HW#9 Clues

CSCI 571

Spring, 2017

HW#9 Prototype

- YouTube Link : https://youtu.be/lG_MlSzNsTM

Tutorials

- **1. Building your first App**

Creating a Project with Android Studio

http://developer.android.com/training/basics/firstapp/creating-project.html

- **2. Running your first App**

http://developer.android.com/training/basics/firstapp/running-app.html

(on same page see also “Run on the Emulator”)

Tutorials

- **3. Starting another activity**

http://developer.android.com/training/basics/firstapp/starting-activity.html

- **4. Comprehensive Tutorial / Article on getting started with Android**

http://www.vogella.com/tutorials/Android/article.html

What is needed

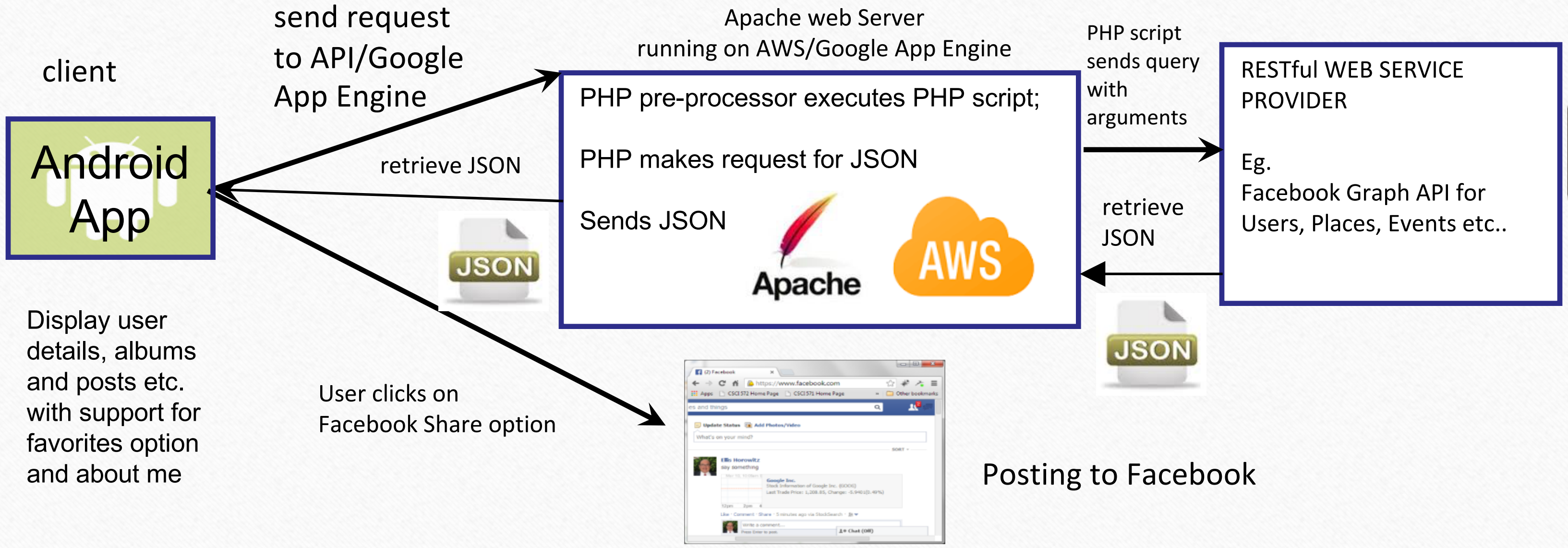
- You will need to download and install Android Studio
  https://developer.android.com/sdk/index.html
- Download the Facebook Android SDK

  https://developers.facebook.com/docs/android/getting-started

- Register your new App with Facebook and get an Application ID

  https://developers.facebook.com/apps/

HW#9 Architecture Overview


client
Android App
send request to API/Google App Engine
retrieve JSON
JSON
Apache web Server running on AWS/Google App Engine
PHP pre-processor executes PHP script;
PHP makes request for JSON
Sends JSON
Apache
AWS
PHP script sends query with arguments
retrieve JSON
JSON
RESTful WEB SERVICE PROVIDER
Eg.
Facebook Graph API for Users, Places, Events etc..
Display user details, albums and posts etc. with support for favorites option and about me
User clicks on Facebook Share option
Posting to Facebook

HW9 Implementation

- You will create 3 activities and a Manifest file
- There will be other files too and you can create more as necessary
- **AndroidManifest.xml**
- **MainActivity.java** – routine that controls the entire process
  - Creates the Search Form UI
  - sets on-click handlers to the buttons
  - Validation the user input
  - Calls AWS/Google App Engine server

HW9 Implementation

- **ResultActivity.java**
  - Creates the Tabbed Layout – Users, Pages , Events , Places and Groups
  - Pagination
  - More details

HW9 Implementation

- **DetailsActivity.java**
  - Creates the Tabbed Layout – Albums and Posts
  - Facebook Share
  - Add to favorites

AndroidManifest.xml File

Every application must have an AndroidManifest.xml file in its root directory. The manifest presents essential information about the application to the Android system. Among other things, the manifest does the following:

- It names the Java package for the application.
- It describes the components of the application — the activities, services, broadcast receivers, and content providers that the application is composed of.
- It names the classes that implement each of the components and publishes their capabilities.

AndroidManifest.xml File

See http://developer.android.com/guide/topics/manifest/manifest-intro.html.

Please note that the file is created by default on creation of a new Android project using Android Studio IDE.

UI Controls in Android

For the homework exercise, you can use the following widgets (not limited to):

- **TextView** (i.e., label)
  http://developer.android.com/reference/android/widget/TextView.html
- **EditText** (i.e., text field)
  http://developer.android.com/reference/android/widget/EditText.html
- **AutoCompleteTextView**
  http://developer.android.com/reference/android/widget/AutoCompleteTextView.html

UI Controls in Android (Contd.)

For the homework exercise, you can use the following widgets (not limited to):

- **Button** http://developer.android.com/reference/android/widget/Button.html
- **NavigationView** https://developer.android.com/reference/android/support/design/widget/NavigationView.html
- **ImageView** http://developer.android.com/reference/android/widget/ImageView.html
- **ExpandableListView** https://developer.android.com/reference/android/widget/ExpandableListView.html

UI Controls in Android (Contd.)

- **ListView** http://developer.android.com/reference/android/widget/ListView.html
- TabLayout http://developer.android.com/reference/android/support/design/widget/TabLayout.html
- ViewPager http://developer.android.com/reference/android/support/v4/view/ViewPager.html
- **TableLayout** http://developer.android.com/reference/android/widget/TableLayout.html

UI Controls in Android (Contd.)

- **TableRow** http://developer.android.com/reference/android/widget/TableRow.html
- **RelativeLayout** http://developer.android.com/reference/android/widget/RelativeLayout.html
- **LinearLayout** (It arranges “components” in vertical or horizontal order, via orientation attribute.) http://developer.android.com/reference/android/widget/LinearLayout.html
- **ScrollView** http://developer.android.com/reference/android/widget/ScrollView.html

RelativeLayout

RelativeLayout lets you position your component base on the nearby (relative or sibling) component's position. You can use "above, below, left and right" to arrange the component position.

LinearLayout

LinearLayout is a common layout that arranges “component” in vertical or horizontal order, via *orientation* attribute

MainActivity.java

onCreate does the following

•Initialize data sharing variables - https://developer.android.com/reference/android/content/SharedPreferences.html

•Render and setup the initial screen with EditText and 2 Buttons

•Register and setup the Navigation Drawer and load its menu components with the required text and icons

•Setup toggle for opening and closing the Navigation Drawer

•Register a event handler with the various UI components– ‘Search’ (Button) and ‘Clear’ (Button)

MainActivity.java (Contd.)

onClickListener for the ‘Search’ Button does the following

- Validate the user input
- Build the URL for AWS/Google App Engine
- Create a new task which is of type AsyncTask to fetch the JSON data. It will initiate an asynchronous call.
- Execute the task and moves to another activity, if needed!

MainActivity.java (Contd.)

onClickListener for the ‘Clear’ Button does the following

•Clear the AutoComplete Text View

MainActivity.java - AsyncTask

AsyncTask is an abstract class provided by Android which helps us to use the UI thread properly. This class allows us to perform long/background operations and show its result on the UI thread without having to manipulate threads.

AsyncTask has four steps:

doInBackground: Code performing long running operation goes in this method. When onClick method is executed on click of button, it calls execute method which accepts parameters and automatically calls doInBackground method with the parameters passed.

MainActivity.java – AsyncTask (Contd.)

onPostExecute: This method is called after doInBackground method completes processing. Result from doInBackground is passed to this method.

onPreExecute: This method is called before doInBackground method is called.

onProgressUpdate: This method is invoked by calling publishProgress anytime from doInBackground call this method.

ResultActivity.java

ResultActivity starts with onCreate

- onCreate does the following

- retrieves JSON data which was passed from MainActivity
- stores the data in a JSONObject
- Setting up the five tabs – ‘Users’, ‘Pages’ , ‘Events’, ‘Places’ and ‘Groups’
- Rendering the ‘favorites’ image properly, if the user had been marked as favorite.

ResultActivity.java - Users

Users Tab would be doing the following:

1. Get the ‘Users’ information from our script hosted on AWS/Google App Engine
2. Format the values in the desired format. For example, date needed to be in the specified format
3. Render the ListView with the User’s information with the data we got from our script
4. Also with the listview, we have an ImageView showing the current user’s picture and a details button ImageView
5. Also, the favorites ImageView should be displayed according to whether that item is favorite or not
6. Furthermore, on clicking the details ImageView, you need to render the details of the current user using DetailsActivity

ResultActivity.java – Other tabs

Repeat the previous steps for Pages, Events, Places and Groups

DetailsActivity.java

DetailsActivity starts with onCreate

- onCreate does the following

- retrieves data which was passed from ResultsActivity
- Setting up the two tabs – ‘Albums’ and ‘Posts’ with relevant data
- Rendering the options menu properly and initializing event handlers for click of options menu items

DetailsActivity.java – Add/Remove Favorites

DetailsActivity would also be responsible for marking a item as favorite or removal

- Get the selection item information such as user ID, name, profile picture etc.
- Save the above information in SharedPreference
- Use a ‘suitable string’ key for storing your favorite item
- You may store your array of favorite stock in the JSON format
- You may also check if the stock is favorite or not, in a similar fashion – Iterate over your array of favorite items and check if the current item is marked as favorite or not.

AboutActivity.java

- ImageView can be used for student image.
- TextView can be utilized for student name and student id.

FACEBOOK POST

For the latest versions of Facebook SDK 4.x, share functionality may require following:

- **Modifications in AndroidManifest file:**
  - Introducing Fb Application Id

```
<meta-data android:name="com.facebook.sdk.ApplicationId" android:value="@string/facebook_app_id"/>
```

  - Adding FacebookActivity

```
<activity android:name="com.facebook.FacebookActivity"
        android:configChanges= "keyboard|keyboardHidden|screenLayout|screenSize|orientation"
        android:theme="@android:style/Theme.Translucent.NoTitleBar” android:label="@string/app_name" />
```

FACEBOOK POST (Contd.)

For the latest versions of Facebook SDK 4.x, share functionality may require following:

- **Modifications in AndroidManifest file:**
    - Adding Facebook Content Provider

```
<provider android:authorities="com.facebook.app.FacebookContentProvider{app_id}"
    android:name="com.facebook.FacebookContentProvider" android:exported="true"/>
```

FACEBOOK POST (Cont.)

- To implement the functionality you may use the following approach on click of the fb button: https://developers.facebook.com/docs/sharing/android
  - Initialize facebook sdk
  - Create a ShareDialog
  - Create LinkContent for the post
  - Share the LinkContent through ShareDialog
  - Register Callback for the ShareDialog
  - Bind onActivityResult for maintaining session

Other notes

- Take a look at https://developer.android.com/guide/topics/ui/layout/listview.html
- The above link also has links to Adapters which are classes that can be customized to bundle details or data with a list view row
- The icons required are provided to you. Any other icons needed, you may find and replicate.

Android Libraries

You may find the below libraries useful to implement the features:

- Google Gson : https://github.com/google/gson
- Fast Image Loading and Caching: http://square.github.io/picasso/
- Apache Commons Lang : https://commons.apache.org/proper/commons-lang/

Android Libraries

You may find the below libraries useful to implement the features:

- Nhaarman library for ListView animations : https://github.com/nhaarman/ListViewAnimations
- Chrisbanes library for zoomable ImageView : https://github.com/chrisbanes/PhotoView