CSE 237A Winter 2016: Individual Project Part 2 Assignment

In this part, you will implement a program which interacts with the RPi2's sensors. The RPi2 provides multiple General Purpose Input/Output (GPIO) connectors, which carry signals to/from the sensors. You will connect the sensors to the RPi2, and implement a user space program using the WiringPi library for GPIO communications. The program you will create emulates a sensor platform that detects emergency situations in operating vehicles.Subsequently, you will use the base code that extends sensors with longer latencies, on which you will implement an Energy-efficient EDF scheduler.

Complete the following steps:

1. Familiarize yourself with WiringPI: http://wiringpi.com/
2. Implement a sensor interaction program based on skeleton code available at:
   - https://cseweb.ucsd.edu/classes/wi16/cse237A-a/project/part2
3. Update your sensor interaction program, which now includes latencies, to implement an earliest-deadline-first (EDF) scheduler.
4. Implement an energy-efficient EDF scheduler for your application
   - The scheduler should manage the workloads available at:
     http://seelab.ucsd.edu/cse237a_wi16

Deliverables of Part 2:

- Complete and demo the individual project part 2 checkpoint with TA
- Submit the four files "assignment1.c, assignemnt1.h, assignment2.c, and assignemnt2.h" via TED. Your code must execute correctly using the predefined wiringPI PIN numbers and the other provided files to receive ANY credit for this part of the project.
- Report:
  - Maximum 3pgs, 12pt Times New Roman font, excluding figures and the table
  - Briefly explain how you implemented the sensor interaction program.
  - Discuss the design choices for your energy efficient scheduler
  - Provide a table for the three provided workloads with estimated CPU energy consumption and if the scheduler made or missed deadlines.
  - Do not include your source code in the report.