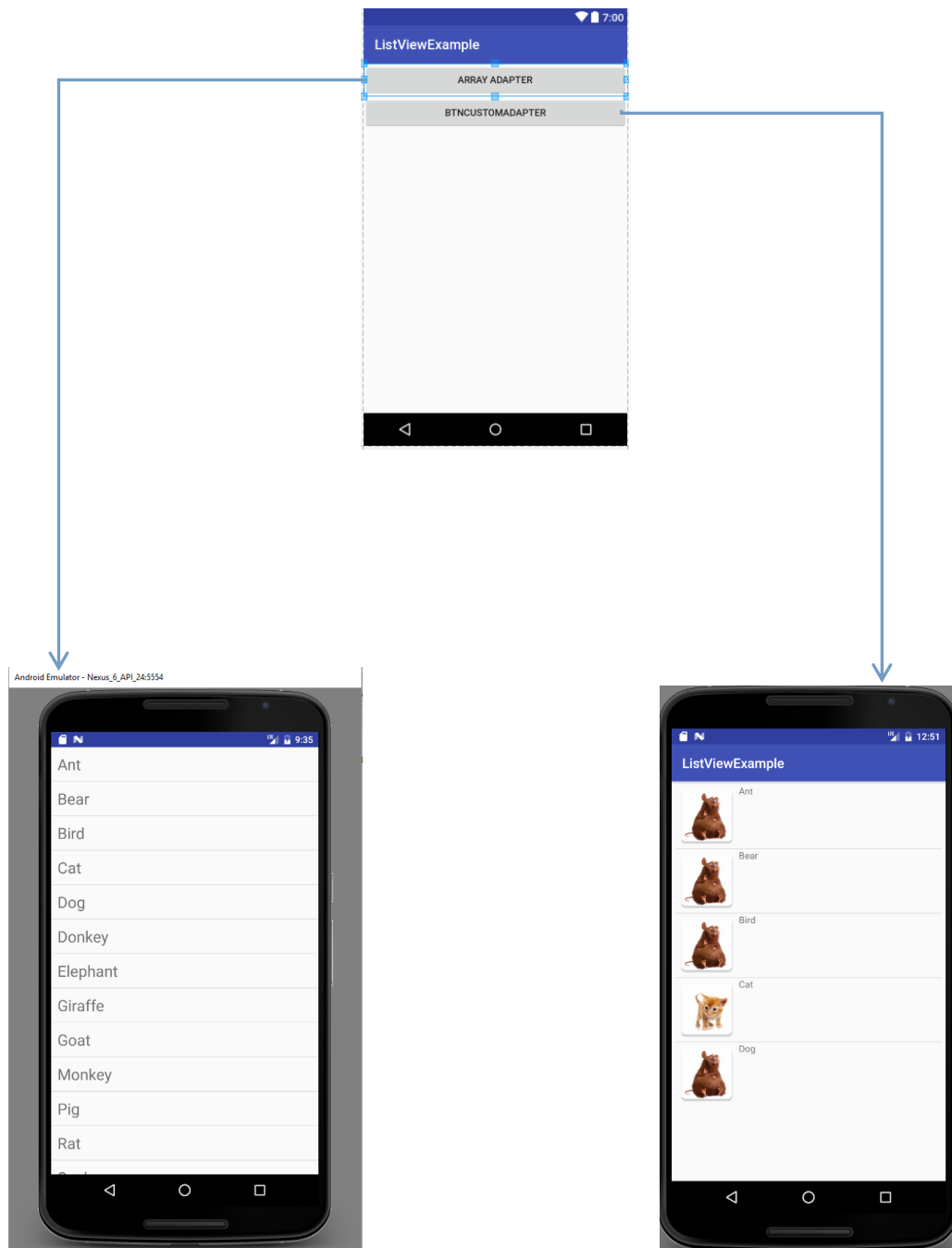
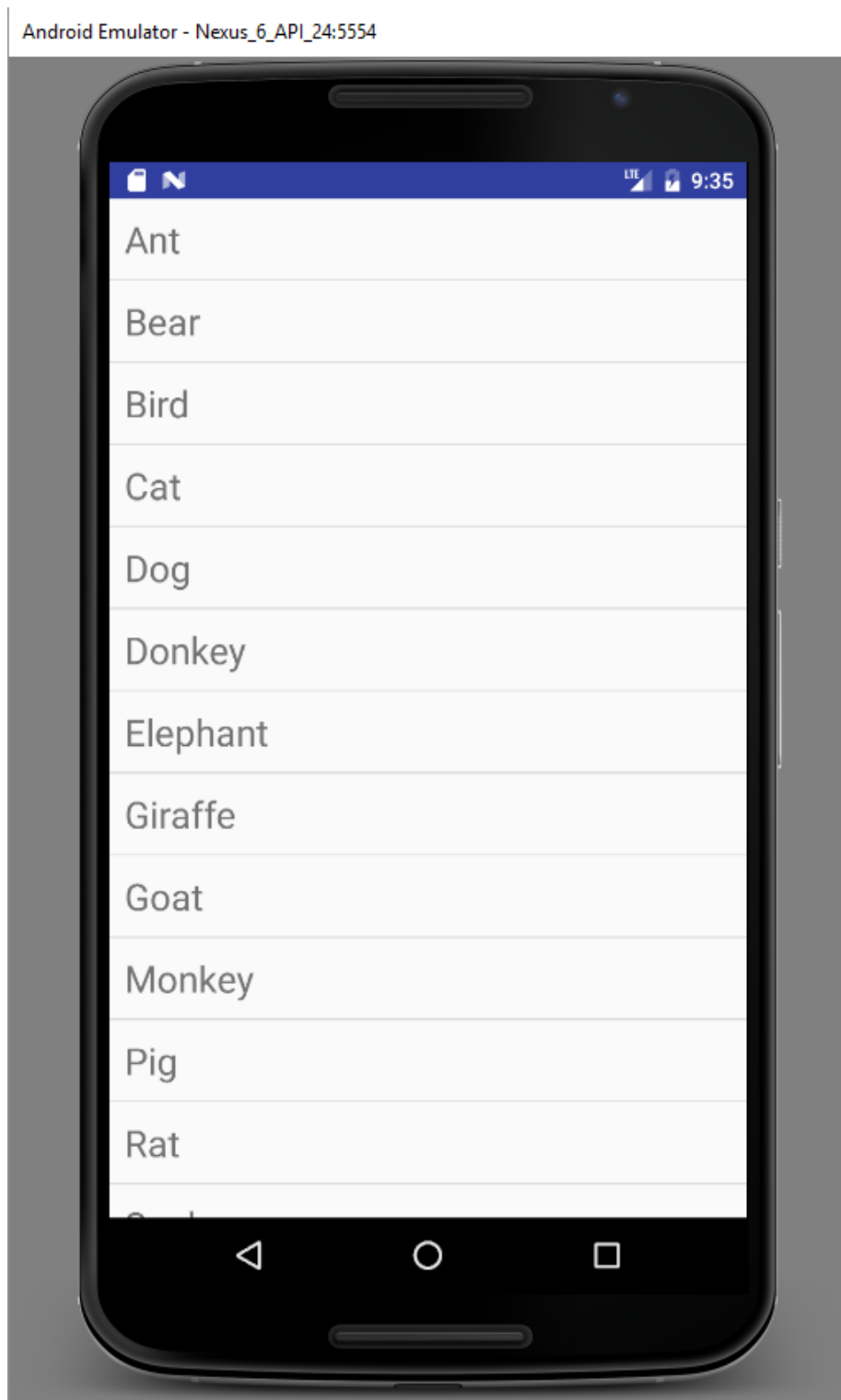


## Lab 2: ListView

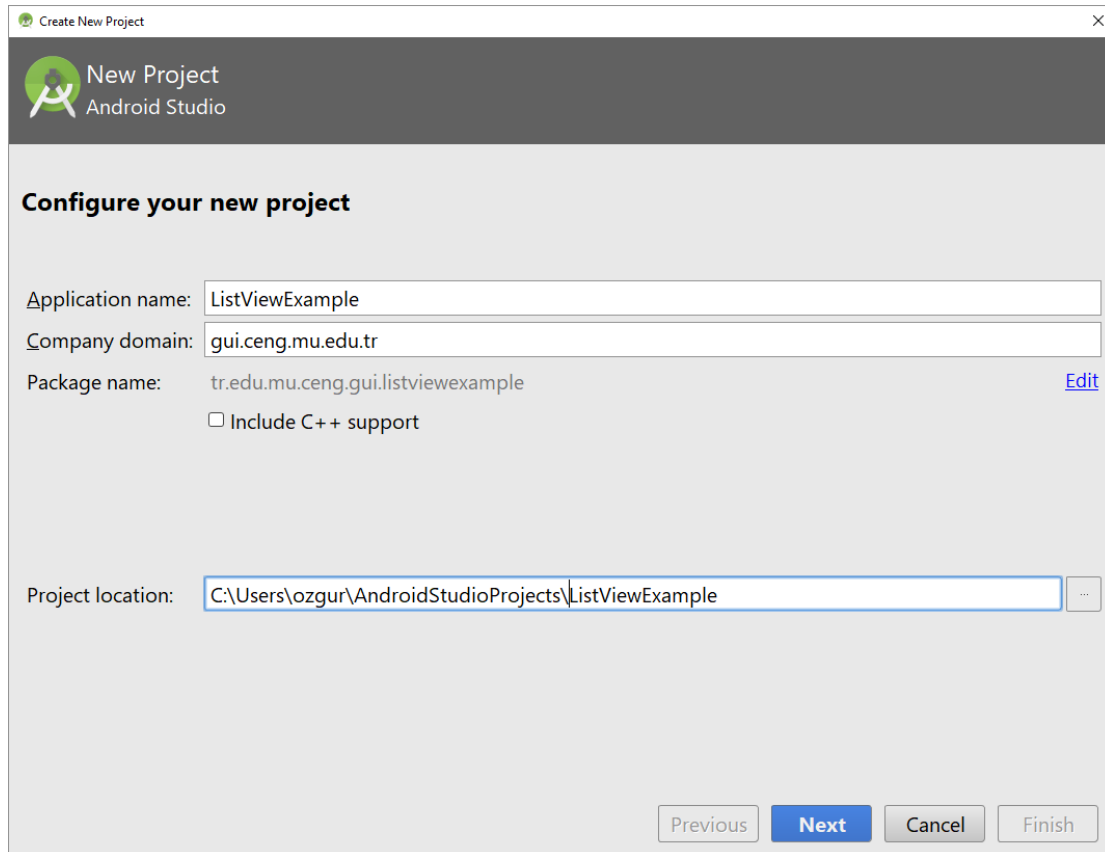


## ***Exercise 1***

In this lab we will be implementing the below UI in Android Studio.



1. Create new project in Android Studio.



The screenshot shows the 'Create New Project' dialog in Android Studio. The title bar says 'Create New Project'. The main header area has the Android Studio logo and the text 'New Project Android Studio'. Below this, the section 'Configure your new project' is displayed. It contains several input fields: 'Application name' with the value 'ListViewExample', 'Company domain' with 'gui.ceng.mu.edu.tr', and 'Package name' with 'tr.edu.mu.ceng.gui.listviewexample'. There is an 'Edit' link next to the package name. Below these is a checkbox for 'Include C++ support' which is unchecked. At the bottom, the 'Project location' is set to 'C:\Users\ozgur\AndroidStudioProjects\ListViewExample'. At the very bottom, there are four buttons: 'Previous', 'Next' (highlighted in blue), 'Cancel', and 'Finish'.

Create New Project

New Project  
Android Studio

**Configure your new project**

Application name: ListViewExample

Company domain: gui.ceng.mu.edu.tr

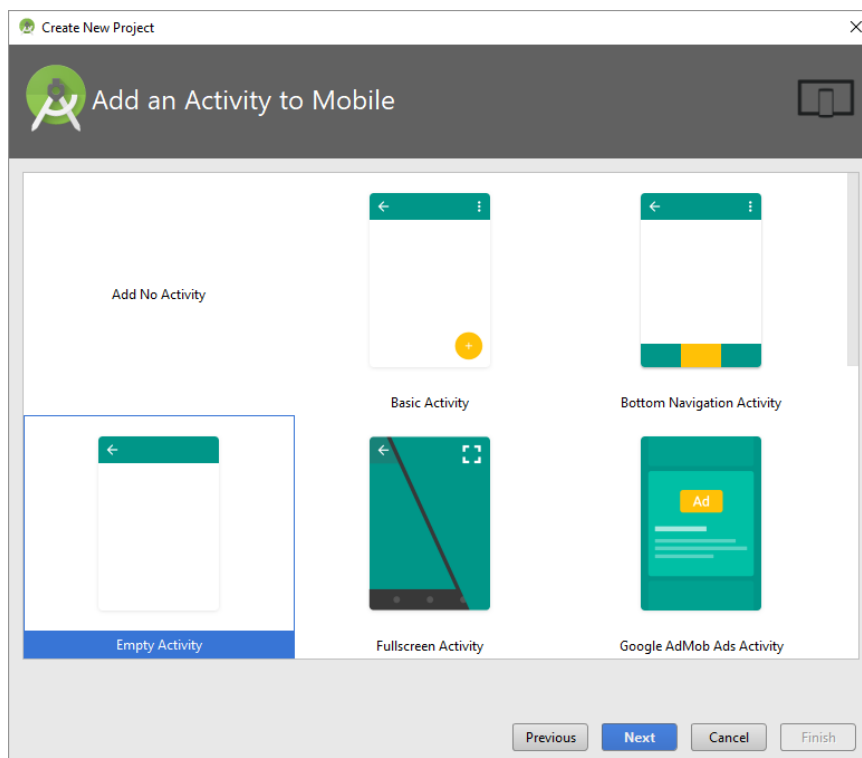
Package name: tr.edu.mu.ceng.gui.listviewexample [Edit](#)

☐ Include C++ support

Project location: C:\Users\ozgur\AndroidStudioProjects\ListViewExample

Previous Next Cancel Finish

2. Select defaults for minimum SDK
3. Select Empty activity as the main activity



The screenshot shows the 'Add an Activity to Mobile' dialog in Android Studio. The title bar says 'Create New Project'. The main header area has the Android Studio logo and the text 'Add an Activity to Mobile'. Below this, there are several activity templates represented by icons. The 'Empty Activity' icon is highlighted with a blue border and a blue bar at the bottom. Other icons include 'Basic Activity', 'Bottom Navigation Activity', 'Fullscreen Activity', and 'Google AdMob Ads Activity'. At the bottom, there are four buttons: 'Previous', 'Next' (highlighted in blue), 'Cancel', and 'Finish'.

Create New Project

Add an Activity to Mobile

Add No Activity

Basic Activity

Bottom Navigation Activity

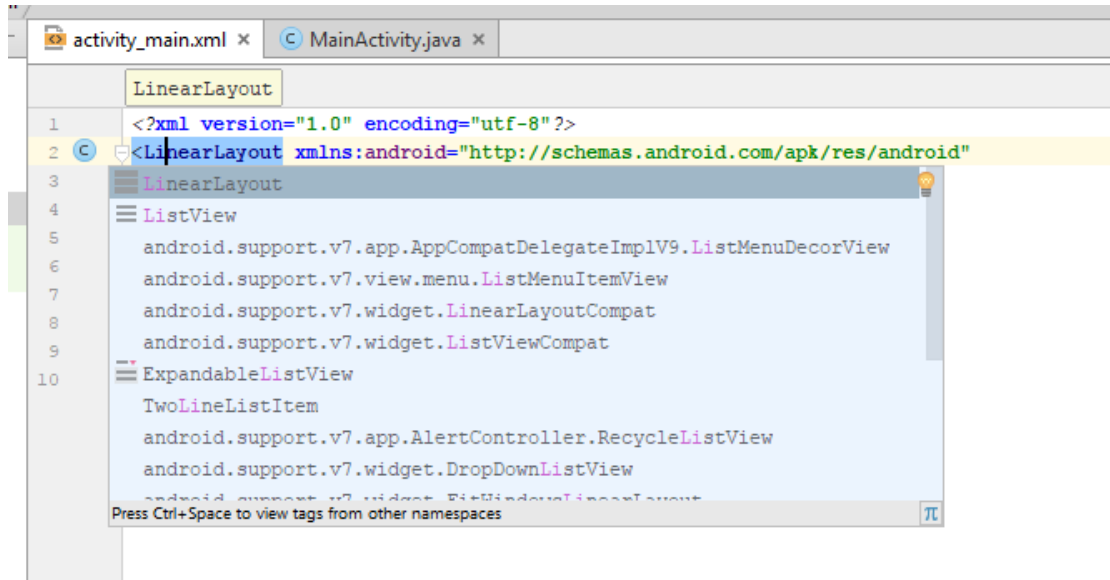
Empty Activity

Fullscreen Activity

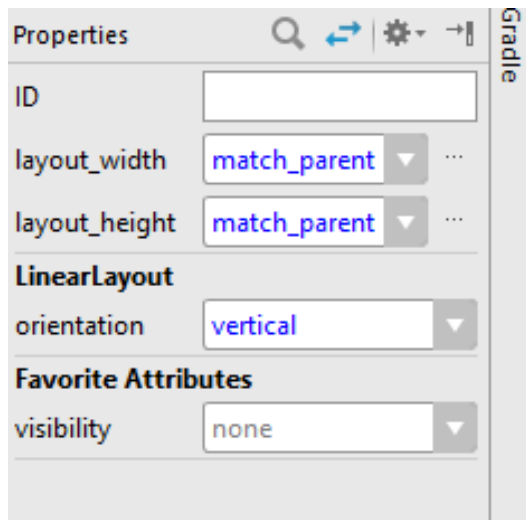
Google AdMob Ads Activity

Previous Next Cancel Finish

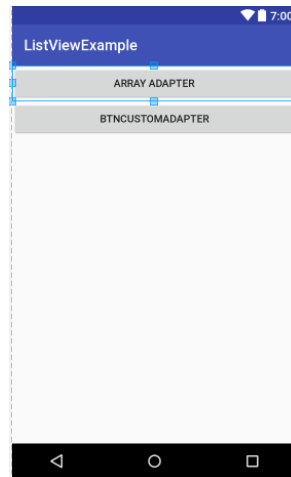
4. Select defaults for the activity naming.
5. Open the activity\_main.xml and change the root element to LinearLayout.



6. Make the LinearLayout with Vertical Orientation



7. Add two Buttons namely "Array Adapter" and "Custom Adapter"



8. Create a new Activity named ArrayAdapterActivity using the template Empty Activity.
9. Open ArrayAdapterActivity when ArrayAdapter button is clicked.

```
public class MainActivity extends AppCompatActivity {

    Button btnArrayAdapter;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnArrayAdapter = (Button) findViewById(R.id.btnArrayAdapter);
        btnArrayAdapter.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent intent = new Intent(MainActivity.this, ArrayAdapterActivity.class);
                startActivity(intent);
            }
        });
    }
}
```

10. Extend ArrayAdapterActivity from ListActivity

```
import android.app.ListActivity;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

public class ArrayAdapterActivity extends ListActivity {
```

11. Modify the activity\_array\_adapter.xml as below.

```
<?xml version="1.0" encoding="utf-8"?>
<TextView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:padding="10dp"
    android:textSize="20sp" >
</TextView>
```

12. Modify the ArrayAdapterActivity.java as below.

```
public class ArrayAdapterActivity extends ListActivity {

    static final String[] ANIMALS = new String[] { "Ant", "Bear", "Bird", "Cat",
        "Dog", "Donkey", "Elephant", "Giraffe", "Goat", "Monkey",
        "Pig", "Rat", "Snake", "Spider" };

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        //this is not needed
        //setContentView(R.layout.activity_array_adapter);
        setListAdapter(new ArrayAdapter<String>(this, R.layout.activity_array_adapter, ANIMALS));

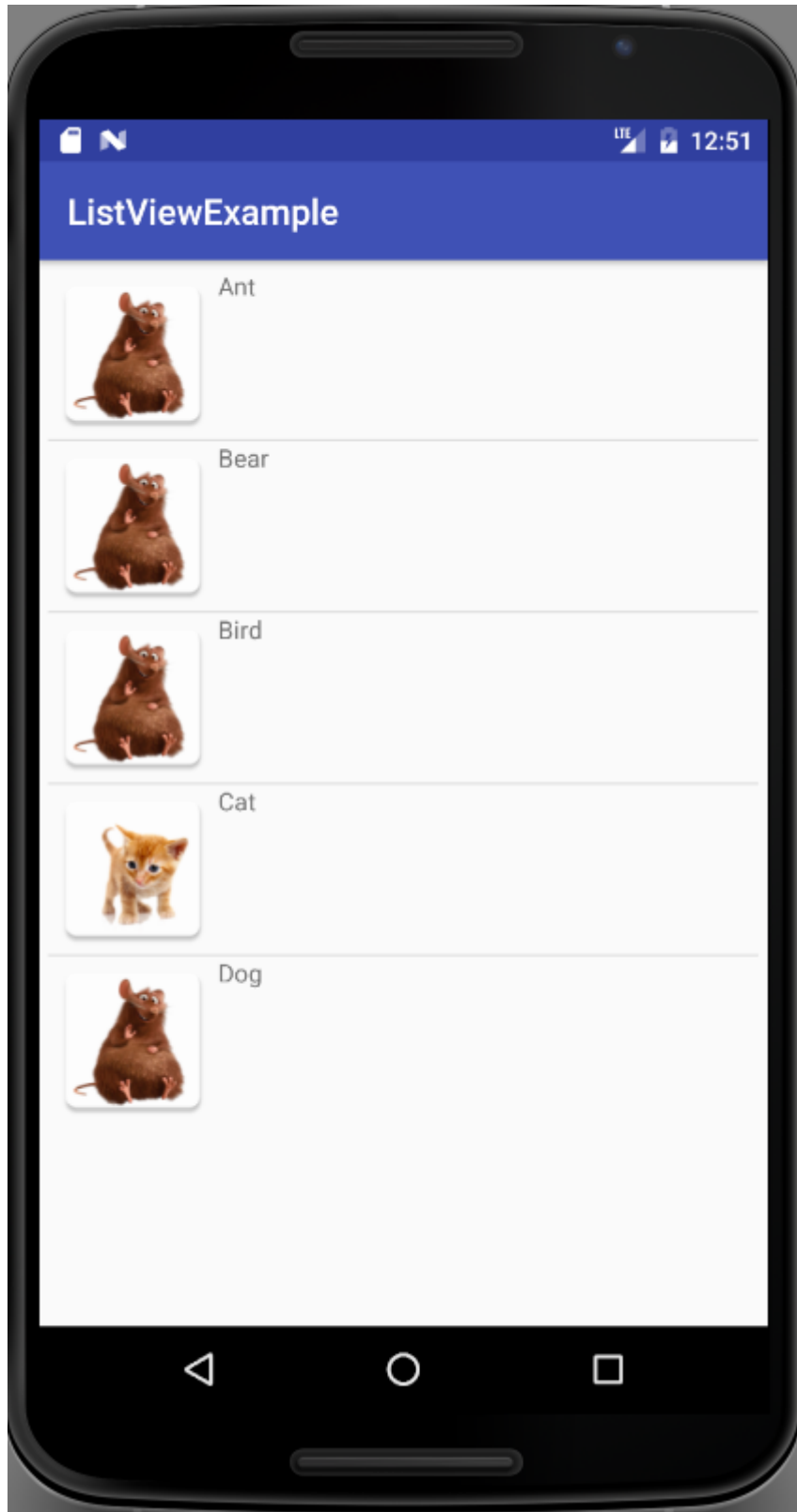
        ListView listView = getListView();
        listView.setTextFilterEnabled(true);
    }
}
```

13. Implement an OnItemClickListener for the ListView.

```
listView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
    public void onItemClick(AdapterView<?> parent, View view,
        int position, long id) {
        Toast.makeText(getApplicationContext(),
            ((TextView) view).getText(), Toast.LENGTH_SHORT).show();
    }
});
```

## Exercise 2

In the second exercise following UI will be implemented.



1. Create a new Activity named CustomAdapterActivity using the template Empty Activity.
2. Open CustomAdapterActivity when Custom Adapter button is clicked.
3. Modify the activity\_custom\_adapter.xml as below

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:padding="5dp" >

    <ListView
        android:id="@+id/listview"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
    />

</LinearLayout>
```

4. Create a new layout namely listview\_row.xml as below

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

    <ImageView
        android:id="@+id/pic"
        android:layout_width="48dp"
        android:layout_height="48dp" />

    <TextView
        android:id="@+id/label"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />


</LinearLayout>
```

5. Create Animal class as below



```

public class Animal {

     private String type;
    private int picId;

    public Animal(String type, int picId) {
        this.type = type;
        this.picId = picId;
    }

    public String getType() {
        return type;
    }

    public void setType(String type) {
        this.type = type;
    }

    public int getPicId() {
        return picId;
    }

    public void setPicId(int picId) {
        this.picId = picId;
    }
}

```

6. Import image assets for animals
7. Implement the AnimalAdapter class as below

```

public class AnimalAdapter extends BaseAdapter {

    private LayoutInflater mInflater;
    private List<Animal> animals;

    public AnimalAdapter(Activity activity, List<Animal> animals) {

        mInflater = (LayoutInflater) activity.getSystemService(
            Context.LAYOUT_INFLATER_SERVICE);
        this.animals = animals;
    }

    @Override
    public int getCount() {
        return animals.size();
    }

    @Override
    public Object getItem(int i) {
        return animals.get(i);
    }

    @Override
    public long getItemId(int i) {
        return i;
    }

    @Override
    public View getView(int i, View view, ViewGroup viewGroup) {
        View rowView;

        rowView = mInflater.inflate(R.layout.listview_row, null);
        TextView textView =
            (TextView) rowView.findViewById(R.id.label);
        ImageView imageView =
            (ImageView) rowView.findViewById(R.id.pic);

        Animal animal = animals.get(i);

        textView.setText(animal.getType());
        imageView.setImageResource(animal.getPicId());

        return rowView;
    }
}

```

8. Implement the CustomAdapterActivity class as below

```
public class CustomAdapterActivity extends AppCompatActivity {

    final List<Animal> animals=new ArrayList<Animal>();

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_custom_adapter);
        animals.add(new Animal("Ant", R.mipmap.other));
        animals.add(new Animal("Bear", R.mipmap.other));
        animals.add(new Animal("Bird", R.mipmap.other));
        animals.add(new Animal("Cat", R.mipmap.cat));
        animals.add(new Animal("Dog", R.mipmap.other));

        final ListView listView= (ListView) findViewById(R.id.listview);
        AnimalAdapter adapter=new AnimalAdapter(this, animals);
        listView.setAdapter(adapter);
    }
}
```

---