**<Project Name>**

Requirements Specification

Submitted in partial fulfilment of the final project for MEEM 5990

<Name>

<Date>

# Overview

Approximately 1 paragraph project description

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **My Requirement** | **Fulfills Class Requirement(s)** | **Self-assessment** | **Instructor**  **Assessment** | **Value** |
| *Requirements Specification* |  |  |  | ***5*** |
| *This Requirement Specification is complete* | *A.* |  |  | *5* |
| *Flow/State Chart* |  |  |  | ***5*** |
| *Flow chart or state chart captures all major aspects of operation* | *B.1* |  |  | *3* |
| *Flow chart or state chart is neat and well organized* | *B.2* |  |  | *2* |
| *System Requirements* *What are you going to do?* |  |  |  | ***5*** |
| System shall measure X at a rate of (at least/exactly) R | C.1 |  |  |  |
| System shall measure X to an accuracy of A | C.1, C.2 |  |  |  |
| System shall update C at a rate of (at least/exactly) R utilizing hardware timing. | C.1, C.2, C.3 |  |  |  |
| System shall monitor for error conditions on sensor Z |  |  |  |  |
| *Hardware Requirements* *What hardware will you use to do it?* |  |  |  | ***0*** |
| System shall be powered by 120 VAC |  |  |  |  |
| System shall utilize NI DAQ XXXX Device |  |  |  |  |
| System shall measure X with Y sensor | C.1 |  |  |  |
| System shall utilize a laptop PC |  |  |  |  |
| *Software Requirements* *How will the software work?* |  |  |  | ***70*** |
| *Data Acquisition/Generation* |  |  |  | ***20*** |
| Shows appropriate use of “The Mantra” | D.1.1 |  |  |  |
| X data shall be acquired using a finite sample hardware timed acquisition | D.1.2,C.3 |  |  |  |
| X data shall be returned as a waveform datatype to include timing data | D.1.2, D.1.3 |  |  |  |
| *Graphical User Interface* |  |  |  | ***15*** |
| Numeric control on the front panel shall allow the user to modify the DAQ sample rate | D.2.1 |  |  |  |
| File output | D.2.5 |  |  |  |
| A button on the main panel will bring up a file selection dialog | D.2.5 |  |  |  |
| The file selection dialog shall allow the user to select an output file with a .csv extension | D.2.5 |  |  |  |
| The main panel shall have a text box that allows the user to enter information about the experiment | D.2.2 |  |  |  |
| Main panel shall not be unresponsive to user input for a period of longer than 0.5 seconds | D.2.3 |  |  |  |
| Main panel shall display a plot of X, Y and Z as it is acquired | D.2.4 |  |  |  |
| Interface shall be clean and easy to understand | D.2.6 |  |  |  |
| *Analysis* |  |  |  | ***5*** |
| Channel X shall convert data from volts to units using a DAQmx scale named BobsSensorScale | D.3.1 |  |  |  |
| Every 100 points of channel Y shall be averaged to reduce noise | D.3.2 |  |  |  |
| *Output* |  |  |  | ***20*** |
| Scaled sensor data from channels X, Y, and Z is logged in a text file | D.4.1 |  |  |  |
| Text file shall store the following attributes in the header: date of acquisition, time of acquisition, phase of moon during acquisition | D.4.2 |  |  |  |
| Text file shall have appropriate column headers | D.4.1 |  |  |  |
| X shall be stored in units of millibar | D.4.1 |  |  |  |
| Y shall be stored in furlongs per fortnight | D.4.1 |  |  |  |
| *Code Design and Quality* |  |  |  | ***10*** |
| SubVIs shall be used as appropriate | D.5.1 |  |  |  |
| Diagram shall be clean an easy to understand | D.5.2 |  |  |  |
| All function error outputs shall be properly handled or justification provided in code comments for ignoring the errors. | D.5.3 |  |  |  |
| *Documentation* |  |  |  | ***15*** |
| *Code Documentation* |  |  |  | ***7*** |
| All VIs shall have populated VI documentation fields | E.1.3 |  |  |  |
| All non-trivial constants shall be explained with labels | E.1.1 |  |  |  |
| Controls and indicators shall be documented via Description and/or Tip | E.1.4 |  |  |  |
| Labels (comments) shall be used on block diagrams as necessary to explain non-trivial code | E.1.2 |  |  |  |
| All VIs shall have useful icons | E.1.5 |  |  |  |
| *User Documentation* |  |  |  | ***8*** |
| User manual shall explain the scope and purpose of the software and the system | E.2.1 |  |  |  |
| User manual shall explain typical use cases | E.2.3 |  |  |  |
| User manual shall explain any setup and configuration | E.2.2 |  |  |  |
| User manual shall make appropriate use of screen-shots to aid in explanations. | E.2.4 |  |  |  |