout>

    </ScrollView>

    <LinearLayout
        android:layout_width="350dp"
        android:layout_height="50dp"
        android:layout_marginTop="50dp"
        android:orientation="horizontal"
        android:layout_gravity="center_horizontal" >

        <EditText
            android:id="@+id/message"
            android:layout_width="275dp"
            android:layout_height="50dp"
            android:layout_gravity="left"
            android:layout_marginBottom="50dp"
            android:background="@android:drawable/editbox_background"
            android:text=""
            android:hint="Message..."
            android:inputType="text"
            android:textSize="20dp" />

        <Button
            android:id="@+id/send"
            android:layout_width="75dp"
            android:layout_height="50dp"
            android:background="@android:drawable/ic_menu_send"/>

    </LinearLayout>

</LinearLayout>

MainActivity.java
package com.example.exercise8;
```

```
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.app.NotificationCompat;
import androidx.core.content.ContextCompat;

import android.Manifest;
import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.content.pm.PackageManager;
import android.graphics.Color;
import android.os.Build;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.Gravity;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.LinearLayout;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    IntentFilter intentFilter;

    private BroadcastReceiver intentReceiver = new BroadcastReceiver() {
        @Override
        public void onReceive(Context context, Intent intent) {
            LinearLayout sms = (LinearLayout) findViewById(R.id.sms);
            TextView newSMS = new TextView(getApplicationContext());
            String msg = intent.getExtras().getString("message");
            newSMS.setText(msg);
            newSMS.setGravity(Gravity.RIGHT);
            sms.addView(newSMS);
            makeNotification(msg);
        }
    };

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

        intentFilter = new IntentFilter();
```

```
intentFilter.addAction("SMS_RECEIVED_ACTION");

EditText contact = (EditText) findViewById(R.id.contact);
EditText message = (EditText) findViewById(R.id.message);

Button send = (Button) findViewById(R.id.send);

if(Build.VERSION.SDK_INT >= Build.VERSION_CODES.TIRAMISU) {
    if(ContextCompat.checkSelfPermission(MainActivity.this,
Manifest.permission.POST_NOTIFICATIONS) != PackageManager.PERMISSION_GRANTED)
{
        ActivityCompat.requestPermissions(MainActivity.this, new
String[] {Manifest.permission.POST_NOTIFICATIONS}, 101);
    }
}

send.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        String msg = message.getText().toString();
        String contactno = contact.getText().toString();
        LinearLayout sms = (LinearLayout) findViewById(R.id.sms);
        TextView newSMS = new TextView(getApplicationContext());
        newSMS.setText(msg);
        sms.addView(newSMS);
        sendMsg(contactno, msg);
    }
});

protected void sendMsg(String contactno, String msg) {
    String SENT = "Message Sent";
    String DELIVERED = "Message Delivered";

    PendingIntent sentPI = PendingIntent.getBroadcast(this, 0, new
Intent(SENT), PendingIntent.FLAG_IMMUTABLE);
    PendingIntent deliveredPI = PendingIntent.getBroadcast(this, 0, new
Intent(DELIVERED), PendingIntent.FLAG_IMMUTABLE);

    SmsManager smsManager = SmsManager.getDefault();
    smsManager.sendTextMessage(contactno, null, msg, sentPI,
deliveredPI);
}

@Override
protected void onResume() {
    registerReceiver(intentReceiver, intentFilter);
    super.onResume();
}
```

```
@Override
protected void onPause() {
    unregisterReceiver(intentReceiver);
    super.onPause();
}

public void makeNotification(String msg) {
    String channelId = "CHANNEL_ID_NOTIFICATION";

    Intent activityIntent = new Intent(this, MainActivity.class);
    PendingIntent contentIntent = PendingIntent.getActivity(this, 0,
activityIntent, PendingIntent.FLAG_IMMUTABLE);

    NotificationCompat.Builder builder = new
NotificationCompat.Builder(getApplicationContext(), channelId);
    builder.setSmallIcon(R.drawable.ic_notifications)
        .setContentTitle("Notification")
        .setContentText(msg)
        .setAutoCancel(true)
        .setPriority(NotificationCompat.PRIORITY_DEFAULT)
        .setContentIntent(contentIntent);

    NotificationManager notificationManager = (NotificationManager)
getSystemService(Context.NOTIFICATION_SERVICE);
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
        NotificationChannel notificationChannel =
notificationManager.getNotificationChannel(channelId);
        if(notificationChannel == null) {
            int importance = NotificationManager.IMPORTANCE_HIGH;
            notificationChannel = new NotificationChannel(channelId,
"Notification", importance);
            notificationChannel.setLightColor(Color.GREEN);
            notificationChannel.enableVibration(true);

notificationManager.createNotificationChannel(notificationChannel);
        }
    }
    notificationManager.notify(0, builder.build());
}
}
```

#### **MessageReceiver.java**

```
package com.example.exercise8;

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
```



```
import android.os.Bundle;
import android.telephony.SmsMessage;
import android.widget.Toast;

public class MessageReceiver extends BroadcastReceiver {
    @Override
    public void onReceive(Context context, Intent intent) {
        Bundle bundle = intent.getExtras();

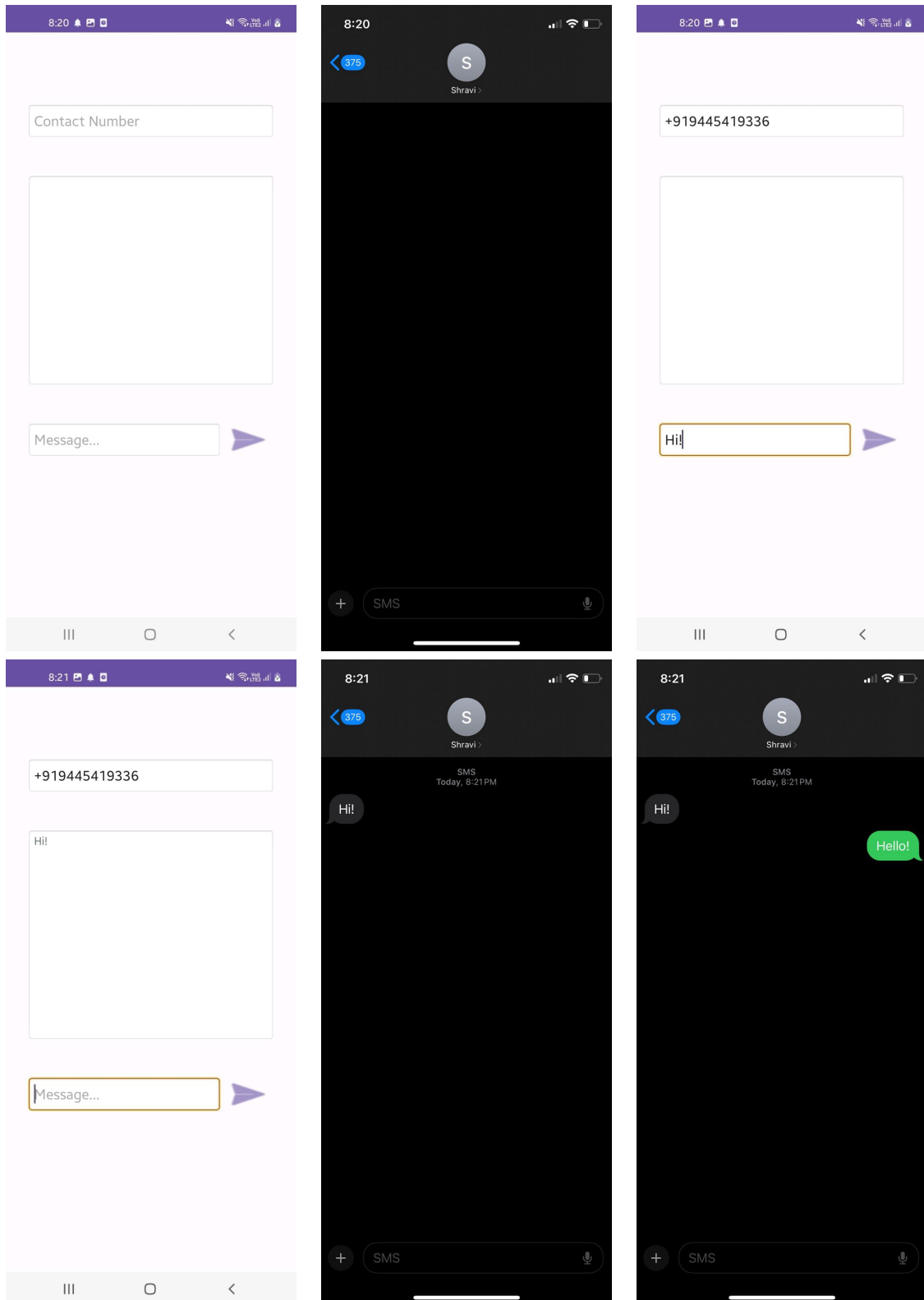
        SmsMessage[] messages;
        String str = "";

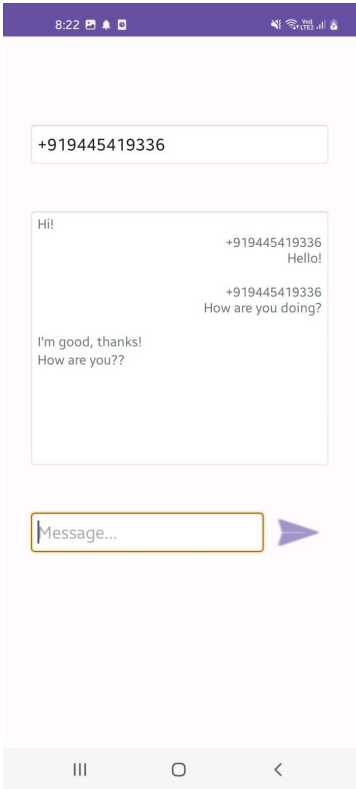
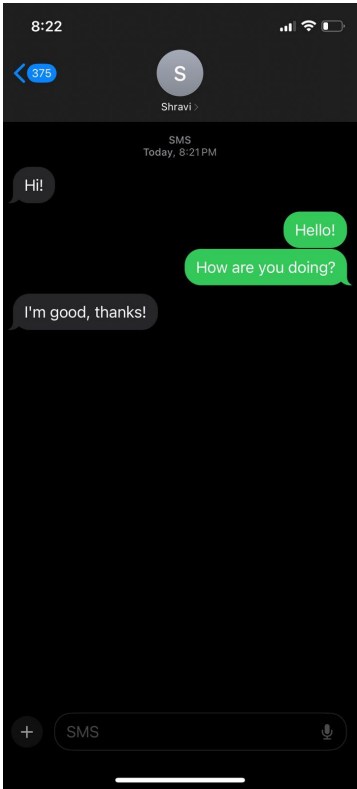
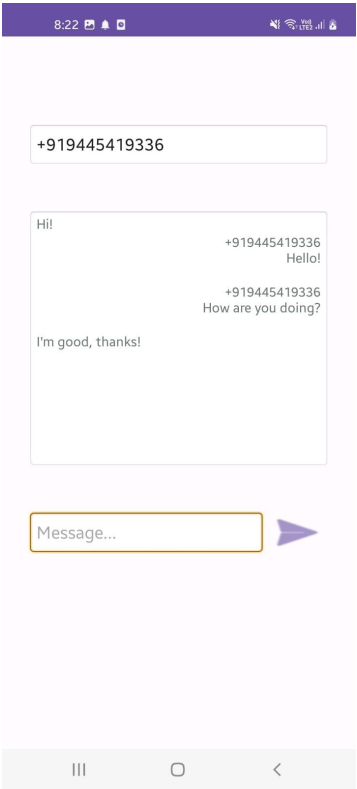
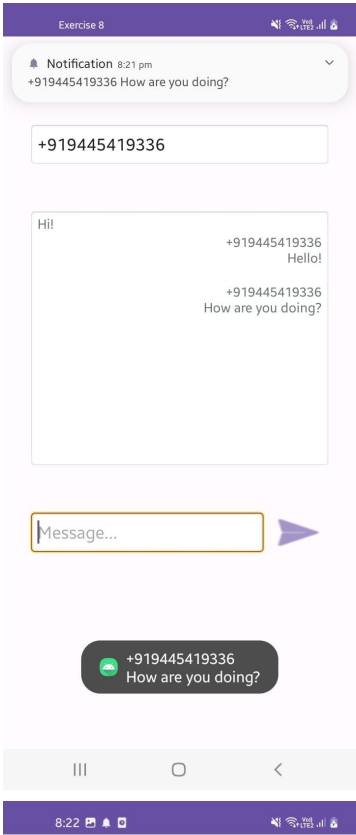
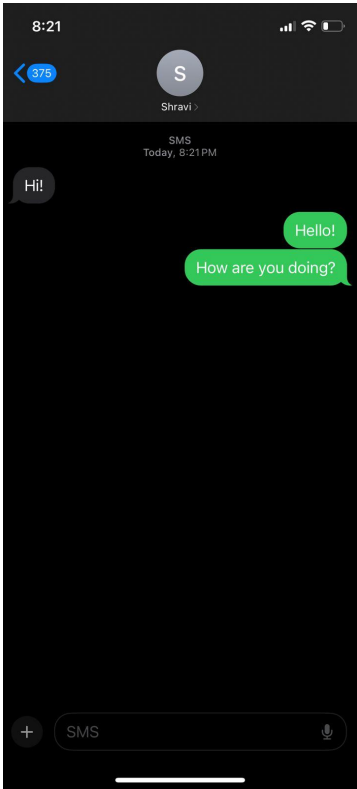
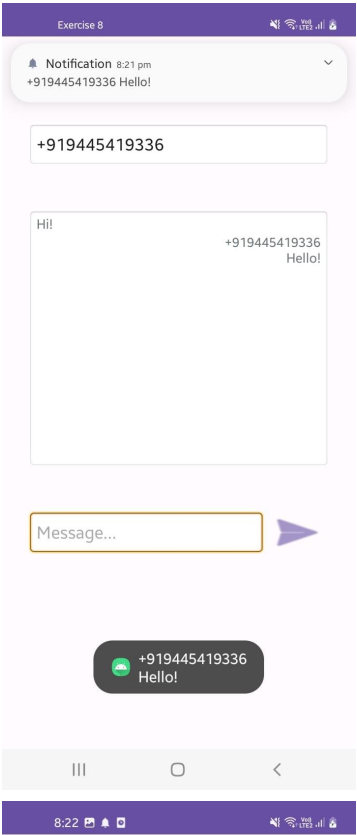
        if(bundle != null) {
            Object[] pdus = (Object[]) bundle.get("pdus");
            messages = new SmsMessage[pdus != null ? pdus.length : 0];
            for(int i = 0; i < messages.length; i++) {
                messages[i] = SmsMessage.createFromPdu((byte[]) (pdus != null
? pdus[i] : null));
                str += messages[i].getOriginatingAddress();
                str += "\n";
                str += messages[i].getMessageBody();
                str += "\n";
            }

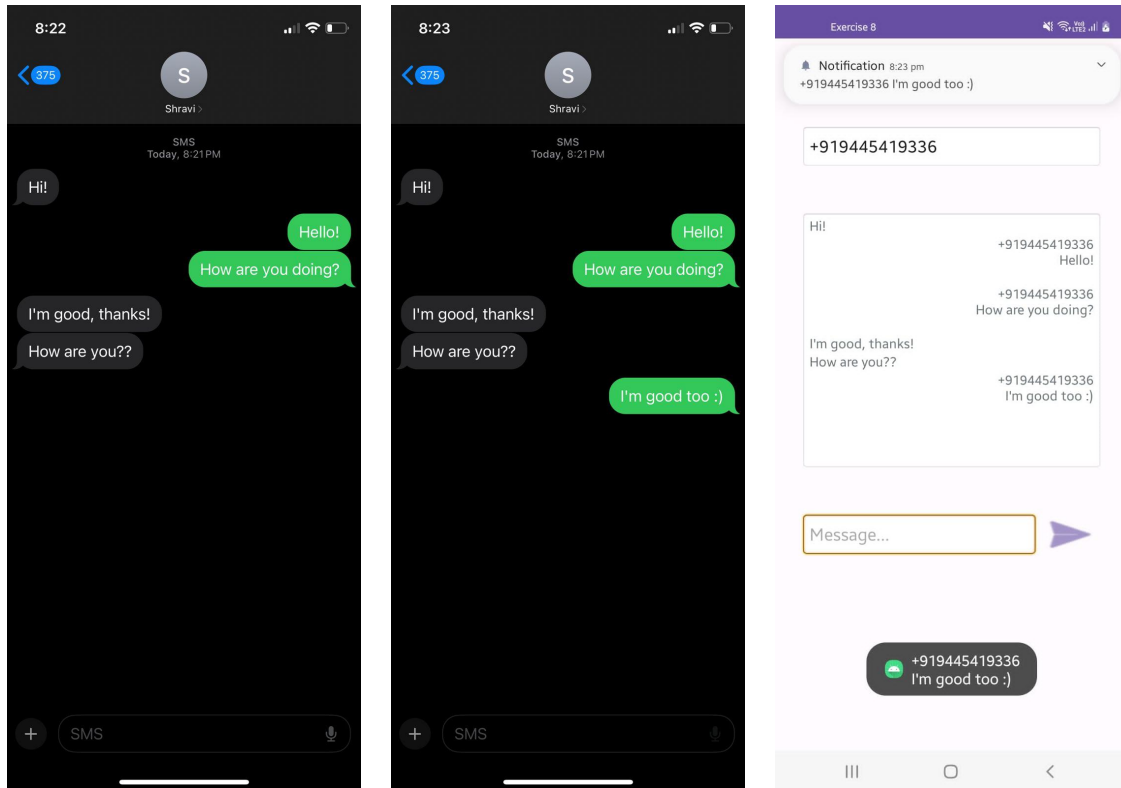
            Toast.makeText(context, str, Toast.LENGTH_SHORT).show();

            Intent broadcastIntent = new Intent();
            broadcastIntent.setAction("SMS_RECEIVED_ACTION");
            broadcastIntent.putExtra("message", str);
            context.sendBroadcast(broadcastIntent);
        }
    }
}
```

OUTPUT :







#### BEST PRACTICES:

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

#### LEARNING OUTCOMES:

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to use event handlers.
- I learnt to link the main activity and view activity.
- I learnt to run the emulator and debugger.
- I learnt to send and receive messages.
- I learnt to create notifications.

## EXERCISE 9

### MENU DRIVEN ANDROID APPLICATION

#### AIM:

Develop a menu driven Android Application to simulate an online shopping app

#### COMPONENTS USED:

##### ANDROID WIDGETS:

- TextView
- EditText
- Button
- NavigationView

##### LAYOUTS USED:

- LinearLayout (Vertical)
- DrawerLayout

#### ACTIVITY AND INTENTS USED:

##### Activities:

- HomeActivity JAVA Class
- AccountActivity JAVA Class
- BasketActivity JAVA Class
- FruitsActivity JAVA Class
- VegetablesActivity JAVA Class
- OffersActivity JAVA Class
- FAQsActivity JAVA Class

##### Intents:

- Intent between MainActivity JAVA Class (sender) and ViewActivity JAVA Class (receiver)

#### CODE:

##### nav\_menu.xml

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

    <item
        android:title="Fruits"
        android:id="@+id/fruits"
        android:textColor="@color/white" />

    <item
        android:title="Vegetables"
        android:id="@+id/vegetables"
        android:textColor="@color/white" />
```

</menu>

#### **slide\_in.xml**

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

    <translate
        android:duration="@android:integer/config_mediumAnimTime"
        android:fromYDelta="100%p"
        android:toYDelta="0" />

</set>
```

#### **slide\_out.xml**

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

    <translate
        android:duration="@android:integer/config_mediumAnimTime"
        android:fromYDelta="0"
        android:toYDelta="100%p" />

</set>
```

#### **HomeActivity.java**

```
package com.example.exercise9;

import androidx.annotation.NonNull;
import androidx.appcompat.app.ActionBarDrawerToggle;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.widget.Toolbar;
import androidx.core.content.ContextCompat;
import androidx.core.view.GravityCompat;
import androidx.drawerlayout.widget.DrawerLayout;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.PopupMenu;
import android.widget.Toast;

import com.google.android.material.navigation.NavigationView;

public class HomeActivity extends AppCompatActivity implements
NavigationView.OnNavigationItemSelectedListener {
```

```
private DrawerLayout drawerLayout;

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

    Toolbar toolbar = findViewById(R.id.toolbar); //Ignore red line
errors    setSupportActionBar(toolbar);

    drawerLayout = findViewById(R.id.drawer_layout);
    NavigationView navigationView = findViewById(R.id.nav_view);
    navigationView.setNavigationItemSelectedListener(this);

    ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(this,
drawerLayout, toolbar, R.string.open_nav,
        R.string.close_nav);
    drawerLayout.addDrawerListener(toggle);
    toggle.syncState();

    Button home = (Button) findViewById(R.id.home);
    Button account = (Button) findViewById(R.id.account);
    Button basket = (Button) findViewById(R.id.basket);
    Button shop_by_category = (Button)
findViewById(R.id.shop_by_category);
    Button more_options = (Button) findViewById(R.id.more_options);
    Button offers = (Button) findViewById(R.id.offers);
    Button faqs = (Button) findViewById(R.id.faqs);

    home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

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

            home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

            account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

            basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

            shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.white));
```

```
offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(HomeActivity.this,
HomeActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(HomeActivity.this,
AccountActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```



```
account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(HomeActivity.this,
BasketActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        PopupMenu popupMenu = new PopupMenu(getApplicationContext(),
more_options);
        popupMenu.getMenuInflater().inflate(R.menu.nav_menu,
popupMenu.getMenu());
```

```
        popupMenu.setOnMenuItemClickListener(new
PopupMenu.OnMenuItemClickListener() {
            @Override
            public boolean onMenuItemClick(MenuItem item) {
                if(item.getItemId() == R.id.fruits) {
                    Intent intent = new Intent(HomeActivity.this,
FruitsActivity.class);
                    startActivity(intent);
                }
                else if(item.getItemId() == R.id.vegetables) {
                    Intent intent = new Intent(HomeActivity.this,
VegetablesActivity.class);
                    startActivity(intent);
                }
            }
            return false;
        });
        popupMenu.show();
    });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

            Intent intent = new Intent(HomeActivity.this,
OffersActivity.class);
            startActivity(intent);
        }
    });
```

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

                Intent intent = new Intent(HomeActivity.this,
FAQsActivity.class);
                startActivity(intent);
            }
        });
    }

    @Override
    public boolean onNavigationItemSelected(@NonNull MenuItem item) {

        drawerLayout.closeDrawer(GravityCompat.START);
        return true;
    }

    @Override
    public void onBackPressed() {
        if (drawerLayout.isDrawerOpen(GravityCompat.START)) {
            drawerLayout.closeDrawer(GravityCompat.START);
        } else {
            super.onBackPressed();
        }
    }
}
```

### **AccountActivity.java**

```
package com.example.exercise9;
```

```
import androidx.annotation.NonNull;
import androidx.appcompat.app.ActionBarDrawerToggle;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.widget.Toolbar;
import androidx.core.content.ContextCompat;
import androidx.core.view.GravityCompat;
import androidx.drawerlayout.widget.DrawerLayout;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.PopupMenu;
import android.widget.Toast;

import com.google.android.material.navigation.NavigationView;

public class AccountActivity extends AppCompatActivity implements
NavigationView.OnNavigationItemSelectedListener {

    private DrawerLayout drawerLayout;

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

        Toolbar toolbar = findViewById(R.id.toolbar); //Ignore red line
errors      setSupportActionBar(toolbar);

        drawerLayout = findViewById(R.id.drawer_layout);
        NavigationView navigationView = findViewById(R.id.nav_view);
        navigationView.setNavigationItemSelectedListener(this);

        ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(this,
drawerLayout, toolbar, R.string.open_nav,
        R.string.close_nav);
        drawerLayout.addDrawerListener(toggle);
        toggle.syncState();

        Button home = (Button) findViewById(R.id.home);
        Button account = (Button) findViewById(R.id.account);
        Button basket = (Button) findViewById(R.id.basket);
        Button shop_by_category = (Button)
findViewById(R.id.shop_by_category);
```

```
Button more_options = (Button) findViewById(R.id.more_options);
Button offers = (Button) findViewById(R.id.offers);
Button faqs = (Button) findViewById(R.id.faqs);

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

                Intent intent = new Intent(AccountActivity.this,
HomeActivity.class);
                startActivity(intent);
            }
        });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```

```
shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont  
ext(), R.color.white));
```

```
offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
                Intent intent = new Intent(AccountActivity.this,  
AccountActivity.class);  
                startActivity(intent);  
            }  
        });
```

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

```
home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.light_purple));
```

```
shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont  
ext(), R.color.white));
```

```
offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
                Intent intent = new Intent(AccountActivity.this,  
BasketActivity.class);  
                startActivity(intent);  
            }  
        });
```

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

```
home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        PopupMenu popupMenu = new PopupMenu(getApplicationContext(),
more_options);
        popupMenu.getMenuInflater().inflate(R.menu.nav_menu,
popupMenu.getMenu());
        popupMenu.setOnMenuItemClickListener(new
PopupMenu.OnMenuItemClickListener() {
            @Override
            public boolean onMenuItemClick(MenuItem item) {
                if(item.getItemId() == R.id.fruits) {
                    Intent intent = new Intent(AccountActivity.this,
FruitsActivity.class);
                    startActivity(intent);
                }
                else if(item.getItemId() == R.id.vegetables) {
                    Intent intent = new Intent(AccountActivity.this,
VegetablesActivity.class);
                    startActivity(intent);
                }
                return false;
            }
        });
        popupMenu.show();
    }
});

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

```
home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(AccountActivity.this,
OffersActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

        Intent intent = new Intent(AccountActivity.this,
FAQsActivity.class);
```



```
        startActivity(intent);
    }
});

}

@Override
public boolean onNavigationItemSelected(@NonNull MenuItem item) {

    drawerLayout.closeDrawer(GravityCompat.START);
    return true;
}

@Override
public void onBackPressed() {
    if (drawerLayout.isDrawerOpen(GravityCompat.START)) {
        drawerLayout.closeDrawer(GravityCompat.START);
    } else {
        super.onBackPressed();
    }
}
}
```

### **BasketActivity.java**

```
package com.example.exercise9;

import androidx.annotation.NonNull;
import androidx.appcompat.app.ActionBarDrawerToggle;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.widget.Toolbar;
import androidx.core.content.ContextCompat;
import androidx.core.view.GravityCompat;
import androidx.drawerlayout.widget.DrawerLayout;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.PopupMenu;
import android.widget.Toast;

import com.google.android.material.navigation.NavigationView;

public class BasketActivity extends AppCompatActivity implements
NavigationView.OnNavigationItemSelectedListener {

    private DrawerLayout drawerLayout;
```

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

    Toolbar toolbar = findViewById(R.id.toolbar); //Ignore red line
errors    setSupportActionBar(toolbar);

    drawerLayout = findViewById(R.id.drawer_layout);
    NavigationView navigationView = findViewById(R.id.nav_view);
    navigationView.setNavigationItemSelectedListener(this);

    ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(this,
drawerLayout, toolbar, R.string.open_nav,
        R.string.close_nav);
    drawerLayout.addDrawerListener(toggle);
    toggle.syncState();

    Button home = (Button) findViewById(R.id.home);
    Button account = (Button) findViewById(R.id.account);
    Button basket = (Button) findViewById(R.id.basket);
    Button shop_by_category = (Button)
findViewById(R.id.shop_by_category);
    Button more_options = (Button) findViewById(R.id.more_options);
    Button offers = (Button) findViewById(R.id.offers);
    Button faqs = (Button) findViewById(R.id.faqs);

    basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```

```
offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(BasketActivity.this,
HomeActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(BasketActivity.this,
AccountActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```

```
account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(BasketActivity.this,
BasketActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.light_purple));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        PopupMenu popupMenu = new PopupMenu(getApplicationContext(),
more_options);
        popupMenu.getMenuInflater().inflate(R.menu.nav_menu,
popupMenu.getMenu());
```

```
        popupMenu.setOnMenuItemClickListener(new
PopupMenu.OnMenuItemClickListener() {
            @Override
            public boolean onMenuItemClick(MenuItem item) {
                if(item.getItemId() == R.id.fruits) {
                    Intent intent = new Intent(BasketActivity.this,
FruitsActivity.class);
                    startActivity(intent);
                }
                else if(item.getItemId() == R.id.vegetables) {
                    Intent intent = new Intent(BasketActivity.this,
VegetablesActivity.class);
                    startActivity(intent);
                }
            }
            return false;
        });
        popupMenu.show();
    });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

            Intent intent = new Intent(BasketActivity.this,
OffersActivity.class);
            startActivity(intent);
        }
    });
```

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

                Intent intent = new Intent(BasketActivity.this,
FAQsActivity.class);
                startActivity(intent);
            }
        });

    }

    @Override
    public boolean onNavigationItemSelected(@NonNull MenuItem item) {

        drawerLayout.closeDrawer(GravityCompat.START);
        return true;
    }

    @Override
    public void onBackPressed() {
        if (drawerLayout.isDrawerOpen(GravityCompat.START)) {
            drawerLayout.closeDrawer(GravityCompat.START);
        } else {
            super.onBackPressed();
        }
    }
}
```

**FruitsActivity.java**

```
package com.example.exercise9;

import androidx.annotation.NonNull;
import androidx.appcompat.app.ActionBarDrawerToggle;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.widget.Toolbar;
import androidx.core.content.ContextCompat;
import androidx.core.view.GravityCompat;
import androidx.drawerlayout.widget.DrawerLayout;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.PopupMenu;
import android.widget.Toast;

import com.google.android.material.navigation.NavigationView;

public class FruitsActivity extends AppCompatActivity implements
NavigationView.OnNavigationItemSelectedListener {

    private DrawerLayout drawerLayout;

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

        Toolbar toolbar = findViewById(R.id.toolbar); //Ignore red line
errors      setSupportActionBar(toolbar);

        drawerLayout = findViewById(R.id.drawer_layout);
        NavigationView navigationView = findViewById(R.id.nav_view);
        navigationView.setNavigationItemSelectedListener(this);

        ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(this,
drawerLayout, toolbar, R.string.open_nav,
        R.string.close_nav);
        drawerLayout.addDrawerListener(toggle);
        toggle.syncState();

        Button home = (Button) findViewById(R.id.home);
        Button account = (Button) findViewById(R.id.account);
        Button basket = (Button) findViewById(R.id.basket);
```

```
        Button shop_by_category = (Button)
findViewById(R.id.shop_by_category);
        Button more_options = (Button) findViewById(R.id.more_options);
        Button offers = (Button) findViewById(R.id.offers);
        Button faqs = (Button) findViewById(R.id.faqs);

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.light_purple));

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

                Intent intent = new Intent(FruitsActivity.this,
HomeActivity.class);
                startActivity(intent);
            }
        });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));
```



```
basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(FruitsActivity.this,
AccountActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(FruitsActivity.this,
BasketActivity.class);
        startActivity(intent);
    }
});

more_options.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
        public void onClick(View v) {

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        PopupMenu popupMenu = new PopupMenu(getApplicationContext(),
more_options);
        popupMenu.getMenuInflater().inflate(R.menu.nav_menu,
popupMenu.getMenu());
        popupMenu.setOnMenuItemClickListener(new
PopupMenu.OnMenuItemClickListener() {
            @Override
            public boolean onMenuItemClick(MenuItem item) {
                if(item.getItemId() == R.id.fruits) {
                    Intent intent = new Intent(FruitsActivity.this,
FruitsActivity.class);
                    startActivity(intent);
                }
                else if(item.getItemId() == R.id.vegetables) {
                    Intent intent = new Intent(FruitsActivity.this,
VegetablesActivity.class);
                    startActivity(intent);
                }
            }

            return false;
        }
    });
    popupMenu.show();
}

offers.setOnClickListener(new View.OnClickListener() {
    @Override
```

```
        public void onClick(View v) {

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

                Intent intent = new Intent(FruitsActivity.this,
OffersActivity.class);
                startActivity(intent);
        }
    });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));
```

```
                Intent intent = new Intent(FruitsActivity.this,
FAQsActivity.class);
                startActivity(intent);
            }
        });

    }

    @Override
    public boolean onNavigationItemSelected(@NonNull MenuItem item) {

        drawerLayout.closeDrawer(GravityCompat.START);
        return true;
    }

    @Override
    public void onBackPressed() {
        if (drawerLayout.isDrawerOpen(GravityCompat.START)) {
            drawerLayout.closeDrawer(GravityCompat.START);
        } else {
            super.onBackPressed();
        }
    }
}
```

### **VegetablesActivity.java**

```
package com.example.exercise9;

import androidx.annotation.NonNull;
import androidx.appcompat.app.ActionBarDrawerToggle;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.widget.Toolbar;
import androidx.core.content.ContextCompat;
import androidx.core.view.GravityCompat;
import androidx.drawerlayout.widget.DrawerLayout;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.PopupMenu;
import android.widget.Toast;

import com.google.android.material.navigation.NavigationView;

public class VegetablesActivity extends AppCompatActivity implements
NavigationView.OnNavigationItemSelectedListener {
```

```
private DrawerLayout drawerLayout;

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

    Toolbar toolbar = findViewById(R.id.toolbar); //Ignore red line
errors    setSupportActionBar(toolbar);

    drawerLayout = findViewById(R.id.drawer_layout);
    NavigationView navigationView = findViewById(R.id.nav_view);
    navigationView.setNavigationItemSelectedListener(this);

    ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(this,
drawerLayout, toolbar, R.string.open_nav,
        R.string.close_nav);
    drawerLayout.addDrawerListener(toggle);
    toggle.syncState();

    Button home = (Button) findViewById(R.id.home);
    Button account = (Button) findViewById(R.id.account);
    Button basket = (Button) findViewById(R.id.basket);
    Button shop_by_category = (Button)
findViewById(R.id.shop_by_category);
    Button more_options = (Button) findViewById(R.id.more_options);
    Button offers = (Button) findViewById(R.id.offers);
    Button faqs = (Button) findViewById(R.id.faqs);

    shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.light_purple));

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```

```
shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont  
ext(), R.color.white));
```

```
offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
                Intent intent = new Intent(VegetablesActivity.this,  
HomeActivity.class);  
                startActivity(intent);  
            }  
        });
```

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

```
home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.light_purple));
```

```
basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont  
ext(), R.color.white));
```

```
offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),  
R.color.white));
```

```
                Intent intent = new Intent(VegetablesActivity.this,  
AccountActivity.class);  
                startActivity(intent);  
            }  
        });
```

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

```
home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(VegetablesActivity.this,
BasketActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```

```
        PopupMenu popupMenu = new PopupMenu(getApplicationContext(),
more_options);
        popupMenu.getMenuInflater().inflate(R.menu.nav_menu,
popupMenu.getMenu());
        popupMenu.setOnMenuItemClickListener(new
PopupMenu.OnMenuItemClickListener() {
            @Override
            public boolean onMenuItemClick(MenuItem item) {
                if(item.getItemId() == R.id.fruits) {
                    Intent intent = new
Intent(VegetablesActivity.this, FruitsActivity.class);
                    startActivity(intent);
                }
                else if(item.getItemId() == R.id.vegetables) {
                    Intent intent = new
Intent(VegetablesActivity.this, VegetablesActivity.class);
                    startActivity(intent);
                }

                return false;
            }
        });
        popupMenu.show();
    });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```



```
                Intent intent = new Intent(VegetablesActivity.this,
OffersActivity.class);
                startActivity(intent);
            }
        });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

                Intent intent = new Intent(VegetablesActivity.this,
FAQsActivity.class);
                startActivity(intent);
            }
        });

    }

    @Override
    public boolean onNavigationItemSelected(@NonNull MenuItem item) {

        drawerLayout.closeDrawer(GravityCompat.START);
        return true;
    }

    @Override
    public void onBackPressed() {
        if (drawerLayout.isDrawerOpen(GravityCompat.START)) {
            drawerLayout.closeDrawer(GravityCompat.START);
        } else {
            super.onBackPressed();
        }
    }
}
```

```
    }  
  }  
}
```

### **OffersActivity.java**

```
package com.example.exercise9;  
  
import androidx.annotation.NonNull;  
import androidx.appcompat.app.ActionBarDrawerToggle;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.appcompat.widget.Toolbar;  
import androidx.core.content.ContextCompat;  
import androidx.core.view.GravityCompat;  
import androidx.drawerlayout.widget.DrawerLayout;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.view.Menu;  
import android.view.MenuItem;  
import android.view.View;  
import android.widget.Button;  
import android.widget.PopupMenu;  
import android.widget.Toast;  
  
import com.google.android.material.navigation.NavigationView;  
  
public class OffersActivity extends AppCompatActivity implements  
NavigationView.OnNavigationItemSelectedListener {  
  
    private DrawerLayout drawerLayout;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_offers);  
  
        Toolbar toolbar = findViewById(R.id.toolbar); //Ignore red line  
errors  
        setSupportActionBar(toolbar);  
  
        drawerLayout = findViewById(R.id.drawer_layout);  
        NavigationView navigationView = findViewById(R.id.nav_view);  
        navigationView.setNavigationItemSelectedListener(this);  
  
        ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(this,  
drawerLayout, toolbar, R.string.open_nav,  
        R.string.close_nav);  
        drawerLayout.addDrawerListener(toggle);  
        toggle.syncState();  
    }  
}
```

```
        Button home = (Button) findViewById(R.id.home);
        Button account = (Button) findViewById(R.id.account);
        Button basket = (Button) findViewById(R.id.basket);
        Button shop_by_category = (Button)
findViewById(R.id.shop_by_category);
        Button more_options = (Button) findViewById(R.id.more_options);
        Button offers = (Button) findViewById(R.id.offers);
        Button faqs = (Button) findViewById(R.id.faqs);

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

                Intent intent = new Intent(OffersActivity.this,
HomeActivity.class);
                startActivity(intent);
            }
        });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```

```
account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(OffersActivity.this,
AccountActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(OffersActivity.this,
BasketActivity.class);
        startActivity(intent);
    }
});
```

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.light_purple));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        PopupMenu popupMenu = new PopupMenu(getApplicationContext(),
more_options);
        popupMenu.getMenuInflater().inflate(R.menu.nav_menu,
popupMenu.getMenu());
        popupMenu.setOnMenuItemClickListener(new
PopupMenu.OnMenuItemClickListener() {
            @Override
            public boolean onMenuItemClick(MenuItem item) {
                if(item.getItemId() == R.id.fruits) {
                    Intent intent = new Intent(OffersActivity.this,
FruitsActivity.class);
                    startActivity(intent);
                }
                else if(item.getItemId() == R.id.vegetables) {
                    Intent intent = new Intent(OffersActivity.this,
VegetablesActivity.class);
                    startActivity(intent);
                }
            }
            return false;
        }
    });
    popupMenu.show();
});
```

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

                Intent intent = new Intent(OffersActivity.this,
OffersActivity.class);
                startActivity(intent);
            }
        });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationCont
ext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```

```
faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

        Intent intent = new Intent(OffersActivity.this,
FAQsActivity.class);
        startActivity(intent);
    }
});

}

@Override
public boolean onNavigationItemSelected(@NonNull MenuItem item) {

    drawerLayout.closeDrawer(GravityCompat.START);
    return true;
}

@Override
public void onBackPressed() {
    if (drawerLayout.isDrawerOpen(GravityCompat.START)) {
        drawerLayout.closeDrawer(GravityCompat.START);
    } else {
        super.onBackPressed();
    }
}
}
```

#### **FAQsActivity.java**

```
package com.example.exercise9;

import androidx.annotation.NonNull;
import androidx.appcompat.app.ActionBarDrawerToggle;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.widget.Toolbar;
import androidx.core.content.ContextCompat;
import androidx.core.view.GravityCompat;
import androidx.drawerlayout.widget.DrawerLayout;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.PopupMenu;
import android.widget.Toast;
```

```
import com.google.android.material.navigation.NavigationView;

public class FAQsActivity extends AppCompatActivity implements
NavigationView.OnNavigationItemSelectedListener {

    private DrawerLayout drawerLayout;

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

        Toolbar toolbar = findViewById(R.id.toolbar); //Ignore red line
errors      setSupportActionBar(toolbar);

        drawerLayout = findViewById(R.id.drawer_layout);
        NavigationView navigationView = findViewById(R.id.nav_view);
        navigationView.setNavigationItemSelectedListener(this);

        ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(this,
drawerLayout, toolbar, R.string.open_nav,
        R.string.close_nav);
        drawerLayout.addDrawerListener(toggle);
        toggle.syncState();

        Button home = (Button) findViewById(R.id.home);
        Button account = (Button) findViewById(R.id.account);
        Button basket = (Button) findViewById(R.id.basket);
        Button shop_by_category = (Button)
findViewById(R.id.shop_by_category);
        Button more_options = (Button) findViewById(R.id.more_options);
        Button offers = (Button) findViewById(R.id.offers);
        Button faqs = (Button) findViewById(R.id.faqs);

        faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```



```
basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(FAQsActivity.this,
HomeActivity.class);
        startActivity(intent);
    }
});

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

        Intent intent = new Intent(FAQsActivity.this,
AccountActivity.class);
        startActivity(intent);
    }
});

basket.setOnClickListener(new View.OnClickListener() {
    @Override
```

```
        public void onClick(View v) {

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

                Intent intent = new Intent(FAQsActivity.this,
BasketActivity.class);
                startActivity(intent);
        }
    });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(), R.color.light_purple));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```

```
        PopupMenu popupMenu = new PopupMenu(getApplicationContext(),
more_options);
        popupMenu.getMenuInflater().inflate(R.menu.nav_menu,
popupMenu.getMenu());
        popupMenu.setOnMenuItemClickListener(new
PopupMenu.OnMenuItemClickListener() {
            @Override
            public boolean onMenuItemClick(MenuItem item) {
                if(item.getItemId() == R.id.fruits) {
                    Intent intent = new Intent(FAQsActivity.this,
FruitsActivity.class);
                    startActivity(intent);
                }
                else if(item.getItemId() == R.id.vegetables) {
                    Intent intent = new Intent(FAQsActivity.this,
VegetablesActivity.class);
                    startActivity(intent);
                }
            }
            return false;
        });
        popupMenu.show();
    });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));
```

```
                Intent intent = new Intent(FAQsActivity.this,
OffersActivity.class);
                startActivity(intent);
            }
        });

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

home.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

account.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

basket.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

shop_by_category.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

offers.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.white));

faqs.setBackgroundColor(ContextCompat.getColor(getApplicationContext(),
R.color.light_purple));

                Intent intent = new Intent(FAQsActivity.this,
FAQsActivity.class);
                startActivity(intent);
            }
        });

    }

    @Override
    public boolean onNavigationItemSelected(@NonNull MenuItem item) {

        drawerLayout.closeDrawer(GravityCompat.START);
        return true;
    }

    @Override
    public void onBackPressed() {
        if (drawerLayout.isDrawerOpen(GravityCompat.START)) {
            drawerLayout.closeDrawer(GravityCompat.START);
        } else {
            super.onBackPressed();
        }
    }
}
```

```
    }  
  }  
}
```

### activity\_home.xml

```
<?xml version="1.0" encoding="utf-8"?>  
<androidx.drawerlayout.widget.DrawerLayout  
    xmlns:android="http://schemas.android.com/apk/res/android"  
    xmlns:app="http://schemas.android.com/apk/res-auto"  
    xmlns:tools="http://schemas.android.com/tools"  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"  
    android:id="@+id/drawer_layout"  
    android:fitsSystemWindows="true"  
    tools:openDrawer="start"  
    tools:context=".HomeActivity">  
  
    <LinearLayout  
        android:layout_width="match_parent"  
        android:layout_height="match_parent"  
        android:orientation="vertical">  
  
        <androidx.appcompat.widget.Toolbar  
            android:layout_width="match_parent"  
            android:layout_height="56dp"  
            android:id="@+id/toolbar"  
            android:elevation="4dp"  
            android:background="@color/lavender"  
            android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"  
            android:popupTheme="@style/ThemeOverlay.AppCompat.Light"/>  
  
        <!--      <FrameLayout-->  
        <!--          android:layout_width="match_parent"-->  
        <!--          android:layout_height="match_parent"-->  
        <!--          android:id="@+id/frame_layout"/>-->  
  
        <TextView  
            android:layout_width="match_parent"  
            android:layout_height="match_parent"  
            android:layout_gravity="center"  
            android:gravity="center"  
            android:text="Home"  
            android:textSize="48dp"  
            android:textStyle="bold"  
            android:textColor="@color/lavender" />  
  
    </LinearLayout>  
  
    <com.google.android.material.navigation.NavigationView
```

```
android:layout_width="wrap_content"  
android:layout_height="match_parent"  
android:id="@+id/nav_view"  
android:layout_gravity="start"  
android:backgroundTint="@color/white"  
app:headerLayout="@layout/nav_header"  
app:itemIconTint="@color/lavender"  
app:itemTextColor="@color/lavender">
```

```
<Button  
    android:id="@+id/home"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="200dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_home"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Home"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/account"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="260dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_account"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Account"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/basket"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="320dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"
```

```
android:drawableLeft="@drawable/nav_basket"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Basket"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/shop_by_category"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="380dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableLeft="@drawable/nav_shop_by_category"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Shop By Category"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/more_options"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="380dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableRight="@drawable/more_options"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/transparent"  
android:layout_gravity="right|center_horizontal"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/offers"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="440dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableLeft="@drawable/nav_offer"  
android:drawableTint="@color/lavender"
```

```
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Offers"  
android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/faqs"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="500dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_faqs"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="FAQs"  
    android:textSize="20dp" />
```

```
<View  
    android:id="@+id/divider"  
    android:layout_width="match_parent"  
    android:layout_height="1dp"  
    android:layout_marginTop="570dp"  
    android:layout_marginStart="20dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:backgroundTint="@color/lavender"  
    android:background="?android:attr/listDivider" />
```

```
<Button  
    android:id="@+id/logout"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="650dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_logout"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Logout"  
    android:textSize="20dp" />
```



```
</com.google.android.material.navigation.NavigationView>
```

```
</androidx.drawerlayout.widget.DrawerLayout>
```

### **activity\_account.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.drawerlayout.widget.DrawerLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/drawer_layout"
    android:fitsSystemWindows="true"
    tools:openDrawer="start"
    tools:context=".AccountActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical">

        <androidx.appcompat.widget.Toolbar
            android:layout_width="match_parent"
            android:layout_height="56dp"
            android:id="@+id/toolbar"
            android:elevation="4dp"
            android:background="@color/lavender"
            android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
            android:popupTheme="@style/ThemeOverlay.AppCompat.Light"/>

        <TextView
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_gravity="center"
            android:gravity="center"
            android:text="Account"
            android:textSize="48dp"
            android:textStyle="bold"
            android:textColor="@color/lavender" />

    </LinearLayout>

    <com.google.android.material.navigation.NavigationView
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:id="@+id/nav_view"
        android:layout_gravity="start"
```

```
android:backgroundTint="@color/white"  
app:headerLayout="@layout/nav_header"  
app:itemIconTint="@color/lavender"  
app:itemTextColor="@color/lavender">
```

```
<Button  
    android:id="@+id/home"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="200dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_home"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Home"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/account"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="260dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_account"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Account"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/basket"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="320dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_basket"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"
```

```
android:gravity="left|center_horizontal"  
android:text="Basket"  
android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/shop_by_category"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="380dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_shop_by_category"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Shop By Category"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/more_options"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="380dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableRight="@drawable/more_options"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/transparent"  
    android:layout_gravity="right|center_horizontal"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/offers"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="440dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_offer"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Offers"
```

```
        android:textSize="20dp" />

<Button
    android:id="@+id/faqs"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="500dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_faqs"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="FAQs"
    android:textSize="20dp" />

<View
    android:id="@+id/divider"
    android:layout_width="match_parent"
    android:layout_height="1dp"
    android:layout_marginTop="570dp"
    android:layout_marginStart="20dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:backgroundTint="@color/lavender"
    android:background="?android:attr/listDivider" />

<Button
    android:id="@+id/logout"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="650dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_logout"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Logout"
    android:textSize="20dp" />

</com.google.android.material.navigation.NavigationView>

</androidx.drawerlayout.widget.DrawerLayout>
```

### activity\_basket.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.drawerlayout.widget.DrawerLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/drawer_layout"
    android:fitsSystemWindows="true"
    tools:openDrawer="start"
    tools:context=".BasketActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical">

        <androidx.appcompat.widget.Toolbar
            android:layout_width="match_parent"
            android:layout_height="56dp"
            android:id="@+id/toolbar"
            android:elevation="4dp"
            android:background="@color/lavender"
            android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
            android:popupTheme="@style/ThemeOverlay.AppCompat.Light"/>

        <TextView
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_gravity="center"
            android:gravity="center"
            android:text="Basket"
            android:textSize="48dp"
            android:textStyle="bold"
            android:textColor="@color/lavender" />

    </LinearLayout>

    <com.google.android.material.navigation.NavigationView
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:id="@+id/nav_view"
        android:layout_gravity="start"
        android:backgroundTint="@color/white"
        app:headerLayout="@layout/nav_header"
        app:itemIconTint="@color/lavender"
        app:itemTextColor="@color/lavender">
```

```
<Button
    android:id="@+id/home"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="200dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_home"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Home"
    android:textSize="20dp" />

<Button
    android:id="@+id/account"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="260dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_account"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Account"
    android:textSize="20dp" />

<Button
    android:id="@+id/basket"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="320dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_basket"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Basket"
    android:textSize="20dp" />

<Button
```

```
android:id="@+id/shop_by_category"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="380dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableLeft="@drawable/nav_shop_by_category"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Shop By Category"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/more_options"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="380dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableRight="@drawable/more_options"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/transparent"  
android:layout_gravity="right|center_horizontal"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/offers"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="440dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableLeft="@drawable/nav_offer"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Offers"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/faqs"  
android:layout_width="match_parent"
```

```
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="500dp"
        android:layout_marginEnd="20dp"
        android:layout_marginBottom="20dp"
        android:drawableLeft="@drawable/nav_faqs"
        android:drawableTint="@color/lavender"
        android:textColor="@color/lavender"
        android:backgroundTint="@color/white"
        android:gravity="left|center_horizontal"
        android:text="FAQs"
        android:textSize="20dp" />

<View
    android:id="@+id/divider"
    android:layout_width="match_parent"
    android:layout_height="1dp"
    android:layout_marginTop="570dp"
    android:layout_marginStart="20dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:backgroundTint="@color/lavender"
    android:background="?android:attr/listDivider" />

<Button
    android:id="@+id/logout"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="650dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_logout"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Logout"
    android:textSize="20dp" />

</com.google.android.material.navigation.NavigationView>

</androidx.drawerlayout.widget.DrawerLayout>

activity_fruits.xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.drawerlayout.widget.DrawerLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
```



```
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:id="@+id/drawer_layout"
android:fitsSystemWindows="true"
tools:openDrawer="start"
tools:context=".FruitsActivity">

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <androidx.appcompat.widget.Toolbar
        android:layout_width="match_parent"
        android:layout_height="56dp"
        android:id="@+id/toolbar"
        android:elevation="4dp"
        android:background="@color/lavender"
        android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
        android:popupTheme="@style/ThemeOverlay.AppCompat.Light"/>

    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_gravity="center"
        android:gravity="center"
        android:text="Fruits"
        android:textSize="48dp"
        android:textStyle="bold"
        android:textColor="@color/lavender" />

</LinearLayout>

<com.google.android.material.navigation.NavigationView
    android:layout_width="wrap_content"
    android:layout_height="match_parent"
    android:id="@+id/nav_view"
    android:layout_gravity="start"
    android:backgroundTint="@color/white"
    app:headerLayout="@layout/nav_header"
    app:itemIconTint="@color/lavender"
    app:itemTextColor="@color/lavender">

    <Button
        android:id="@+id/home"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
```

```
android:layout_marginTop="200dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableLeft="@drawable/nav_home"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Home"  
android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/account"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="260dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_account"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Account"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/basket"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="320dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_basket"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Basket"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/shop_by_category"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="380dp"
```

```
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableLeft="@drawable/nav_shop_by_category"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Shop By Category"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/more_options"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="380dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableRight="@drawable/more_options"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/transparent"  
android:layout_gravity="right|center_horizontal"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/offers"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="440dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableLeft="@drawable/nav_offer"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Offers"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/faqs"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="500dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"
```

```
        android:drawableLeft="@drawable/nav_faqs"
        android:drawableTint="@color/lavender"
        android:textColor="@color/lavender"
        android:backgroundTint="@color/white"
        android:gravity="left|center_horizontal"
        android:text="FAQs"
        android:textSize="20dp" />

<View
    android:id="@+id/divider"
    android:layout_width="match_parent"
    android:layout_height="1dp"
    android:layout_marginTop="570dp"
    android:layout_marginStart="20dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:backgroundTint="@color/lavender"
    android:background="?android:attr/listDivider" />

<Button
    android:id="@+id/logout"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="650dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_logout"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Logout"
    android:textSize="20dp" />

</com.google.android.material.navigation.NavigationView>

</androidx.drawerlayout.widget.DrawerLayout>
```

### activity\_vegetables.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.drawerlayout.widget.DrawerLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/drawer_layout"
    android:fitsSystemWindows="true"
```

```
tools:openDrawer="start"
tools:context=".VegetablesActivity">

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <androidx.appcompat.widget.Toolbar
        android:layout_width="match_parent"
        android:layout_height="56dp"
        android:id="@+id/toolbar"
        android:elevation="4dp"
        android:background="@color/lavender"
        android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
        android:popupTheme="@style/ThemeOverlay.AppCompat.Light"/>

    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_gravity="center"
        android:gravity="center"
        android:text="Vegetables"
        android:textSize="48dp"
        android:textStyle="bold"
        android:textColor="@color/lavender" />

</LinearLayout>

<com.google.android.material.navigation.NavigationView
    android:layout_width="wrap_content"
    android:layout_height="match_parent"
    android:id="@+id/nav_view"
    android:layout_gravity="start"
    android:backgroundTint="@color/white"
    app:headerLayout="@layout/nav_header"
    app:itemIconTint="@color/lavender"
    app:itemTextColor="@color/lavender">

    <Button
        android:id="@+id/home"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="200dp"
        android:layout_marginEnd="20dp"
        android:layout_marginBottom="20dp"
        android:drawableLeft="@drawable/nav_home"
        android:drawableTint="@color/lavender"
```

```
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Home"  
android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/account"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="260dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_account"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Account"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/basket"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="320dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_basket"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Basket"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/shop_by_category"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="380dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_shop_by_category"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"
```

```
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Shop By Category"  
android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/more_options"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="380dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableRight="@drawable/more_options"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/transparent"  
    android:layout_gravity="right|center_horizontal"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/offers"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="440dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_offer"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Offers"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/faqs"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="500dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_faqs"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"
```

```
        android:text="FAQs"
        android:textSize="20dp" />

<View
    android:id="@+id/divider"
    android:layout_width="match_parent"
    android:layout_height="1dp"
    android:layout_marginTop="570dp"
    android:layout_marginStart="20dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:backgroundTint="@color/lavender"
    android:background="?android:attr/listDivider" />

<Button
    android:id="@+id/logout"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="650dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_logout"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Logout"
    android:textSize="20dp" />

</com.google.android.material.navigation.NavigationView>

</androidx.drawerlayout.widget.DrawerLayout>

activity_offers.xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.drawerlayout.widget.DrawerLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/drawer_layout"
    android:fitsSystemWindows="true"
    tools:openDrawer="start"
    tools:context=".OffersActivity">

    <LinearLayout
        android:layout_width="match_parent"
```



```
android:layout_height="match_parent"
android:orientation="vertical">

<androidx.appcompat.widget.Toolbar
    android:layout_width="match_parent"
    android:layout_height="56dp"
    android:id="@+id/toolbar"
    android:elevation="4dp"
    android:background="@color/lavender"
    android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
    android:popupTheme="@style/ThemeOverlay.AppCompat.Light"/>

<TextView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_gravity="center"
    android:gravity="center"
    android:text="Offers"
    android:textSize="48dp"
    android:textStyle="bold"
    android:textColor="@color/lavender" />

</LinearLayout>

<com.google.android.material.navigation.NavigationView
    android:layout_width="wrap_content"
    android:layout_height="match_parent"
    android:id="@+id/nav_view"
    android:layout_gravity="start"
    android:backgroundTint="@color/white"
    app:headerLayout="@layout/nav_header"
    app:itemIconTint="@color/lavender"
    app:itemTextColor="@color/lavender">

<Button
    android:id="@+id/home"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="200dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_home"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Home"
    android:textSize="20dp" />
```

```
<Button
    android:id="@+id/account"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="260dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_account"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Account"
    android:textSize="20dp" />

<Button
    android:id="@+id/basket"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="320dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_basket"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Basket"
    android:textSize="20dp" />

<Button
    android:id="@+id/shop_by_category"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="380dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_shop_by_category"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Shop By Category"
    android:textSize="20dp" />
```

```
<Button
    android:id="@+id/more_options"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="380dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableRight="@drawable/more_options"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/transparent"
    android:layout_gravity="right|center_horizontal"
    android:textSize="20dp" />
```

```
<Button
    android:id="@+id/offers"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="440dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_offer"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Offers"
    android:textSize="20dp" />
```

```
<Button
    android:id="@+id/faqs"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="500dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_faqs"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="FAQs"
    android:textSize="20dp" />
```

```
<View
    android:id="@+id/divider"
```

```
        android:layout_width="match_parent"
        android:layout_height="1dp"
        android:layout_marginTop="570dp"
        android:layout_marginStart="20dp"
        android:layout_marginEnd="20dp"
        android:layout_marginBottom="20dp"
        android:backgroundTint="@color/lavender"
        android:background="?android:attr/listDivider" />

<Button
    android:id="@+id/logout"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="650dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_logout"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Logout"
    android:textSize="20dp" />

</com.google.android.material.navigation.NavigationView>

</androidx.drawerlayout.widget.DrawerLayout>

activity_faqs.xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.drawerlayout.widget.DrawerLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/drawer_layout"
    android:fitsSystemWindows="true"
    tools:openDrawer="start"
    tools:context=".FAQsActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical">

        <androidx.appcompat.widget.Toolbar
            android:layout_width="match_parent"
```

```
        android:layout_height="56dp"
        android:id="@+id/toolbar"
        android:elevation="4dp"
        android:background="@color/lavender"
        android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
        android:popupTheme="@style/ThemeOverlay.AppCompat.Light"/>

<TextView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_gravity="center"
    android:gravity="center"
    android:text="FAQs"
    android:textSize="48dp"
    android:textStyle="bold"
    android:textColor="@color/lavender" />

</LinearLayout>

<com.google.android.material.navigation.NavigationView
    android:layout_width="wrap_content"
    android:layout_height="match_parent"
    android:id="@+id/nav_view"
    android:layout_gravity="start"
    android:backgroundTint="@color/white"
    app:headerLayout="@layout/nav_header"
    app:itemIconTint="@color/lavender"
    app:itemTextColor="@color/lavender">

<Button
    android:id="@+id/home"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="200dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_home"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Home"
    android:textSize="20dp" />

<Button
    android:id="@+id/account"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
```

```
android:layout_marginStart="20dp"  
android:layout_marginTop="260dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableLeft="@drawable/nav_account"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Account"  
android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/basket"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="320dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_basket"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Basket"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/shop_by_category"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"  
    android:layout_marginTop="380dp"  
    android:layout_marginEnd="20dp"  
    android:layout_marginBottom="20dp"  
    android:drawableLeft="@drawable/nav_shop_by_category"  
    android:drawableTint="@color/lavender"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    android:gravity="left|center_horizontal"  
    android:text="Shop By Category"  
    android:textSize="20dp" />
```

```
<Button  
    android:id="@+id/more_options"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginStart="20dp"
```

```
android:layout_marginTop="380dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableRight="@drawable/more_options"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/transparent"  
android:layout_gravity="right|center_horizontal"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/offers"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="440dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableLeft="@drawable/nav_offer"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="Offers"  
android:textSize="20dp" />
```

<Button

```
android:id="@+id/faqs"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:layout_marginStart="20dp"  
android:layout_marginTop="500dp"  
android:layout_marginEnd="20dp"  
android:layout_marginBottom="20dp"  
android:drawableLeft="@drawable/nav_faqs"  
android:drawableTint="@color/lavender"  
android:textColor="@color/lavender"  
android:backgroundTint="@color/white"  
android:gravity="left|center_horizontal"  
android:text="FAQs"  
android:textSize="20dp" />
```

<View

```
android:id="@+id/divider"  
android:layout_width="match_parent"  
android:layout_height="1dp"  
android:layout_marginTop="570dp"  
android:layout_marginStart="20dp"  
android:layout_marginEnd="20dp"
```

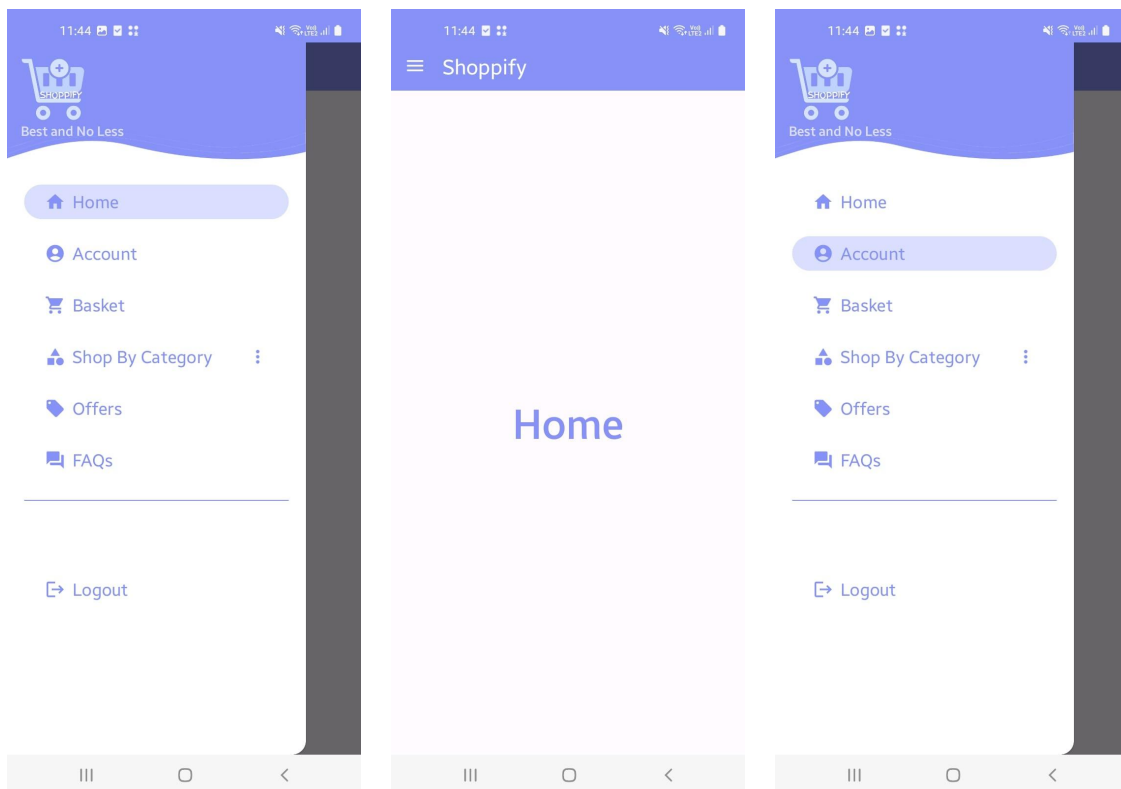
```
        android:layout_marginBottom="20dp"
        android:backgroundTint="@color/lavender"
        android:background="?android:attr/listDivider" />

<Button
    android:id="@+id/logout"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginTop="650dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:drawableLeft="@drawable/nav_logout"
    android:drawableTint="@color/lavender"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    android:gravity="left|center_horizontal"
    android:text="Logout"
    android:textSize="20dp" />

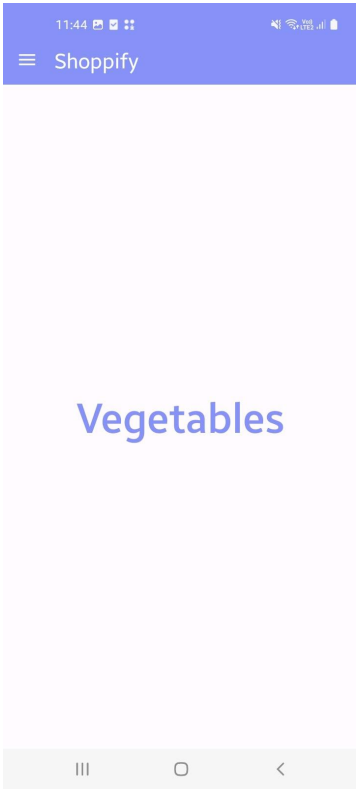
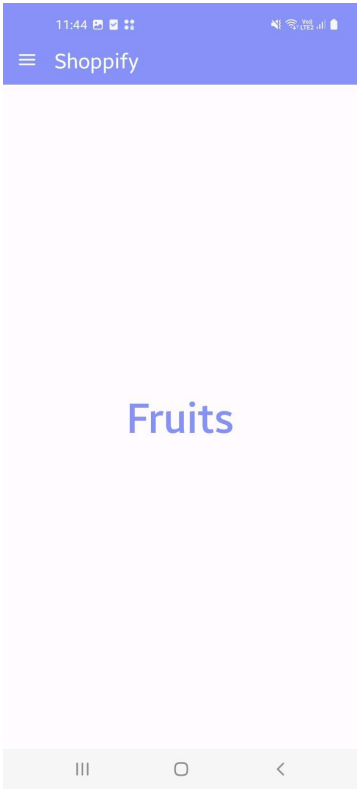
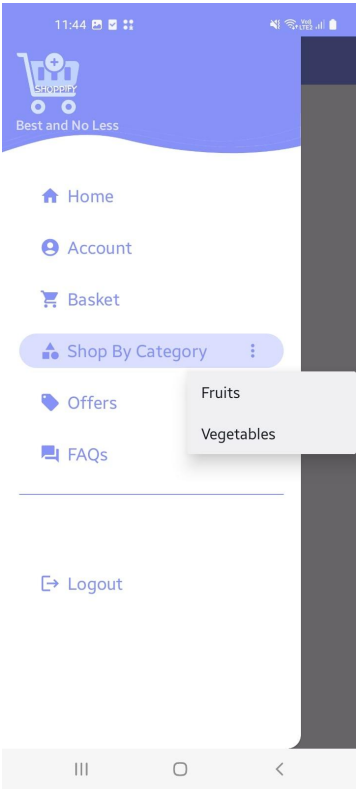
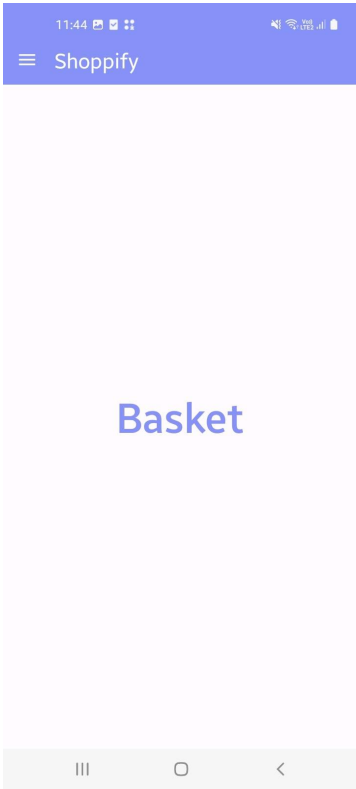
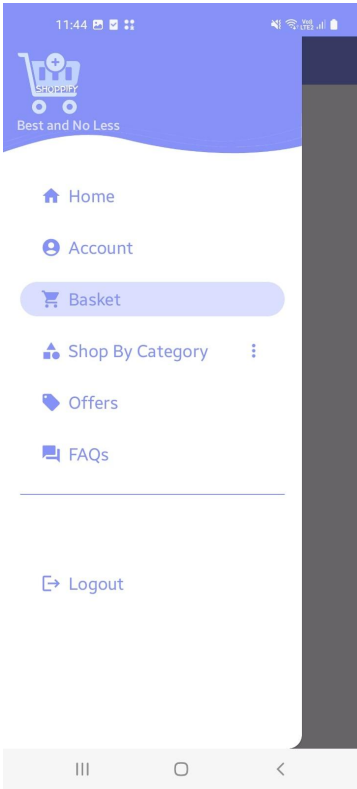
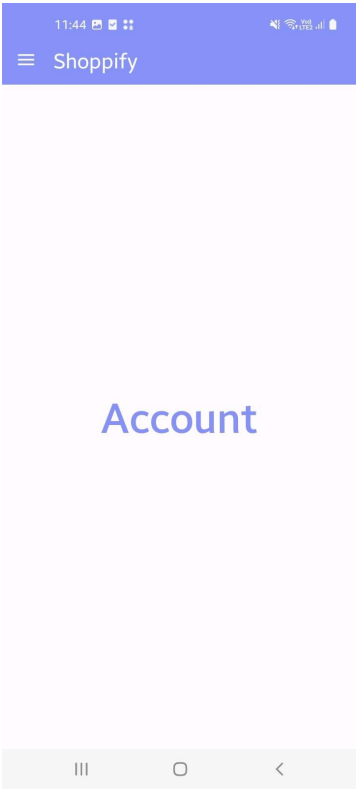
</com.google.android.material.navigation.NavigationView>

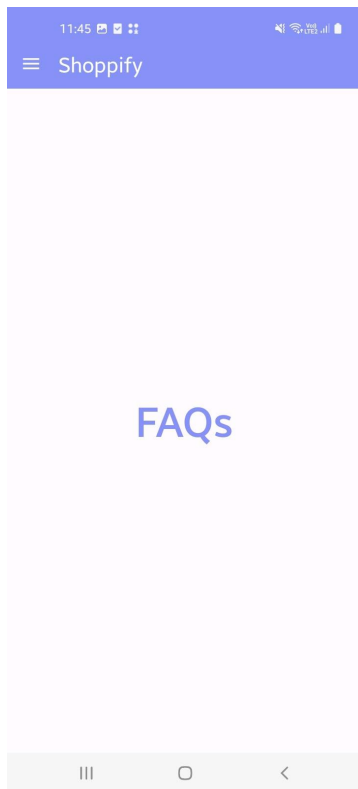
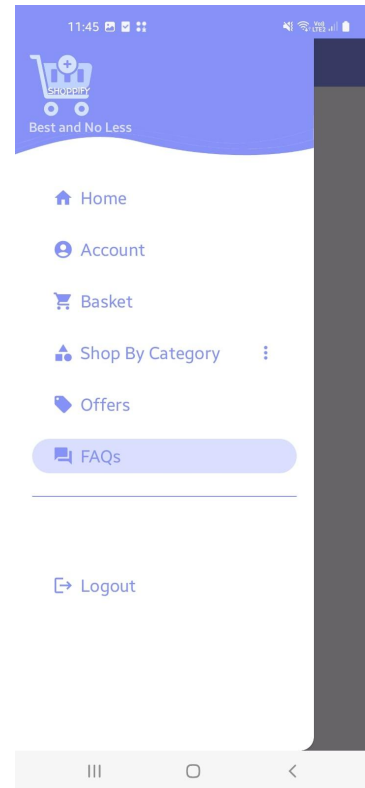
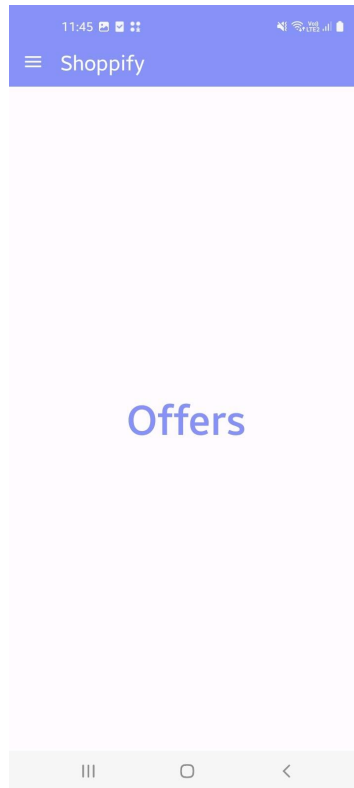
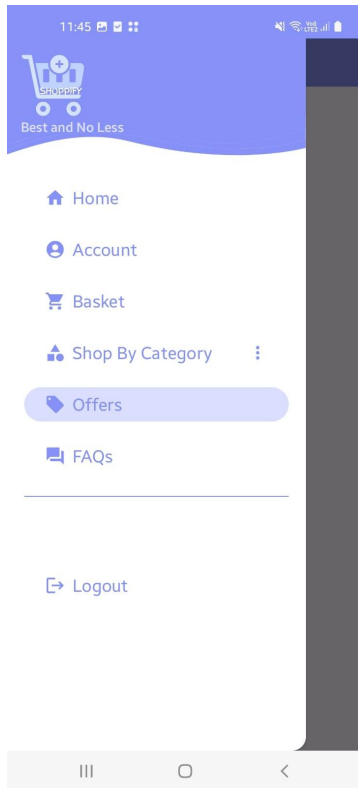
</androidx.drawerlayout.widget.DrawerLayout>
```

#### OUTPUT:









**BEST PRACTICES:**

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

**LEARNING OUTCOMES:**

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to use event handlers.
- I learnt to link the main activity and view activity.
- I learnt to run the emulator and debugger.

I learnt to create navigation bars and drop-down menus.

## EXERCISE 10

### ALARM CLOCK - ANDROID APPLICATION

#### AIM:

Develop an Alarm Clock Android Application.

1. Use permission for WAKE\_LOCK.
2. Have a TimePicker component followed by a ToggleButton to select time and Alarm On / Off.
3. Use the AlarmManager to set the alarm and send notification on alarm trigger.
4. Perform 3 different notifications
  - a. Show a message to user in the activity UI
  - b. Play the alarm ringtone
  - c. Send an Android notification message.

#### COMPONENTS USED:

##### ANDROID WIDGETS:

- TimePicker
- ToggleButton

##### LAYOUTS USED:

- LinearLayout (Vertical)

#### ACTIVITY AND INTENTS USED:

##### Activities:

- MainActivity JAVA Class

##### Intents:

- Intent between MainActivity JAVA Class (sender) and ViewActivity JAVA Class (receiver)

#### CODE:

##### 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">

    <uses-permission android:name="android.permission.POST_NOTIFICATIONS" />
    <uses-permission android:name="android.permission.INTERNET" />
    <uses-permission android:name="android.permission.VIBRATE" />
    <uses-permission android:name="android.permission.WAKE_LOCK" />

    <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/Theme.Alarm"
    tools:targetApi="34">
    <activity
        android:name=".RedirectActivity"
        android:exported="false" />
    <activity
        android:name=".MainActivity"
        android:exported="true"
        android:launchMode="singleTop">
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />

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

    <receiver android:name=".AlarmReceiver"
        android:permission="android.permission.BROADCAST_SMS"
        android:exported="true">
        <intent-filter>
            <action
android:name="android.provider.Telephony.SMS_RECEIVED" />
            </intent-filter>
        </receiver>
    </application>

</manifest>
```

#### **activity\_main.xml**

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

    <TimePicker
        android:id="@+id/timePicker"
        android:layout_width="match_parent"
        android:layout_height="400dp"
        android:layout_gravity="center"
        android:layout_marginTop="100dp"/>
```

```
<ToggleButton
    android:id="@+id/setButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="50dp"
    android:checked="false"
    android:textOff="Set Alarm"
    android:textOn="Turn Off"
    android:layout_gravity="center" />

</LinearLayout>
```

### MainActivity.java

```
package com.example.alarm;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.NotificationCompat;

import android.app.AlarmManager;
import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.graphics.Color;
import android.os.Build;
import android.os.Bundle;
import android.view.View;
import android.widget.TimePicker;
import android.widget.Toast;
import android.widget.ToggleButton;

import java.util.Calendar;

public class MainActivity extends AppCompatActivity {

    AlarmManager alarmManager;
    ToggleButton setButton;
    TimePicker timePicker;
    Calendar calendar;
    NotificationChannel notificationChannel;
    NotificationManager notificationManager;
    int hour, minute;
    long alarmTimeMillis, currentTimeMillis, alarmTime;
    IntentFilter intentFilter;
```

```
private BroadcastReceiver intentReceiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        makeNotification();
    }
};

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

    intentFilter = new IntentFilter();
    intentFilter.addAction("SMS_RECEIVED_ACTION");

    alarmManager = (AlarmManager) getSystemService(ALARM_SERVICE);
    timePicker = findViewById(R.id.timePicker);
    setButton = findViewById(R.id.setButton);
    calendar = Calendar.getInstance();

    notificationChannel = new NotificationChannel("AlarmClock","Alarm
Clock",NotificationManager.IMPORTANCE_DEFAULT);
    notificationManager = getSystemService(NotificationManager.class);
    notificationManager.createNotificationChannel(notificationChannel);

    setButton.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if(setButton.isChecked()) {
                hour = timePicker.getHour();
                minute = timePicker.getMinute();

                calendar.set(Calendar.HOUR_OF_DAY, hour);
                calendar.set(Calendar.MINUTE, minute);
                calendar.set(Calendar.SECOND, 0);

                alarmTimeMillis = calendar.getTimeInMillis();
                currentTimeMillis = System.currentTimeMillis();
                alarmTime = alarmTimeMillis - currentTimeMillis;

                Intent intent = new
Intent(MainActivity.this,AlarmReceiver.class);
                PendingIntent pendingIntent =
PendingIntent.getBroadcast(MainActivity.this,100,intent,
PendingIntent.FLAG_IMMUTABLE);

                alarmManager.set(AlarmManager.RTC_WAKEUP,calendar.getTimeInMillis(),
pendingIntent);
            }
        }
    });
}
```

```
        else {
            Toast.makeText(getApplicationContext(), "Alarm Off",
Toast.LENGTH_SHORT).show();
        }
    }
});
}

@Override
protected void onResume() {
    registerReceiver(intentReceiver, intentFilter);
    super.onResume();
}

@Override
protected void onPause() {
    unregisterReceiver(intentReceiver);
    super.onPause();
}

public void makeNotification() {
    String channelId = "CHANNEL_ID_NOTIFICATION";

    Intent activityIntent = new Intent(this, MainActivity.class);
    PendingIntent contentIntent = PendingIntent.getActivity(this, 1,
activityIntent, PendingIntent.FLAG_IMMUTABLE);

    NotificationCompat.Builder builder = new
NotificationCompat.Builder(getApplicationContext(), channelId);
    builder.setSmallIcon(R.drawable.alarm)
        .setTitle("Notification")
        .setText("Alarm Ringing")
        .setAutoCancel(true)
        .setPriority(NotificationCompat.PRIORITY_HIGH)
        .setCategory(NotificationCompat.CATEGORY_MESSAGE)
        .setContentIntent(contentIntent);

    NotificationManager notificationManager = (NotificationManager)
getSystemService(Context.NOTIFICATION_SERVICE);

    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
        NotificationChannel notificationChannel =
notificationManager.getNotificationChannel(channelId);
        if(notificationChannel == null) {
            int importance = NotificationManager.IMPORTANCE_HIGH;
            notificationChannel = new NotificationChannel(channelId,
"Notification", importance);
            notificationChannel.setLightColor(Color.GREEN);
            notificationChannel.enableVibration(true);
        }
    }
}
```



```
notificationManager.createNotificationChannel(notificationChannel);
    }
}
notificationManager.notify(0, builder.build());
}
}
```

### **AlarmReceiver.java**

```
package com.example.alarm;

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.media.MediaPlayer;
import android.provider.Settings;
import android.widget.Toast;

public class AlarmReceiver extends BroadcastReceiver {

    MediaPlayer mp;

    @Override
    public void onReceive(Context context, Intent intent) {
        Toast.makeText(context, "Alarm Ringing", Toast.LENGTH_SHORT).show();
        mp = MediaPlayer.create(context,
Settings.System.DEFAULT_RINGTONE_URI);
        mp.setLooping(true);
        mp.start();

        Intent broadcastIntent = new Intent();
        broadcastIntent.setAction("SMS_RECEIVED_ACTION");
        context.sendBroadcast(broadcastIntent);
    }
}
```

OUTPUT :



**BEST PRACTICES:**

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

**LEARNING OUTCOMES:**

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to use event handlers.
- I learnt to link the main activity and view activity.
- I learnt to run the emulator and debugger.
- I learnt to set alarms.
- I learnt to create notifications.

## EXERCISE 11

### HYBRID MOBILE APP

**AIM:**

Develop an android application to display a static web page with contents that uses all formatting HTML tags. Also should load the web page from the specified URL.

**COMPONENTS USED:****ANDROID WIDGETS:**

- WebView

**LAYOUTS USED:**

- LinearLayout (Vertical)

**ACTIVITY AND INTENTS USED:****Activities:**

- MainActivity JAVA Class

**Intents:**

- Intent between MainActivity JAVA Class (sender) and ViewActivity JAVA Class (receiver)

**CODE:****index.html**

```
<html>
  <head>
    <title>Hybrid Mobile App</title>
    <style>
      body {
        background:linear-gradient(to bottom, #57225D, #A8CADD);
      }
      div {
        height:50vh; width: 75vw;
        position:absolute;
        top:25vh;
        left:12.5vw;
        background-color:none;
        border:2px;
        border-style:dashed;
        border-color:white;
      }
      h1, h4 {
        text-align:center
      }
    </style>
  </head>
  <body>
```

```
<div>
    <br><br><br><br>
    <h1>Exercise 11: Hybrid Mobile App</h1>
    <br><br>
    <h4>HTML content is written in the app!</h4>
</div>
</body>
</html>
```

#### **activity\_main.xml**

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

    <WebView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/myWebView" />

</LinearLayout>
```

#### **MainActivity.java**

```
package com.example.ex11;

import androidx.appcompat.app.AppCompatActivity;
import androidx.webkit.WebViewAssetLoader;
import androidx.webkit.WebViewClientCompat;

import android.os.Bundle;
import android.webkit.WebResourceRequest;
import android.webkit.WebResourceResponse;
import android.webkit.WebView;

class LocalContentWebViewClient extends WebViewClientCompat {

    private final WebViewAssetLoader mAssetLoader;

    LocalContentWebViewClient(WebViewAssetLoader assetLoader) {
        mAssetLoader = assetLoader;
    }

    @Override
    public WebResourceResponse shouldInterceptRequest(WebView view,
```

```
WebResourceRequest
request) {
    return mAssetLoader.shouldInterceptRequest(request.getUrl());
}
}
public class MainActivity extends AppCompatActivity {

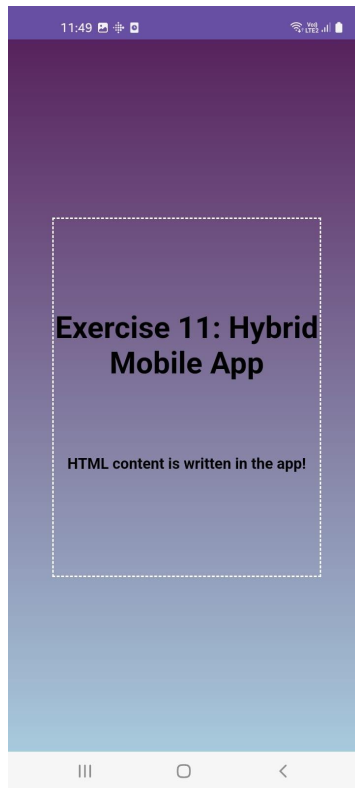
    WebView webView;
    WebViewAssetLoader assetLoader;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        webView = findViewById(R.id.myWebView);

        assetLoader = new WebViewAssetLoader.Builder()
            .addPathHandler("/assets/", new
WebViewAssetLoader.AssetsPathHandler(this))
            .addPathHandler("/res/", new
WebViewAssetLoader.AssetsPathHandler(this))
            .build();
        webView.setWebViewClient(new LocalContentWebViewClient(assetLoader));

        webView.loadUrl("https://appassets.androidplatform.net/assets/index.html");
    }
}
```

**OUTPUT :**



**BEST PRACTICES:**

- Standard naming conventions
- Suitable comments
- Proper indentation
- Proper user interface which is understandable and easy to navigate
- Use of modularity and functions

**LEARNING OUTCOMES:**

- I learnt the working of Android Studio.
- I learnt about the various widgets.
- I learnt to choose and use the layouts.
- I learnt to use event handlers.
- I learnt to link the main activity and view activity.
- I learnt to run the emulator and debugger.
- I learnt to load a static webpage in an android app from the given URL.