Homework 0

1) Thermostats regulate the output air temperature, comparing it to the reference setpoint. The control input is a voltage signal to activate a heat source like a furnace. The sensors used for temperature feedback are thermometers or thermocouples.

   Cruise control regulates vehicle velocity, comparing it to the set cruise speed. The control input is a control force generated by changing position of the throttle. The feedback sensor is a tachometer which measures the speed of the wheel rotation.

   Actuators use a control system to regulate the load position. The control input is a velocity command to the motor inside the actuator, which will drive the load through a gearbox and ball screw. The feedback sensor is a potentiometer or encoder which measures the load position.

2) Blood pressure regulation is a feedback control system I was not aware of. Baroreceptors measure the blood pressure moving through the arteries. If the blood pressure is high or low, the glossopharyngeal nerve sends a signal to the brain. The brain then sends a chemical signal to the heart to change the heart rate. The change in heart rate causes a change in blood pressure using the method of negative feedback.