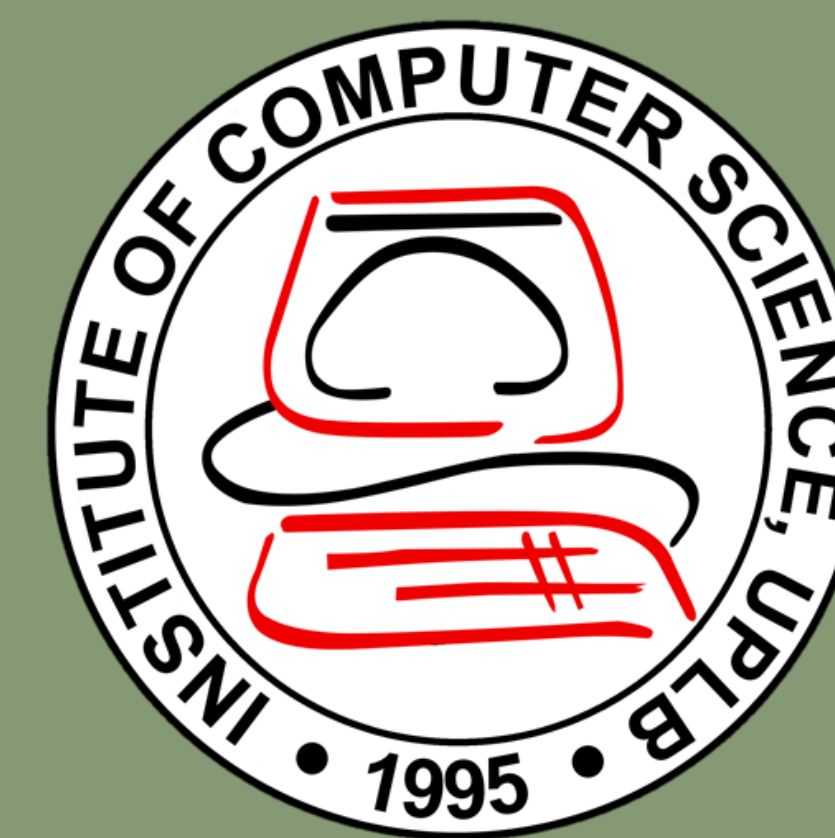# Mobile Development of Philippine Climate Outlook Through Data Driven Documents and Web-View Applications

Adrienne Elise R. Cortez and Prof. Concepcion L. Khan

ABSTRACT

Knowing the amount of rainfall in a region is a necessity for people to know if they need to plant crops or to evacuate areas based in the heaviness of precipitation. The purpose of this project is to provide a solution to easy access of the data that is already provided by government agencies and to discuss how the development and the use of a mobile app designed to carry the information from the SARAi website. The technology used in this application is PhoneGap, which is a mobile web-view application that allows the programmer to use familiar scripts in coding within mobile applications and allows for a high percentage of code reuse when coding for both web and mobile applications. In joint with this technology, Data Driven Documents or D3 is used to display the maps dynamically with the data supplied and less processing time than what Geographical Information Systems provide.

OBJECTIVES

GENERAL OBJECTIVE: To create a mobile app that serves the rainfall (in mm) for each province and municipality in the Philippines with the look and feel of the SARAi website using visualization techniques available in 3DJS

SPECIFIC OBJECTIVES:

1 Display the rainfall information which are used for decision making

2 Ease the transferal and renewal of information acquisition

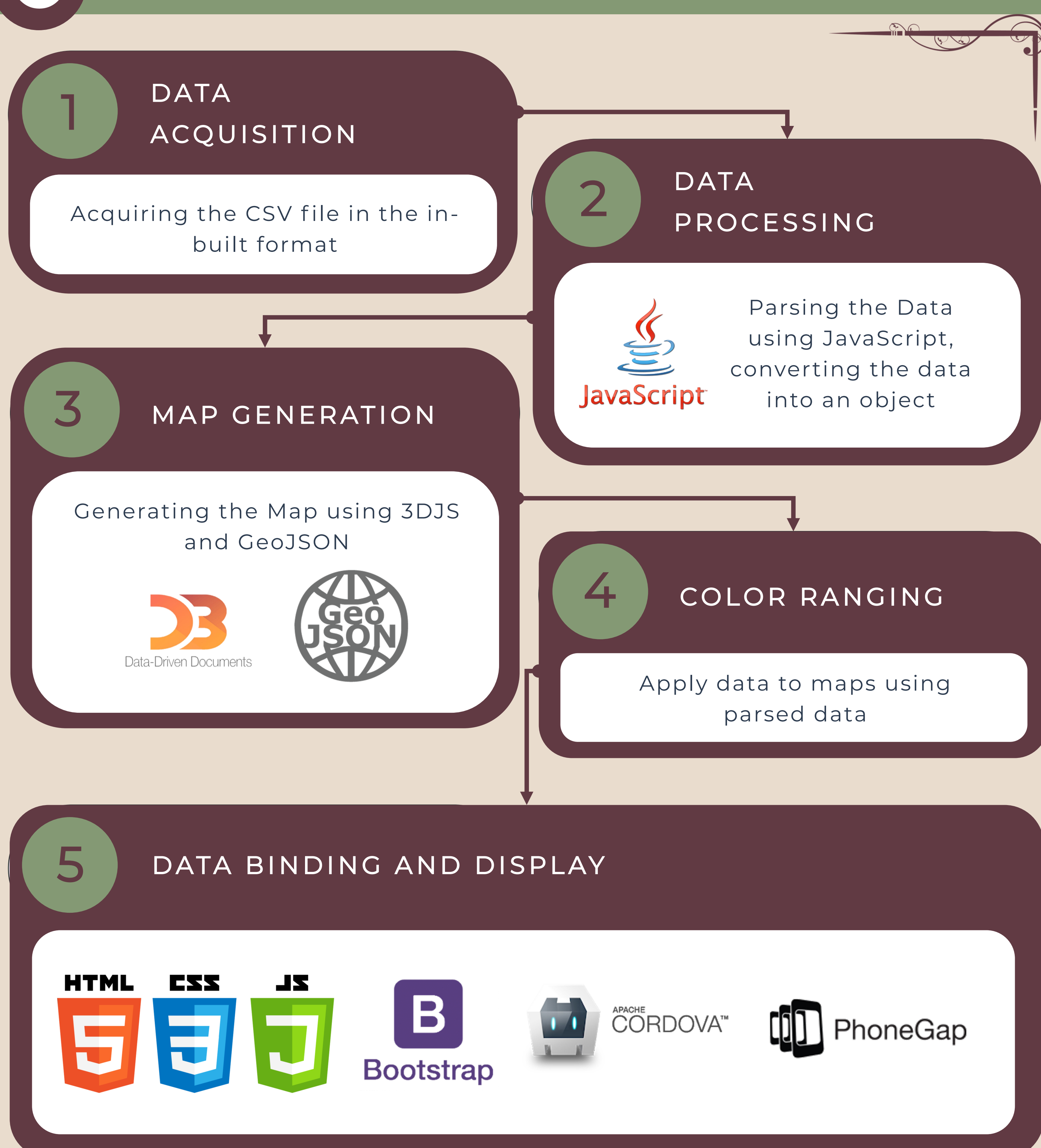3 Simplify the usage of the application for high-level users

METHODOLOGY

1 DATA ACQUISITION

Acquiring the CSV file in the in-built format

2 DATA PROCESSING

JavaScript

Parsing the Data using JavaScript, converting the data into an object

3 MAP GENERATION

Generating the Map using 3DJS and GeoJSON

D3 Data-Driven Documents   GeoJSON

4 COLOR RANGING

Apply data to maps using parsed data

5 DATA BINDING AND DISPLAY

HTML5 CSS3 JS Bootstrap APACHE CORDOVA PhoneGap

Figure 1: Major Processes and Development Diagram

RESULTS AND DISCUSSION

Test Value	Test 1	Test 2	Test 3	Average
Update	13 sec	12 sec	13 sec	12.7 sec
Startup	44 sec	42 sec	43 sec	43 sec
Download *heavily reliant on internet speed	123 sec	57 sec	198 sec	126 sec

Figure 2: Time Consumption of App Processes Table

The app starts up with none of its settings and data setup. The processing is frontloaded, so the app, once it's fully loaded no longer needs to add any middle processes that slow down the use of the app. Initial loading of the data takes around 40 seconds to 45 seconds, averaging to below a minute at 43 seconds. This loading only takes place the first time that the user opens the app, or after an application update has been downloaded. The loaded data is stored inside the phone's internal storage, provided that the user allows the app to access files. This lessens the processing time that the app needs for its startup.

The home page consists of dropdowns of all provinces and municipalities, and once selected, the displayed details will correspond to the selected province/municipality. It also shows the Six Month Nationwide Rainfall Outlook that shows the amount of rainfall in a province by color ranging the provinces in shades of blue as shown in Figure 3, the lighter the color, the less rainfall there is in an area.
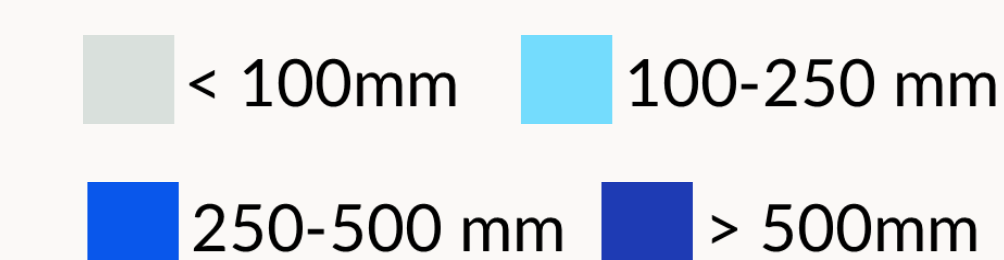
< 100mm   100-250 mm
250-500 mm   > 500mm

Figure 3: Color Ranges

Updating the information of the app is done by updating the app itself. Since the available information for rainfall in an area spans 6-months, the data of the app changes monthly. This can be done by downloading the current version of the app either through Google Play Store (once available) or the QR code below.

SCAN THE QR CODE TO DOWNLOAD THE APP

Available for Android Devices (Lollipop and above), and downloadable through Adobe's PhoneGap Build Website which hosts the app. [File Size: ~7MB]
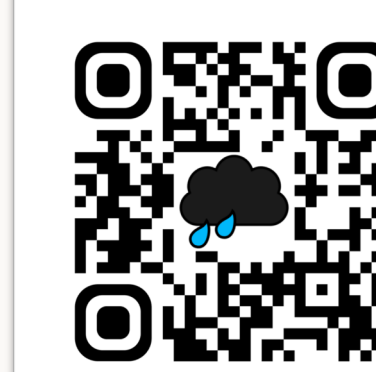
CONCLUSION

The Rainfall Outlook Application for the Philippines was successfully created to display the rainfall in an province or municipality with the stipulation of simplicity and lesser strain on the computational device. The application performs better when many of the components have been preloaded or stored into a data object that can be re-accessed at a later date.

Visualization of Data helps make decisions for those that need there information because people recognize and recall visual cues better than other sensory input.

THE AUTHOR

Adrienne Elise "Ajen" Cortez is a Batch 2014 BS Computer Science undergraduate. She is the eldest daughter of Ma. Victoria R Cortez and Carlos G Cortez, born and raised in Sta. Cruz, Laguna.