CS 3651 Skill Demo 3: Photo-resistors

Goals:

Understand how to use digital input/output lines to interface with a variable resistance sensor

Tools/supplies:

Teensy
photoresistor
various resistors
laptop
breadboard
USB cable

Background:

CS 3651 videos that should have been watched by this time:
CS3651 - Intro to Multimeters
CS3651 - Using Multimeter in a Circuit
CS 3651 Introduction to Circuit Schematics
CS 3651 Introduction to Resistors
CS 3651 Introduction to Capacitors
IntroToLED.mov
pullupdown1.mov
How and WHY to Solder Correctly (if did not attend class)
Introduction to Breadboard (Protoboards) (if don't remember from ECE2031)
CS 3651 Pull-up resistors
CS 3651 - APIA - Pull down resistors
CS 3651 - APIA - Sensing: Photoresistor

Relevant section of book (Practical Electronics for Inventors 2000 edition): pages 1-14

1. Find a photoresistor

2. Determine the range in ohms of the photoresistor
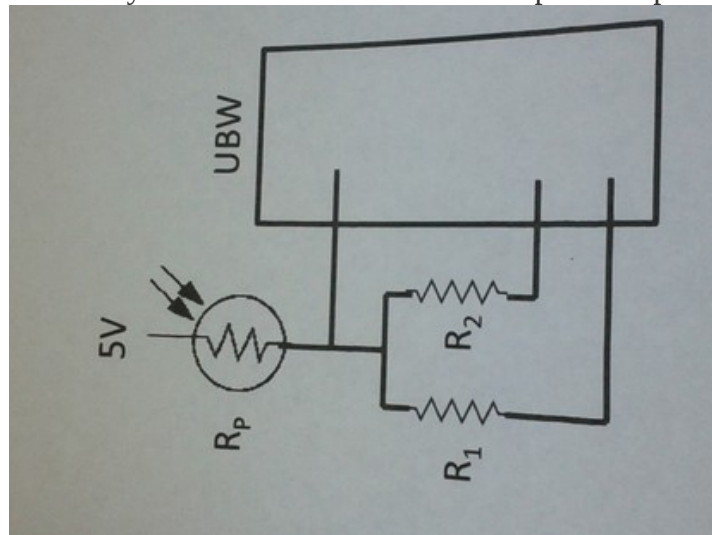
Minimum _____   Maximum _____

3.   Construct the circuit below and determine the value of R1 that allows you to detect 2 states of the sensor, no light exposure and full light exposure. Write a program to do so.
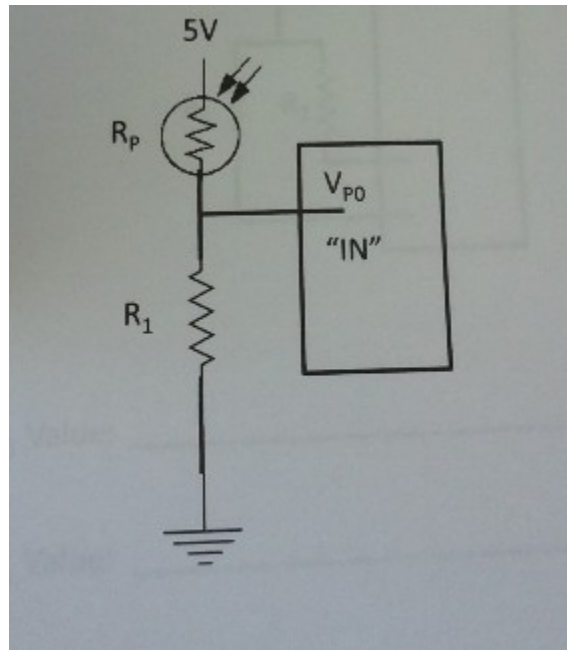
R1 = _____

Sign-off initials:_____   Date:_____   Time:_____

4. Construct the circuit below and and a program to determine the value of R1 and R2 that allows you to detect 3 states of the sensor: no light exposure, full light exposure, and a point in between the extremes. Hint: Remember that your microcontroller can set its pins to input or output!

R1 = _____   R2 = _____

Sign-off initials:_____   Date:_____   Time:_____