ITIS/ITCS 4180/5180 Mobile Application Development

Midterm

Date Posted: 06/13/2013 at 18:00

Due Date: 06/19/2013 at 23:55

Basic Instructions:

1. This is the Midterm Exam, which will count for 30% of the total course grade.
2. In every file submitted you MUST place the following comments:
    a. Midterm.
    b. File Name.
    c. Your Full Name.
3. This Midterm is an individual effort. Each student is responsible for her/his own Midterm and its submission.
4. Once you have picked up the exam, you may not discuss it in any way with anyone until the exam period is over.
5. Once you have picked up the exam, there is no limit as to how much time you may spend working on it, until the return date/time mentioned above.
6. A 10% penalty will be subtract from the midterm's score for each late day. No credit will be given for a midterm turned in more than 7 days past the due date.
7. This exam is composed of 3 parts, answer all of the parts.
8. If any problems arise during this exam, email me (mshehab (at) uncc.edu).
9. Please download the support files provided with the Midterm and use them when implementing your project.
10. **Export your Android project as follows:**
    a) From eclipse, choose "Export…" from the File menu.
    b) From the Export window, choose General then File System. Click Next.
    c) Make sure that your Android project for this Midterm is selected. Make sure that all of its subfolders are also selected.
    d) Choose the location you want to save the exported project directory to. For example, your Desktop or Documents folder.
    e) The first time you export, make sure you select Create directory structure for files.
    f) Click Finish, and then go to the directory you exported the project to. Make sure the exported directory contains all necessary files, such as the .java and resource files.
11. Submission details:
    a) When you submit the Midterm, compress your exported Android project into a single zip file. The format of compressed file name is:
        i. Midterm.zip
    b) You should submit the Midterm through Moodle:
        i) Submit the zip file.
12. **Any violation of the rules regarding consultation with others will not be tolerated and will result disciplinary action and failing the course. Failure to do the above instructions will result in loss of points.**

Midterm (100 Points)

In this assignment you will develop a simple Rotten Tomatoes client application. The application should be able to load information about box office, in theater, opening, and upcoming movies. Users of the application will be able to add/remove movies to their favorites. The favorites should be stored on the server using the provided favorites API. For this homework you will be using both JSON and XML parsers.

Notes:

1. The recommended Android Virtual Device (AVD) should have minimum SDK version set to 11 and target SDK at least 17. The app should display correctly on 3.2" QVGA (ADP2) (320x480: mdpi).
2. All API calls, JSON or XML parsing and image downloading should be performed using Threads (or AsyncTask) and your code should not block the main thread.
3. For further information about the rotten tomatoes API check the documentation available at http://developer.rottentomatoes.com. In addition the Rotten Tomatoes api provides the following test interface http://developer.rottentomatoes.com/iodocs

Initial Setup and Favorites API Description

- You are provided with a java class "**Config.java**", import it to your project.
- Edit the "**Config.java**", by setting the "**YOUR49ERUSERNAME**" to your UNCC user name, please the username listed on Moodle. If your email is "bsmith@uncc.edu" then set the variable to "bsmith". To retrieve the "uid" you should use the "Config.getUid()" method.
- You are provided with a test website which includes a form that will allow you to test these APIs, http://cci-webdev.uncc.edu/~mshehab/api-rest/favorites/

addToFavorites API:

- *URL*: http://cci-webdev.uncc.edu/~mshehab/api-rest/favorites/addToFavorites.php
- *Arguments*: (**POST method**)
  - *uid* : the uid value returned by calling "Config.getUid()".
  - *mid* : the movie id to be added to the user favorites.
- Description: This API will add a movie to the user's favorites on the server. Failing to pass the required parameters will result in error response from the server. If all parameters are passed successfully, the server will return a response that includes the an error message, and the user's id. A successful response is as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<response>
   <error>
      <id>0</id>
      <message>Done adding favorite 12452094382</message>
   </error>
   <user>
      <id>444ac1a0bbbfa1cf258b1eeeeb71ff420</id>
   </user>
</response>
```

getAllFavorites API:

- *URL*: http://cci-webdev.uncc.edu/~mshehab/api-rest/favorites/getAllFavorites.php
- *Arguments*: (**POST method**)
  - *uid* : the uid value returned by calling “Config.getUid()”
- Description: This API will retrieve all the favorites stored on the server for the specified user id. The “uid” parameter should be passed to the API to enable the server to identify the user. Failing to pass the required parameters properly will result in error response from the server. The root of the XML returned is a **response** element. The first child of the root element is an **error** element, which will includes an error id and message. The error elements will enable you to identify if any errors have occurred. Each favorite element will have an “id” element, which represents the id of the movie stored in favorites. Below is an example response XML returned:

```
<?xml version="1.0" encoding="UTF-8"?>
<response>
   <error>
      <id>0</id>
      <message>Done getting all favorites</message>
   </error>
   <user>
      <id>444ac1a0bbbfa1cf258b1eeeeb71ff420</id>
   </user>
   <favorites>
      <favorite>
         <id>111111111</id>
      </favorite>
      <favorite>
         <id>22222222</id>
      </favorite>
   </favorites>
</response>
```

deleteFavorite API:

- *URL*: http://cci-webdev.uncc.edu/~mshehab/api-rest/favorites/deleteFavorite.php
- *Arguments*: (**POST method**)
  - *uid* : the uid value returned by calling “Config.getUid()”.
  - *mid* : the movie id to be deleted from the user favorites.
- Description: This API will delete a favorite movie from the user’s stored favorites. Failing to pass the required parameters will result in error response from the server. A successful response is as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<response>
   <error>
      <id>0</id>
      <message>Done deleting favorite 12452094382</message>
   </error>
   <user>
      <id>444ac1a0bbbfa1cf258b1eeeeb71ff420</id>
   </user>
</response>
```

deleteAllFavorites API:

- *URL*: http://cci-webdev.uncc.edu/~mshehab/api-rest/favorites/deleteAllFavorites.php
- *Arguments*: (**POST method**)
  - *uid* : the uid value returned by calling "Config.getUid()".
- Description: This API will delete all the user's favorites stored on the server. Failing to pass the required parameters will result in error response from the server. A successful response is as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<response>
   <error>
      <id>0</id>
      <message>Done deleting all your favorites</message>
   </error>
   <user>
      <id>444ac1a0bbbfa1cf258b1eeeeb71ff420</id>
   </user>
</response>
```

isFavorite API:

- *URL*: http://cci-webdev.uncc.edu/~mshehab/api-rest/favorites/isFavorite.php
- *Arguments*: (**POST method**)
  - *uid* : the uid value returned by calling "Config.getUid()".
  - *mid* : the movie id to be checked in favorites.
- Description: This API will check if the provided movie id is present in the user's favorites that stored on the server. The result will include an isFavorite element that will be set to true or false. Failing to pass the required parameters will result in error response from the server. A successful response is as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<response>
   <error>
      <id>0</id>
      <message>Done checking is favorite 12452094382</message>
   </error>
   <user>
      <id>444ac1a0bbbfa1cf258b1eeeeb71ff420</id>
   </user>
   <favorites>
      <favorite>
         <id>123</id>
         <isFavorite>true</isFavorite>
      </favorite>
   </favorites>
</response>
```

Errors:

- Each error has an associated id and an error message explaining the error. If an error is detected you should show a Toast message displaying the corresponding error message. Not that, an error id of 0, means no errors have occurred.

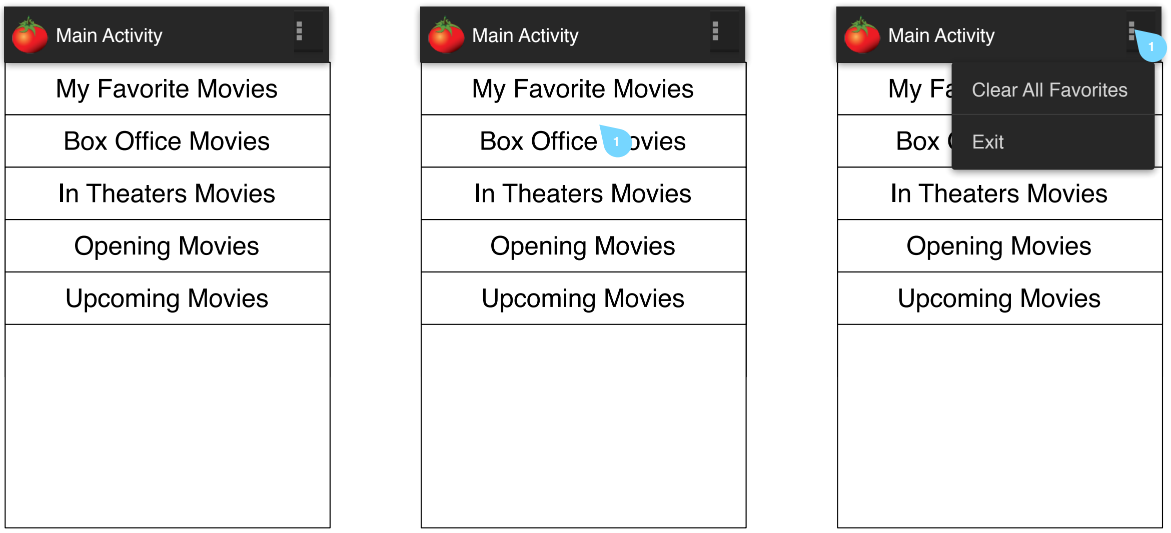
<u>Important Coding Requirements:</u>

Points will be deducted if your application does not follow the below requirements:

1) All network connections, JSON/XML parsing, and image downloading should be performed using Threads (or AsyncTask) and should not block the main thread.
2) Your code should use standard naming conventions, such as, uppercase class names, and lower case variable/method names. Also your variable and method names should be descriptive of the data or action performed.
3) All AsyncTask/Runnable and Parsing Classes should not be implemented as inner classes in an Activity instead should be implemented as separate files.
4) Your implementation should target the most efficient algorithms and data structures. You will be graded based on the efficiency of your implementation.

Part A: Main Activity (10 Points)

The main activity displays a ListView with 5 options to the user, which include “My Favorite Movies”, “Box Office Movies”, “In Theaters Movies”, “Opening Movies”, and “Upcoming Movies”. Figures 1(a) and 1(b) show the Main Activity and the ListView. Clicking on any of these options should start the Movies Activity. Also note that clicking the options menu should show the “Clear All Favorites”, “Exit” options. Clicking the “Clear All Favorites” should delete all favorites stored on the server and clicking the “Exit” option should exit the application.



(a) Main Activity Starting (b) ListView can click options (c) The menu and exit

Figure 1, The Main Activity Wireframe

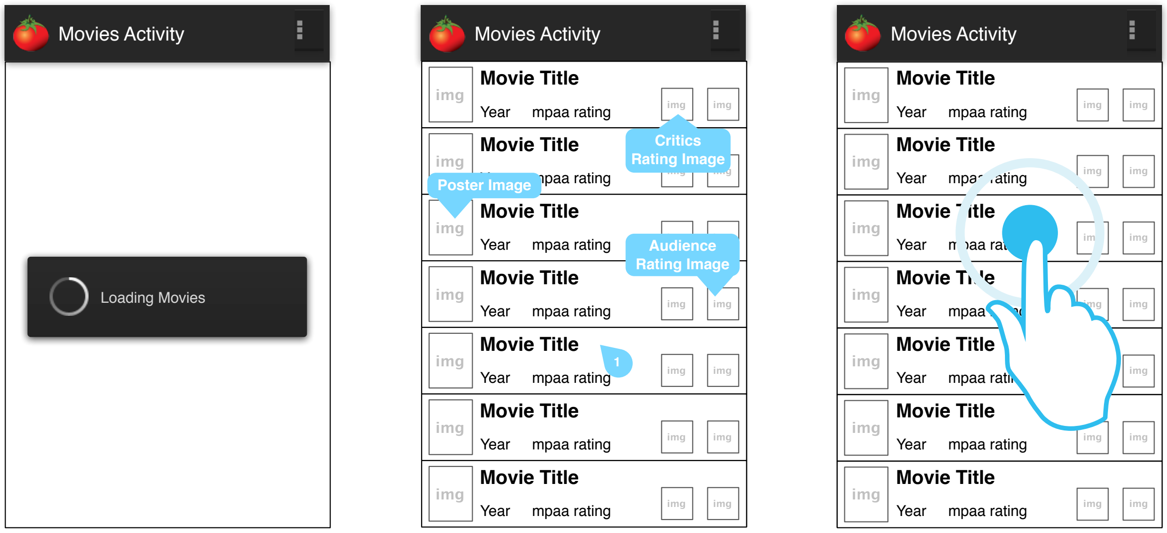
Part B: Movies Activity (60 Points)

The Movies activity is responsible for the loading the list of movies based on the selected option in the Main activity.

1) If “My Favorite Movies” was selected then the movies list should be loaded by using the favorites API to retrieve the ID’s of the favorite movies. Then the Rotten Tomatoes API should be contacted to retrieve the details of retrieved movie ID’s. If the “Box

Office Movies", "In Theaters Movies", "Opening Movies", or "Upcoming Movies" options are selected then the corresponding JSON rottentomatoes APIs should be used. Check the API documentation (http://developer.rottentomatoes.com/docs).

2) The content of the JSON API should be retrieved by establishing a HTTP connection to the service, you should request at least **50 movies**. All the parsing and HTTP connections should be performed by a worker thread or an AsyncTask and should not be performed by the main thread. While, the movies JSON/XML is being loaded you should indicate that using the progress alert as indicated in Figure 2(a).
3) The loaded movies should be displayed in a ListView. The ListView items should be displayed to include the movie poster thumbnail, title, year, MPAA rating, critics rating image and the audience rating image, as shown in Figure 2(b). The audience and critic rating images are provided in the support files. You should investigate reusing the views provided by the ListView adapter from the (scarp) recycle pool and should provide the synchronization needed to ensure the loading of the correct thumbnails.
4) Clicking a movie item should display the movie details by starting the Movie activity.
5) When the Movies activity is displaying the Favorite Movies, upon long pressing any of the favorite movies should remove this movie from the favorites by contacting the corresponding favorite API and should refresh the ListView to indicate this change.



(a) Movies Activity Loading Movies

(b) ListView showing the different movies

(c) Long Press removes a favorite movie

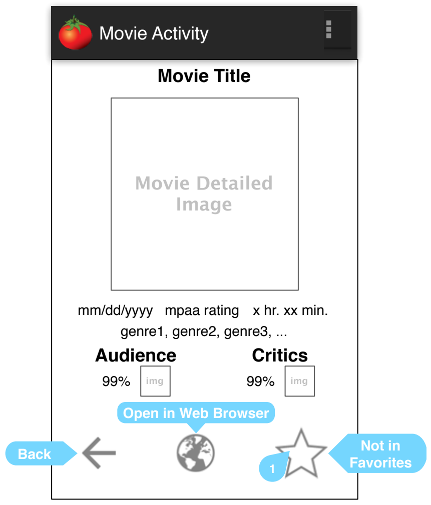
Figure 2, The Movies Activity Wireframe

Part C: Movie Activity (30 Points)

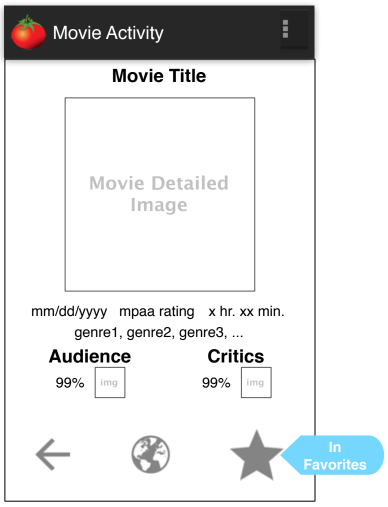
The Movie activity will display more details related to the movie selected in the Movies activity. The Movie activity wireframe is shown in Figure 3.

1) Loading the movie detailed image should be performed by a worker thread and not by the the main thread. If no poster is found use the "poster_not_found.png" image.

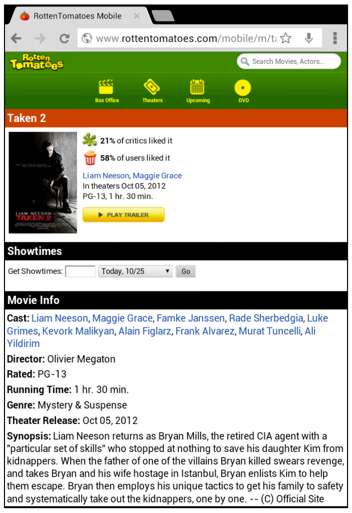
2) The audience and critics images are similar to ones used in the Movies activity. Note that you are also required to display a comma separated string showing the movie's different genres, which would require using the Rotten Tomatoes Movies Info api.
3) The loaded movie is either in the favorite list or not. If the movie is not in the favorites this should be indicated by using the icon in Figure 3(a), and if it was in the favorites it should be indicated using the icon in Figure 3(b). Clicking not in favorites icon should add the current movie to the favorites and should change the icon to the in favorites icon. Similarly clicking the in favorites icon should remove the current movie from the favorites and should change the icon to the not in favorites icon.
4) Upon clicking the back icon (left arrow icon), the Movie activity should exit.
5) Upon clicking on the globe icon, the movie website should be loaded in the web browser, as indicated in Figure 3(c).



(a) Movies Activity Loaded for movie not in favorites



(b) Movies Activity Loaded for movie in favorites



Taken 2

21% of critics liked it

58% of users liked it

Liam Neeson, Maggie Grace
In theaters Oct 05, 2012
PG-13, 1 hr. 30 min.

Showtimes

Get Showtimes: Today, 10/25 Go

Movie Info

Cast: Liam Neeson, Maggie Grace, Famke Janssen, Rade Sherbedgia, Luke Grimes, Kevork Malikyan, Alain Figlarz, Frank Alvarez, Murat Tuncelli, Ali Yildirim

Director: Olivier Megaton

Rated: PG-13

Running Time: 1 hr. 30 min.

Genre: Mystery & Suspense

Theater Release: Oct 05, 2012

Synopsis: Liam Neeson returns as Bryan Mills, the retired CIA agent with a "particular set of skills" who stopped at nothing to save his daughter Kim from kidnappers. When the father of one of the villains Bryan killed swears revenge, and takes Bryan and his wife hostage in Istanbul, Bryan enlists Kim to help them escape. Bryan then employs his unique tactics to get his family to safety and systematically take out the kidnappers, one by one. -- (C) Official Site

(c) Movie website loaded upon clicking globe icon

Figure 3, The Movie Activity Wireframe