

MICROCONTROLLER:

Microcontroller has only been with us for a few decades but their impact (direct or indirect) on our life is profound. Usually these are supposed to be just data processors performing exhaustive numeric operations. But their presence is unnoticed at most of the places like

- At supermarkets in Cash Registers, Weighing Scales, etc.
- At home in Ovens, Washing Machines, Alarm Clocks, etc.
- At play in Toys, VCRs, Stereo Equipment, etc.
- At office in Typewriters, Photocopiers, Elevators, etc.
- In industry in Industrial Automation, safety systems, etc.
- On roads in Cars, Traffic Signals, etc

A microcontroller is a highly integrated chip, which includes on single chip, all or most of the parts needed for a controller. The microcontroller typically includes: CPU (Central Processing Unit), RAM (Random Access Memory), EPROM/PROM/ROM (Erasable Programmable Read Only Memory), I/O (input/output) – serial and parallel, timers, interrupt controller

Microcontrollers can be classified on the basis of internal bus width, architecture, memory and instruction set.

THE 8-BIT MICROCONTROLLER 14 TYPES OF MICROCONTROLLERS

When the ALU performs arithmetic and logical operations on a byte (8-bits) at an Instruction the microcontroller is an 8-bit microcontroller. The internal bus width of 8-bit microcontroller is of 8-bit. Examples of 8-bit microcontrollers are Intel 8051 family and Motorola MC68HC11 family.

Thermostat:

A thermostat simply switches the heating system on and off as necessary. It works by sensing the air temperature, switching on the heating when the air temperature falls below the thermostat setting, and switching it off once this set temperature has been reached. Turning a room thermostat to a higher setting will not make the room heat up any faster. How quickly the room heats up depends on the design of the heating system, for example, the size of boiler and radiators.

Neither does the setting affect how quickly the room cools down. Turning a room thermostat to a lower setting will result in the room being controlled at a lower temperature, and saves energy. The heating system will not work if a time switch or programmer has switched it off.

Conclusion

The End of Term Documentation helps conclude our first semester of working on the temperature sensing thermostat with Arduino project and will satisfy our lecturer expectation. After all, when we initially began establishing the project, lots of features and ideas were passed around and deeply discussed. Brainstorming was a large portion of our initial beginnings which were a bit time consuming, and now our focus has shifted quite a lot to documentation and polishing what we have been working on for 15 weeks. We can all agree that our initial start was very bumpy; we chose a topic that was very expansive and interesting, with an advisor who had mountains of knowledge on it. There were times when the team contemplated on changing the project a little bit like the customer requirements, some projects headed towards a completely new topic. But we kept on it, we added new features, some innovated, others challenging. The team is proud of what we have created.

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Self evaluation

After finishing this project, I have not only gained a lot of knowledge and information about designing and building thermostats, but also I learnt about teamwork and how important it is to complete any task. I would say that the hardest part that I came across in the assignment was applying computer aided-design software to our project. In the beginning I didn't know exactly where to start on this task, but with the excellent guidance of my lecturer plus the help of my other group members, I managed to complete this task.

Overall, I'm confident to say that finishing this project has brought me the knowledge and skills I need to tackle any challenges I might face in my future career as an engineer.

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