Lab 8 – Tide Prediction App with a Web Service

CS235AM, Intermediate Mobile Application Development: Android

This lab will give you practice using a Web Service in conjunction with SQLite and the SQLite.NET ORM.

Requirements

The app will display a list of all 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 form 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:

- 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:
        - Location name
        - Station ID
        - 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:
      http://www.tidesandcurrents.noaa.gov/tide_predictions.html?gid=1409#listing
- Tide predictions will be downloaded from a NOAA CO-OPS Web Service. There is a SOAP web service and a quasi-REST web service. The URLs for each web service are given below.
    - Before calling the web service, the app will check to see the requested data is in the database.
        - If it is, then the predictions from the database should be displayed.
        - 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). I described it as qusai-REST because it is the URL for the High/Low Tide Predictions "try me" HTML form at: http://opendap.co-ops.nos.noaa.gov/axis/webservices/highlowtidepred/index.jsp. But for all practical purposes it can be used pretty much like a REST web service.
- The SOAP web service returns a response in XML, the proxy parses it into a collection of C# objects. Information about the High/Low Tide Prediction service is here: http://opendap.co-ops.nos.noaa.gov/axis/

Group A, Special Instructions

Use the REST web service and request data in text (tab separated value) format or, optionally, XML.
(It is very unusual to get a web service response in text format, but you already have a parser, so…)

Group B, Special Instructions

Use the SOAP web service with this WSDL file: http://opendap.co-ops.nos.noaa.gov/axis/webservices/highlowtidepred/wsdl/HighLowTidePred.wsdl. The response you get back from the proxy will be a C# object, not XML. So you don't have to parse it!

Review and Submission

Zip the beta version of the solution (after removing the bin and obj folders) and e-mail it to your code-review partner. After getting a code review, revise your code and upload it to Moodle.