Car Systems Research

Speedometer + RPM Gauge

* Items needed: Arduinio, Display (LCD), Servo Motors x2,
  + Potentially needed: Wheel, Color sensor
* Ideas:
  + Connect Arduino to the pedal/motor or simulator to determine the correct Speed and RPM, use servo motors to turn the handles
  + Create a wheel that spins as the motor is pressed, each rotation is counted to the RPM using a sensor and Speedometer is also determined through this
* References:
  + <https://www.youtube.com/watch?v=4r8l9JhDcj0>
  + <https://www.youtube.com/watch?v=u2uJMJWsfsg>
  + <https://www.xsimulator.net/community/threads/speedometer-with-arduino.14162>
* Diagram:

A diagram of a process

AI-generated content may be incorrect.

Turn Signal

* Items needed: Arduino, LED display, diodes, push buttons, resistors
* Ideas:
  + Connect the turn signal to a series of push buttons, based on the signal given, using a buck converter we will connect this with the Arduino to display the correct LED
* References:
  + <https://www.youtube.com/watch?v=gqaCwqRQ3gE>
  + <https://www.youtube.com/watch?v=U02HgHwMMAo> – For windshield but is related
* Diagram

A diagram of a computer hardware system

AI-generated content may be incorrect.

Windshield Wiper

* Items needed: Arduino, Diodes, Resistors
* Idea:
  + Similar to the Turn Signal have a state go into a Buck converter and go into the Arduino, will then contact the simulation and display the wipers
* References:
  + <https://www.youtube.com/watch?v=U02HgHwMMAo>
* Diagram: Essentially the same as above, without any display

AC/Heater:

* Items needed: Arduino, Temperature sensor, heating/cooling system
* Ideas:
  + Still a bit confused as to how to get this working. In order to get the fan working we would need to have the temperature gauge be connected to the Arduino, either through push buttons or some other measure. The issue is I don’t know how to get the heating and cooling to work on such a fan
* References:
  + <https://www.youtube.com/watch?v=7urlOXtGVYw>
  + <https://www.youtube.com/watch?v=04ww-K2Jsa0>
  + <https://projecthub.arduino.cc/ambhatt/temperature-controlled-fan-with-lcd-using-arduino-ac0231>

Gear Stick

* Items: Push btns, Leds, Arduino
* Idea
  + Each year shift will active certain push buttons which will be relayed to the Arduino. LEDs would be used to light up what drive state the car is in or to light up the entire gear stick. This position would then be sourced back into the simulator