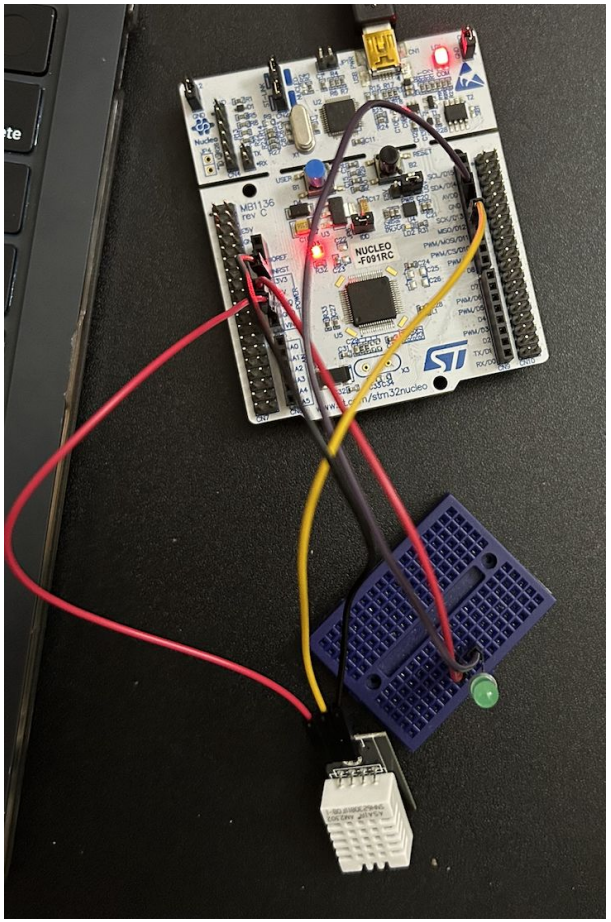
ECEN 5813: Smart Temperature Monitoring system using State Machine



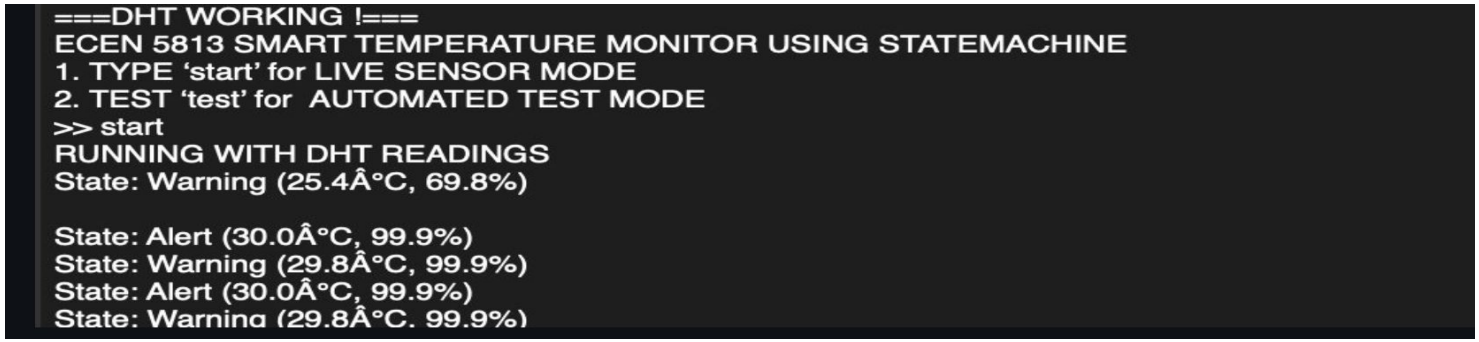
Scope Refinement

Before: UART commands both set thresholds and controlled state machine

Now:

- **Start:** launches state machine with live DHT data
- **Test:** runs automated self-check of state transitions

Benefit: Decouples threshold configuration from testing, simplifies codebase



What’s Working

State Transitions:

- Normal (slow blink) → Warning (medium) → Alert (fast) based on real-time readings

UART Parser:

- Recognizes “start” and “test” with clear acknowledgments

LED Indicators:

- GPIO-driven blink rates consistently match each state

Sensor Reliability:

- DHT errors detected after boot!

Challenges, Lessons & Next Steps

Key Challenge:

- Coupled threshold logic in “test” made debugging difficult
- Interfacing a sensor to stm32

Adjustment:

- Reverted threshold setup to manual UART; “test” now only validates transitions

What did I learn :

- Separation of concerns enhances maintainability
- Modular UART parsing eases future command additions
- Sensor integration with stm32

Next Steps:

- Add LCD for transition feedback
- Implement timestamped data logging
- adding new commands to command processor
- Relay the data over cloud.