Live Weather Monitoring System

Project Proposal
Course Group 4
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Project Description

Environmental conditions impact every individual's daily life. Monitoring those conditions has become a common part of society. Our group is proposing to construct a weather monitoring system through the knowledge received from many topics covered within this course. This system will be able to monitor and report weather parameters received through the internet connection, as well as display alerts for when a certain set of temperature peaks have been reached and identified.

This IoT system will essentially portray a lightweight version of current marketplace leaders such as the weather network but generalize a more specific location. Some features that will be included within the development of this system include:

- Communicate and deliver data received through a microcontroller through a wireless internet connection.
- Usage of temperature and humidity sensors to accurately measure and monitor the temperature in a specific location.
- Users will be able to place sensors, at preferred locations to get the accurate temperature readings of that particular location
- Obtain users' location for accurate weather reading.
- Set peak values to notify end-users of warning temperatures measured within their location.

Requirements

Stakeholders

U	User
S	System
D	Developer

Functional Requirements of System

R1	The system shall accurately report real-time temperature data.	
R2	The system shall accurately report real-time humidity data.	
R3	The system shall transmit the data via a microcontroller to the web server using a WI-FI connection.	

R4	The system shall withstand temperatures between -40 to 80 ºC.	
R5	The system shall be able to read humidity levels between 0 to 100%.	
R6	The system shall be waterproof.	
R7	The system should have a sampling rate of at least 2 samples per second.	

Non-functional Requirements

Availability

R8	The system shall provide live reports of the weather.	
R9	The system shall not crash unexpectedly.	

Security

R10	The system shall be secure.	
R11	The system shall only allow authorized users to access the system.	

Maintainability

R12	The system shall be easy to maintain.	
R13	The system shall be able to perform over-the-air updates.	

Interoperability

R14	The system shall be compatible with smartphone devices.	
R15	The system shall be compatible with other smart home devices.	

Functional Requirements of User

R16	The system shall report to the user when weather goes below/above the set threshold.	

Non-functional Requirements

Availability

R17	The system and all its functionalities shall be available to the user.	
R18	Temperature, humidity along with the weather report shall be displayed to the user.	

Security

R19	The user shall be able to access the system securely.	
R20	All user credentials shall be stored in the system securely.	

Interoperability

R21	The user shall be able to operate the system on different devices like smartphones and smart homes.	

Functional Requirements of Developer

R22	The developer shall deploy the system.	

Non-functional Requirements

Extensibility/Evolvability

R23	The system shall be easily extensible/evolvable.	

Testability

R24	The system shall be easily testable.	

Scalability

R25	The system shall be scalable.	

Maintainability

R26	The system shall allow the developer to create back-ups of the entire system.	
R27	The system shall be easily maintainable.	