Systems Programming

Programming Assignment 1

Description

The purpose of this assignment is to design, code, and test a C program that serves as a high level state machine for a machine controller.

Requirements

The following are the requirements of the machine controller:

- The controller shall have 4 states, stopped, startup, running, coastdown
- The controller shall have one input, run, which determines the next state.
- In the stopped state a run of 1 shall move to startup state.
- In the startup state for more than 15 seconds a run of 1 shall move to running state.
- In the running state a run of 0 shall move to the coastdown state.
- In the coastdown state for 30 seconds the controller shall move to the stopped state.
- The controller shall have one output, speed_command, which determines the speed of the machine.
- In the stopped state the speed_command shall be 0%.
- In the startup state the speed_command shall be 50%.
- In the running state the speed_command shall be 100%.
- In the coastdown state the speed_command shall be 25%.
- After the machine has started it must go through the coastdown state and stopped state.

Assignment Submission Requirements

The following are the submission requirements for the assignment:

- The files will be submitted to Canvas
- The flowchart or pseudo code
- The C code with compile instructions in the banner
- The test code with compile instructions in the banner
- A screen shot of one test run of your code.

Due: 9-16-2024