**COMP7506 Smart phone apps development**

**Workshop 3   Android Apps Development (Part 2)**

1) Introduction

   In Workshop 2, we 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) Opening / importing your project for Workshop 2

3) Introduction of "List" in Android

   a) Overview:
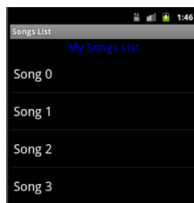
      Displaying a list needs **THREE** elements

         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 lists according to the type of adapters:

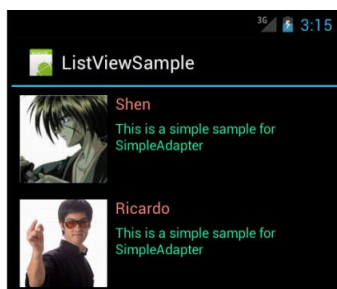         1. ArrayAdapter

            The simplest 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.

            
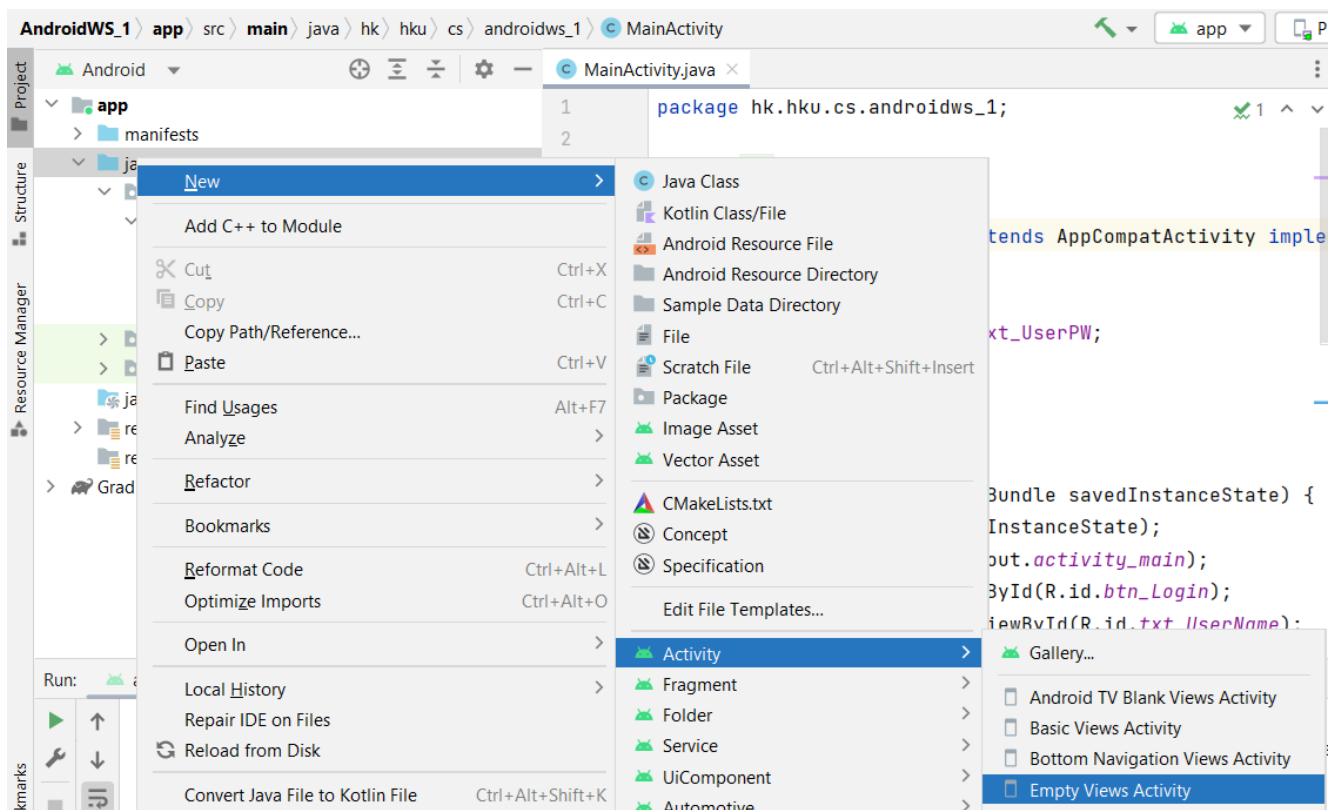
         3. SimpleCursorAdapter

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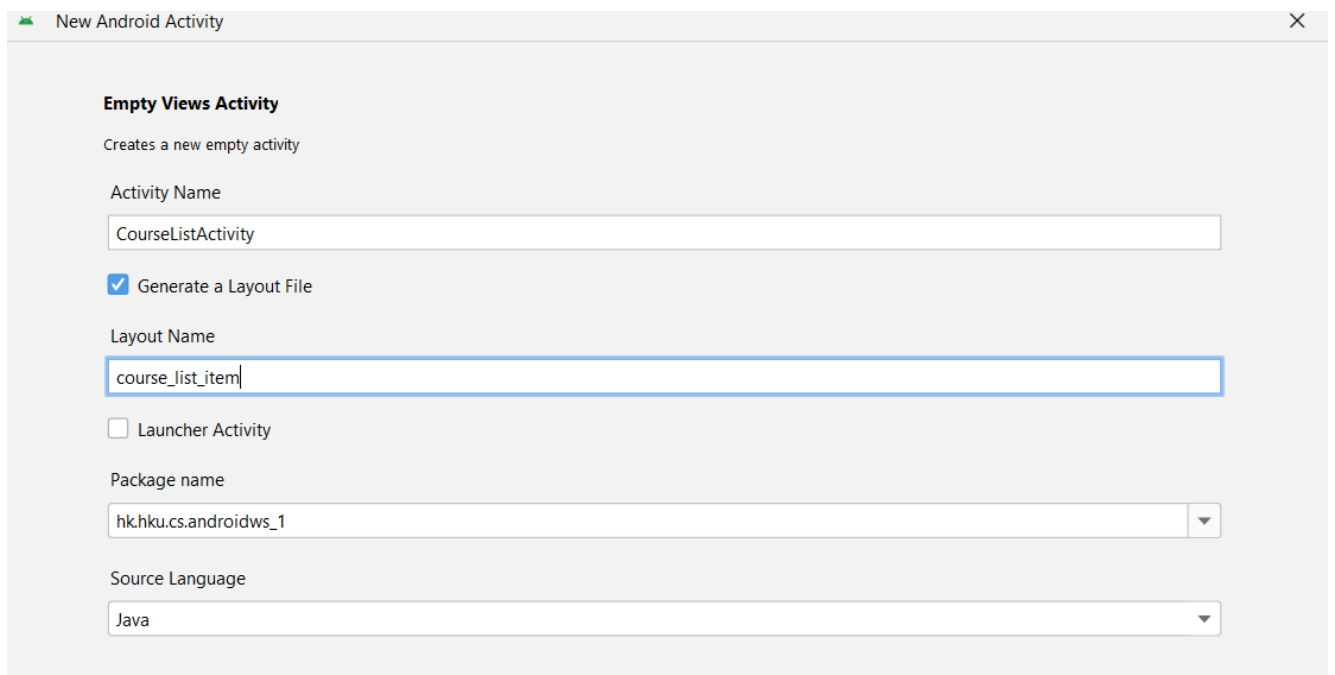
      For simplicity, we are going to use **ListActivity** instead of traditional Activity. The only difference is that ListActivity optimize the display of ListView.
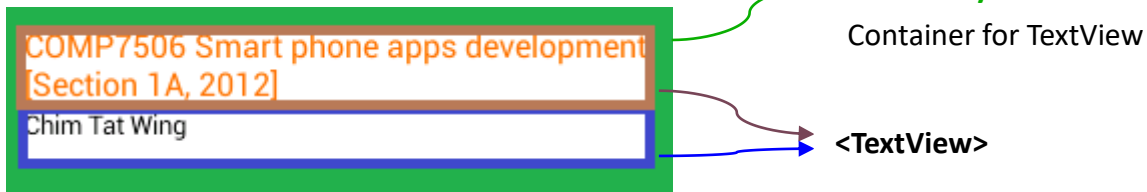
4) Creating new Activity

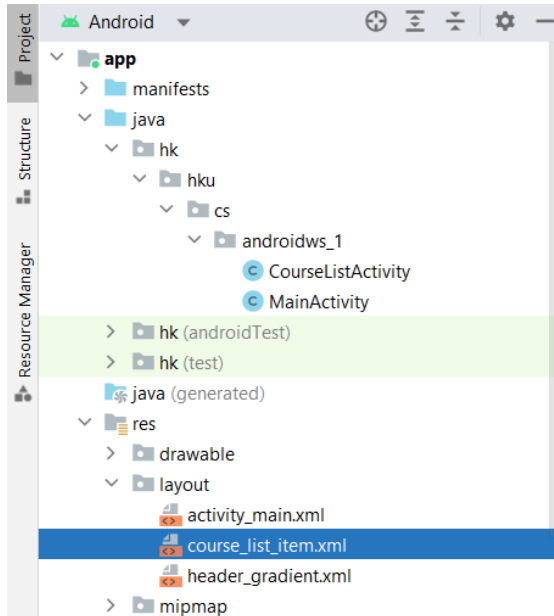Browse to <Project> → app → java → <package name>, and then right-click New → Activity → Empty Views Activity



Set the Activity Name as "CourseListActivity", also set the Layout Name as "course_list_item".

5) Define the row layout of each record in the list

COMP7506 Smart phone apps development [Section 1A, 2012]

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**<LinearLayout>**
Container for TextView

**<TextView>**

Browse to <Project> → app → res →layout → course_list_item.xml



Replace the contents of course_list_item.xml code with following:

```xml
<?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) Modify CourseListActivity.java as follows:

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

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

c) The resulting code will be like this

```java
public class CourseListActivity extends ListActivity {

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

}
```

d) List Data

i) 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 (e.g., TextView).

ii) Creating class variable **list** for holding the data

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

iii) Inside **onCreate** function

(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);
}
```

(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);
```

e) At this point, the code will be like:

```java
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**

   a) 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.

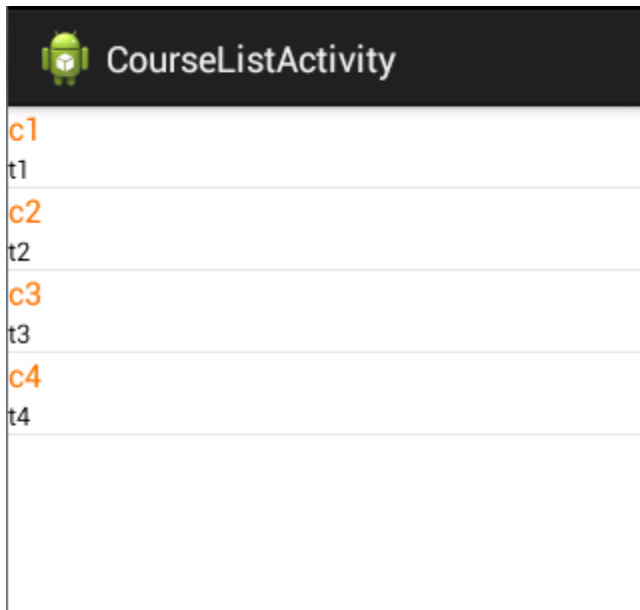   b) Inside the onClick function in **MainActivity**.java

     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);
```

```java
@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) Testing



**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.**