**3-2 Milestone Two: Enhancement One: Software Design and Engineering**

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1. **Briefly describe the artifact. What is it? When was it created?**

The artifact that I will use comes from a previous class, CS 350: Emerging Systems Architectures and Technologies. This project is a thermostat that uses external sensors to tell the temperature, and it can be turned up or down depending on the button pressed. It uses an LCD to display the temperature, time, and date. This project was created and worked on throughout July 2025.

1. **Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in software development? How was the artifact improved?**

I chose to include this project because of how it was created and what it can lead to. This project is coding in python, but it’s on a Raspberry pi using Ubuntu a GI less OS where the code can be run from files. We added all the components to make the thermostat using a solderless board by connecting them via the GPIO pins. This project shows that I can code in python by using connected devices and running them properly. It also shows my technical skills in building a project off paper and into the real world.

The goal of the project originally was to have a stand along thermostat that the user could turn the temperature up or down, turn on the heat or AC, and show the current temperature the sensor was getting. By adding a file that collects data from the sensors of the thermostat and loading them into a file we can improve this project. Storing this data in another file sets us up to have a more in-depth project and allows us to have more control over the thermostat. It allows us to see the temperature per time so if this was to be connected to a home AC unit, we could see what times are hotter and/or cooler.

1. **Did you meet the course outcomes you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?**

I do believe that I met the outcomes of the course for this enhancement that I planned for. I designed, developed, and delivered professional-quality written communication to describe the first enhancement. With adding my code, I also demonstrated my ability to use well-founded and innovative techniques and skills. I show that I have an Idea and I’m active pursuing this idea by using building blocks to create a professional final project.

The two course outcomes that I chose were:

**Course Outcome -** Design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts.

**Course Outcome -** Demonstrate an ability to use well-founded and innovative techniques, skills, and tools in computing practices for the purpose of implementing computer solutions that deliver value and accomplish industry-specific goals.

1. **Reflect on the process of enhancing and modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?**

The first thing I realized when adding this enhancement was that it seemed like it would be easy at first. But after coding it I realized this was the easy part of the enhancements, because it was just adding another file that logs the data. But I also made a print file that can be run separately in another terminal as the file logs the data every 30 seconds. I didn’t rely on it because I would have to have this many files that call each other and/or need each other to run. So, I’ll have to explain to the users that in order to perform some of the actions such as printing the data they will have to use other terminals to run these files as the main thermostat file is running.

But next comes the hard part, using this file to make the graphs and binary search tree (BST). The challenges that I faced here was getting the file uploaded onto my raspberry Pi. For some reason, my Pi wasn’t allowing the file to update when I sent it over via SHH. I had to go in and do it the hard way using Nano, where you navigate using arrow keys to get to where you need to edit the file. After I finished editing the file I came across a post from a user’s talking about how using Nano is dated and that he uses VS code Remote-SSH I have never personally used it but I will be giving it a try if I cant figure out why my raspberry Pi won’t accept the updated zip files.