**Project Name:** Pi Weather Station with Web Application

**Group Members:**

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**Project Scope Statement:**

In Trinidad and Tobago, accurate, ongoing, locale-specific weather data is difficult to obtain. Even in the developed cities like New York, the forecasted temperature may be -1 degrees, but when you're walking through the city, it can be as low as -5 and that's because of the wind channels that flow through the cities. A local weather station however would give the user a more accurate reading. The current direction of human development is steering towards efficiency, reliability and availability of information and data in daily living. In keeping with this trend it will be beneficial to undertake a project is for the creation of a system whereby consumers can track and keep a log of precise weather data namely Rainfall, Humidity, Temperature, Pressure, UV Index, Pollen/Dust Level and Wind Speed readings. As a group we intend to assemble a local weather station using a Raspberry Pi. The data captured can be used individually or integrated into a collective database through from which a myriad of applications can arise. We are aware of the time and financial resources will be a limiting factor.

**General Project Information:**

This project provides a weather web app that is used for displaying weather data obtained from weather stations to users. It entails the producing of more accurate weather data by allowing for small weather stations to be set up in various locations so that location-accurate weather data can be obtained. The system requires that either the users who own stations or the web app owner(s) add stations to the system by connecting their stations to an online database that the web app gets its data from.

**Problem/Opportunity Statement:**

The main problem being addressed is the need to get location-accurate weather data in the country of Trinidad and Tobago. There are issues where, weather conditions given over the news may be inaccurate as they only focus on some areas and do not account for the whole island. The opportunity here is that, given that people certainly need to know the weather, we can produce a means of attaining more decentralized weather information for the public and produce a service that can would be generally used/accepted.

**Project Objectives:**

1. To create a Pi Weather Station for recording Rainfall, Humidity, Temperature, Pressure, UV Index, Pollen/Dust level and Wind Speed readings.
2. To write necessary software for serving and storing the data in an online database.
3. Develop a fully functional Progressive Web Application to link Pi Weather Stations to and fetch its data from the server.
4. Implementing an easy to use and understand UI.
5. Users must have an account to access our Web App.
6. The consumers should have the option to view only their personal Pi Weather Stations to quickly find their data and logs from the entire database.
7. The consumers should have the option to view data from Pi Weather Stations in certain searchable locations.
8. Weather Stations can be searched by name on the Progressive Web Application
9. Finish this project within the course duration.

**Project Description:**

The project seeks to develop a Pi Weather Station to be used anywhere in Trinidad and Tobago. The general aim is to have more accurate and localized weather readings and logs. Thus the general population especially those whose livelihood is impacted by the weather or has the potential to be improved with availability of more accurate weather readings, will benefit from this project Time is one of the factors that can affect our project as it has to be completed within a specific time frame. Additionally, financial investment in a raspberry pi with relevant sensor components is necessary to achieve our purpose. Care has to be taken when building the weather stations so that it can function properly in the necessary environments. Ideally the hardware should be compatible with any environment for instance protection from water as it would include electronic parts.

**Business Benefits:**

This model can be applied by interested parties to improve the efficiency of their businesses. For instance, a farmer will know that he may benefit on a certain day, based on weather conditions, by planting or harvesting as opposed to focusing on sales. Likewise a fisherman may be able to judge if it is safe to venture out to fish and make informed decisions that minimize cost and risk of life. Other groups that can benefit include persons who are affected by the outcomes of weather changes especially flooding such as researchers, planners and developers in various private and state institutions, lifeguards, water sportspersons and other sportsperson and all other businesses that are weather-sensitive. Similarly transporters, delivery facilities, police and security personnel, arts and theatre stand to gain in terms of finding various settings to do videography/photography. The field of preventative medicine, e.g., those with allergies or sun sensitivity can find useful information using this weather service. Thus it has the potential to improve productivity, efficiency, health and safety to name some of the benefits.

**Project Deliverables:**

1. Project Proposal
2. Requirement Analysis and Specification (includes any of Use Case Diagram , User Stories, ERD, Sequence Diagram etc. where applicable)
3. Project Design (Architectural Design, Discussion of Alternative Designs, System Interface Description etc. where applicable)
4. Project Design (continued, includes UI design, Detailed Description of Components/Subsystems etc. where applicable)
5. Built Pi Weather Station
6. Project Implementation (Initial Code)
7. Project Implementation (continued, includes Test Cases)
8. Project Implementation (continued)
9. Project Implementation (continued)
10. Final Project Submission

**Estimated Project Duration:**

Not certain however it can be estimated that depending on our knowledge base, time and resources, the project duration may last a moderate to a somewhat long time, perhaps 11-14 weeks.