EURECOM
Sophia Antipolis

# Mobile Applications and Services
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## Android session 1


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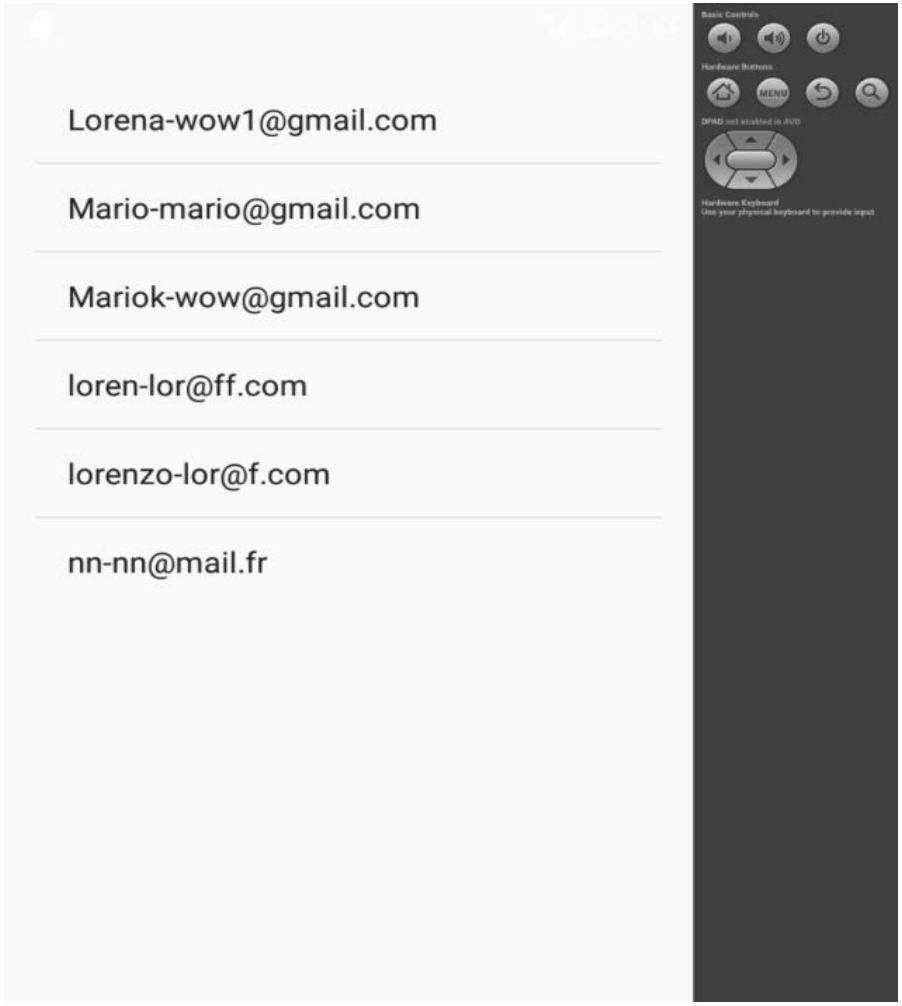
# Json API from GAE lab session

- **URL:**
  - http://hellomoongae.appspot.com/contactlist?respType=json
- **Output:**


```
[
    {"id":"ag5zfmhlbGxvbW9vbmdhZXIUCxIHQ29udGFjdCIHbG9yZW56bww",
    "phone":"8012",
    "email":"lor@f.com",
    "name":"lorenzo"},
    {"id":"ag5zfmhlbGxvbW9vbmdhZXIPCxIHQ29udGFjdCICbm4M",
    "phone":"8211",
    "email":"nn@mail.fr",
    "name":"nn"},
    ….
]
```

# Application Demo



# Create a project

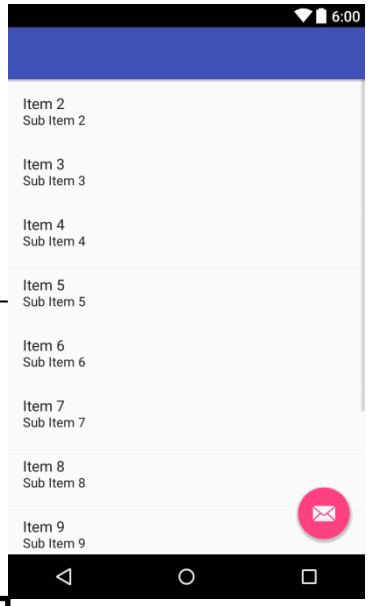
- **Create a project**
- **Request internet permission**

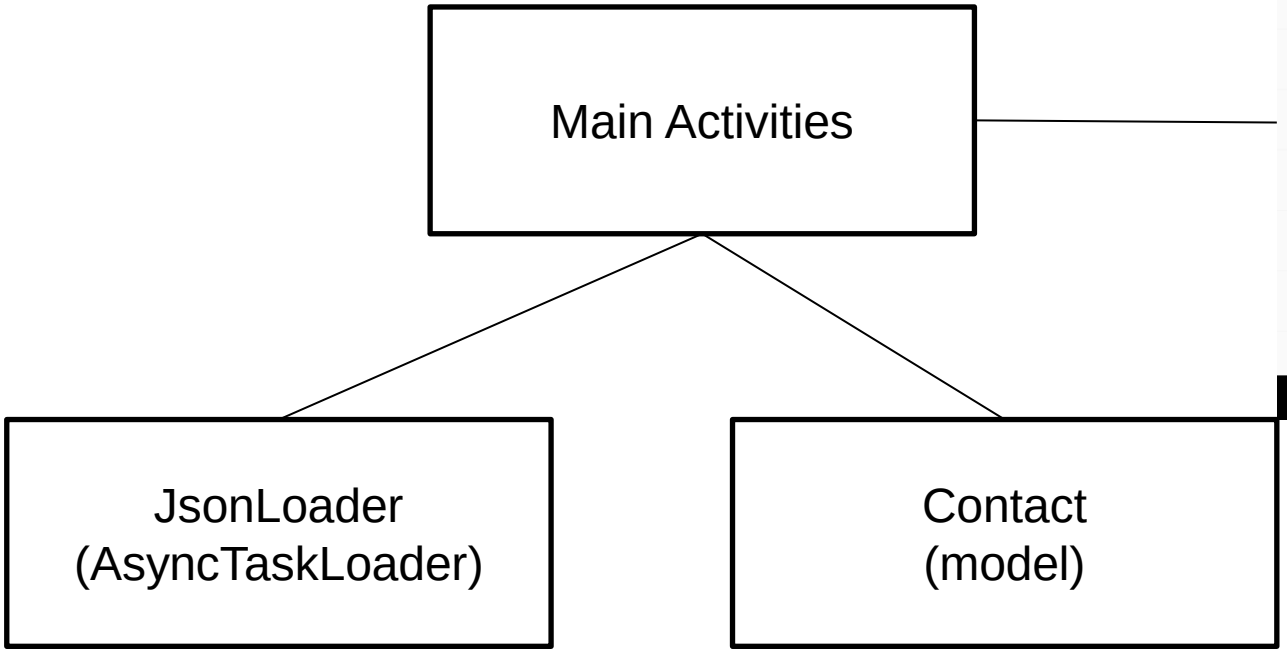
```
<uses-permission android:name="android.permission.INTERNET"/>
```

- **asynchronous retrieval of data: Loader API**
  - Useful features when dealing with Android's ContentProviders
  - See the link the lab instructions

# MyContactList

```
<ListView
    android:id="@+id/listView1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >
</ListView>
```



# Loader API: setup HTTP

```
public class JsonLoader extends
AsyncTaskLoader<List<Contact>> {
@Override
    public List<Contact> loadInBackground() {
    URL page= new URL(" http://[...]/contactslist?respType=json ");
    conn = (HttpURLConnection) page.openConnection();
    conn.connect();
    InputStreamReader in =
    new InputStreamReader((InputStream) conn.getContent(),"UTF-8");
[…]
```

# Loader API: parse json

```
String jsonStr = readAll(stream);
JSONArray jsContactList = new JSONArray(jsonStr);
int num = jsContactList.length();
List<Contact> result = new ArrayList<Contact>(num);
for (int i = 0; i < num; i++) {
Contact c =
new Contact(jsContactList.getJSONObject(i));
result.add(c);
}
return result;
```

# Data Model

```
public class Contact {
    private final String id, name, email, phone;
    public Contact(JSONObject jsonObject) {
    name = jsonObject.getString("name");
    phone = jsonObject.getString("phone");
    [...]
    }
    public String toString() {
    return String.format("%s - %s", name, email);
    }
}
```

# Main activity (1)

```
public class MainActivity extends Activity implements
LoaderCallbacks<List<Contact>> {
    private ListView view;
    protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    view = (ListView) findViewById(R.id.listView);
    }
    protected void onResume() {
    getLoaderManager().restartLoader(0, null, this);
    }
    public Loader<List<Contact>> onCreateLoader(...) {
    return new JsonLoader(this);
    }
[...]
```

# Adaptors

- **ListView doesn't know / care about displayed data**
  - it just displays given a number of rows
  - rows need to have their own layout (which can be complex)
- **Adapter provides ListView with readily laid out Views for each row**
  - handles dynamic data sets
  - needs to be customized for complex data

# Main Activity (2)

```
public void onLoadFinished([...], List<Contact>
result) {
    view.setAdapter(new ArrayAdapter<Contact>(this,
    android.R.layout.simple_list_item_1, result));
}
```

# Adaptor

- **Default Adaptor**
  - listView.setAdapter(**new** ArrayAdapter<Contact>(**this**, android.R.layout.simple_list_item_1,arg1));
  - Default behaviour of “android.R.layout.simple_list_item_1”
    - ☞ Calls the contact toString() method and puts it in the TextView
- **Customed Adapter**
  - listView.setAdapter(**new** ArrayAdapter(**this**, R.layout.contact, contacts));
  - Create a contact layout model in xml
  - Create your own adapter in Java
  - Tell it where to put the contact info in your model
- **See** http://www.vogella.com/tutorials/AndroidListView/article.html

# View an image from URL

- **Putting the URL in the android:**
  - src attribute of an ImageView in your .xml layout does notwork
- **You need to download each pictures in Java**
  - Use BitmapFactory to convert the url into a bitmap object
  - Put the bitmap objet as source to your ImageView
  - Do it in an AsynkTask

```
private class LoadImage extends AsyncTask<String, String, Bitmap> {
    private ImageView img;
    private Contact contact;
    private Bitmap bitmap;

    public LoadImage(ImageView img, Contact contact)
    {
        this.img = img;
        this.contact = contact;
    }

    protected Bitmap doInBackground(String... args) {
        try {
            bitmap = BitmapFactory.decodeStream((InputStream)new URL(args[0]).getContent());
        } catch (Exception e) {
            e.printStackTrace();
        }
        return bitmap;
    }
    protected void onPostExecute(Bitmap image) {
        if(image != null){
            img.setImageBitmap(image);
        }else{
            popUp("No image was found for " + contact.getName());
        }
    }
}
```

See http://www.learn2crack.com/2014/06/android-load-image-from-internet.html

# Communicate between activities

- **We now want to implement the Add/Modify/Delete features**
  - A click on a contact will open a new page
  - We need a way to communicate between Activities
- **Use intent**
  - Start activity
  - Pass the data (putExtra)

# Customize action bar

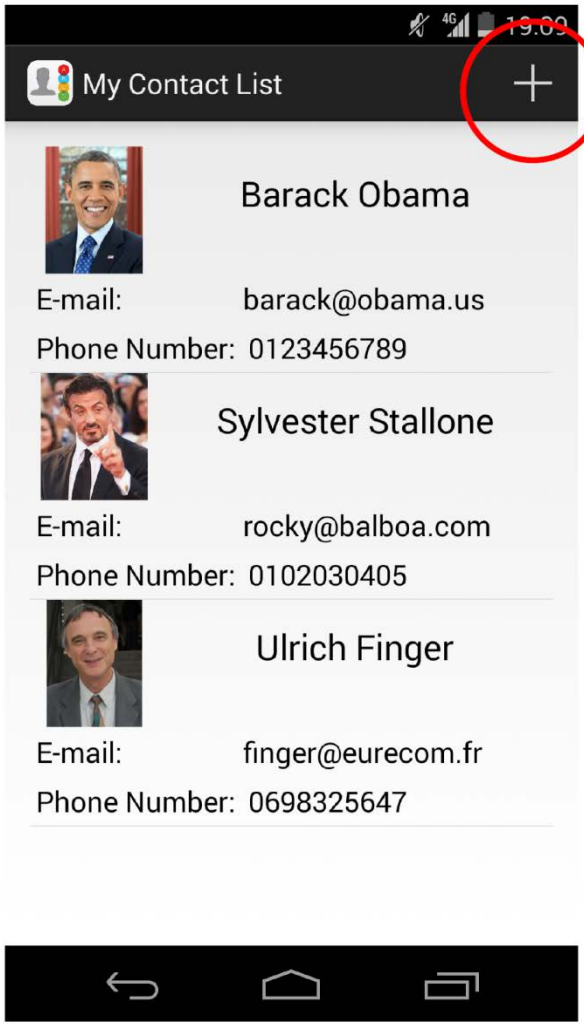
- Add your items in res/menu

```xml
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android" >
    <item
        android:id="@+id/action_add"
        android:icon="@drawable/ic_action_new"
        android:showAsAction="ifRoom"
        android:title="Add Contact"/>
</menu>
```

- Inflate your menu in your activity

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

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    // Handle presses on the action bar items
    switch (item.getItemId()) {
        case R.id.action_add:
            openAddAContact();
            return true;
        default:
            return super.onOptionsItemSelected(item);
    }
}
```




http://developer.android.com/guide/topics/ui/actionbar.html

# What are different usage of this app?

- **Online personalize storage of your contact list available across multiple devices**
- **What else ?**

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