Lab 7 – Tide Prediction App with a REST Web Service

CIS399, Android Application Development

Objectives: This lab is designed to give you practice:

- Using a web service client
- Using asynchronous tasks

Part 1: Do the textbook exercises shown below:
- 10-2, Work with asynchronous tasks

Upload a text file to Canvas in which you will report, for each exercise above, whether you:
  A. Followed all the steps shown in the book and successfully compiled and ran the program (where applicable).
  B. Loaded the completed solution, experimented with the code, and ran the program (where applicable).
  C. Read through the steps and inspected the relevant code without writing or running a program.
  D. Didn't do any of the above.

Submission

Enter your exercise report directly on Canvas, or enter it in a text file and upload it to Canvas.

Part 2: Modify the previous Tide Table app so that it has these additional features:

- Requirements

  The app will display a list of at least three locations for which there are tide predictions for our state (or another state if you prefer). The user will be able to select a location and date, and then the app will display the tide predictions for that location and day.

  The predictions will be downloaded from the NOAA web service unless they are already stored in the app's database. When new predictions are downloaded, the predictions for the selected location, for the rest of the current year, will be added to the database.

- Implementation

  This app is an enhancement of the previous version of the Tide Prediction App that had tide predictions pre-loaded in an SQLite database.

  Implementation details:

  o Tide station information will be preloaded. You can hard-code the tide stations or, better yet, put them in a table in your SQLite database (this will make updating easier).
    - Include the following information for each station:
      o Location name
      o Station ID
      o Latitude and longitude (so you can add a geo-location feature to this app later)
    - Only the "Harmonic" stations have predictions available via the web service. You can get the list of NOAA Tide Prediction Stations for Oregon here:
      https://www.tidesandcurrents.noaa.gov/tide_predictions.html?gid=1409#listing
  o Tide predictions will be pulled from a NOAA CO-OPS Web Service.
    - Before calling the web service, the app will check to see the requested data is in the database.
      o If it is, then the predictions from the database should be displayed.
      o Otherwise the predictions for the rest of the year, for that location, should be downloaded from the web service, stored in the database, and the requested predictions displayed.
    - The REST web service can return tide predictions in a variety of formats (text, HTML, or XML). You will be getting results in XML format. You can try the web service here:
      http://opendap.co-ops.nos.noaa.gov/axis/webservices/highlowtidepred/index.jsp.
- All the features implemented in the previous version of this app will still work.

Submission
Zip the project folder and upload it to Canvas.