HW Wk 04 - Product Design Specification
ECE 411

Team #3:

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Product summary:

Our product is a pen shaped color picker. By pointing the tip of the pen at an object, it can display the hex color code of that object. This hex code can then be replicated into your own digital art project by using that same hex code. This device can be especially helpful for people that are color-blind. Outside digital projects, it can also be used to match the paint color of an object in order to apply some new paint. This product is for anyone that might need some help restoring or bringing to life the colors of reality for your projects.

“Market” Analysis:

Targeted Customers: Digital artist, painters, interior designers, DIY projects, and color-blind people.

Competition: Other color analysis software/app, cheaper color readers, “eyeball test”

Price: 50$ this is our reference price based on the research of similar projects.

We may have to lower the price in the future baced on the components we use to make it much cheaper for the customers. Other color analysis devises on the internet are much more complex and cost a lot of money. We shoot for cheap smal device for everyday life and easy to use, so everyone can easily have hands on it and do not spent a lot of money.

Requirements:

- Must: Read color, output a hex code to display, be portable, run on battery.
- Should: Be small and light, have an LED or a buzzer to indicate the state of color identification process.
- May: Give out the complementary colors, ergonomic, rechargeable, have an app, have an RGB LED to display the color

System Architecture:

Those are the major parts we will be using in our product:

- Color Sensor
- Microcontroller
- Battery
- Voltage regulator
- Display

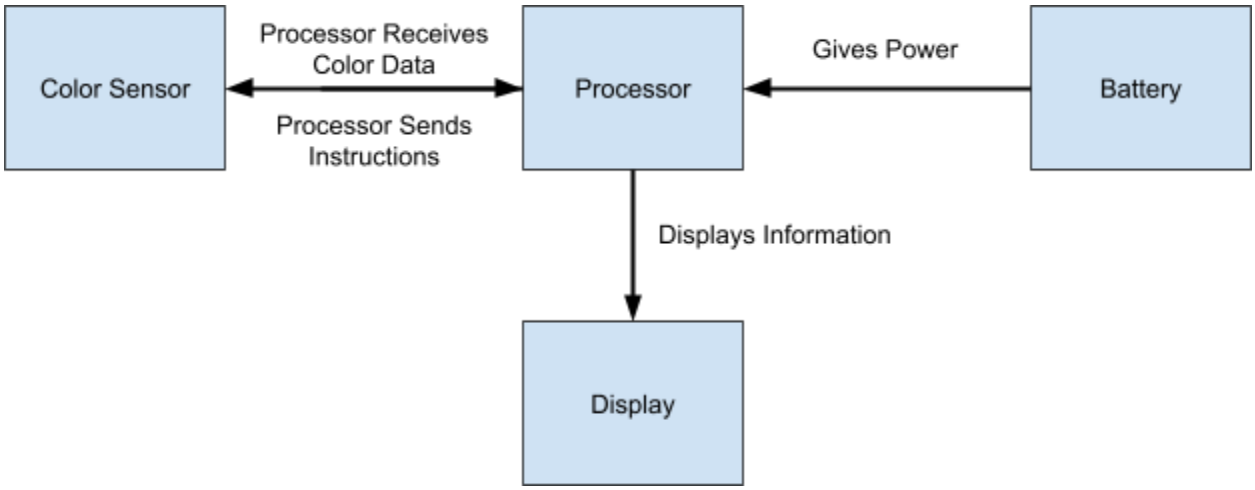

Figure 1. Level 0 block diagram.

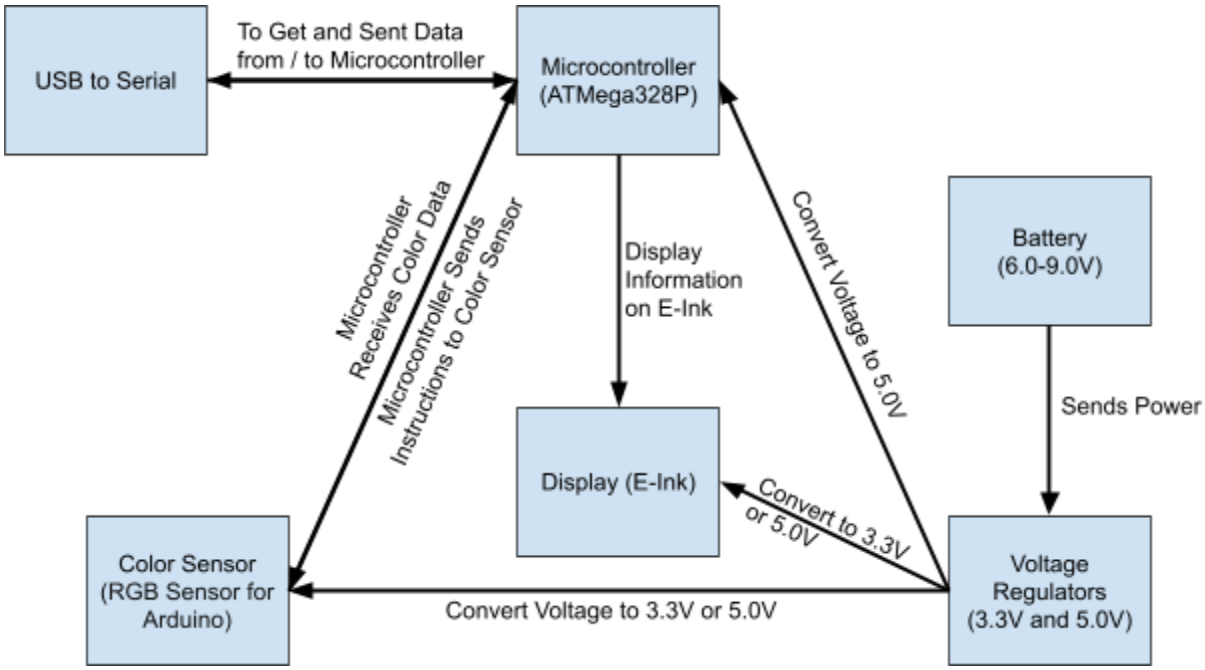

Figure 2. Level 1 block diagram.

Design Specification:

- We'll be using the ATMega328P as our processor, with the Arduino being the development environment.
- The RGB color sensor is the TCS34725. It has an IR filter and runs off of 3.3V, consuming a maximum of 330μA when active.
- E-Ink Display It runs at 3.3V.
- We will use 3.3V and 5V voltage regulators.
- Batteries (Not sure what exactly will be used)

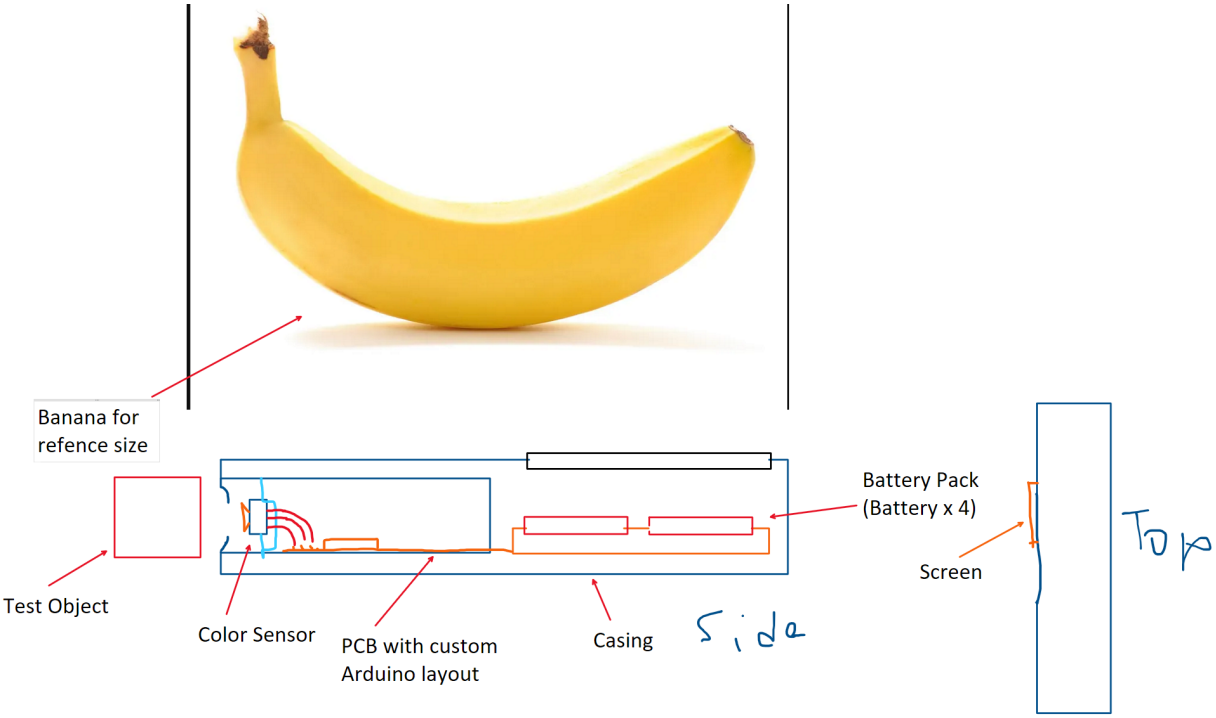

Figure 3.Example of our product.