Milestone 5 Presentation

IOT Smart Thermostat

Group 6:

Team members:

Abir Faisal, Isaiah Cruz, Gabriel Giani, Brandon Hyppolite, Kevin Pham

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URL: https://cen4010-group-6.web.app/

Group 6 Team Members

- Abir Faisal (Scrum Master) - GitHub / Initial Codebase / System Diagrams / Hardware / Html & Python
- Isaiah Cruz (Develop Team) - HTML / YouTube Channel / Milestone Documents
- Gabriel Giani (Develop Team) - HTML / Milestone Documents
- Brandon Hyppolite (Develop Team) - Firebase / Trello / Discord / HTML & JavaScript
- Kevin Pham (Develop Team) - HTML / CSS / JavaScript

System Implementation Infrastructure

Programming and Web Technologies

- MicroPython
- HTML
- CSS
- JavaScript
- Bootstrap Web Framework

Tools and Platform

- Firebase
- Raspberry Pi Pico
- Firebase
- GitHub
- Draw.io
- Microsoft Visio
- AHTx0 Temperature and Humidity Sensor Library

Motivation & Purpose

Motivation:

Have you ever wanted to adjust the temperature from your bed, but you did not want to leave the comfort of your bed?

With our web thermostat program, now you can adjust temperature settings from the palm of your hand using your smartphone.

Purpose:

Create a web thermostat program that is compatible with off-the-shelf components and can easily adjust thermostat temperature settings from any device with network connectivity.

Functionalities

- Allow the user to access the thermostat using a passcode.
- Allow the user to set the temperature.
- Allow the user to set a schedule for the temperature.
- Allow the user to select operating mode (heating/cooling).
- Sense and maintain the temperature of the room.

Link: cen4010-group-6.firebaseapp.com

Target Audience

- Home user and small businesses.
- Those interested in independently operating smart devices that do not require any additional infrastructure other than a common wireless router.
- Any device with network connectivity.

Unique Features

- Independent Operation
- Offline Functionality
- Bed Temperature Sensing
- No External Service Required

Slide 9: Complete Features

- Ability to create and log into unique account
- Ability to set and change the temperature.
- Ability to set a schedule for the temperature.
- Ability to select operating mode, heating or cooling.
- Ability to sense temperature of the room using connected sensors.

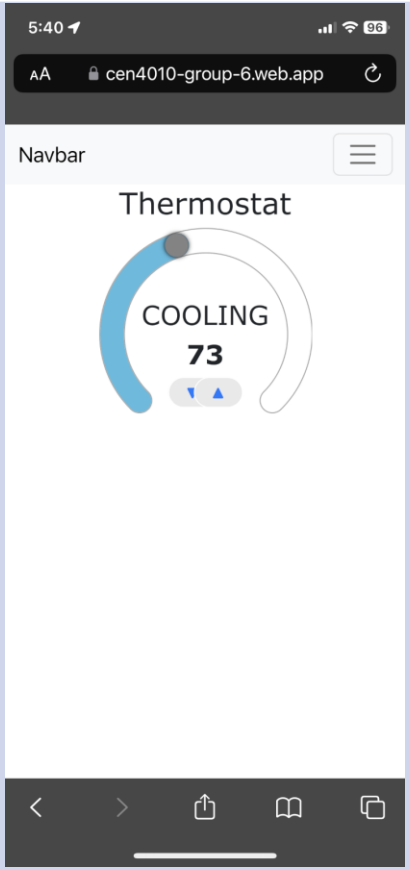
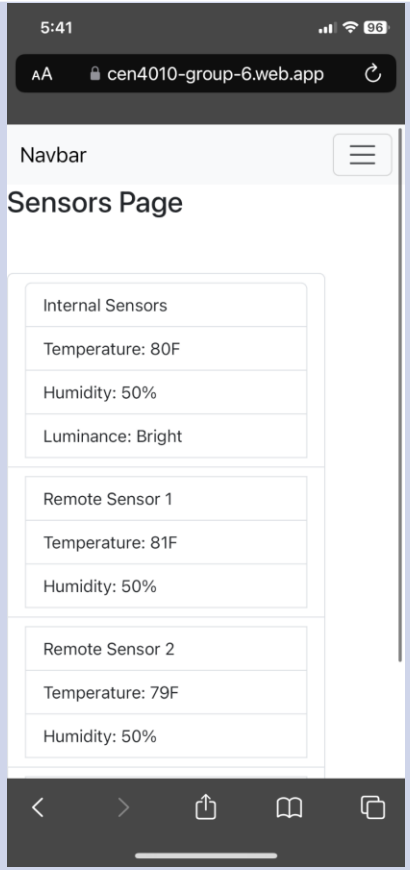
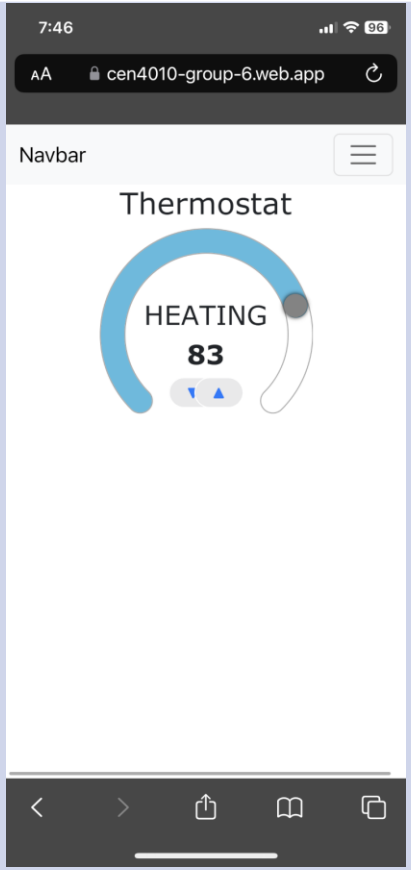
Slide 10: Future Roadmap

- Offline mode that can provide the same or similar functionality without internet connection
- Mode that can be operated without creating an account and having to login into the account.
- Metrics page that provides more data on temperature and energy savings.

Slide 11: Knowledge Gained

- Backend databases using Google Firebase.
- Working together with others in a group project environment.
- Version control software using GitHub desktop.
- Project management/planning and SCRUM using Trello, Draw.io, Microsoft Visio, and Balsamiq.
- Working with multiple programming languages together using MicroPython, HTML, CSS, JavaScript, Bootstrap Web Framework.

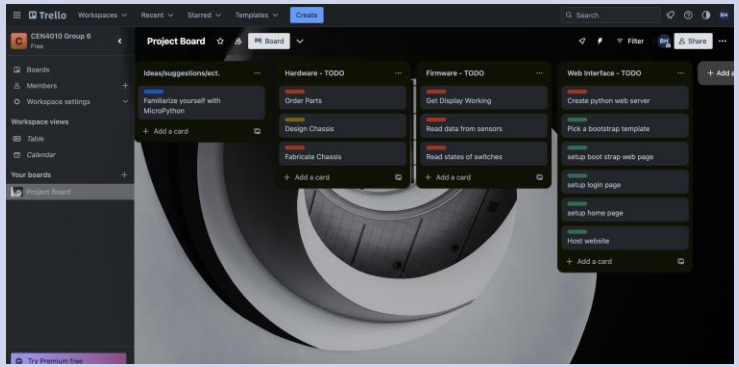
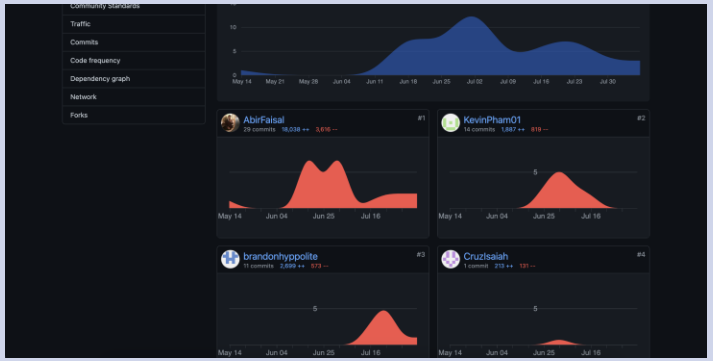
Project Screenshots

Login Page	Home Page	Sensor Page	Mode Switch Page
			

Nonfunctional Requirements

- Performance: Program should perform well given the limited hardware.
- Usability: Easy, simple to use interface that should require minimal instruction on how to use it.
- Accessibility: Program should be accessible from most modern mobile devices and desktop computers.
- Expected load: Low expected load as data being sent and stored will be minimal and the number of users will be low.
- Security requirement: Users login info to the device will be computed into a hash to ensure the password is not compromised if someone has physical access to the device. The device will support connections to secured wireless networks.
- Storage: Onboard flash memory to store programs and configuration files and in memory data structure to information such as, thermostat statistics, performance statistics, etc.
- Availability: Must be available 24/7 because a thermostat must monitor and maintain temperatures.
- Fault tolerance: High fault tolerance due to multiple sensors.

Trello Workspace & GitHub

Trello Workspace	GitHub Contributors
	

Questions & Concerns

- Any questions or concerns?

Slide 14: Thank you

- Express gratitude for their time and consideration.
- Reiterate your contact information and willingness to answer any further questions.