CSE499 Task 1

Avi Tombak, Bodhiswattwa Basu, Gabe Yengle, Jesse Both

1) **Github Repo**
   https://github.com/bodhiswa/CSE499_EmbeddedControls
2) **Project Identification**
   - **What are we building?**
     - A blinds control system for controlling blinds
   - **What are we controlling with the PID?**
     - The motion of a blinds system in order to automatically control the light level and impact the temperature of a room. The system will consist of a Nucleo controlling light and temperature sensing inputs and outputting a stepper motor response in order to move and control the blinds.
   - **What are the sensors? (min 2)**
     - Photoresistor or some other sort of light sensor
       Used to determine light level outside window
     - DHT11 temperature/humidity sensor
       Used to determine temperature inside window
   - **What are the actuators? (min 1)**
     - Stepper Motors (x2)
       Used to control the motion of the system (opening/closing of all blinds and tilting of the blinds to adjust light level)
   - **What is the feedback element (closed loop)?**
     - Windows light level and outside temperature
       The goal of the control system is to manage the light level and temperature of a room, feedback about this light and temperature state must be incorporated to do this
   - **What part is hard real-time?**
     - Haven't identified a hard real time element to this system, maybe if a remote control was incorporated, immediate reaction would be considered hard real time.
   - **What part is soft real-time?**
     - The controlling and adjustment of the blinds
3) **BOM**
   - Nucleo Board
   - DHT11 (model used in 321)
   - Photoresistor (no specific model was chosen)
   - 2x Stepper Motors (something like https://www.amazon.com/dp/B08HNDDJBX)
   - Blinds (possible old blinds provided from a dorm complex or some low cost equivalent)

- Extra: Remote control and IR sensor (implementing remote control would be nice)