Eon

Temperature Control System - Den

Written Requirements

Revision History

Authors	Description of Change	Sections	Rev	Date
Erine Estrella Mohamed Jaafar Devontae Reid Sean Wulwick	➢ Initial Release	All	O	2-28-18
Erine Estrella Mohamed Jaafar Sean Wulwick	➢ Correction based on meeting ○ More granilerized ○ Less wordy	-Section 3	I	3-13-18
Erine Estrella	➢ Changed grammatical errors in Terminology for more conciseness ○ Added a new terminology ➢ Added a brief description of calendar and city match features ➢ Changed description of Connect to Wifi ○ Removed the list of features that will be affected by internet connection ➢ Added default temperature if Weekly calendar has yet been set up ➢ Changed description of Setting temperature based on user defined city ➢ Added what would the system fo if indoor temperature breached set temperature + threshold ➢ Edited what what would happen to the system if system malfunctioned	-Section 2 -Section 3 -Section 3 Subsections: 1, 2, 3, 7, 10	II	4-1-18

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1 Team Description

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2 Terminology

Term	Definition
HVAC	Heating, ventilation, and air conditioning system. This technology provides thermal comfort and acceptable indoor air quality.
Weather Channel API	An API is an application programming interface, which allows the temperature control system obtain desired data from the weather channel.
Threshold	A certain temperature range that the system will be able to maintain.
GUI	Graphical user interface. This allows the user to interact with the system through graphical icons and visual indicators.

3 Temperature Control System

This system implements a heating/cooling control system that regulates room temperature according to user input (temperature in either Fahrenheit or Celsius) in and activating a HVAC system. The control system is also capable of maintaining a climate type within a room at a predefined threshold of temperature. For example, if the user would like a warm climate, a temperature of 80 degrees F can be maintained constantly. The GUI features an external temperature display based on location information that is collected from the Weather Channel API. This system is capable of utilizing a Calendar feature which allows the user to create a convenient weekly temperature schedule through the GUI. Through the use of the Weather Channel API, the user is able to select any city world wide and set the city's local temperature as the indoor temperature.

3.1 Overview

The system provides interior temperature control. There will be a weekly calendar setting, city of choice, and user override.

1. Connection to Wifi

The system **shall** allow the user to connect/disconnect to their home wifi, enabling/disabling features of the system that require internet connection.

2. Weekly Calendar

The weekly calendar provides user with the capability to set up a temperature schedule. If the user has yet to set up the calendar schedule, the system will default to 65 degrees F.

2.1. Weekly Table

This **shall** display temperatures at desired times and days of the week.

This **shall** require 3 inputs from the user: day, time and temperature.

2.2. Modifications of the calendar

The system **shall** allow for the insertion, modification or deletion of data, at any point in time (i.e: changing temperatures in calender).

2.3. Recurring Schedule

By default the system **shall** repeat the weekly schedule every week.

3. Setting temperature based on user defined city

The system **shall** allow user to set a city to track.

3.1. Error handling

The system **shall** consider invalid user input (i.e: zip code) and display error messages in such cases.

4. Custom temperature input

The system **shall** allow user to input (or modify an already set) temperature of choice to adjust the indoor temperature.

5. Display of Weather Channel API

The system **shall** display local temperature and weather forecast.

6. Maintain temperature threshold

The system **shall** allow for a simple entry of temperature, which is maintained with the aid of the thermostat. The system **shall** have a default threshold of 3 degrees.

7. User defined temperature threshold

The system **shall** allow the user to set their own temperature threshold.

7.1. Threshold is Breached

7.1.1. Room temperature is above set temperature

When the room temperature is greater than the set point plus the threshold, the system will cool the room until the current set temperature plus threshold is reached.

7.1.2. Room temperature is below set temperature

When the room temperature is lower than the set point plus the threshold, the system will heat the room until the current set temperature plus threshold is reached.

8. Enable / disable system

The user **shall** be able to enable or completely disable all events.

9. Vacation Mode

System **shall** maintain in vacation mode a base temperature of 40 degrees (F) to avoid weather damage to the residence.

10. Error Override

The system **shall** disable itself completely in the event of a malfunction resulting in temperature not changing for an while the HVAC is running.
The system **shall** display an error message on the screen.