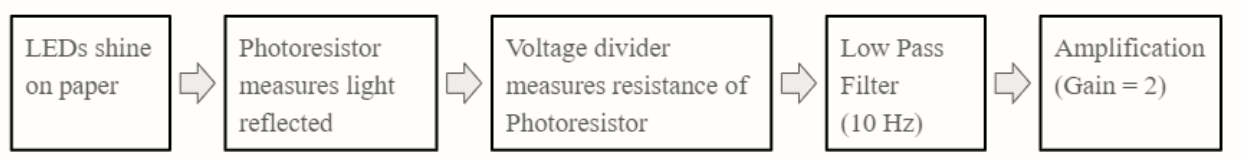
ISIM Final Project Report

By Hazel Smith and Lilo Heinrich

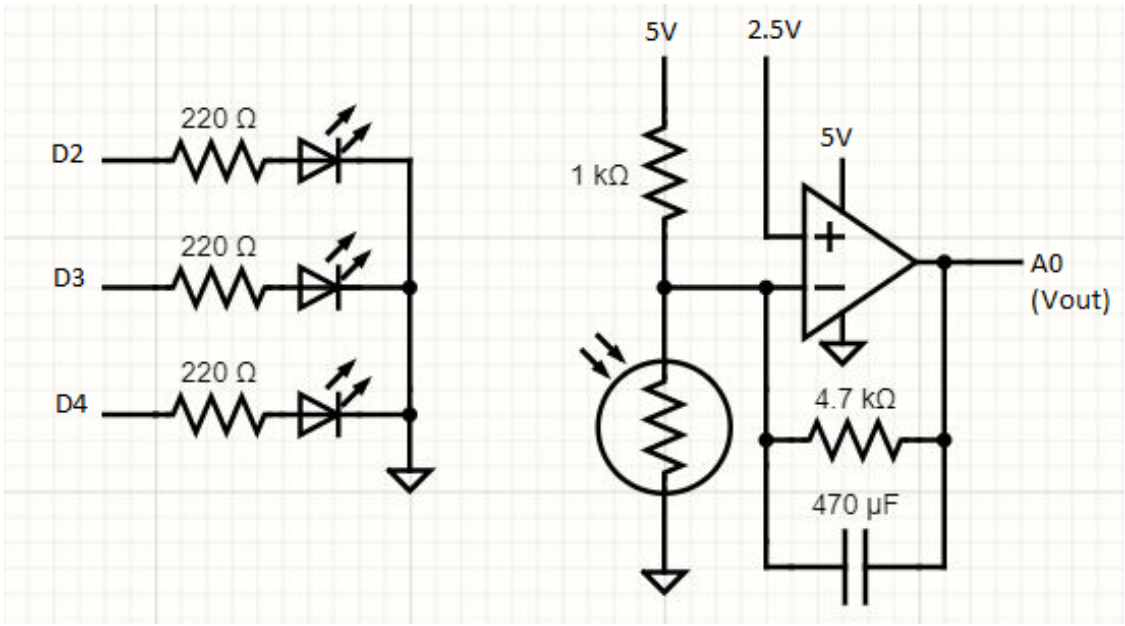
Goal

A color sensor that senses the red, green, and blue components of a given piece of paper was made. It shines an LED of a certain color and uses the light reflected to approximate each color component and then return the hex code of that color.

Block diagram



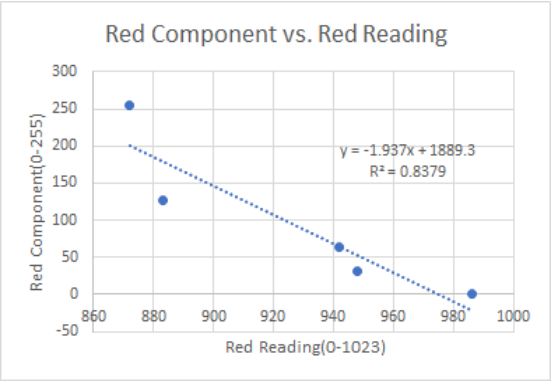
Circuit diagram

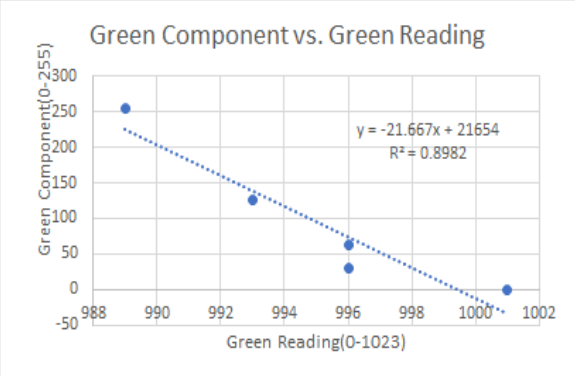


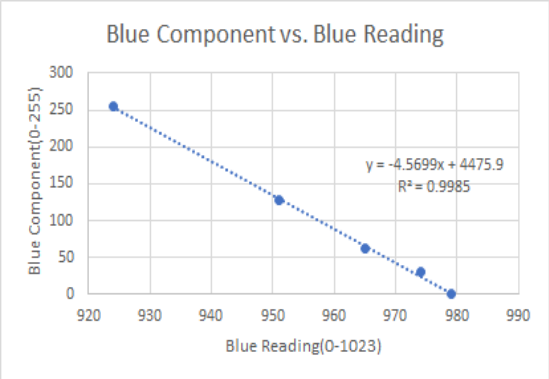
Data

Color	Red				Green				Blue				Black
Amount (0-255)	31	63	127	255	31	63	127	255	31	63	127	255	
Red Reading	948	942	883	872	968	966	966	899	970	971	973	970	986
Green Reading	995	999	989	988	996	996	993	989	999	1000	999	995	1001
Blue Reading	961	969	956	958	970	970	962	968	974	965	951	924	979

Calibration Curve







Results		
Mystery Color	Measured Hex Code	Actual Hex Code
1	1d cb 121	01b4b4
2	b4 1cf a6	c87c00

Interpretation

While the sensor is good at determining the intensity of a certain color, it is less good at determining a mixed RGB color. In some tests using the calibration papers the sensor was able to tell the intensity of the color(0-255). However, the sensor gets confused when presented with a mixed RGB color and produces impossible results, as seen in the results. An explanation for this is that even when presented with a pure color, say pure red(255,0,0), the sensor still read blue and green components that were above zero. This may have been caused by light reflecting off of surfaces that were not the paper, or the color of the paper not being perfect since the test papers were actually made of ink printed on white paper.