Body Control and Comfort

Software Test

Q1. Control the position of a delicate mechanism using an actuator with position feedback.

Implement a closed-loop controller in *application.c* for an actuator. The controller reads the requested position (from 0-100%) and controls the actuator position, accordingly, given that:

- *application.c* contains an entry point function *applicationLoop10ms()* that is called every 10 ms from the main system scheduler.
- *hwio.h* implements an interface to the hardware controller.
- Give some thoughts about how you will handle fine installation tolerances between individual cars.

Tips:

- Consider different values on requested position, such as 0%, 50%, 100%, and 150%
- If the working range of the sensor is 2V (0%) to 8V (100%), consider the situations where the feedback signal is out of that range, i.e. less than 2 or more than 8 volts.
- Implementation of the hwio functions is not part of the task.
- Implementation of the call to applicationLoop10ms() is not part of the task.
- Feel free to reasonably assume any missing information or reach out to me if needed.

Q2. If the sensor above was used in Regera, and then we moved on to use a PWM sensor for Jesko to control the same mechanism, what do you think should be done to support both cars with minimal software development efforts?

Q3. Suggest a folder structure for your solution for Q2.

Q4. What systems in Regera do you think will be within your responsibility in the Body Control and Comfort Software team? What improvements can you offer for that system?

Q5. Briefly describe the working principle of the Regera Direct Drive *or* the Jesko Light Speed Transmission? And if you chose to answer the LST part, can you describe how that concept developed for the CC850?