Rochester Institute of Technology

Real Time and Embedded Systems

Project 2b

Overview:

For Project 2a your solution involved using a polled loop scheduling system with no OS. For this project (2b) you will redesign and implement Project 2a using freeRTOS. Utilize as many of the OS capabilities as are appropriate.

Please note that the user commands are limited to the first two characters in a line, any other characters entered after the first two and before the <CR> are ignored.

For your report, please include a paragraph or two comparing and contrasting your implementation of Project 2a versus Project 2b.

Requirements:

Each task must run in its own thread and should avoid polling.

Command line characters should be read using an interrupt to avoid polling in that task.

Warning:

Be sure to check your PWM signal with the oscilloscope before connecting the servo motors

Due Date:

Please refer to the course schedule for the due date. An in-class demo will be required. Please submit your source code and your report (in either PDF or Word compatible format) to the corresponding myCourses drop box.

Grading Criteria:

- Program Operation and Demo – 50%
  - Hardware setup is orderly and well organized – 10%
  - Demo sheet functions all completed – 30%
  - Demo operates without faults or restarts – 10%
- Program Design --- 15%
  - Proper initialization
  - Correct use of functions (no copy/paste/edit slightly)
  - Separation of hardware related code from pure software (e.g. the results reporting code)
- Source Code Structure and Readability – 10%
  - Appropriate use of white space – 2%
  - Consistent and good indentation – 2%
  - Appropriate comments at the function and paragraph levels (such as a for loop) – 2%
  - Following C style guide (good names, etc.)
- Report Content – 25%
  - Report is at least 2 pages (not counting pictures, cover page, diagrams) – 5%
  - Demonstrates team understands the problem, solution, and technology (hardware and software) – 10%
  - Report contains all required sections per the report guideline