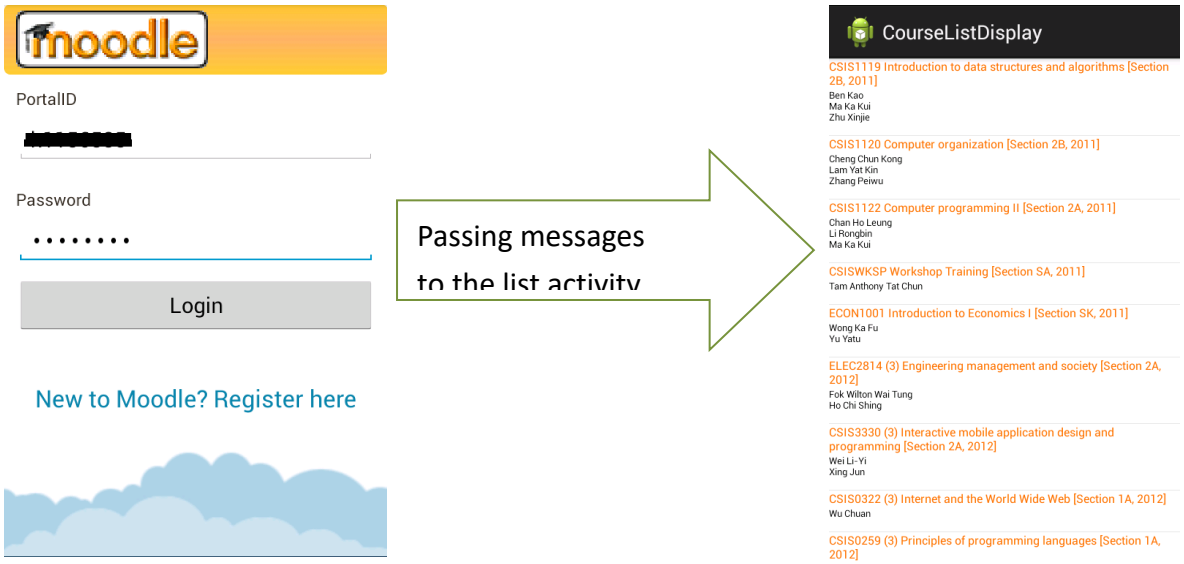
COMP7506 Smart phone apps development

Workshop 3　Android Apps Development (Part 2)

1　Introduction

In Workshop 2, we have developed the login screen of our Moodle app.

In this workshop, we are going to design the list layout, and learn how to pass messages between activities.



2 Importing your project of workshop 1

Click “Open an existing Android Studio project” or “Import project (Eclipse ADT, Gradle, etc)” at the welcome page of Android Studio. Browse to the project folder and click “OK”.

3 List

3.1 Introduction

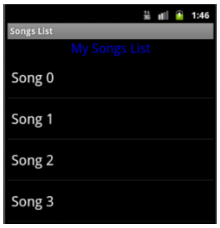
Displaying a list needs **THREE** elements

1. ListView
2. Adapter: an interface for mapping the data into the ListView
3. Data: Strings, images, or even button

There are THREE types of list according to the type of adapters:

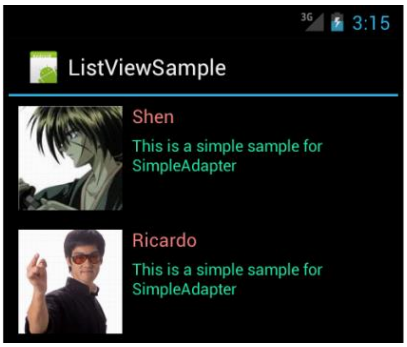
1. ArrayAdapter

   The most simple list which can only show 1 line of words



2. **SimpleAdapter** (We are going to use this)

   It is more flexible. We can design various layout inside a row of the list



3. SimpleCursorAdapter

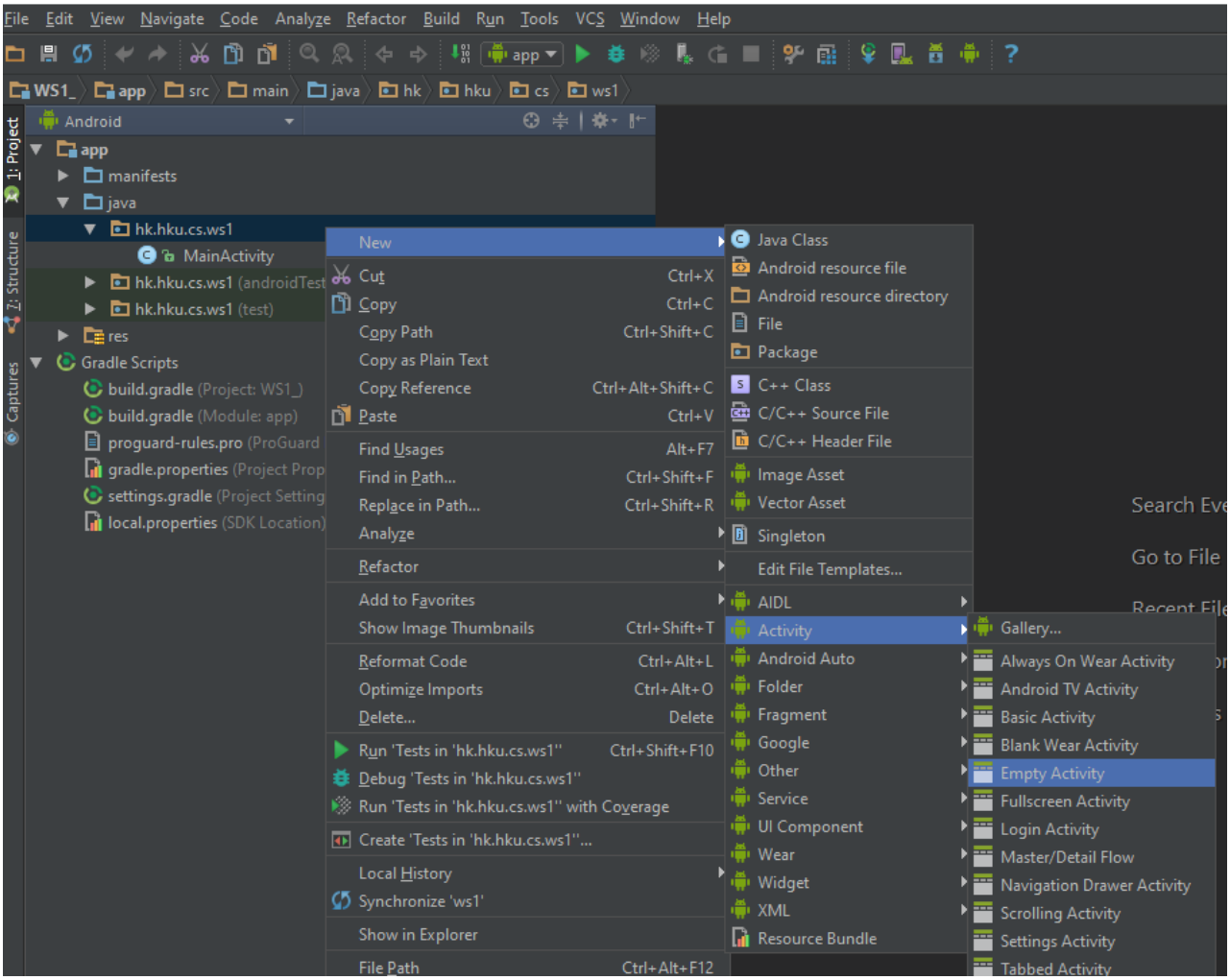
3.2 Introduction to SimpleAdapter

Inside the list of SimpleAdapter, we can define our custom layout. For example, we can place ImageView, Button, or CheckBox in every rows of the list.

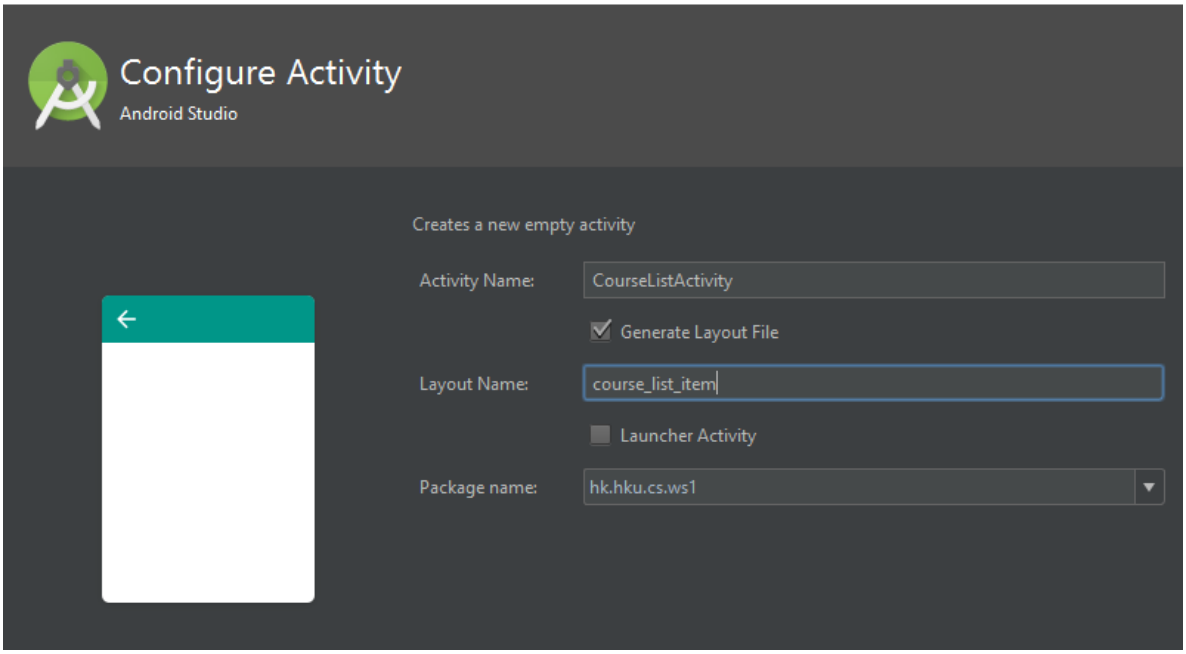
For simplicity, we are going to use **ListActivity** instead of traditional Activity. The only difference is that ListActivity optimize the display of ListView.

4 Creating new Activity

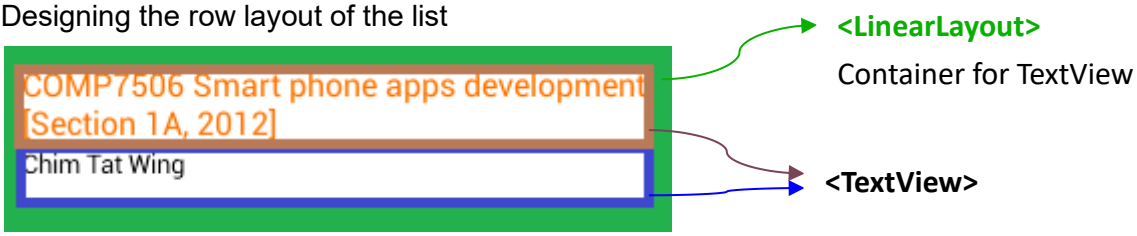
Browse to <project> → app → java →hk.hku.cs.ws1, and them right click main → New → Activity → Empty Activity



and name it as CourseListActivity, also rename the Layout Name as course_list_item

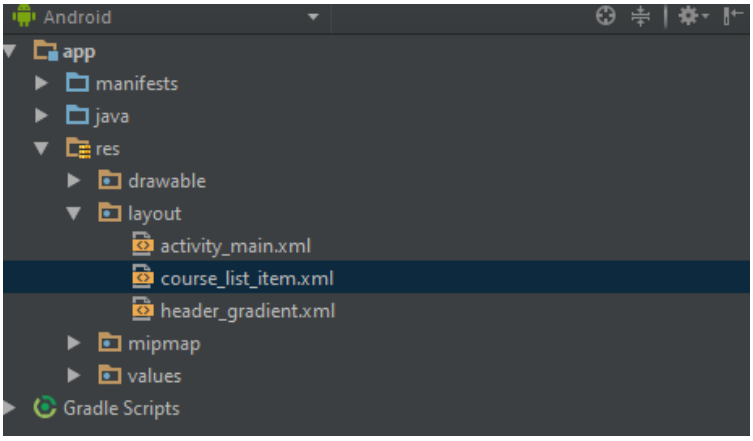


5 Designing the row layout of the list



5.1.1 Create a new xml file under res/layout

Browse the project to <project> → app → src→ main → res →layout →`course_list_item.xml`



and replace the `course_list_item.xml` code with following code

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

    <TextView android:id="@+id/coursename"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="#FF7300"
        android:textSize="16sp" />
    <TextView android:id="@+id/teachers"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="#000000"
        android:textSize="13sp" />

</LinearLayout>
```

6 Modifying CourseListActivity.java

6.1 Extends **ListActivity** instead of Activity (or AppCompatActivity)

6.2 Remove **onCreateOptionsMenu** and **onOptionItemSelected** functions

6.3 Remove setContentView(R.layout.activity_course_list); from **onCreate function**

6.4 The result code will be like this

```
public class CourseListActivity extends ListActivity {

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

}
```

6.5 List Data

6.5.1 Introduction

In general, **HashMap** is used to construct the list data for **SimpleAdapter**. The **keys** of the map will be used to map on the **IDs** of components(eg: TextView).

6.5.2 Creating class variable **list** for holding the data

ArrayList< Map<String, Object> > list = new ArrayList< Map<String, Object> >();

6.5.3 Inside **onCreate** function

6.5.3.1 Getting ArrayList from Intent which will be passed from MainActivity

```
Intent intent = this.getIntent();
ArrayList<String> courseName = intent.getStringArrayListExtra("CourseName");
ArrayList<String> teachers = intent.getStringArrayListExtra("Teachers");

for( int i = 0; i < courseName.size(); i++ ){
        Map<String, Object> map = new HashMap<String, Object>();
        map.put( "CourseName", courseName.get(i) );
        map.put( "Teachers", teachers.get(i) );
        list.add(map);
}
```

6.5.3.2 Setting Adapter

```
SimpleAdapter adapter = new SimpleAdapter( this, list, R.layout.course_list_item,
                                           new String[]{"CourseName","Teachers"},
                                           new int[]{R.id.coursename, R.id.teachers}      );
setListAdapter(adapter);
```

6.6 At this point, the code will be like this

```
public class CourseListActivity extends ListActivity {
    ArrayList< Map<String, Object> > list = new ArrayList< Map<String, Object> >();

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

        Intent intent = this.getIntent();
        ArrayList<String> courseName = intent.getStringArrayListExtra("CourseName");
        ArrayList<String> teachers = intent.getStringArrayListExtra("Teachers");

        for( int i = 0; i < courseName.size(); i++ ){
            Map<String, Object> map = new HashMap<String, Object>();
            map.put( "CourseName", courseName.get(i) );
            map.put( "Teachers", teachers.get(i) );

            list.add(map);
        }


        SimpleAdapter adapter = new SimpleAdapter(  this, list, R.layout.course_list_item,
                                                    new String[]{"CourseName","Teachers"},
                                                    new int[]{R.id.coursename, R.id.teachers}    );
        setListAdapter(adapter);
    }

}
```

7 Passing messages(ArrayLists) from **MainActivity** to **CourseListActivity**

7.1 Introduction

Switching from one activity to another requires an Intent which is used to store messages, and inform the android to switch into the specific activity.

7.2 Inside the **onClick** function in **MainActivity**.java

Add the following code

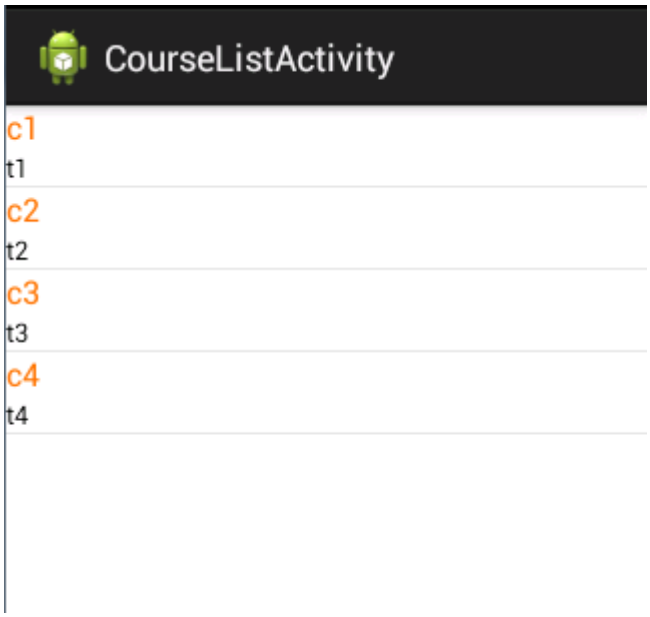
```
Intent intent = new Intent(getBaseContext(), CourseListActivity.class);
ArrayList<String> cname = new ArrayList<String>();
ArrayList<String> cteachers = new ArrayList<String>();
//*************Sample Data*************//
cname.add("c1"); cteachers.add("t1");
cname.add("c2"); cteachers.add("t2");
cname.add("c3"); cteachers.add("t3");
cname.add("c4"); cteachers.add("t4");
//*************Sample Data*************//
intent.putStringArrayListExtra("CourseName", cname);
intent.putStringArrayListExtra("Teachers", cteachers);
startActivity(intent);
```

```
@Override
public void onClick(View v) {
    // TODO Auto-generated method stub
    if (v.getId() == R.id.btn_Login) {
        String uname = txt_UserName.getText().toString();
        String upassword = txt_UserPW.getText().toString();

        System.out.println( "@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@\n " +
                            "The Portal ID is: " + uname + "\n" +
                            "The Password is: " + upassword + "\n" +
                            "@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@" );

        Intent intent = new Intent(getBaseContext(), CourseListActivity.class);
        ArrayList<String> cname = new ArrayList<String>();
        ArrayList<String> cteachers = new ArrayList<String>();
        //*************Sample Data*************//
        cname.add("c1"); cteachers.add("t1");
        cname.add("c2"); cteachers.add("t2");
        cname.add("c3"); cteachers.add("t3");
        cname.add("c4"); cteachers.add("t4");
        //*************Sample Data*************//
        intent.putStringArrayListExtra("CourseName", cname);
        intent.putStringArrayListExtra("Teachers", cteachers);
        startActivity(intent);
    }
}
```

8 Test and Result



Please save and keep your work properly. We will continue in the next workshop. Also you need to submit your work after Workshop 4 as a proof of workshop participation.