Android Development

Ch-04

Outlines

- ListView
- RecyclerView
- Option Menu
- Floating Context Menu
- Floating Action Button
- App Icon

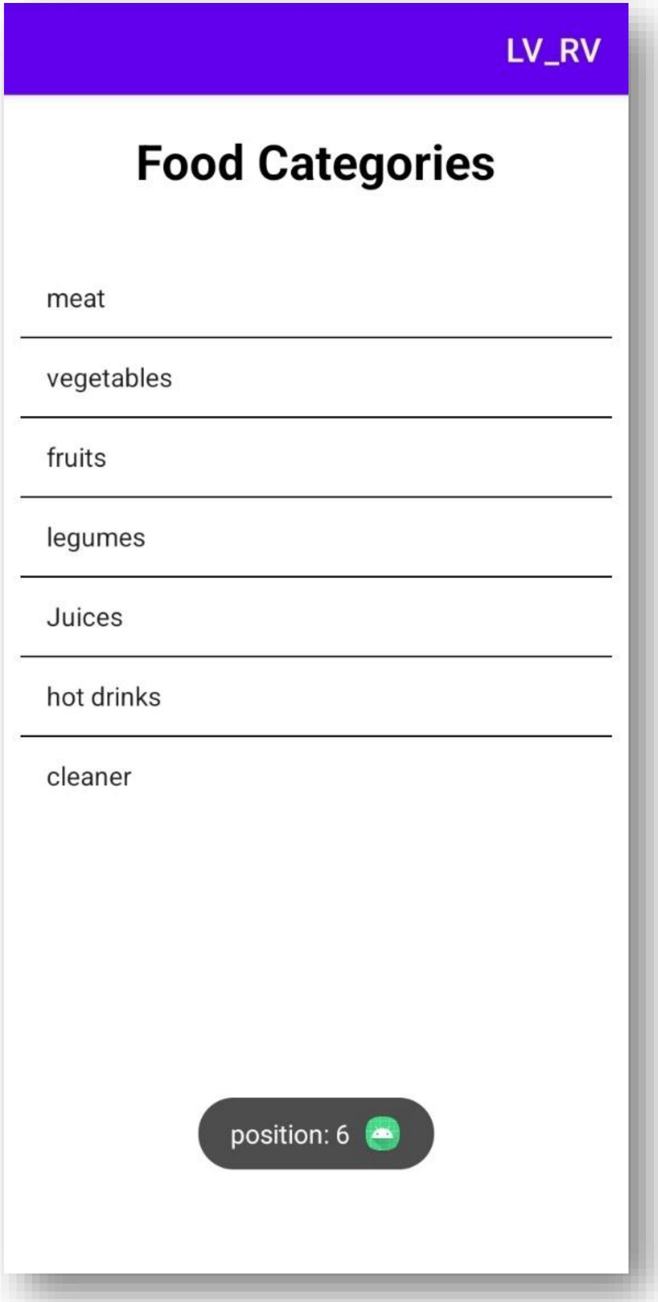
Android ListView

- An element to contain and display data sequentially in multiple rows.
- It extends to ViewGroup class.
- We can set the data into it in a static way using XML and dynamic way using java.
- The middle man between the data and the ListView is called: **Adapter**.

Adapter

- In Android, whenever we want to **bind** some data which we get from any data source (e.g. ArrayList, SQLite, etc.) with a UI component(e.g. ListView, RecuclerView, etc.) then Adapter comes into the picture.
- Adapter acts as a bridge between the UI component and data sources.
- There are a previous defined Adapters in android.
- We can create customized adapters too.

Example-1



LV_RV

Food Categories

meat

vegetables

fruits

legumes

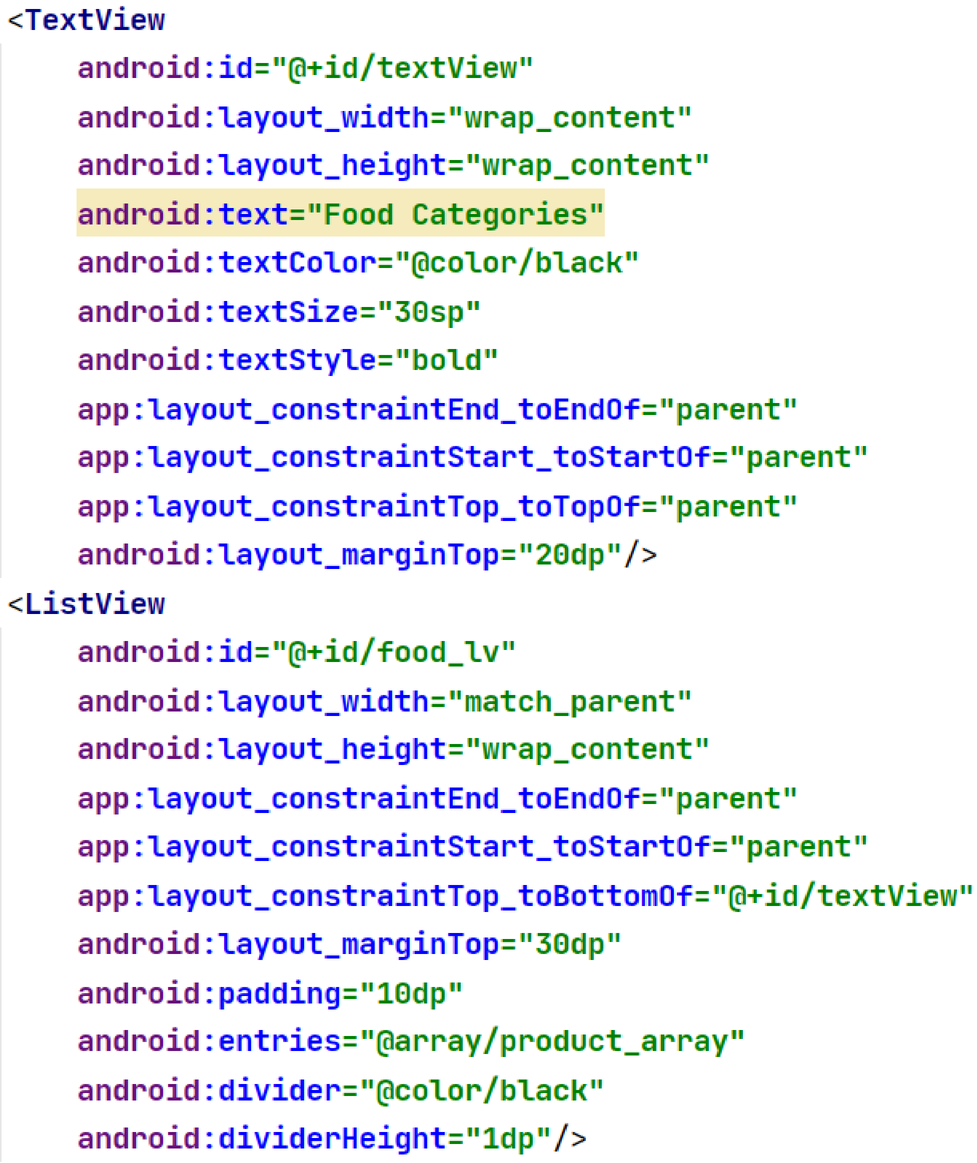
Juices

hot drinks

cleaner

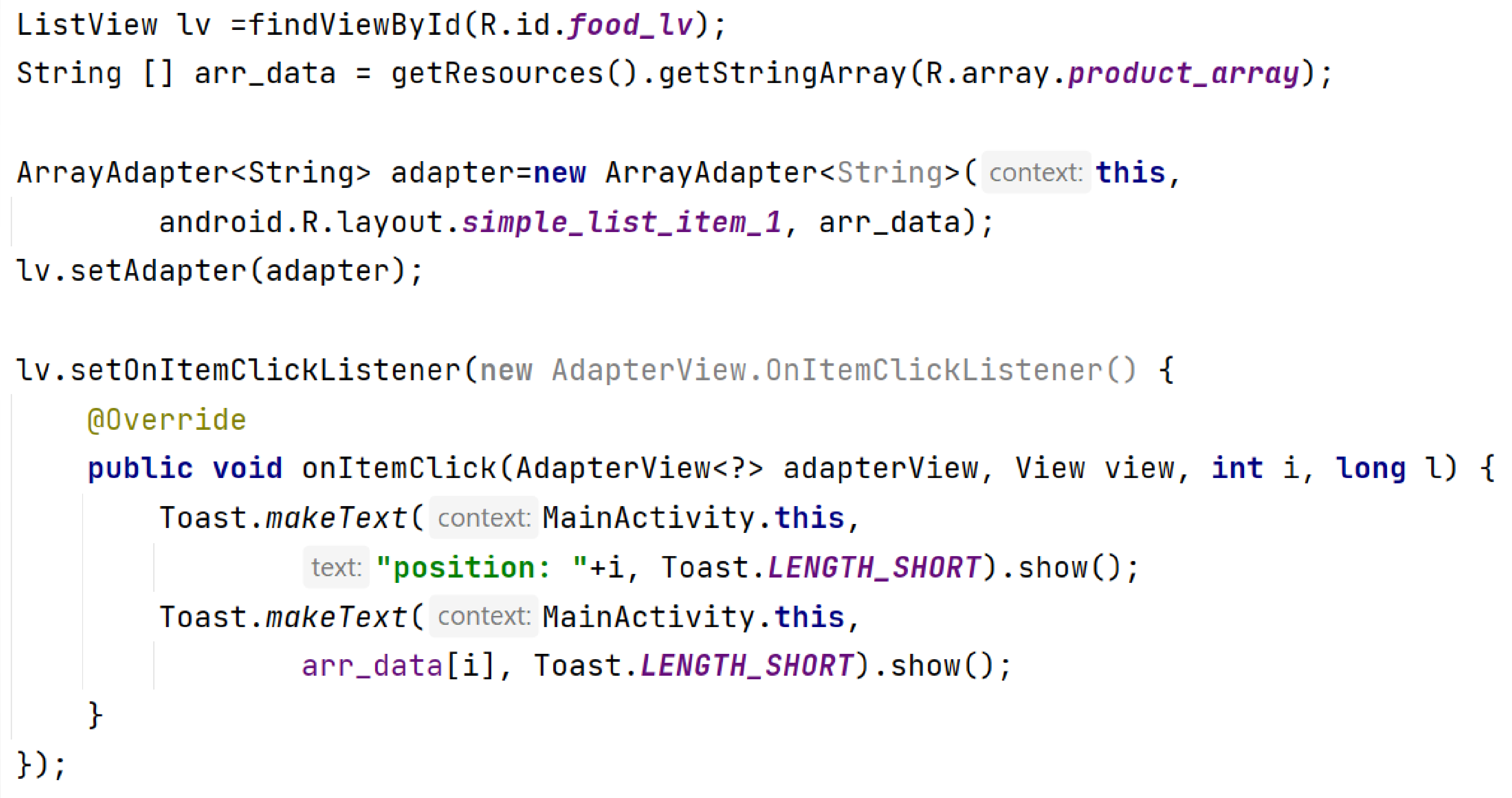
position: 6

Example-1 – solution.xml



```
<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Food Categories"
    android:textColor="@color/black"
    android:textSize="30sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    android:layout_marginTop="20dp"/>
<ListView
    android:id="@+id/food_lv"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView"
    android:layout_marginTop="30dp"
    android:padding="10dp"
    android:entries="@array/product_array"
    android:divider="@color/black"
    android:dividerHeight="1dp"/>
```

Example-1 – solution.java



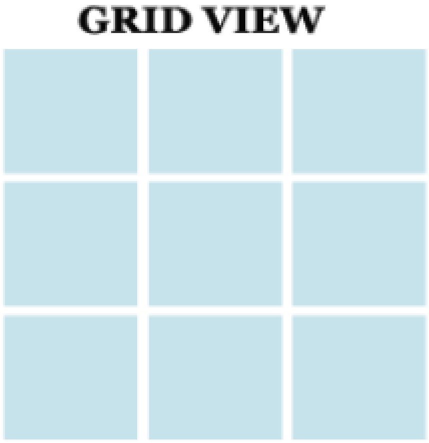
```
ListView lv =findViewById(R.id.food_lv);
String [] arr_data = getResources().getStringArray(R.array.product_array);

ArrayAdapter<String> adapter=new ArrayAdapter<String>( context: this,
        android.R.layout.simple_list_item_1, arr_data);
lv.setAdapter(adapter);

lv.setOnItemClickListener(new AdapterView.OnItemClickListener() {
    @Override
    public void onItemClick(AdapterView<?> adapterView, View view, int i, long l) {
        Toast.makeText( context: MainActivity.this,
                text: "position: "+i, Toast.LENGTH_SHORT).show();
        Toast.makeText( context: MainActivity.this,
                arr_data[i], Toast.LENGTH_SHORT).show();
    }
});
```

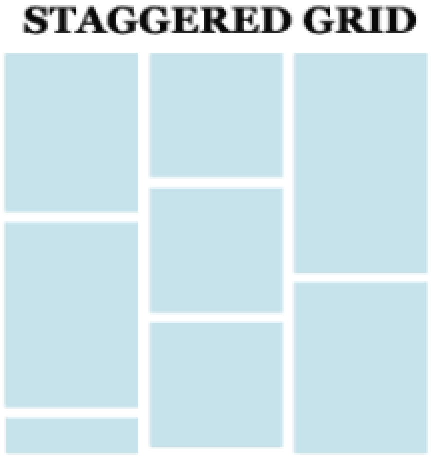
RecyclerView

- It is flexible and efficient version of **ListView**.
- It is an container for rendering larger data set very efficiently.
- It provides an ability to implement the **horizontal**, **vertical** and **expandable** List.
- It's mainly used when we have data can change at **run time** based on user action or any **network events**.
- **Important** Components of RecyclerView:
- **ItemView:** the design.xml of items in recycler view.
- **ViewHolder:** It will save/hold the inflation of RV items and past used.
- **RecyclerView.Adapter**
- **Layout Managers:** to manage the work of adapter and appearance of RV items on the layout.

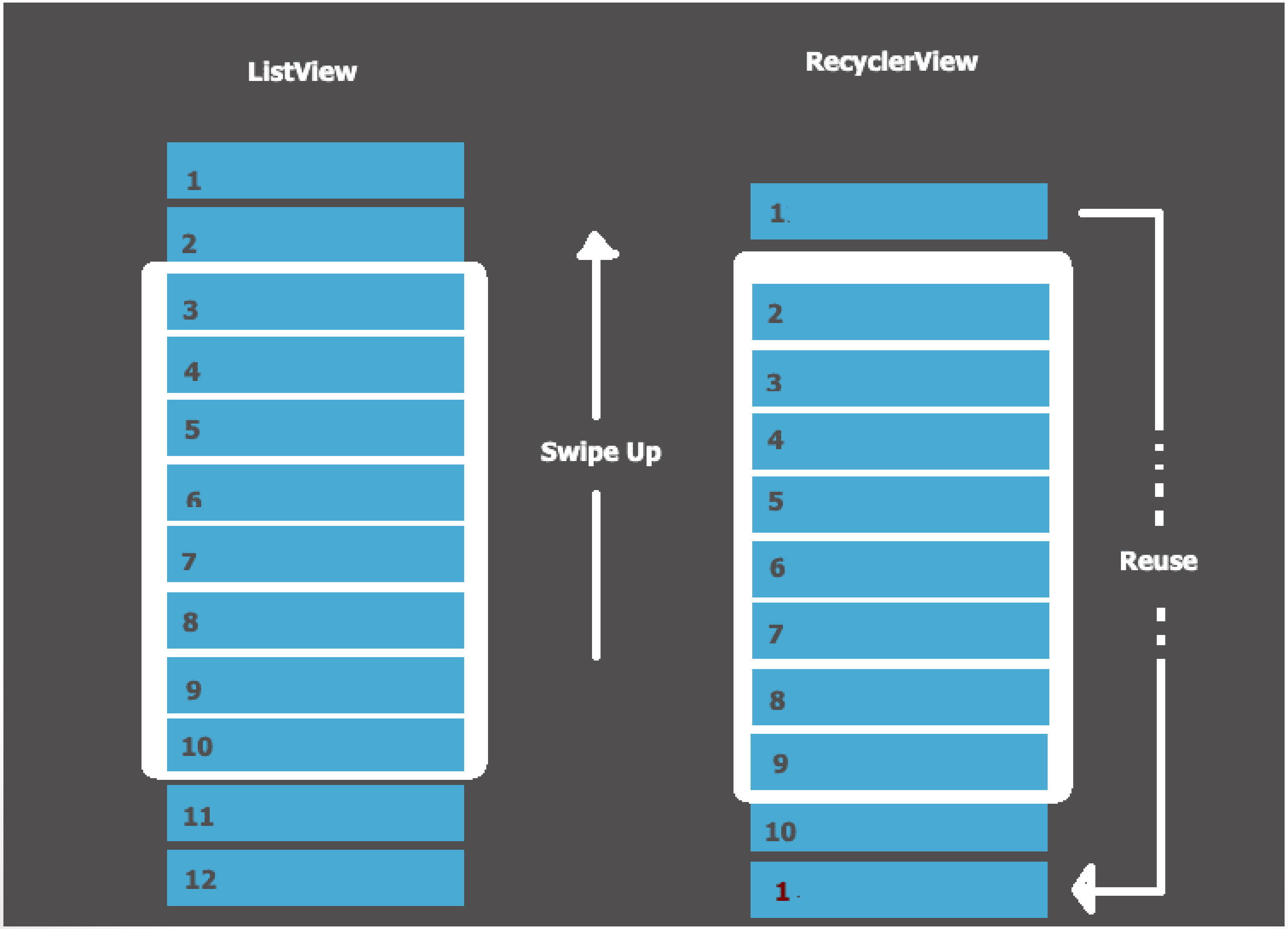
RecyclerView - Layout Manager types

- **Linear Layout Manager**: It is used for displaying the data items in a horizontal or vertical scrolling List (VERTICAL is Default).
- **Grid Layout Manager:** It is used to show the items in grid format.
- **Staggered Grid Layout Manager:** It is used to show the items in staggered Grid.





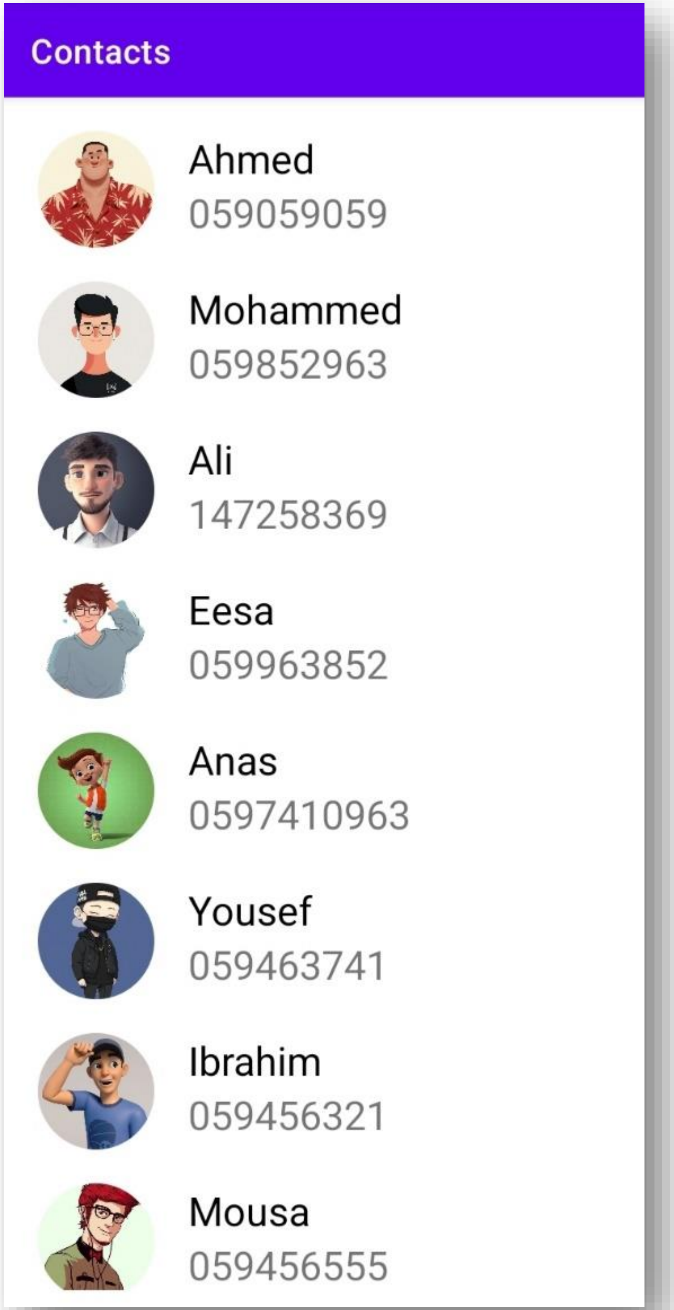
RecyclerView vs. ListView



Steps of create RecyclerView

- **Step 1:** create main **layout file containing RecyclerVeiw** and connect with.
- **Step 2:** create java package (**models**).
- **Step 3:** create the **object** java class inside models package.
- **Step 4**: create **item layout** for row items in RecyclerView.
- **Step 5:** prepare the data to be used by adapter.
- **Step 6:** create java package (**adapters**).
- **Step 7:** create a **custom adapter class** inside **adapters** package.
- **Step 8:** connect the adapter with a recycler view.

Example-2



Contacts

Ahmed
059059059

Mohammed
059852963

Ali
147258369

Eesa
059963852

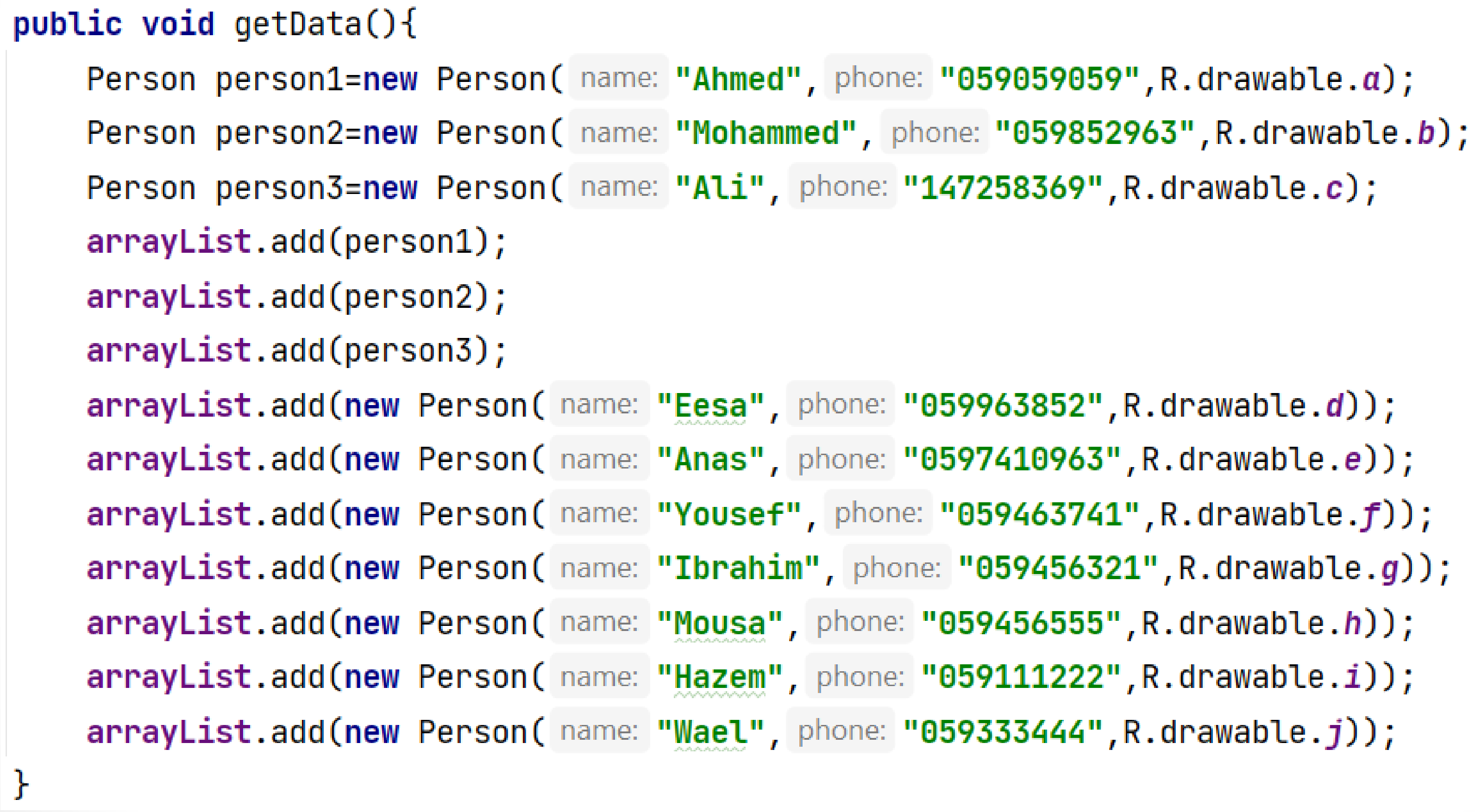
Anas
0597410963

Yousef
059463741

Ibrahim
059456321

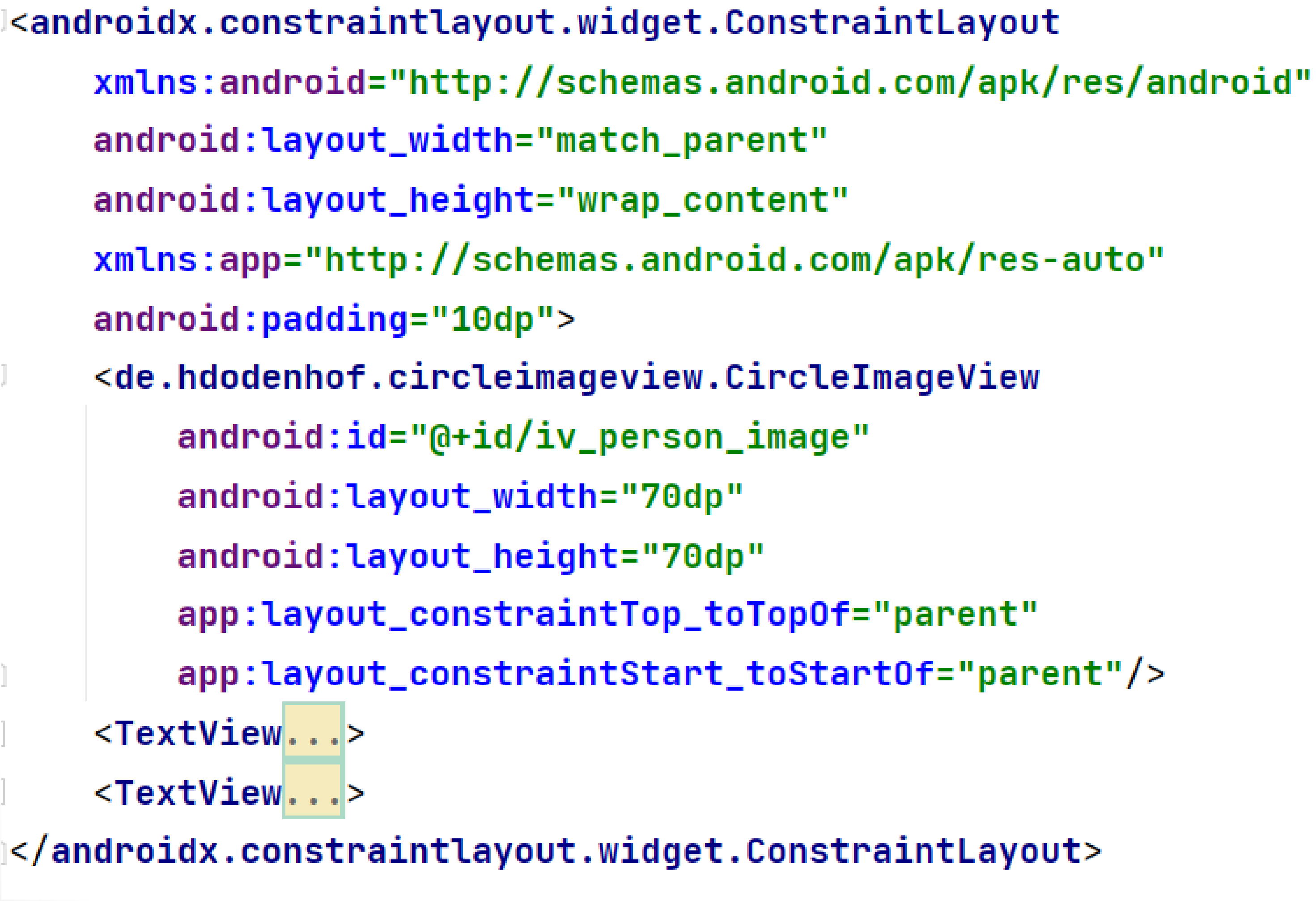
Mousa
059456555

Example-1 – prepare the data



```
public void getData(){
    Person person1=new Person( name: "Ahmed", phone: "059059059",R.drawable.a);
    Person person2=new Person( name: "Mohammed", phone: "059852963",R.drawable.b);
    Person person3=new Person( name: "Ali", phone: "147258369",R.drawable.c);
    arrayList.add(person1);
    arrayList.add(person2);
    arrayList.add(person3);
    arrayList.add(new Person( name: "Eesa", phone: "059963852",R.drawable.d));
    arrayList.add(new Person( name: "Anas", phone: "0597410963",R.drawable.e));
    arrayList.add(new Person( name: "Yousef", phone: "059463741",R.drawable.f));
    arrayList.add(new Person( name: "Ibrahim", phone: "059456321",R.drawable.g));
    arrayList.add(new Person( name: "Mousa", phone: "059456555",R.drawable.h));
    arrayList.add(new Person( name: "Hazem", phone: "059111222",R.drawable.i));
    arrayList.add(new Person( name: "Wael", phone: "059333444",R.drawable.j));
}
```

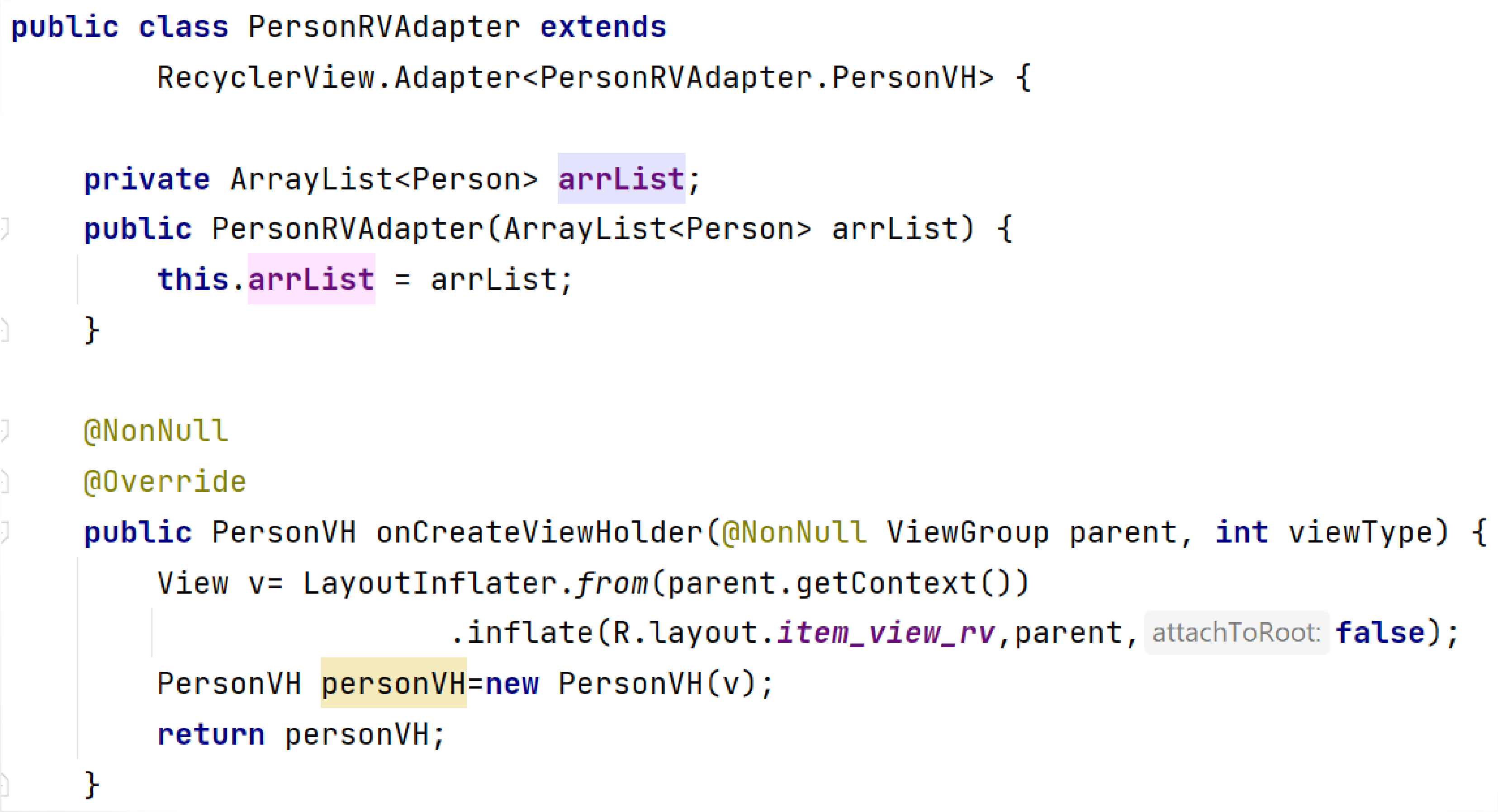
Example-1 – item_view_rv.java



```
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:padding="10dp">
    <de.hdodenhof.circleimageview.CircleImageView
        android:id="@+id/iv_person_image"
        android:layout_width="70dp"
        android:layout_height="70dp"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintStart_toStartOf="parent"/>
    <TextView...>
    <TextView...>
</androidx.constraintlayout.widget.ConstraintLayout>
```

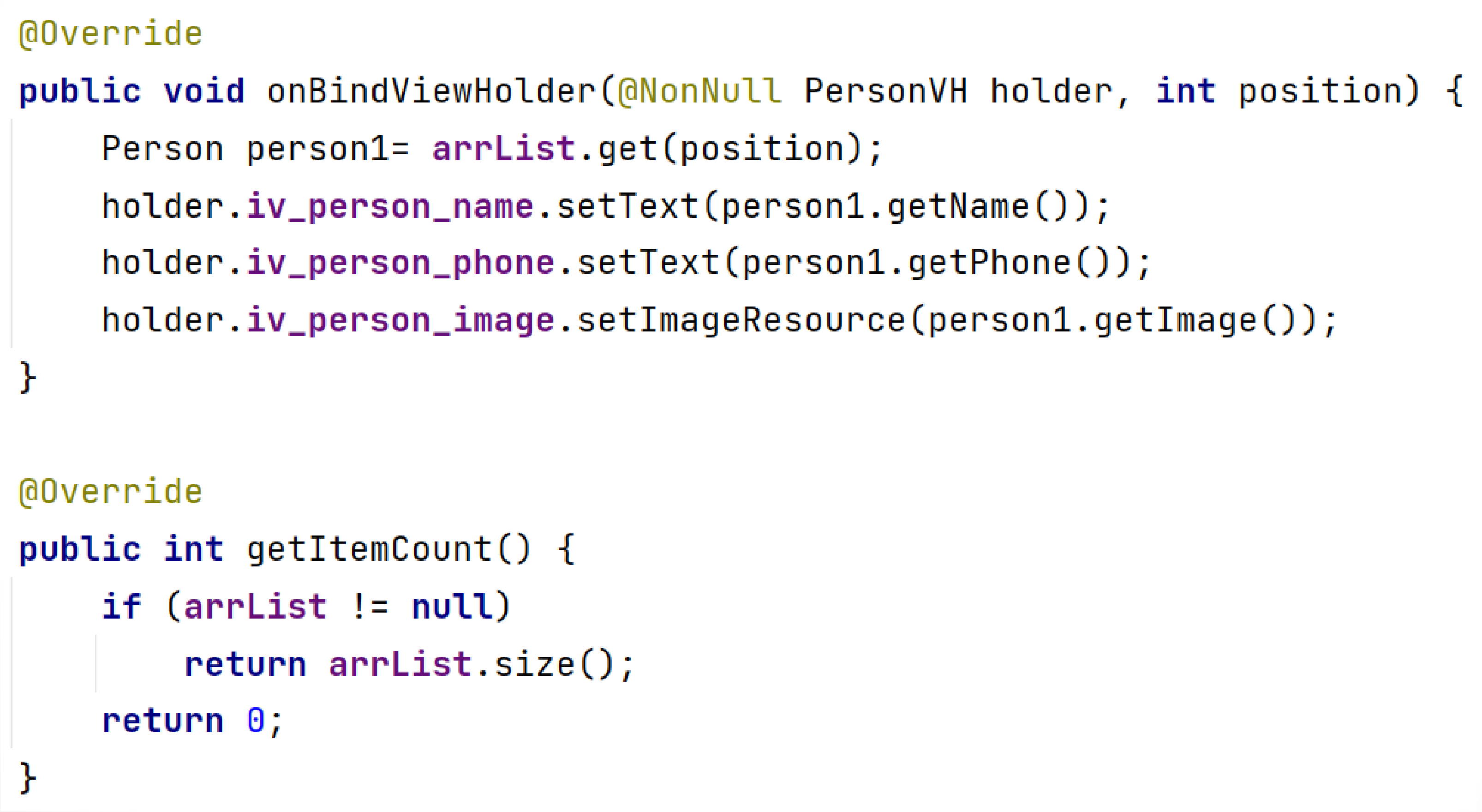
Circleimageview's Third party library:
implementation 'de.hdodenhof:circleimageview:3.1.0'

Example-1 – Adapter.java



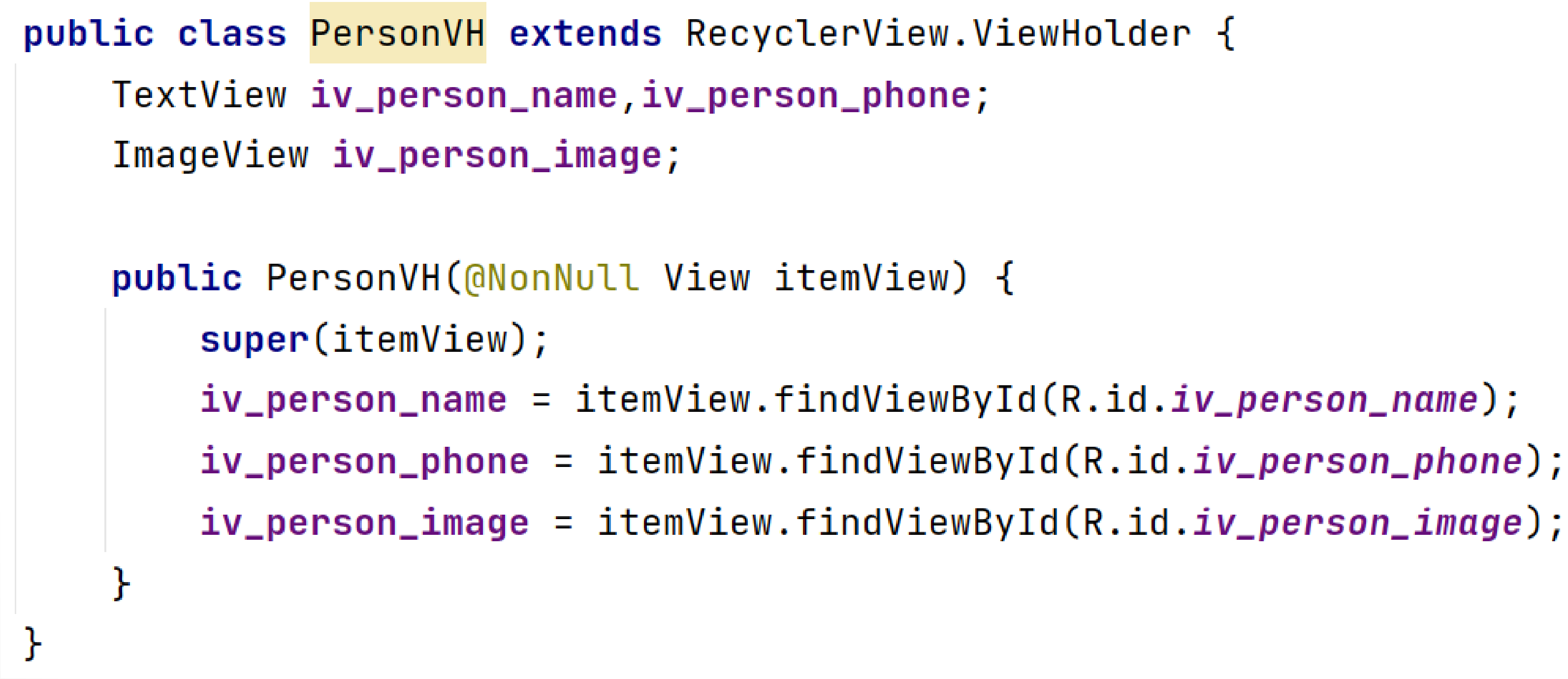
```
public class PersonRVAdapter extends
        RecyclerView.Adapter<PersonRVAdapter.PersonVH> {

    private ArrayList<Person> arrList;
    public PersonRVAdapter(ArrayList<Person> arrList) {
        this.arrList = arrList;
    }

    @NonNull
    @Override
    public PersonVH onCreateViewHolder(@NonNull ViewGroup parent, int viewType) {
        View v= LayoutInflater.from(parent.getContext())
                        .inflate(R.layout.item_view_rv,parent, attachToRoot: false);
        PersonVH personVH=new PersonVH(v);
        return personVH;
    }
```

Example-1 – Adapter.java



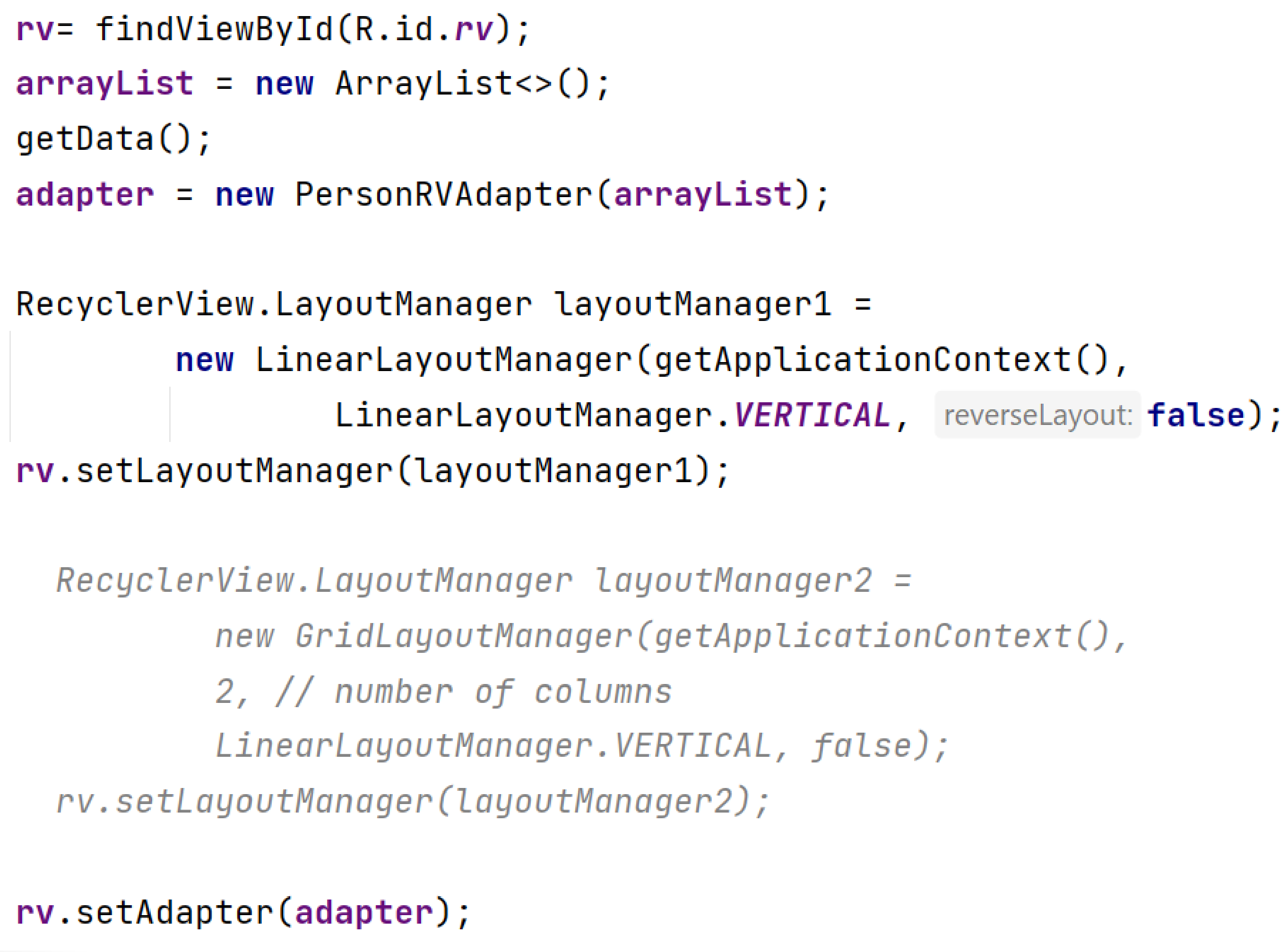
```java
@Override
public void onBindViewHolder(@NonNull PersonVH holder, int position) {
    Person person1= arrList.get(position);
    holder.iv_person_name.setText(person1.getName());
    holder.iv_person_phone.setText(person1.getPhone());
    holder.iv_person_image.setImageResource(person1.getImage());
}

@Override
public int getItemCount() {
    if (arrList != null)
        return arrList.size();
    return 0;
}
```

Example-1 – Adapter.java



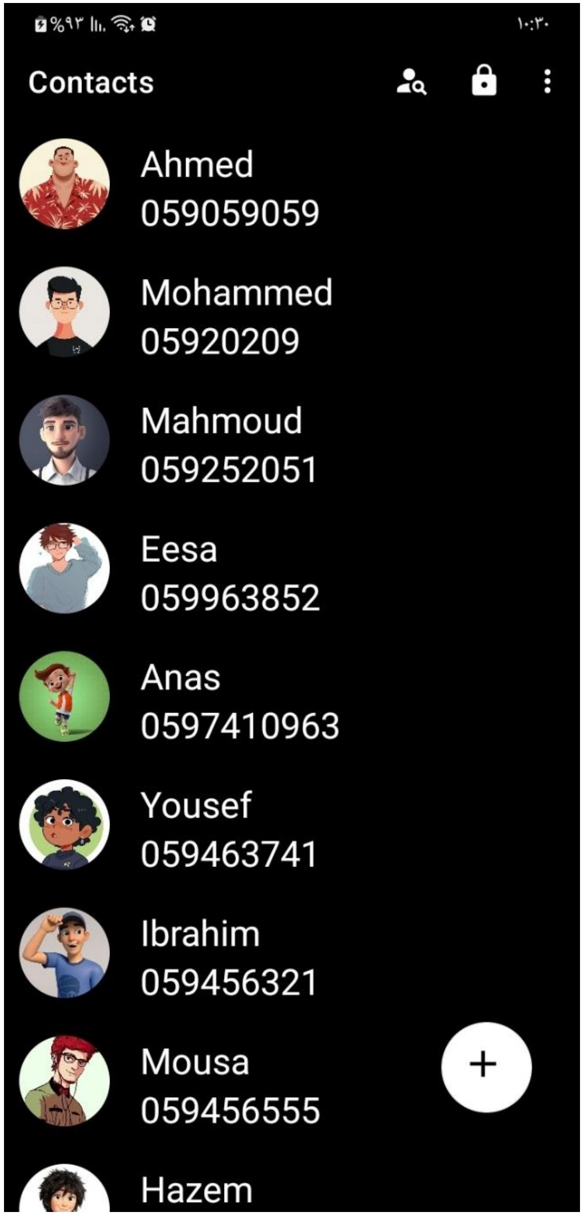
```java
public class PersonVH extends RecyclerView.ViewHolder {
    TextView iv_person_name,iv_person_phone;
    ImageView iv_person_image;

    public PersonVH(@NonNull View itemView) {
        super(itemView);
        iv_person_name = itemView.findViewById(R.id.iv_person_name);
        iv_person_phone = itemView.findViewById(R.id.iv_person_phone);
        iv_person_image = itemView.findViewById(R.id.iv_person_image);
    }
}
```

Example-1 – MainLayout.java



```
rv= findViewById(R.id.rv);
arrayList = new ArrayList<>();
getData();
adapter = new PersonRVAdapter(arrayList);

RecyclerView.LayoutManager layoutManager1 =
        new LinearLayoutManager(getApplicationContext(),
                LinearLayoutManager.VERTICAL, reverseLayout: false);
rv.setLayoutManager(layoutManager1);

  RecyclerView.LayoutManager layoutManager2 =
          new GridLayoutManager(getApplicationContext(),
          2, // number of columns
          LinearLayoutManager.VERTICAL, false);
  rv.setLayoutManager(layoutManager2);

rv.setAdapter(adapter);
```

Example-3



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Contacts

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Mohammed
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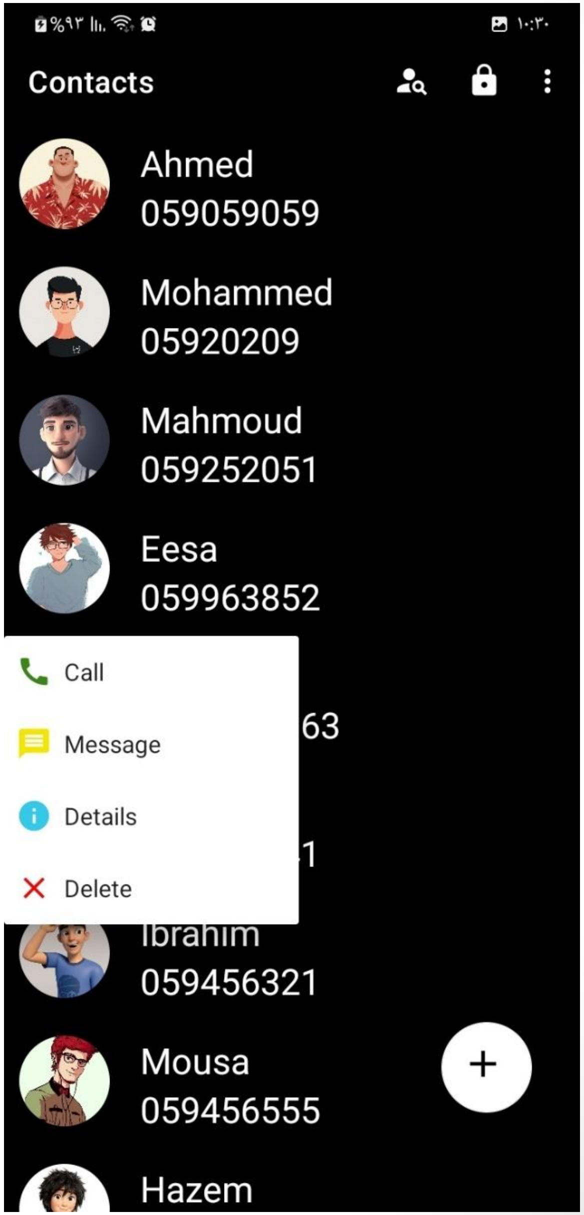
Hazem



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1

Ibrahim
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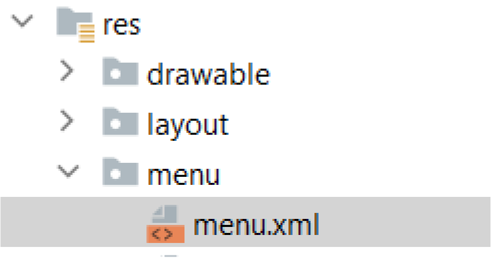
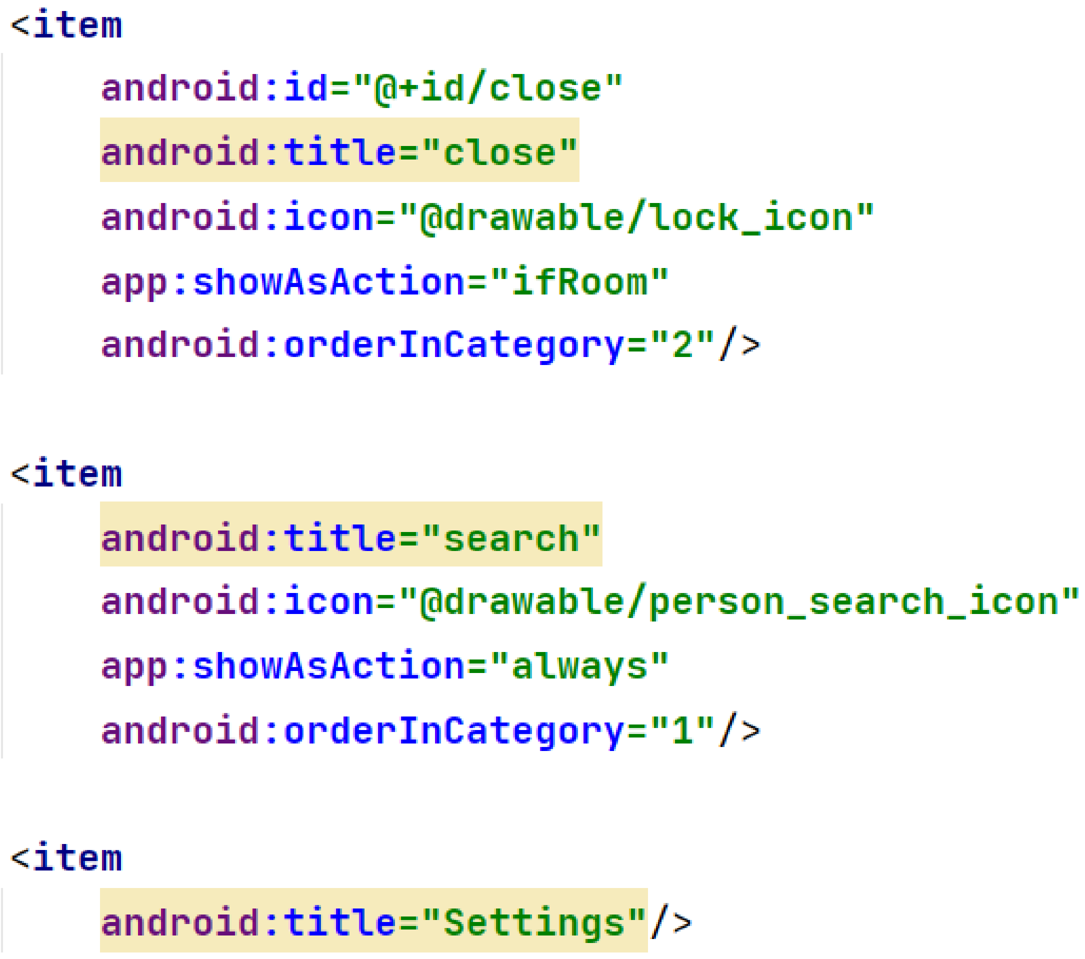
Hazem

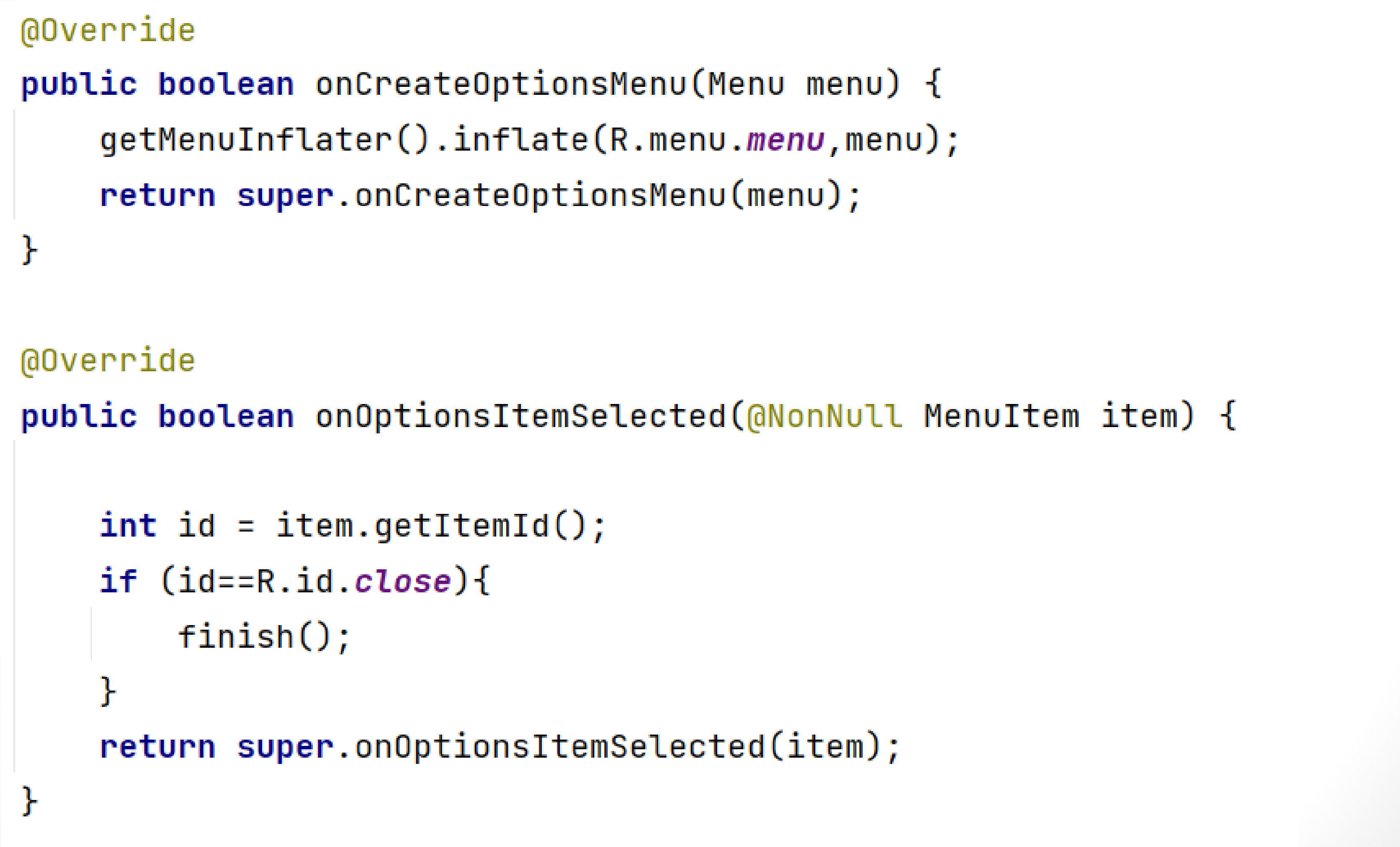
Example-3 – OptionMenu.xml





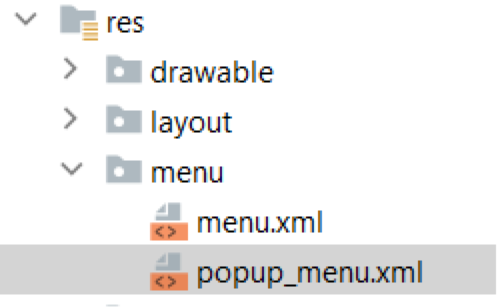
```
<item
    android:id="@+id/close"
    android:title="close"
    android:icon="@drawable/lock_icon"
    app:showAsAction="ifRoom"
    android:orderInCategory="2"/>

<item
    android:title="search"
    android:icon="@drawable/person_search_icon"
    app:showAsAction="always"
    android:orderInCategory="1"/>

<item
    android:title="Settings"/>
```

Example-3 – OptionMenu.java

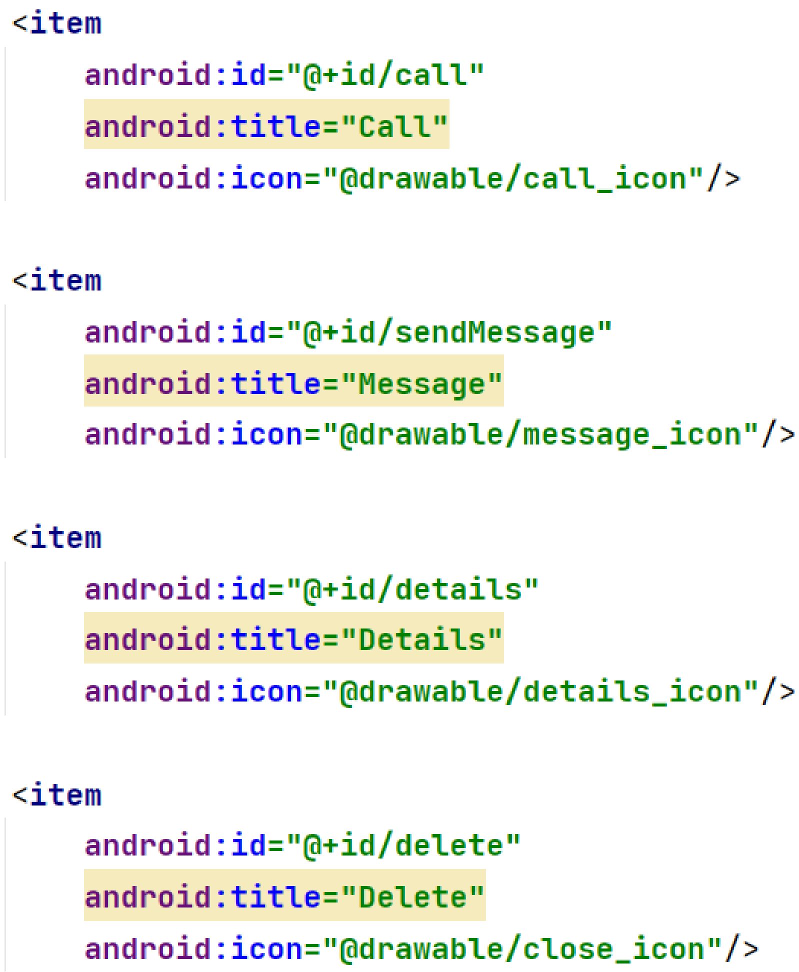


```java
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    getMenuInflater().inflate(R.menu.menu,menu);
    return super.onCreateOptionsMenu(menu);
}

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

    int id = item.getItemId();
    if (id==R.id.close){
        finish();
    }
    return super.onOptionsItemSelected(item);
}
```

Example-3 – FloatingMenu.xml

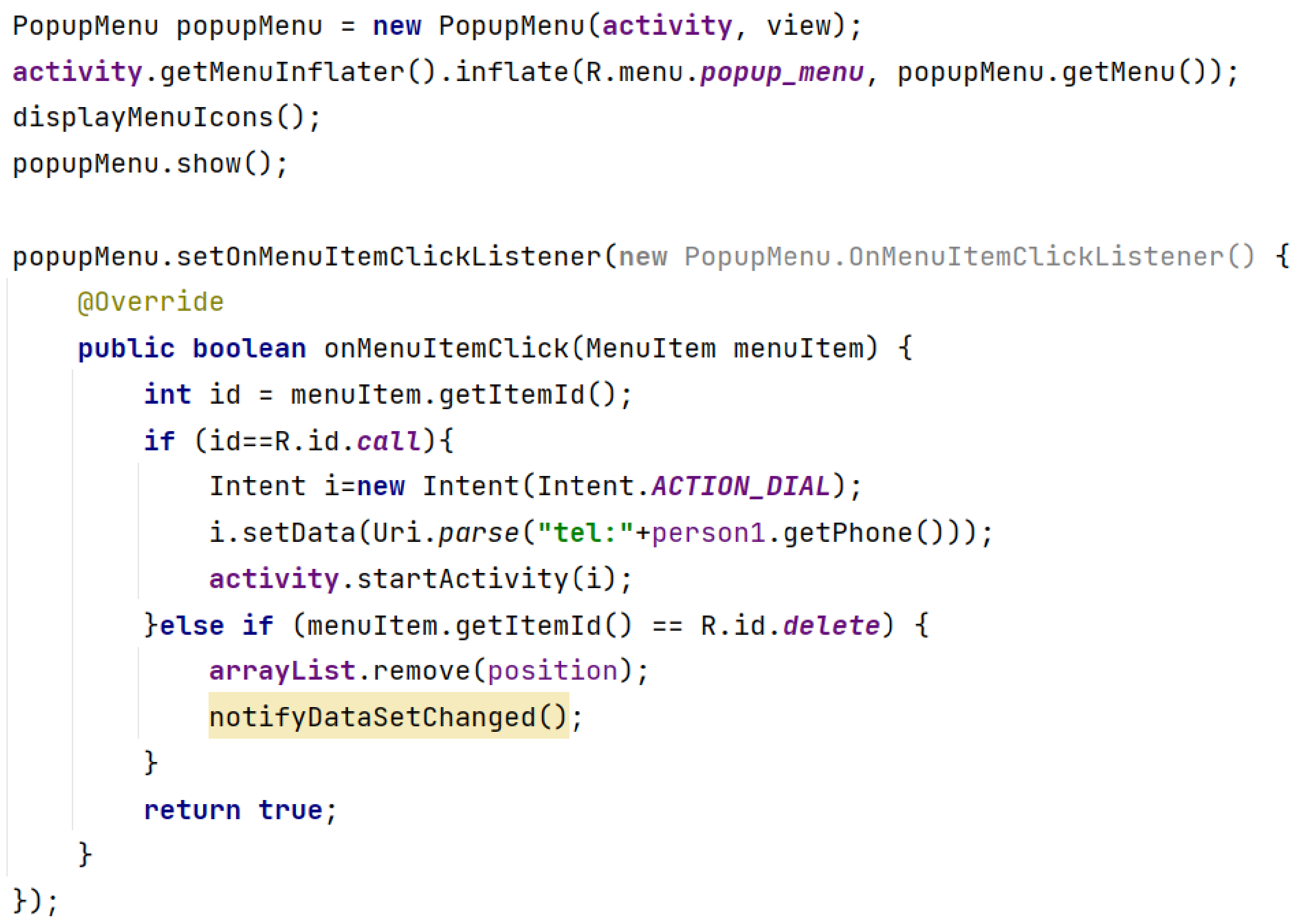


```
res
  drawable
  layout
  menu
    menu.xml
    popup_menu.xml
```



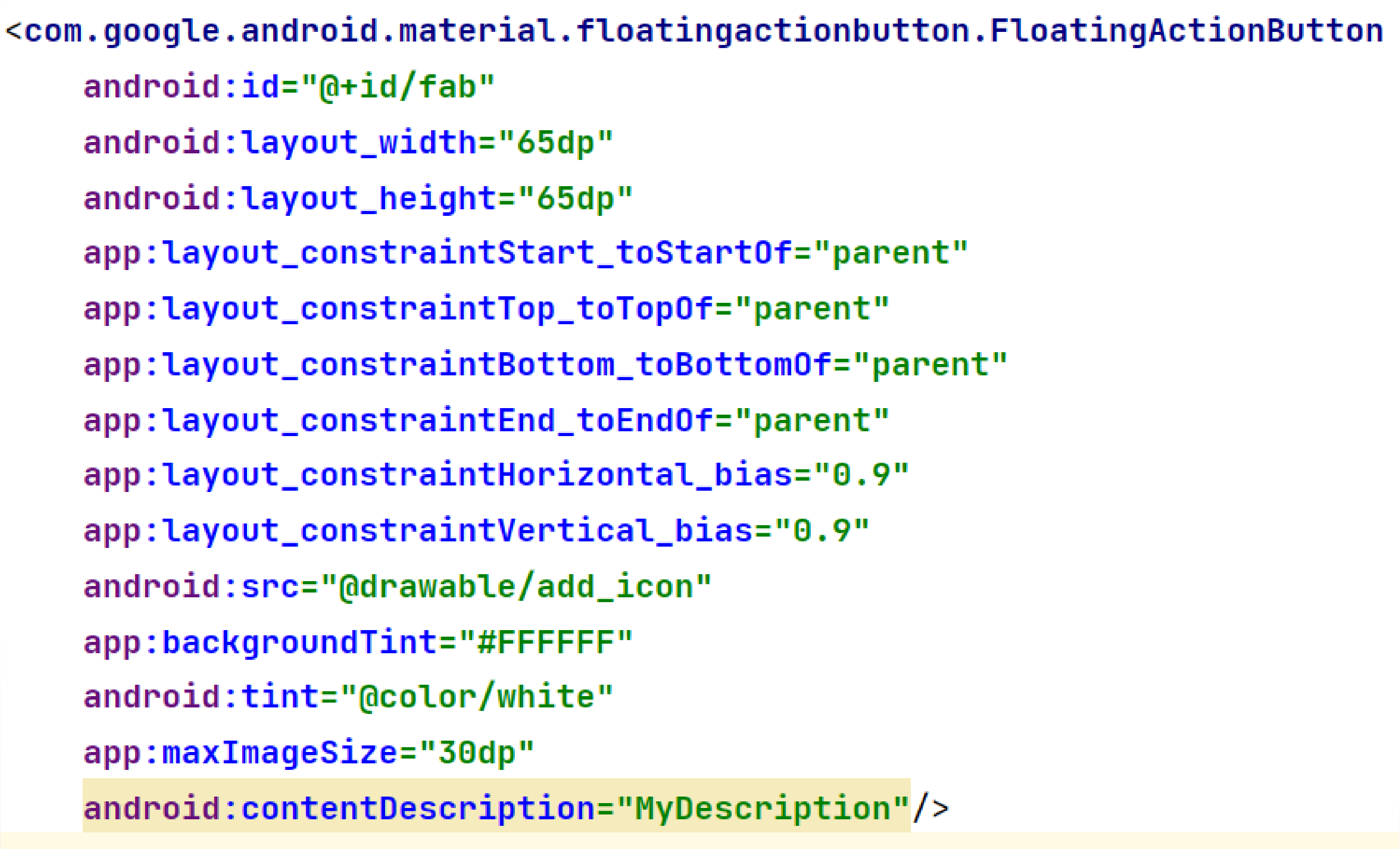
```
<item
    android:id="@+id/call"
    android:title="Call"
    android:icon="@drawable/call_icon"/>

<item
    android:id="@+id/sendMessage"
    android:title="Message"
    android:icon="@drawable/message_icon"/>

<item
    android:id="@+id/details"
    android:title="Details"
    android:icon="@drawable/details_icon"/>

<item
    android:id="@+id/delete"
    android:title="Delete"
    android:icon="@drawable/close_icon"/>
```

Example-3 – FloatingMenu.java



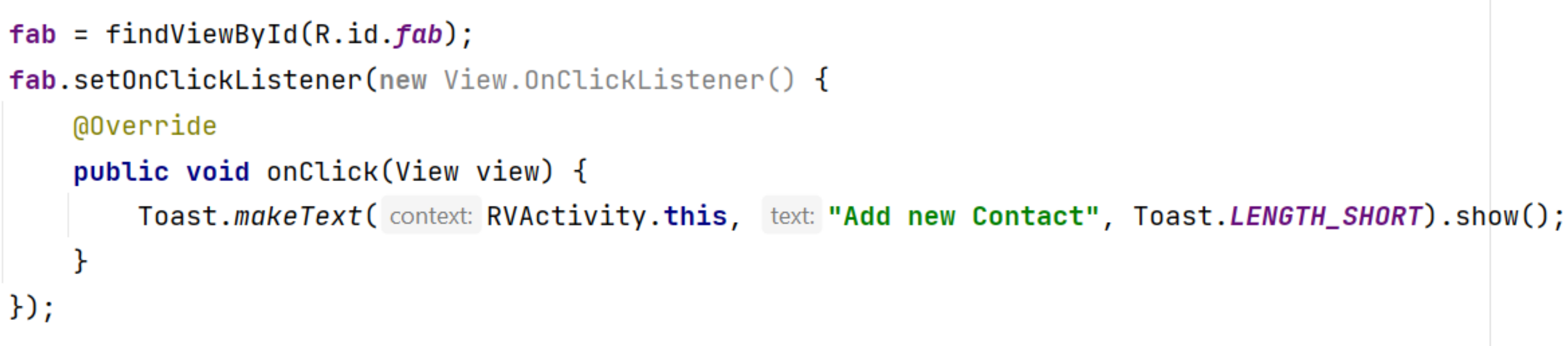
```
PopupMenu popupMenu = new PopupMenu(activity, view);
activity.getMenuInflater().inflate(R.menu.popup_menu, popupMenu.getMenu());
displayMenuIcons();
popupMenu.show();

popupMenu.setOnMenuItemClickListener(new PopupMenu.OnMenuItemClickListener() {
    @Override
    public boolean onMenuItemClick(MenuItem menuItem) {
        int id = menuItem.getItemId();
        if (id==R.id.call){
            Intent i=new Intent(Intent.ACTION_DIAL);
            i.setData(Uri.parse("tel:"+person1.getPhone()));
            activity.startActivity(i);
        }else if (menuItem.getItemId() == R.id.delete) {
            arrayList.remove(position);
            notifyDataSetChanged();
        }
        return true;
    }
});
```

Example-3 – FloatingActionButton.xml



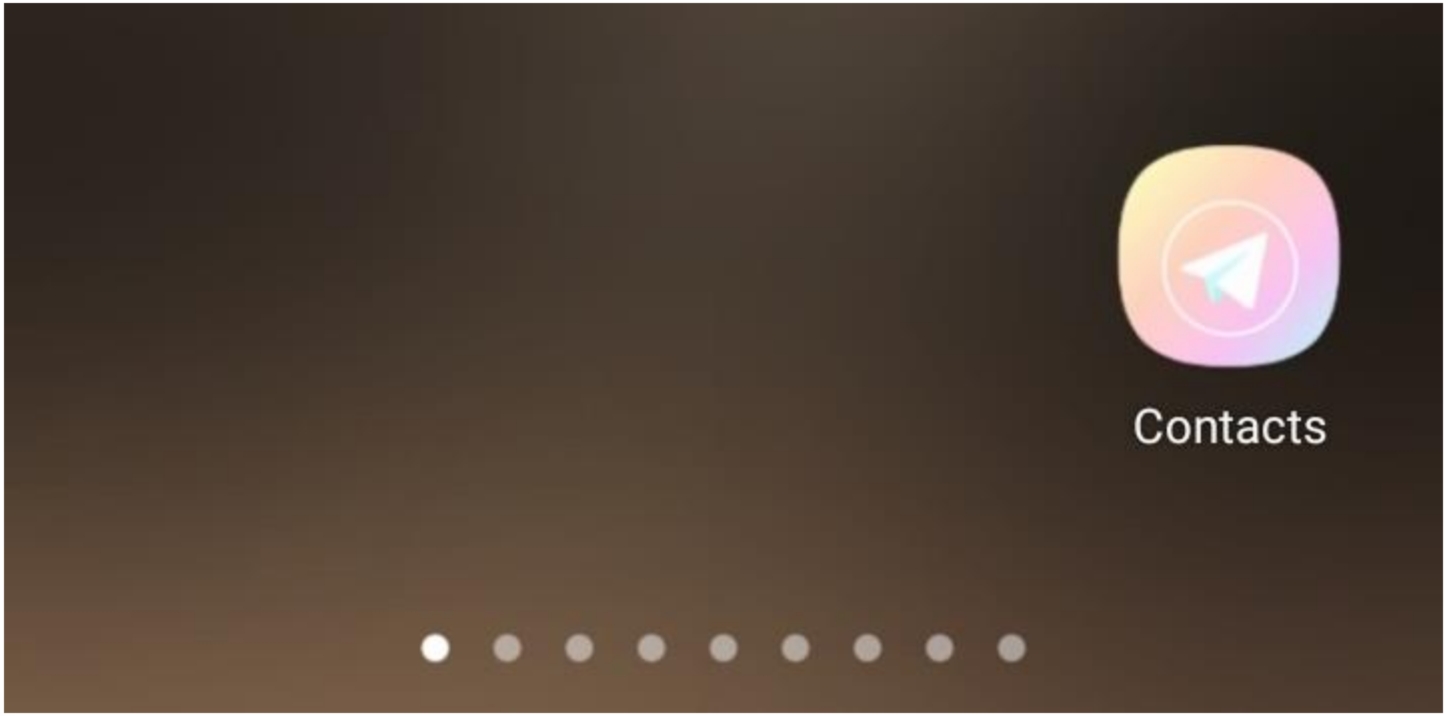
```xml
<com.google.android.material.floatingactionbutton.FloatingActionButton
    android:id="@+id/fab"
    android:layout_width="65dp"
    android:layout_height="65dp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.9"
    app:layout_constraintVertical_bias="0.9"
    android:src="@drawable/add_icon"
    app:backgroundTint="#FFFFFF"
    android:tint="@color/white"
    app:maxImageSize="30dp"
    android:contentDescription="MyDescription"/>
```

Example-3 – FloatingActionButton.java

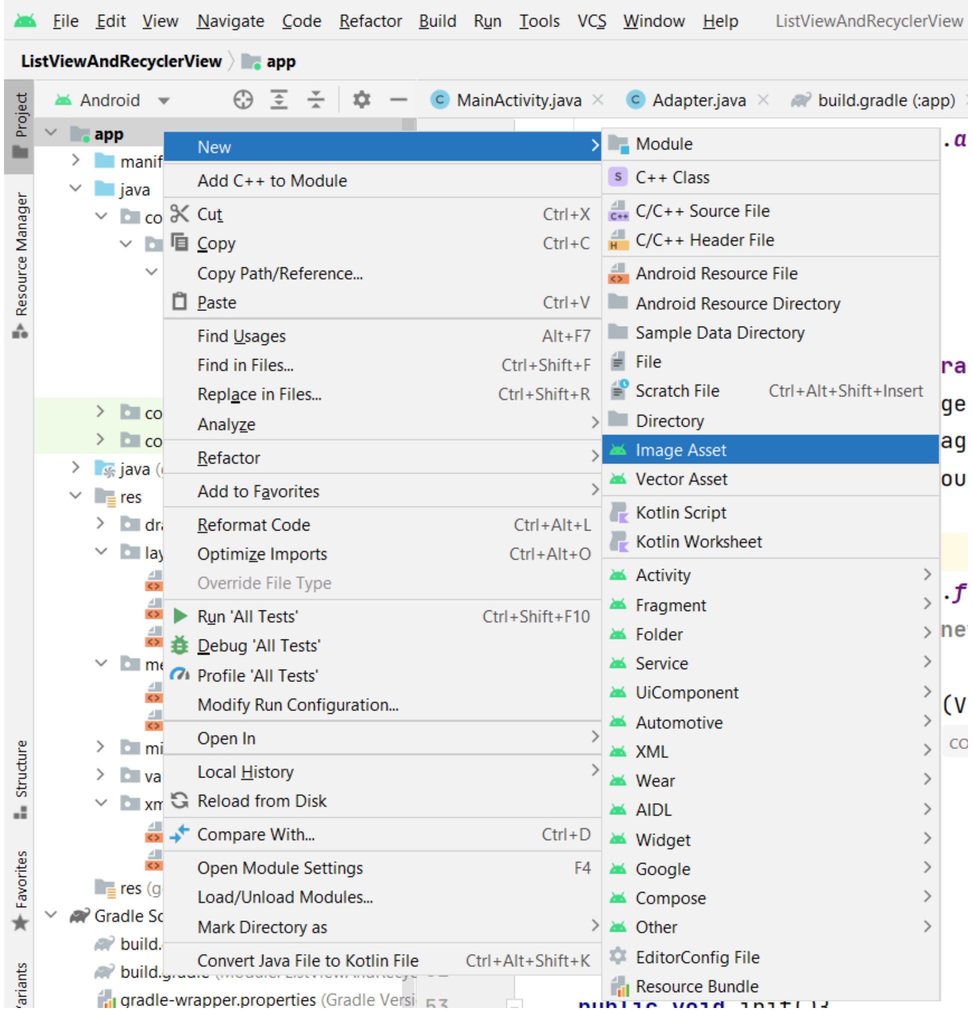


```
fab = findViewById(R.id.fab);
fab.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Toast.makeText( context: RVActivity.this,  text: "Add new Contact", Toast.LENGTH_SHORT).show();
    }
});
```

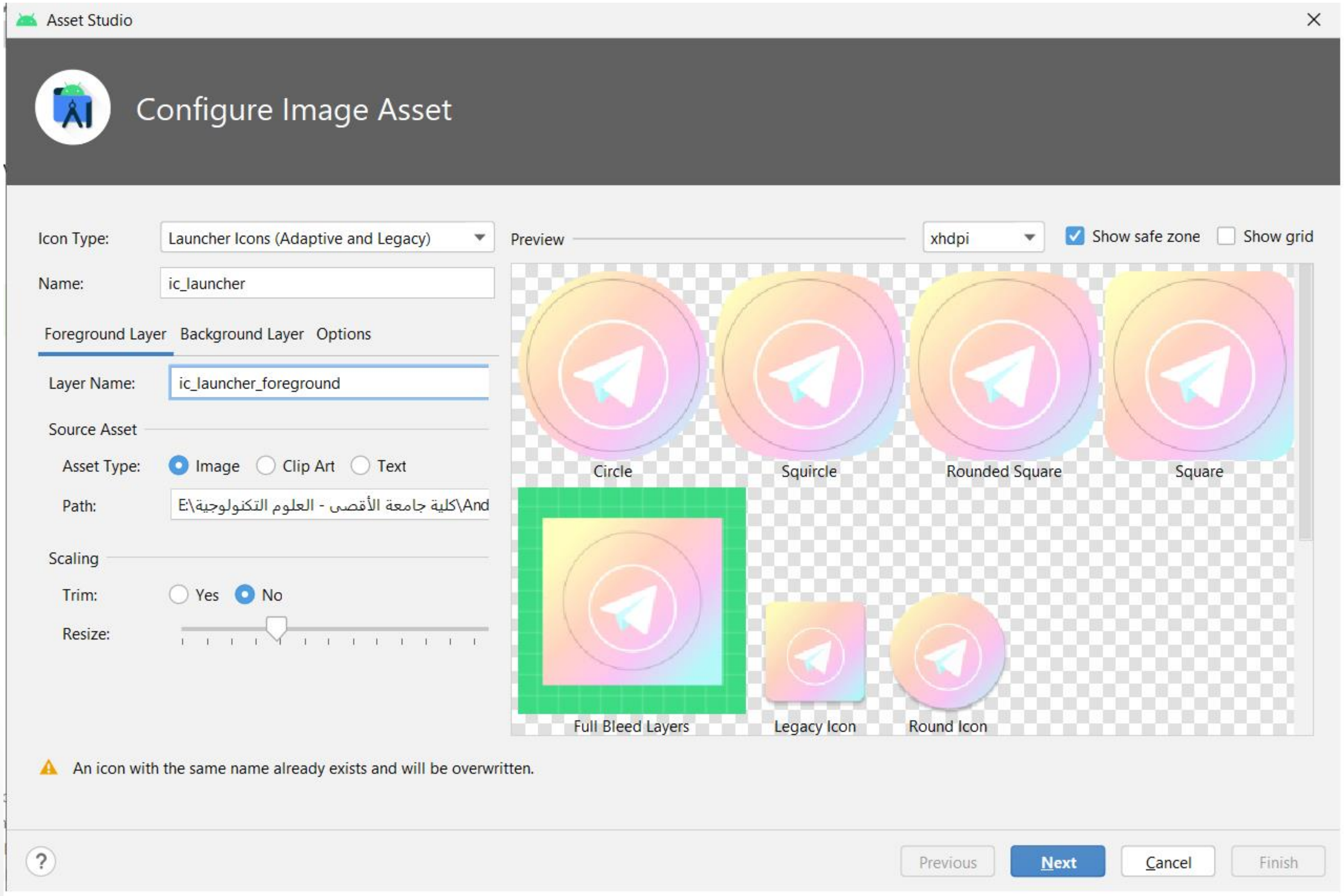
Example-4. Add Image Icon



Example-4. Add Image Icon (1)



Example-4. Add Image Icon (2)



Icon Type: Launcher Icons (Adaptive and Legacy)

Name: ic_launcher

Foreground Layer | Background Layer | Options

Layer Name: ic_launcher_foreground

Source Asset

Asset Type: ● Image ○ Clip Art ○ Text

Path: E:\كلية جامعة الأقصى - العلوم التكنولوجية\And

Scaling

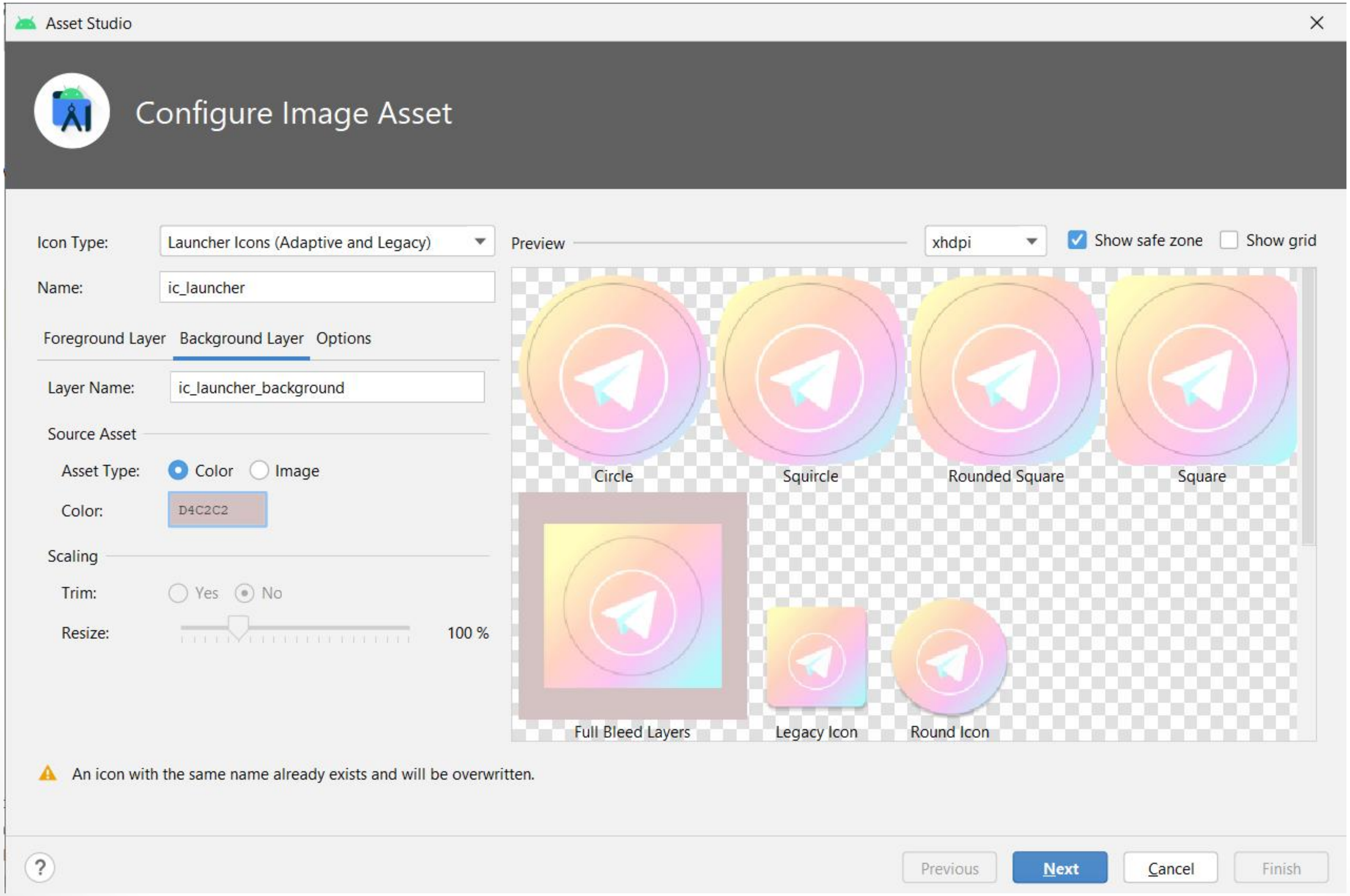
Trim: ○ Yes ● No

Resize:

xhdpi ☑ Show safe zone □ Show grid

⚠ An icon with the same name already exists and will be overwritten.

Example-4. Add Image Icon (3)



Configure Image Asset

Icon Type: Launcher Icons (Adaptive and Legacy)

Name: ic_launcher

Layer Name: ic_launcher_background

Source Asset

Asset Type: ● Color ○ Image

Color: D4C2C2

Scaling

Trim: ○ Yes ● No

Resize: 100 %

⚠ An icon with the same name already exists and will be overwritten.

Done

Fares Saleem