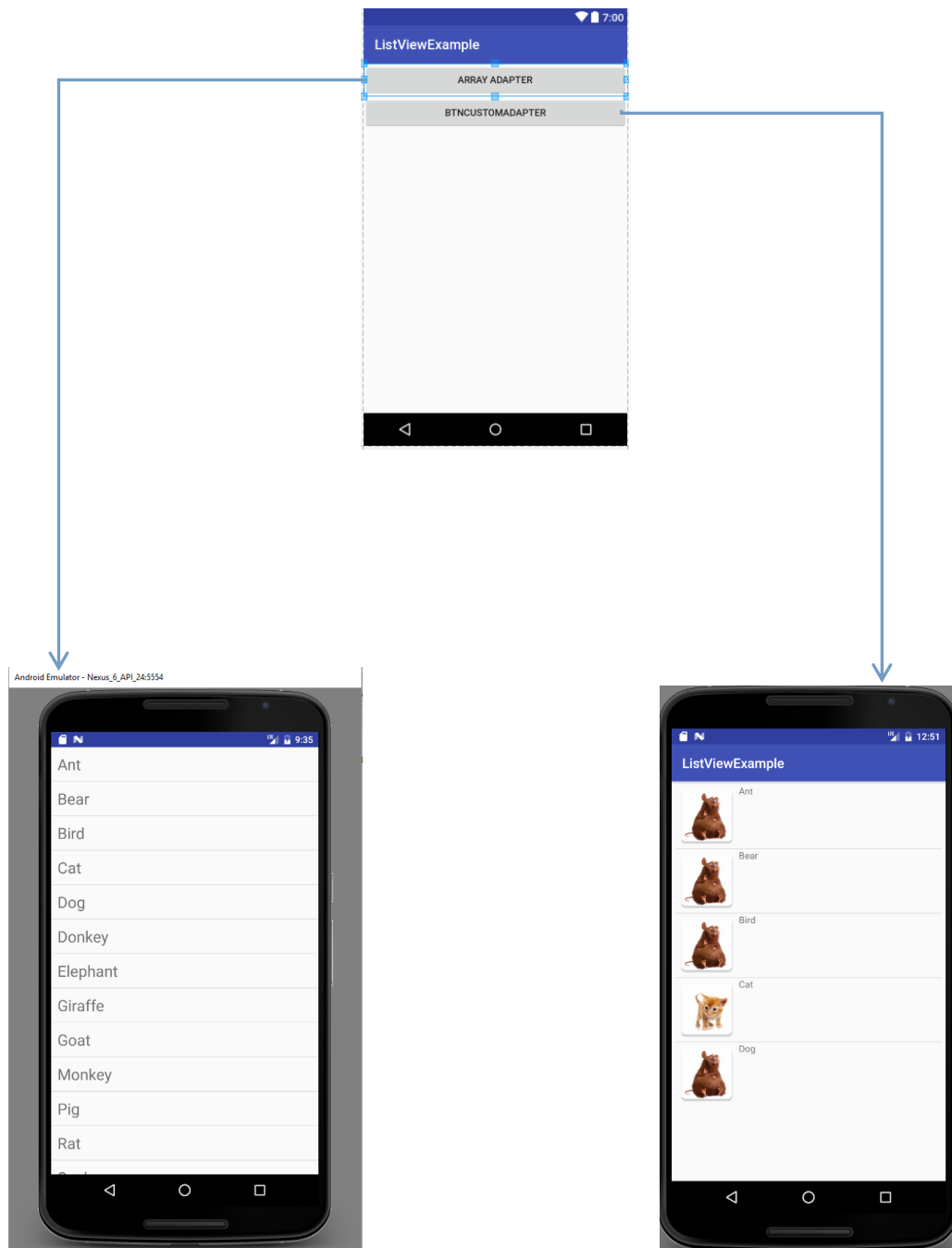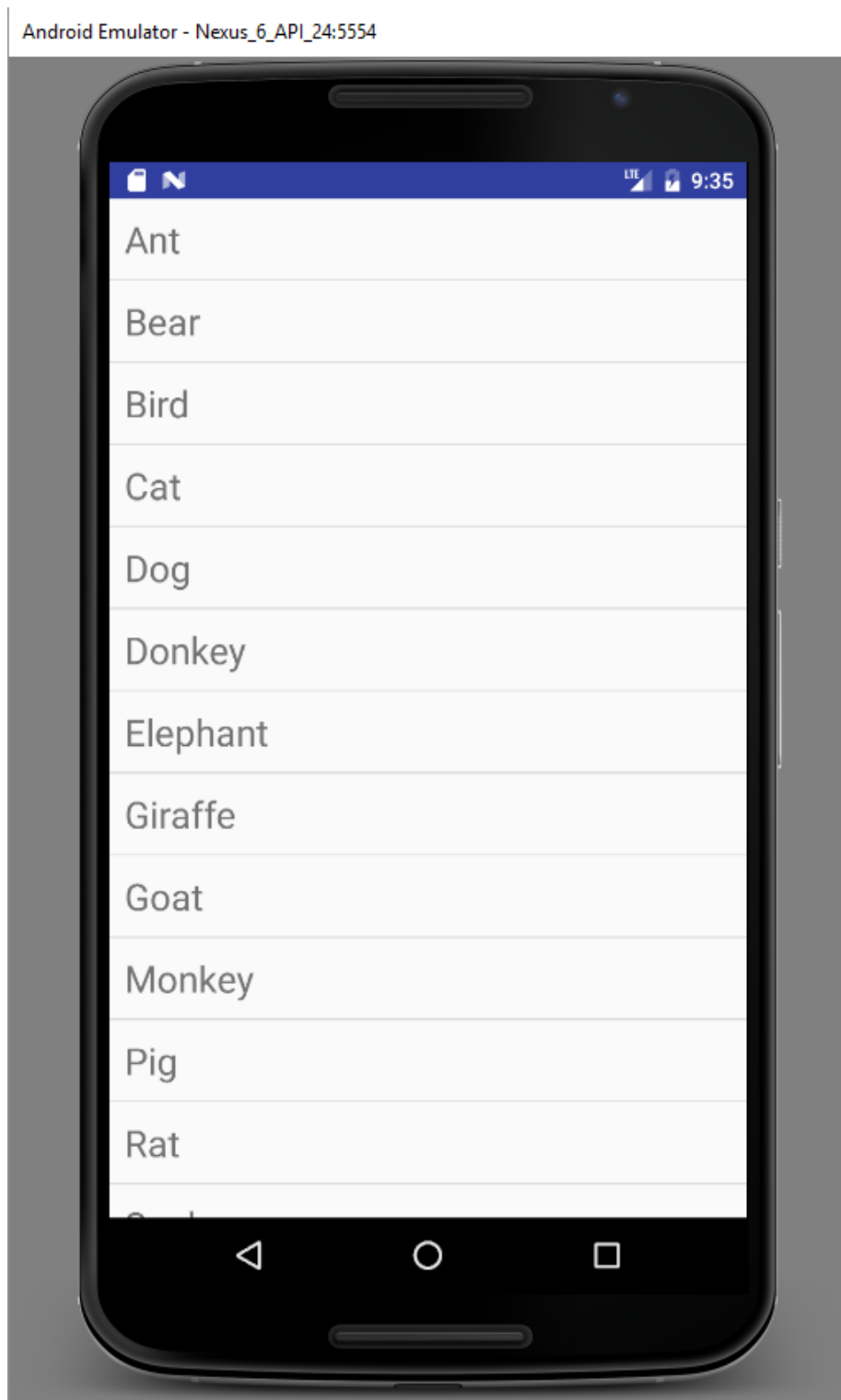# Lab 2: ListView
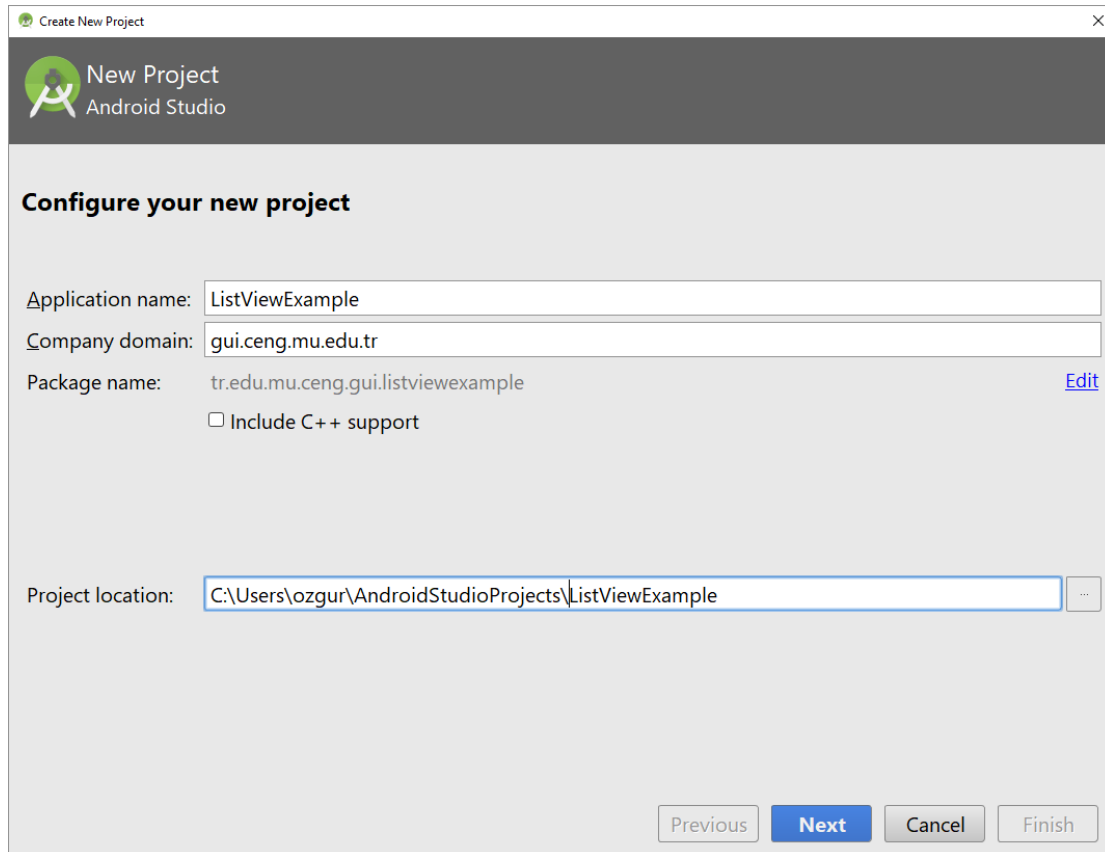
Exercise 1

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

1. Create new project in Android Studio.

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

4. Select defaults for the activity naming.

5. Open the activity_main.xml and change the root element to LinearLayout.
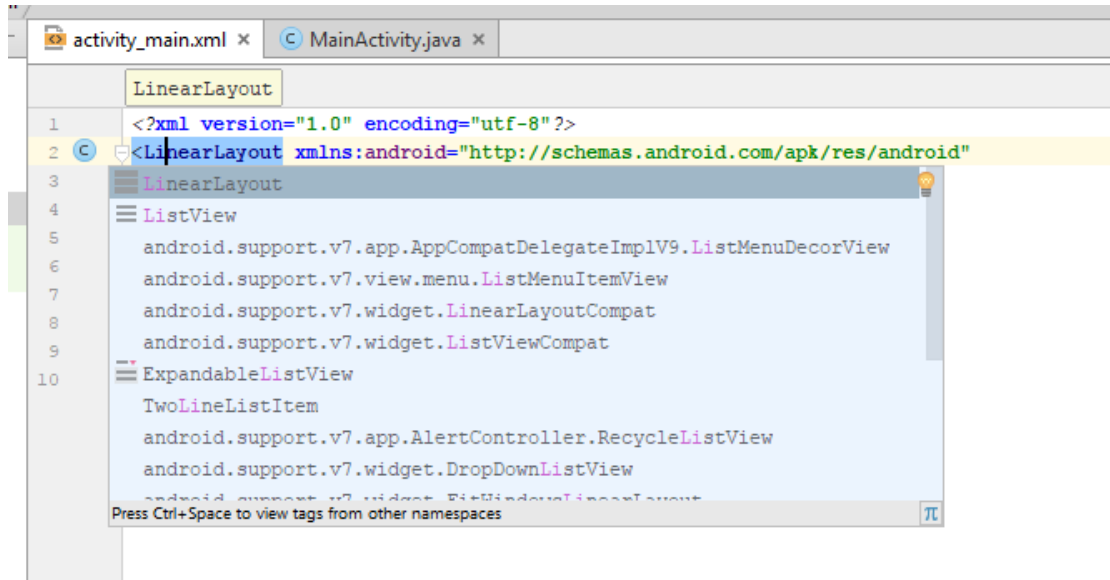
6. Make the LinearLayout with Vertical Orientation
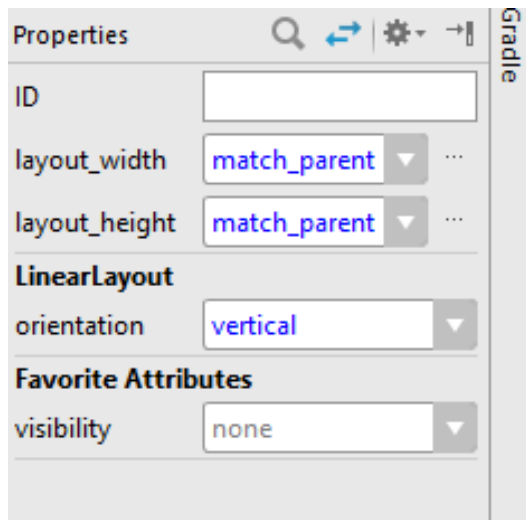
7. Add two Buttons namely "Array Adapter" and "Custom Adapter"
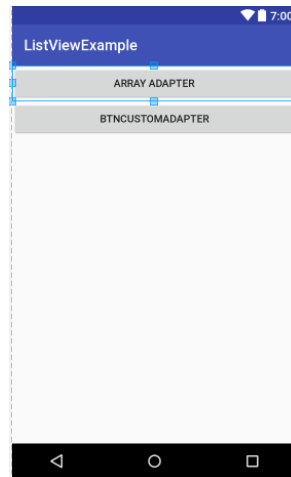
8. Create a new Activity named ArrayAdapterActivity using the template Empty Activity.
9. Open ArrayAdapterActivity when ArrayAdapter button is clicked.

```java
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

```java
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
<?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.

```java
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.

```java
        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.
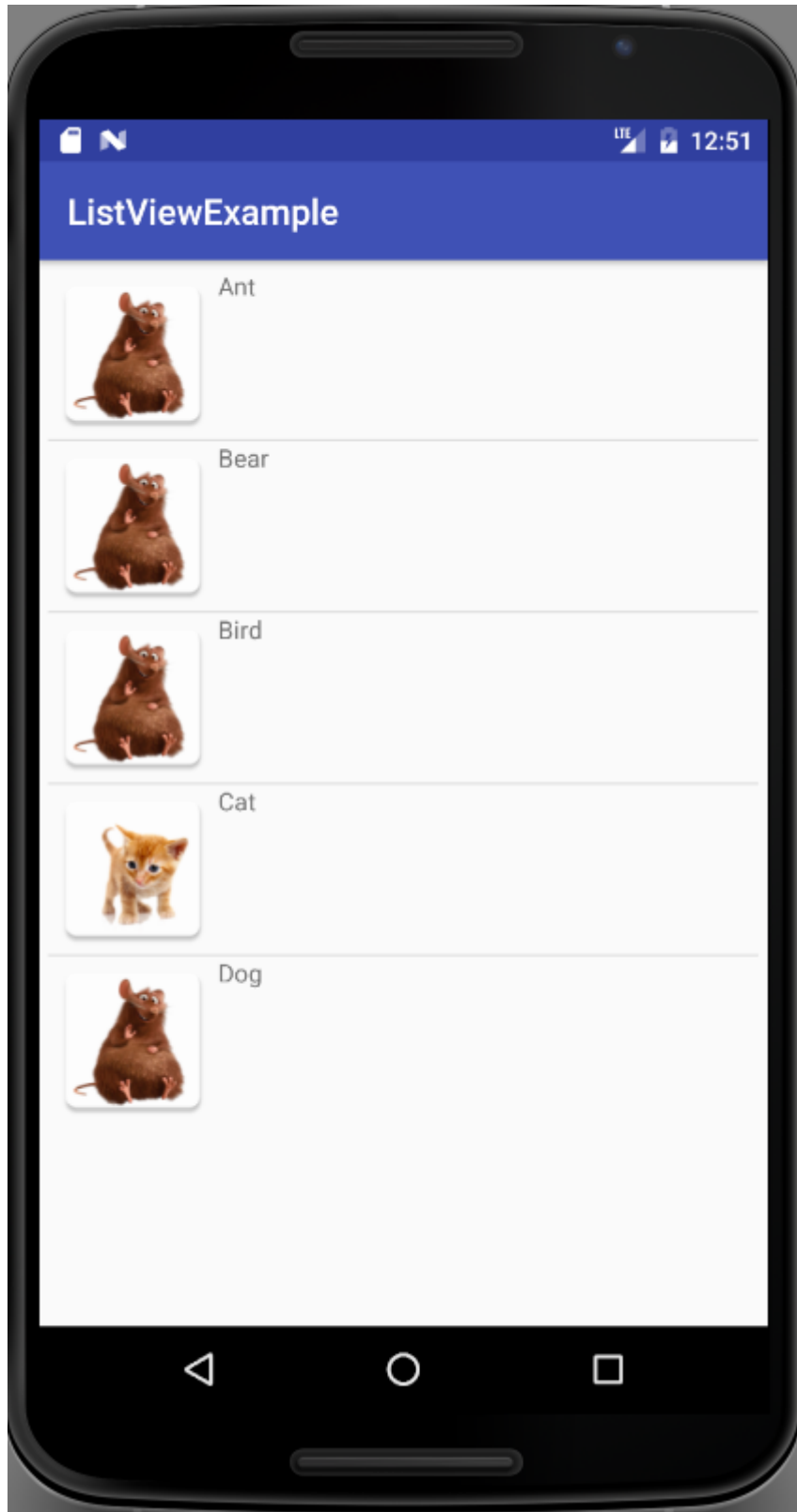
1. Create a new Activity named CustomAdapterActivity using the template Empty Activity.
2. Open CustomAdapterActivity when Custom Adapter button is clicked.
3. Modify the activity_custom_adapter.xml as below

```xml
<?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
<?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

```java
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

```java
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

```java
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);
    }
}
```