

Homework: Android Twitter Post – A Mobile Phone Exercise

1. Objectives

- Become familiar with the Eclipse, Android and Twitter.
- Use Java code with a combination of the Android SDK and Twitter APIs.
- Provide an interface to post a message to Twitter.

2. Background

2.1 Eclipse

Eclipse is an open source community, whose projects are focused on building an open development platform comprised of extensible frameworks, tools and runtimes for building, deploying and managing software across the lifecycle.

The Eclipse Project was originally created by IBM in November 2001 and supported by a consortium of software vendors.

The Eclipse Top-Level Project is an open source, robust, full-featured, commercial-quality, industry platform for the development of highly integrated tools and rich client applications.

The home page of the Eclipse Foundation is located at:

<http://www.eclipse.org/>

2.2. Android

Android is a mobile operating system initially developed by Android Inc., a firm purchased by Google in 2005. Android is based upon a modified version of the Linux kernel. Unit sales for Android OS smart phones ranked first among all smart phone OS handsets sold in the U.S. in the second quarter of 2010, at 33%.

The Android operating system software stack consists of Java applications running on a Java based object oriented application framework on top of Java core libraries running on a Dalvik virtual machine featuring JIT compilation.

The Official Android home page is located at:

<http://www.android.com/>

The Official Android Developer home page is located at:

<http://developer.android.com/index.html>

2.3. iPhone and BlackBerry: You are free to choose to develop your application on iPhone or Blackberry. However, we won't be able to assist you, or cannot guarantee any help with your development process; you will have to make your application on your own, and your application will be presented in person to the graders; they will care about how your application works, and the interface you make.

2.4 Twitter

Twitter has been introduced since assignment #8. In this assignment, you will get familiar with and use the mobile version of Twitter API.

3. Description of the Exercise

In this exercise, you will write a Android Mobile application that does the following sequence of actions:

- a) Authorizes (logs in) the user to Twitter;
- b) An edit box is provided to enter a ZIP code. When a button named "Get Movies" is clicked, the JSON (or XML) data from HW #8 (from Tomcat) is retrieved. The choice of JSON or XML is up to you.
- c) Data about the Flixster movies in the first listed theater and images are displayed, and the UI allows to select one of the movies through a set of radio buttons.
- d) Tweet about the movie you selected: the information to be tweeted includes: The title of the movie, the name of the theater and the first show time listed for that movie. For example: **I will see "Footloose" at Edgewater Multiplex Cinemas at 3:55AM**, where **Footloose** is the name of the movie, **Edgewater Multiplex Cinemas** is the name of the theater and **3:55AM** is the first show time listed for the movie.

Snapshots of the user interface are shown below. The design of your GUI is flexible and does not have to look exactly the same as the ones shown below.

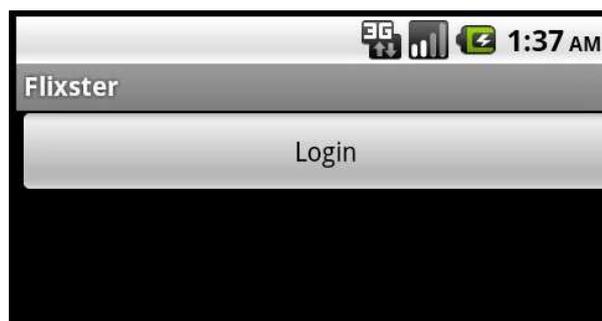


Figure 1. Application starts and the Twitter Login button appears

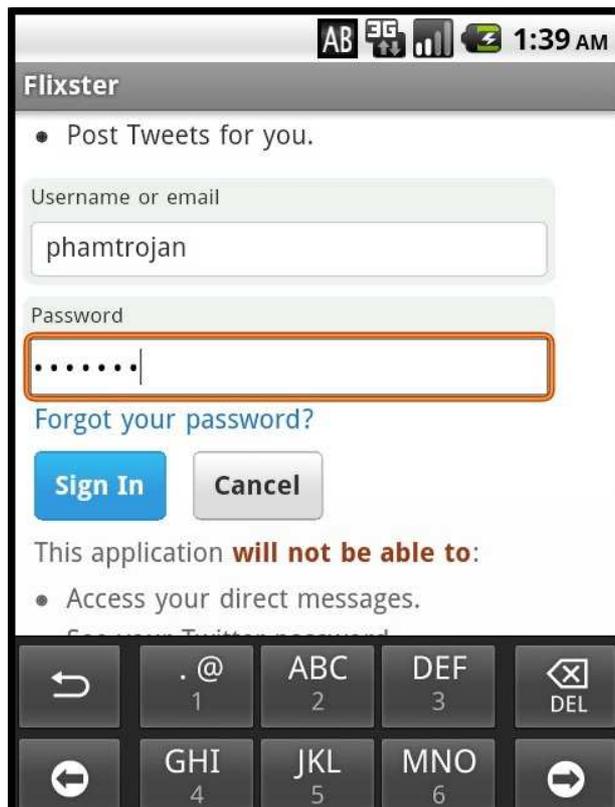


Figure 2. The Twitter Login Dialog appears to let you enter the login information

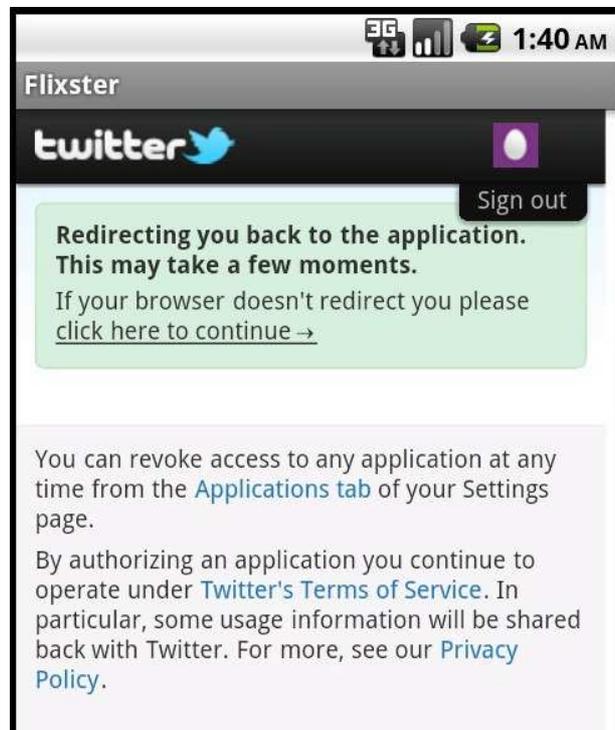


Figure 3. It might take a while for the Twitter login process to be completed and you might see this screen. Just be patient.

After the login process has been completed successfully, there will be a text box that let you enter the zipcode, and a button named “Get Movie” below it. When you click on the button, a request is sent to your hw#8 to get the information about the first theater and the movies that are going on in the theater, which, in turn, is retrieved from Flixster as described in the previous assignments.

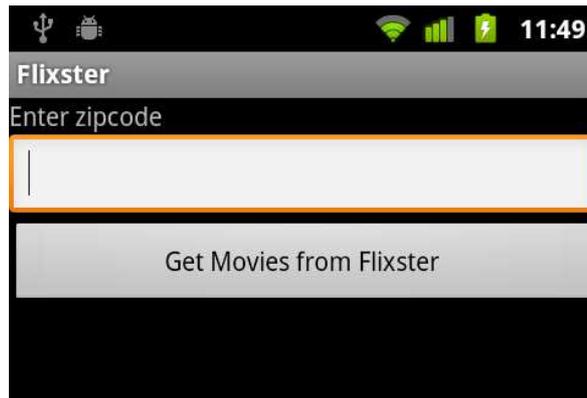


Figure 4. Enter zipcode

When you click on the “Get Movies from Flixster” button, you will check the format of the zipcode. If the zipcode does not consist of 5 digits, then give an error message, as shown in the picture below.

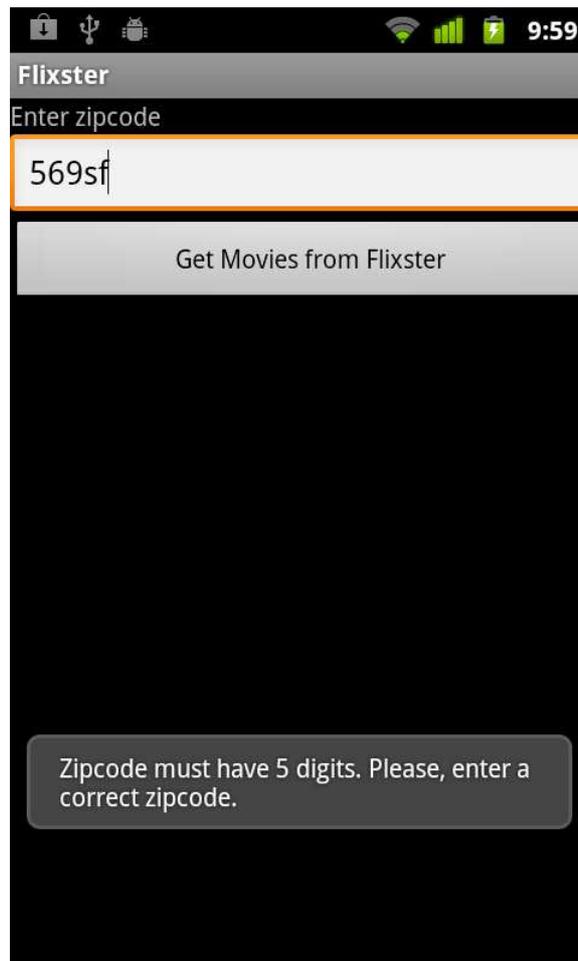


Figure 5. Incorrect zipcode.

Here are some screenshots that you see after you successfully retrieve the information from hw#8.

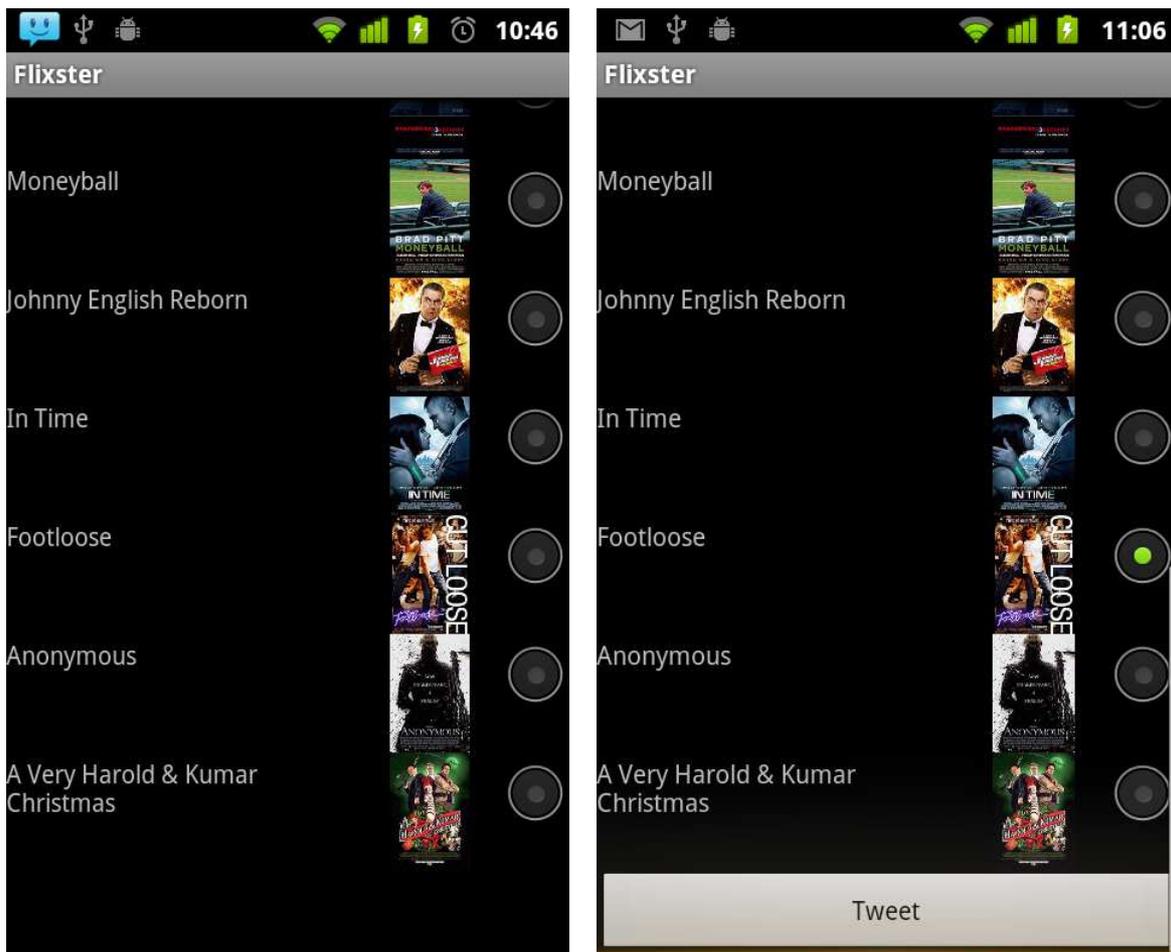


Figure 6. The left column displays the titles of the movies, the middle column displays the icons of the movies, and the right column displays the radio buttons that let you choose a specific movie. The view used to display the movies must be scrollable (ScrollView) so that when the number of movies is big, you can scroll the screen up and down to see all the movies (Pay attention to the scroll bar on the right side of the right picture).

The Tweet button only appears after you have selected a movie with a radio button (the picture on the right hand side). It should not be visible if no movie has been selected (the picture on the left hand side).

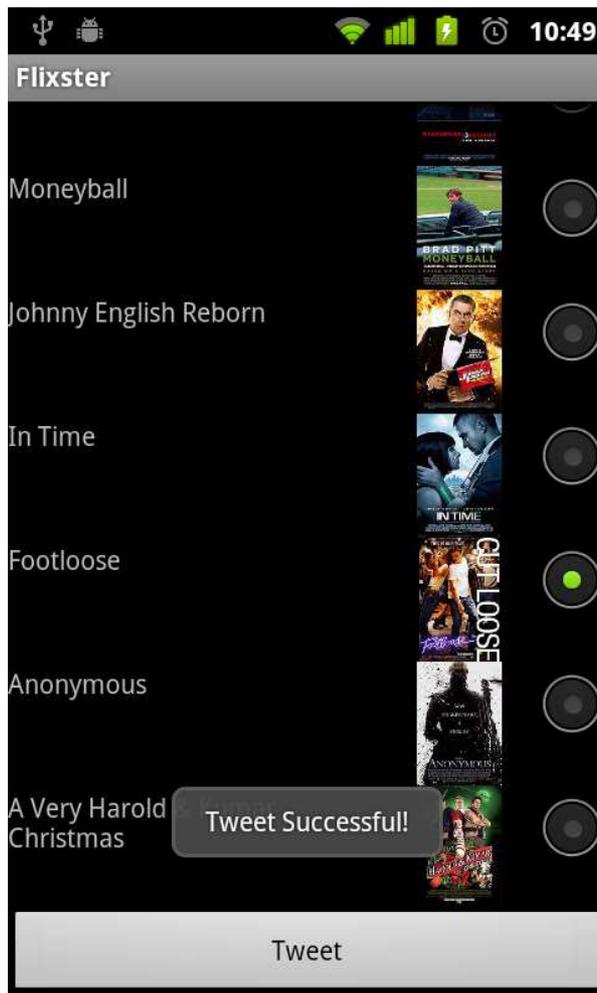


Figure 7. After you select a movie and click on the Tweet button, a small dialog window (called Toast in Android SDK) appears and shows that the tweet was successful or failed. The Toast message is usually displayed for 4 or 5 seconds.

If you go to your Twitter website (on your computer, not on the phone), you will see a new tweet, which looks like this:

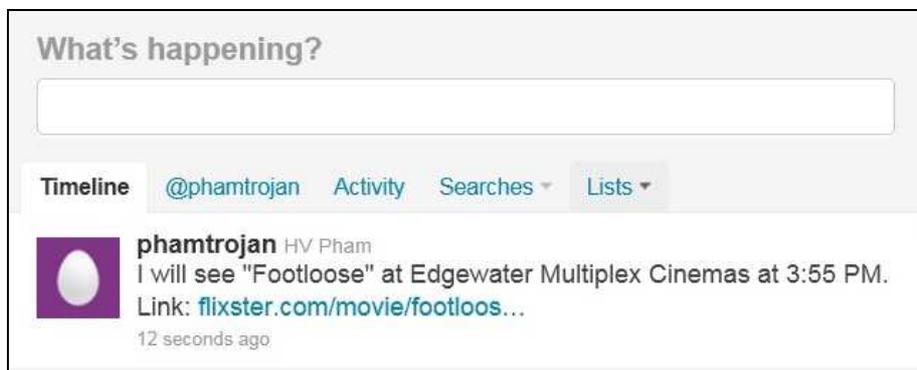


Figure 8. Your new tweet on Twitter. Remember, Twitter does not allow you to tweet two identical messages in order to avoid duplicates.

To implement this exercise you are required to write a Java program using the Android SDK and the Twitter API for Android. The top-level interface consists of three areas:

- Button For the initial login (Figure 1). After that, twitter SDK will provide a mechanism for you to log into Twitter (Figure 2). You are responsible to figure out how to use Twitter SDK to display the login dialog. The recommended SDK for Twitter on Android is twitter4j (<http://twitter4j.org/en/>). Googling “twitter4j example” will give you some code sample that helps you understand the SDK.
- A EditText that allows you to enter a zipcode, and a button that when clicked will send the zipcode to your assignment#8 to retrieve the data.
- A TableLayout that allows you to display the movies’ titles, icons and radio buttons in the column style, as shown in Figure 4. Note that there is also a button called “Tweet” at the bottom of the table.

4. Implementation Hints

4.1. Android SDK

The website where you can find the tutorial on Android programming is: <http://developer.android.com>. You should read the Development Guide located under the Dev Guide tab on the website. Then specifically focus on the tutorial on how to create a view with Android SDK. The links to the tutorials that you will likely need are below:

<http://developer.android.com/resources/tutorials/hello-world.html>

<http://developer.android.com/resources/tutorials/views/index.html>

Practise writing some simple Views on Android SDK first, such as the hello world example provided on the Android SDK website, get familiar with LinearLayout, TableLayout, Button, TextView, EditText...

4.2 Twitter4j API (Twitter for java)

Twitter has multiple SDKs for Android, but the twitter4j SDK is the most popular and easy to use. Google “Twitter4j example” will give you quite an amount of code sample of how to authorize users to twitter.

4.3. Other APIs for Twitter

If you choose to make your application on different smart phones, you will have to use a different API libraries for Twitter, which are written in different languages, in Objective-C for iPhone. Here is the link to the other libraries for Twitter services:

<https://dev.twitter.com/docs/twitter-libraries>

5. Prerequisites

This homework requires the use of the following components:

1. Download and install Eclipse. Download and install the Android SDK. Instructions on how to download and install both are available on the class website at http://www-scf.usc.edu/~csci571/2010Fall/eclipse_setup_v6_8.pdf.
2. For the Twitter SDK, you will need to create an account on Twitter, then within that account, create an application, for which you just need to fill out some fields of data, and you will get the credential information that is needed when you code on Android SDK.
3. At this point, we do NOT put any restriction on the presentation of the application. You are also free to choose any library that you would prefer.

7. Material You Need to Submit

Unlike other exercises, you will have to “demo” your submission “in person” during a special grading session. Details and logistics for the demo will be provided in class, in the Announcement page and in the class news group.

You should also ZIP your Android source directory and SUBMIT the resulting ZIP file.