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CS-499

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Milestone Two Narrative

For my capstone project, I decided to dive deeper into my CS-350 Thermostat final project and enhance it. In this project, I enhanced the original project into two parts: A simulation-enhanced version that worked inside of VS Code and the same enhanced version, but it worked through the Raspberry Pi device as a real-life thermostat that illustrated software design and engineering, algorithms and data structures, and database integration. The simulation version uses mock sensors and actuators, but also still applies thermostat logic with hysteresis and logs all readings, inputs, state changes, and settings into a SQLite database that is safe and acts as a portable simulation.

The version that applies to the Pi device, which has all the same processes and design elements as the simulation version, runs directly off the Pi device. Running directly off of the device, it integrates all the same buttons, screen, and temperature/humidity sensor as before to allow for controlling the heating and cooling aspect of the device. All of this allows me to demonstrate my ability to pair hardware and software together in a proficient way. In conclusion, the simulation version shows my ability in software design, algorithmic logic, and database management, while the Pi device version adds hardware integration and embedded control. This also allows me to show my proficiency across required areas, along with applying it to a real-world system.

**PLEASE LOOK BELOW**

**Side note: I am unable to finish the Pi device portion because I cannot log into the device since I forgot the password. I could reset it, but I reached out to my professor to see if it was a class-wide password or if it was individual. Once he gets back to me, I will be able to implement the rest of the Pi device functionalities. Also at a later date i will be using git bash to push everything into a repository on github once I fix the Pi device.**