Timing Module for NPAS

Autonomous Monitoring and Control of Rocket Test Systems Internship

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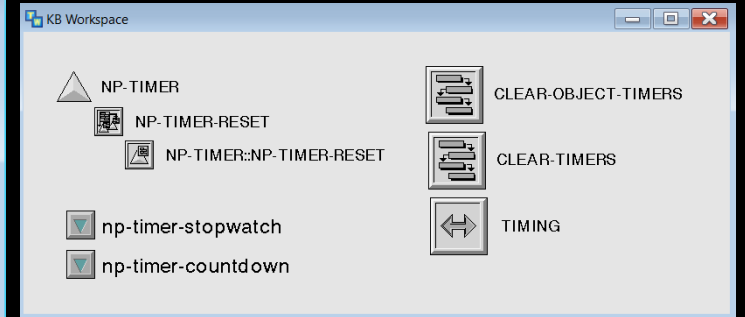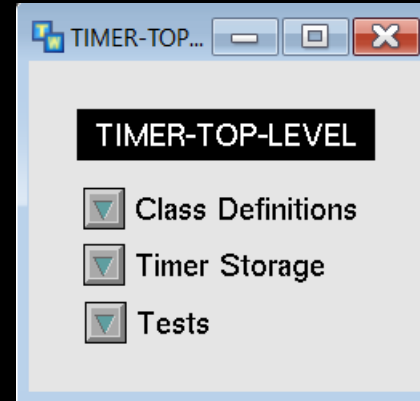
Background

- High Pressure Gas Facility
  - INSIGHT
  - Gensym G2
  - D2K
- Timing Module
- 3 potential uses
  - Usage Timing
  - Sequence Step Timing
  - Valve Cycle Timing
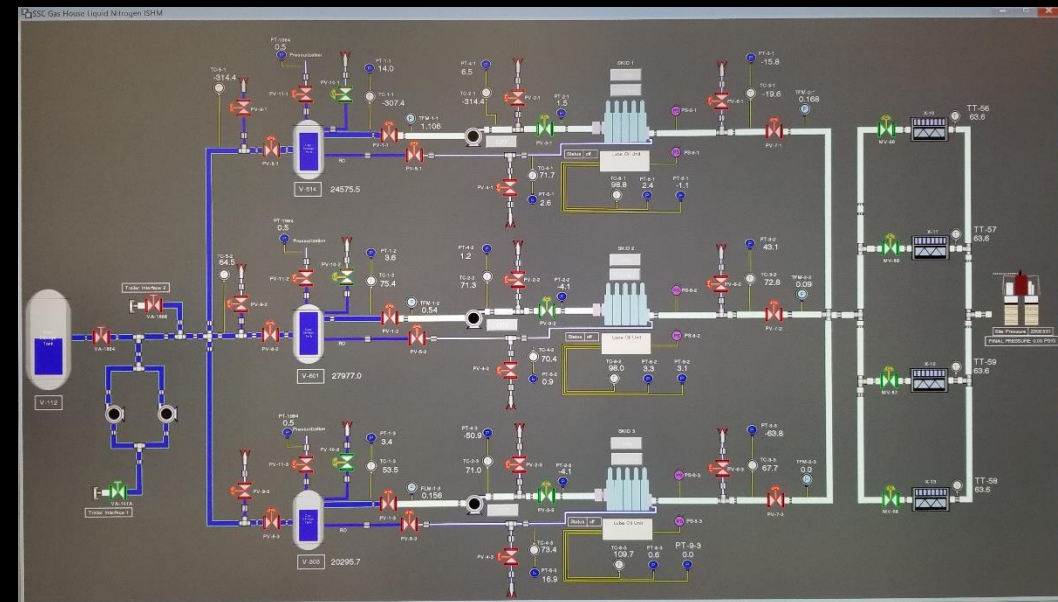
Overview

- Modular and generic
  - Not application specific
  - Can be used in any G2 or NPAS application
- Code is easy to read and is properly commented
  - Enables others to understand and evolve the code without spending much time in deciphering the code

Stopwatch (State-timer)

- Tracks attribute value (e.g. when a pump is on or off)
  - Define values for an on cycle
  - Timer will tell you how long the attribute had those values
- Can optionally store history
  - Stores start and stop times of each cycle
  - Can later perform analysis on history
    - Runtime
    - Duty Cycle #32 1:51:45 p.m. duty cycle is 80.832%

Countdown

- Sets a countdown
  - Performs an action at time up
- Delayed procedure invocation
  - Executes a procedure after a set time
- Features
  - Reset
  - Pause
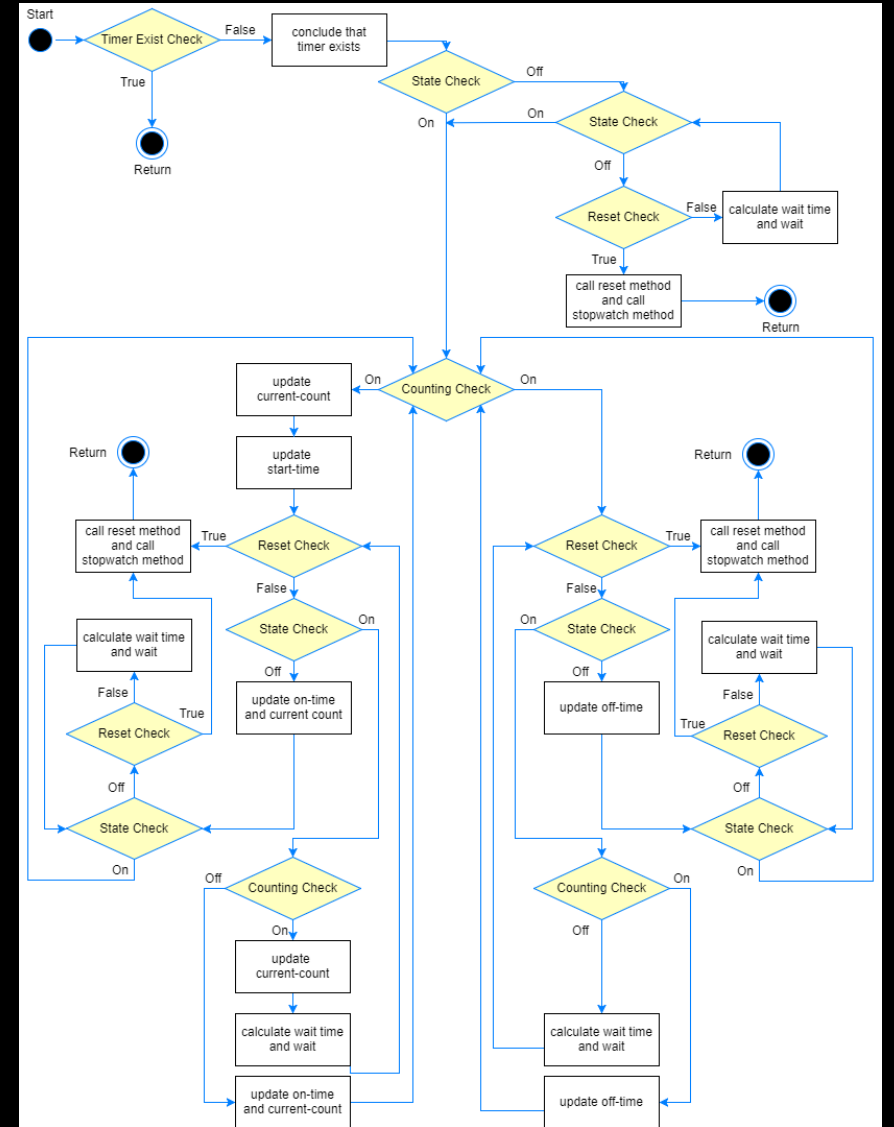 - Stop
  - Override countdown with new time

Documentation

- User Guide
- Activity Diagrams
- Commented Code
- Possible Future Improvements

Growth

- Learned a new language (G2) and gained experience in object-oriented programming

- Improved ability in working independently

- Observed integration of NPAS implementation for a space habitat module at JSC iPAS

- Firsthand experience of Stennis site

Questions?