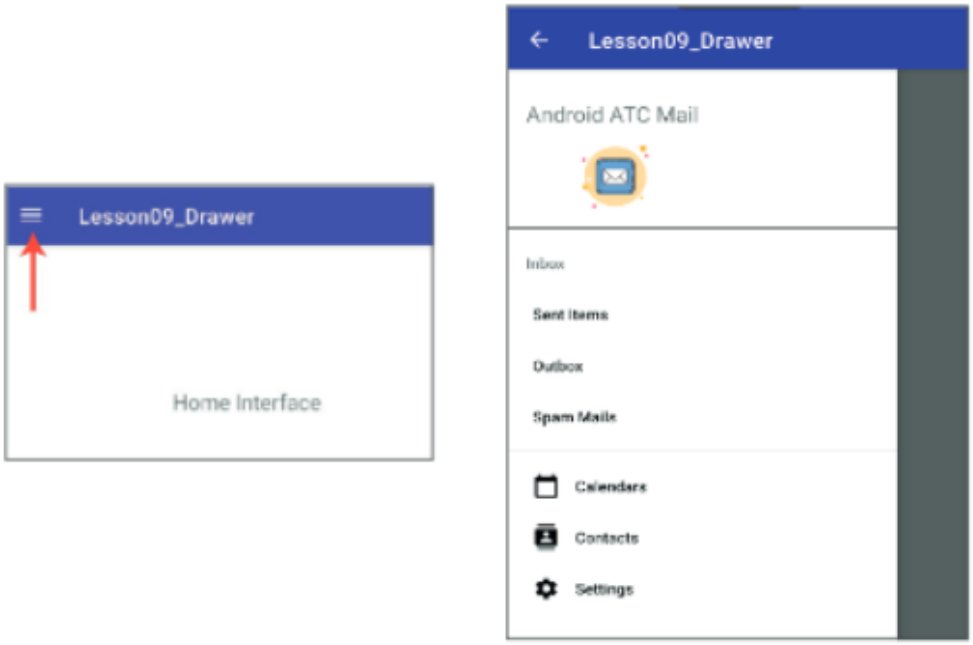
Lab 09:

Creating Navigation Drawer in Android App

In this lab, you will create an Android app using a drawer widget as a navigation technique for your app content. At the end of this lab you should get the following drawer menu:



The steps are as follows:

1- Open Android Studio, and then click **File → New → New Project**

2- Select **Empty Activity**, and click **Next**

3- Type: **Lab09** for the application name, then click **Finish**.

4- Before you start with typing the Kotlin code in your app, check the **build.gardle (Module: Lab09)** file and be sure it has the Kotlin plugin. If not, add the following code: **id 'kotlin-android-extensions'**
And click the **Sync Now**. The configuration should be as follows:

```
plugins {
    id 'com.android.application'
    id 'kotlin-android'
    id 'kotlin-android-extensions'
}
```

5- Open the **activity_main.xml** file in the Design mode, and then **delete** the "Hello World!" text.

6- Open the **activity_main.xml** file in the Code mode. At the top of this code, replace the following code:

```
<androidx.constraintlayout.widget.ConstraintLayout
```

With:

```
<androidx.drawerlayout.widget.DrawerLayout
```

7- Configure an id attribute value for your Drawer layout by adding the following attribute:

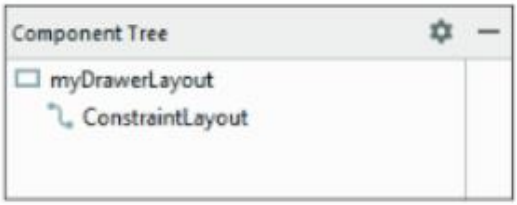
```
android:id="@+id/myDrawerLayout"
```

The full code of **activity_main.xml** file is as follows:

```
<?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:id="@+id/myDrawerLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"/>
```

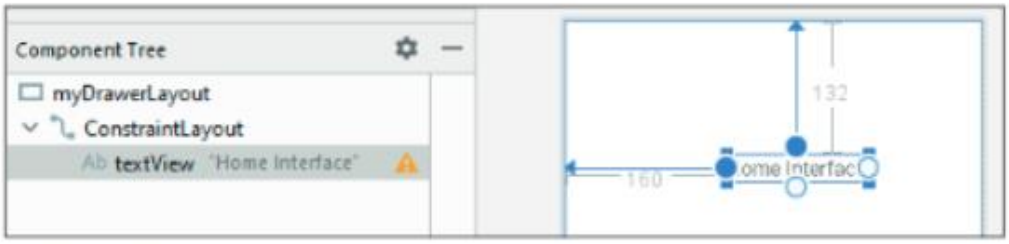
8- Open the **activity_main.xml** file in the **Design** mode. From the **Palette** panel (Layouts), add a **ConstraintLayout** widget to your activity interface using the drag and drop technique. This layout must be a child widget of your **DrawerLayout** as illustrated in the figure below for the Component Tree.

Here, this constraint layout represents your main or home activity interface.



9- From the **Palette** panel (Text), add a **TextView** widget to your activity. It should be a child widget of your **ConstraintLayout** widget. Set its constraints, set its **text** attribute value to **Home Interface**, and set its **textSize** to **20sp**.

Your interface should have the following design:

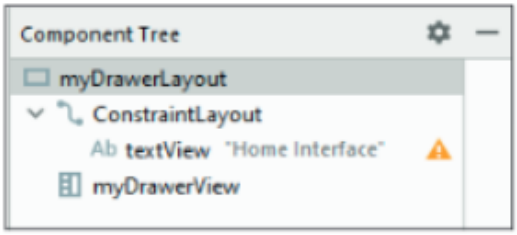


The **activity_main.xml** file in the **Code** mode is as follows:

```
<?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:id="@+id/myDrawerLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

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

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

```
            android:layout_marginStart="160dp"
            android:layout_marginTop="132dp"
            android:text="Home Interface"
            android:textSize="20sp"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toTopOf="parent" />
    </androidx.constraintlayout.widget.ConstraintLayout>
</androidx.drawerlayout.widget.DrawerLayout>
```

10- Open the **activity_main.xml** file in the **Design** mode. From the **Palette** panel (Containers), drag and drop a **NavigationView** widget to the **Component Tree** panel and be sure to add it as a child widget of your **DrawerLayout** widget. The component structure of your widgets must have the following design:



Importance Note: In the components tree above, the **ConstraintLayout** (or any interface activity container) must be before your **myDrawerView** (NavigationView) widget, otherwise, the navigation list items will not respond to any user's taps.

11- Open the **activity_main.xml** file in the **Code** mode and add the following attributes to your **NavigationView** tag:

```
android:id="@+id/myDrawerView"
android:layout_gravity="start"
android:fitsSystemWindows="true"
```

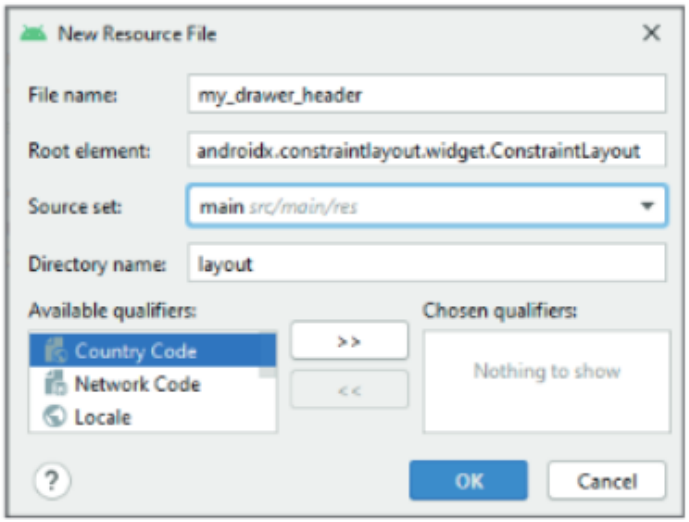
The full code of your **activity_main.xml** file as follows:

```
<?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:id="@+id/myDrawerLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

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

```
        android:layout_height="match_parent">

        <TextView
            android:id="@+id/textView"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginStart="160dp"
            android:layout_marginTop="132dp"
            android:text="Home Interface"
            android:textSize="20sp"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toTopOf="parent" />

    </androidx.constraintlayout.widget.ConstraintLayout>

    <com.google.android.material.navigation.NavigationView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/myDrawerView"
        android:layout_gravity="start"
        android:fitsSystemWindows="true"
        android:clipToPadding="false"
        app:headerLayout="@layout/my_drawer_header"
        app:menu="@menu/my_drawer_items"/>

</androidx.drawerlayout.widget.DrawerLayout>
```

12- Your Drawer navigation list consists of a header and navigation items. In this step you will create your Drawer navigation header which consists of an image and text. To do that, right click **layout → New Resource File**

As illustrated in the dialog box below, type: **my_drawer_header** for the **File name** and click **OK**.

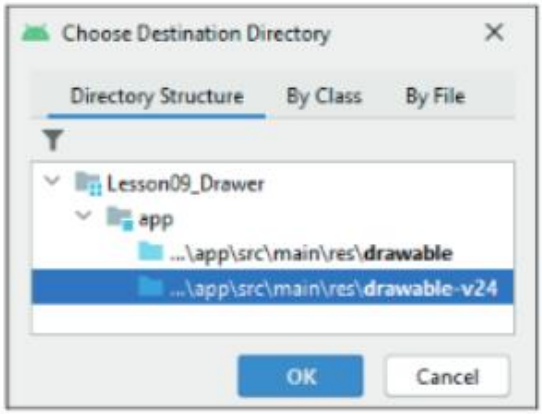


13- We want to get the following design for the **my_drawer_header.xml** file. It consists of text, icon and horizontal line.

To get this design, open the **my_drawer_header.xml** file in the Design mode, add a **TextView** widget, set its constraints, set its attributes values as follows:

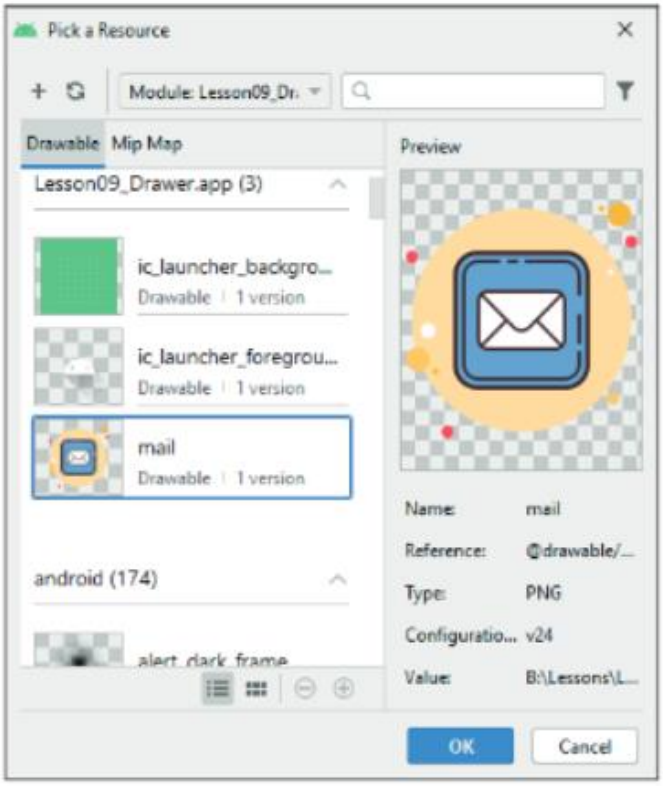
text: Android ATC Mail	**textSize** :20sp

14- To add the icon from the **Labs** files which you have in your computer, open **Labs\Images\ Lab09**, copy: **mail.png**. Back to your **Android Studio**, right click the **drawable** container, select **Paste**, then select the destination directory as illustrated in the figure below. Click **OK**.



15- As illustrated in the dialog box below, keep the default configurations and click **OK**

16- From the **Palette** panel (Widgets), Add an **ImageView** widget to your activity interface using the drag and drop technique. As illustrated in the **Pick a Resource** dialog box below, select your image, click **OK**. Then, set your image constraints.



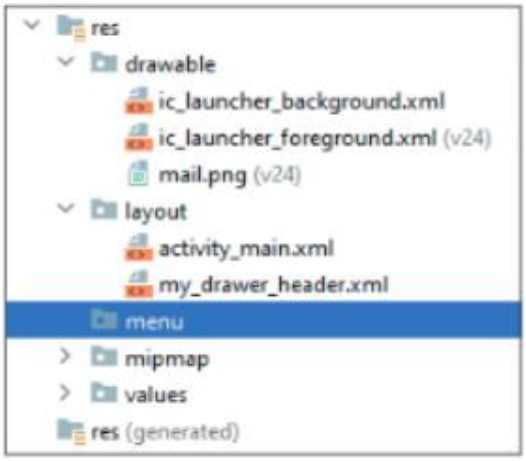
17- To add a horizontal line in **my_drawer_header.mxl** file below your image (mail.png), open the file in the **Design** mode, add a **<view>** widget (from the **Palette** panel → **Widgets**) to your interface. Open your file (**my_drawer_header.mxl**) in the **Code** mode, and set the **View** tag attributes values as illustrated in the following gray highlighted XML code:

```
<View
    android:id="@+id/view"
    android:layout_width="409dp"
    android:layout_height="1dp"
    android:layout_marginTop="148dp"
    android:background="@color/black"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
```

Your **my_drawer_header.mxl** file should have a design that looks like the following figure:

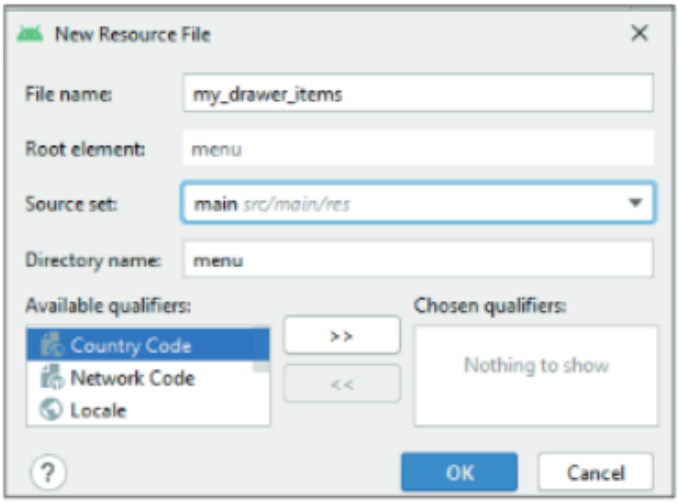
Now in the following steps, you will create the content of your drawer list items. These items consist of texts and icons. First of all, create a menu directory which will later include the file **menu.xml**. This file will include all the components of your drawer list items.

18- Right click the **res** directory → **New** ˚ **New Resource Directory**. Type **menu** for the **Directory name**, select **menu** for the **Resource type** and click **OK**. You should have the following files and directories structure:

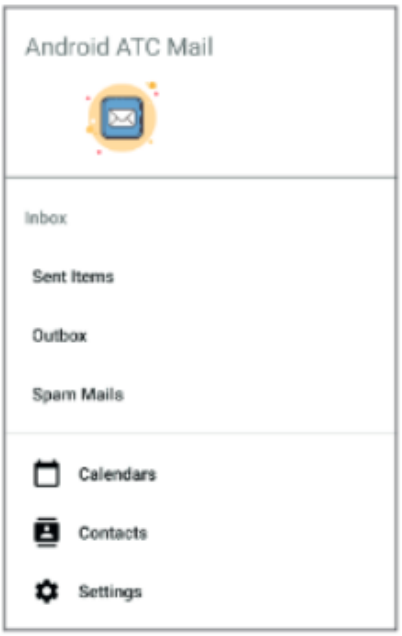


19- Right click the **menu** directory → **New** → **Menu Resource File**

As illustrated in the dialog box below, type **my_drawer_items** for the **File name**, and click **OK**.

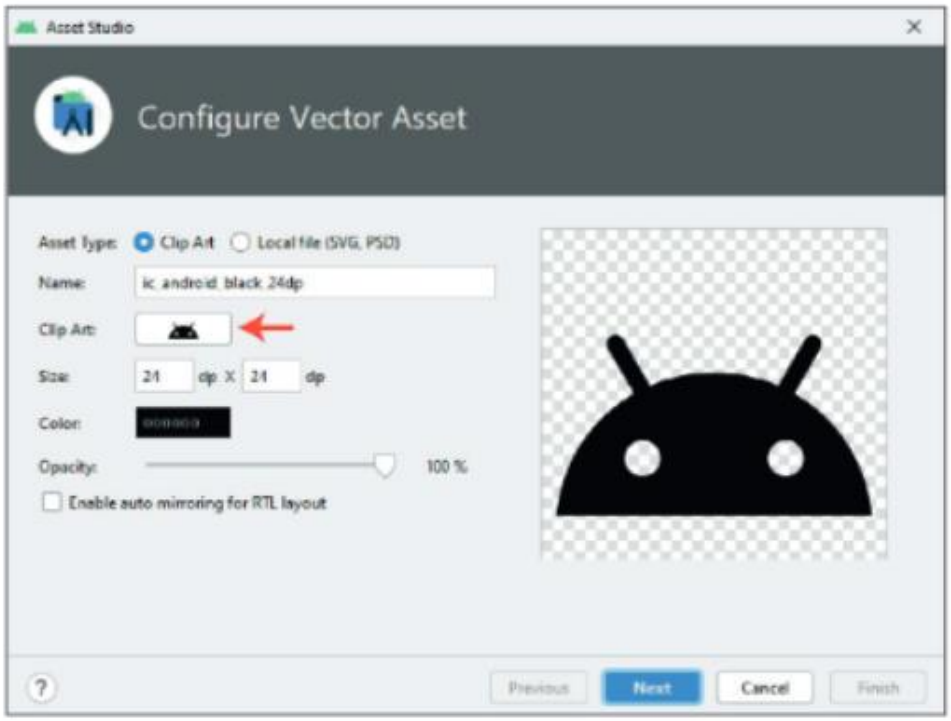


20- Our goal is to create the following drawer items list:



To do that, first import these icons (Calendars, Contacts, and Settings) into your Android project. To add these icons into your project, right click **drawable** container → **New** → **Vector Asset.**

From the following dialog box, click the **Clip Art** icon, type: **mail** in the search area, select the mail icon, click **OK**, click **Next** and click **Finish**



Repeat the same steps to add the following icons: **calendar today**, **contacts**, and **settings**

21- We want to add four items to this drawer list (Inbox, Calendar, Contacts, and Settings). To do that, open the **my_drawer_items.xml** file in the Design mode, and from the **Palette** panel add four **Menu Item** widgets using the drag and drop technique (you may also add them using your XML code). You should have the following design:

22- You may continue using the design mode for **my_drawer_items.xml** file to configure your drawer items by selecting each Item (Menu Item), click the **Attributes** tab, then configure the item **id**, **title**, and add the **icon** too. However, we will do this task using the XML code because we have later planned to add sub menu for the **Inbox** menu item.

Open your **my_drawer_items.xml** file in the **Code** mode, you should have the following code:

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

    <item android:title="Item" />
    <item android:title="Item" />
    <item android:title="Item" />
    <item android:title="Item" />
</menu>
```

Edit this file to have the following configuration:

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

    <item
        android:id="@+id/inboxId"
        android:icon="@drawable/ic_baseline_mail_24"
        android:title="Inbox"/>

    <item
        android:id="@+id/calendarId"
        android:icon="@drawable/ic_baseline_calendar_today_24"
        android:title="Calendars" />

    <item android:id="@+id/contactsId"
        android:icon="@drawable/ic_baseline_contacts_24"
        android:title="Contacts" />

    <item android:id="@+id/settingsId"
        android:icon="@drawable/ic_baseline_settings_24"
        android:title="Settings" />
</menu>
```

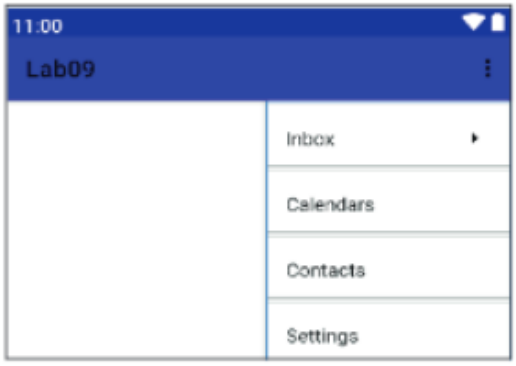
23- To add a sub menu to your **Inbox** item, add the following XML code to your **Inbox** item tag:

```
<item
    android:id="@+id/inboxId"
    android:icon="@drawable/ic_baseline_mail_24"
    android:title="Inbox">
    <menu>
        <item
            android:id="@+id/sentId"
            android:title="Sent Items" />
```

```
        <item
            android:id="@+id/outboxId"
            android:title="Outbox" />
        <item
            android:id="@+id/spamId"
            android:title="Spam Mails" />
    </menu>
</item>
```

Note: In the code above, remove the close sign tag (/) of the first Item tag. It is beside `android:title="Inbox"`

If you check your file in the **Design** mode, you should have the following design:



The full code of the **my_drawer_items.xml** file is as follows:

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


    <item
        android:id="@+id/inboxId"
        android:icon="@drawable/ic_baseline_mail_24"
        android:title="Inbox">
        <menu>
            <item
                android:id="@+id/sentId"
                android:title="Sent Items" />
            <item
                android:id="@+id/outboxId"
                android:title="Outbox" />
            <item
                android:id="@+id/spamId"
                android:title="Spam Mails" />
```

```
</menu>
    </item>

    <item
        android:id="@+id/calendarId"
        android:icon="@drawable/ic_baseline_calendar_today_24"
        android:title="Calendars" />

    <item android:id="@+id/contactsId"
        android:icon="@drawable/ic_baseline_contacts_24"
        android:title="Contacts" />

    <item android:id="@+id/settingsId"
        android:icon="@drawable/ic_baseline_settings_24"
        android:title="Settings" />

</menu>
```

24- Now, this step is very important, because you will tell your **NavigationView** widget which you have added in the **activity_main.xml** file before about which file must be used as a header for your Drawer and which one must be used for the menu list. To do this, open the **activity_main.xml** file in the **Code** mode and add the two gray highlighted attributes to your **NavigationView** tag. The code is as follows:

```
<com.google.android.material.navigation.NavigationView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/myDrawerView"
    android:layout_gravity="start"
    android:fitsSystemWindows="true"
    app:headerLayout="@layout/my_drawer_header"
    app:menu="@menu/my_drawer_items"/>
```

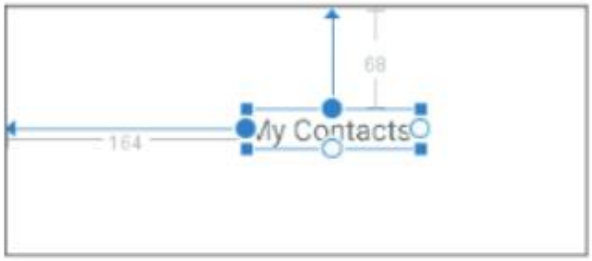
25- Our plan for the app user is for him to tap the **Contacts** in the drawer list. When this is done, another activity called **Contacts** will open. This is just to test some navigation techniques which we may use with our drawer list. Therefore, let us create a new activity by right clicking **Layouts → New → Activity → Empty Activity**

Type **Contacts** in the **File Name**, and click **Finish**

26- Open the **activity_contacts.xml** file in the Design mode, add a **TextView** widget, set its constraints, and set its attributes values as follows:

text : Contacts	**textSize**: 20sp

You should have the following design:



27- Open the **MainActivity** file, and add the following configuration for the **myToggle** variable:

```
class MainActivity : AppCompatActivity() {

    lateinit var myToggle: ActionBarDrawerToggle

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

28- Then add the following configuration for the **MainActivity** file. If you get a red under line under the **DrawerLayout**, double click it, click the red pop-up lamp, and select **Import**.

```
class MainActivity : AppCompatActivity() {

    lateinit var myToggle: ActionBarDrawerToggle

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

   val drawerLayout: DrawerLayout = findViewById(R.id.myDrawerLayout)
   val navView: NavigationView = findViewById(R.id.myDrawerView)

   myToggle = ActionBarDrawerToggle(this, drawerLayout, 0, 0)

   myDrawerLayout.addDrawerListener(myToggle)

   myToggle.syncState()
     supportActionBar?.setDisplayHomeAsUpEnabled(true)

   navView.setNavigationItemSelectedListener {
 when (it.itemId) {
```

```
    R.id.sentId -> {
        Snackbar.make(findViewById(R.id.sentId),"Your Email has been
sent successfully",Snackbar.LENGTH_LONG).show()
                }

    R.id.outboxId -> {
        Snackbar.make(findViewById(R.id.outboxId),"This is your
OutBox folder",Snackbar.LENGTH_LONG).show()
                }

    R.id.spamId -> {
        Snackbar.make(findViewById(R.id.spamId),"This is your Spam
folder",Snackbar.LENGTH_LONG).show()
                }

    R.id.calendarId -> {
         Snackbar.make(findViewById(R.id.calendarId),"This is your
Calendar",Snackbar.LENGTH_LONG).show()
                }

     R.id.contactsId -> {
         startActivity(Intent(this, Contacts::class.java))}
                }

                true

            }
        }

 override fun onOptionsItemSelected(item: MenuItem): Boolean {

      if (myToggle.onOptionsItemSelected(item)) {
          return true
      }
      return super.onOptionsItemSelected(item)
    }

}
```

As you see in the code above, the **setNavigationItemSelectedListener** method helps you in configuring the navigation for your drawer list.

29- **Run** your app. Tap your drawer button on your app toolbar and tap your drawer items. You should have the following output results: