Cole Feely
Feb. 15, 2022
Electrical and Computer Engineering 304
Junior Design Project

Preliminary Design Review

Table of Contents

List of Parts

	A	B	C	D
1	ECE231/304/397A Kits Spring 2022			
2				
3	Arduino Uno	1	Jameco Part#2151486	
4	USB A-B cable	1	Jameco Part#1978676	
5	0.96" OLED display	1	Jameco Part#2211952	
6	4 digit 7 segment display	1	Jameco Part#2280407	
7	breadoard M or L	2	Jameco Part#20723	
8	Pocket AVR programmer	1	Sparkfun #PGM-09825	
9	FTDI interface	1	Sparkfun #DEV-09716	
10	USB to alligator clips	1	Tayda Electronics #A-5363	
11	ISP adapter kit	1	Adafruit #1465	
12	9 V battery	1		
13	9 v battery clip	1		
14	USB wall adapter	1		
15	USB mini cable	2	Jameco Part# 673694	
16				
17	***small parts bag***			
18	red LEDS	10	Jameco Part 3333973	
19	green LEDs	10	Jameco Part# 34761	
20	resistors (100 or 1k Ohm)	10		
21	rgb LED	1		
22	TIP 120 transistor	1	Jameco Part# 32993	
23	spst switches	3	Jameco Part#149948	
24	piezo speaker	1		
25	HR-SC04 ultrasound sensor	1	Sparkfun #SEN-15569	
26	ATmega328P DIP on foam	1	Jameco PArt#2139111	
27	100K potentiometer	1		
28	16 MHz crystal	1	Jameco Part#325139	
29	CDS photocell	1	Jameco Part# 120310	
30				
31	**Also need**		These parts will be made available soon...	
32	22 pf capacitors	2	Jameco Part#15405	
33	TMP36 sensor (ECE-231)	1	Sparkfun TMP36	
34	M/M jumper wires	1		
35	7805 voltage regulator	1	Jameco Part# 51262	
36				
37	Also available soon			
38	mini breadboard		Jameco #2155452	
39	pocket digital multimeter		Jameco Part # 2318559	

Section 1: Problem Statement

Limiting exposure and spread of the COVID-19 virus is vital for protecting our communities and by following safety protocols issued by public health agencies, we can reduce the number of fatalities and time spent under COVID restrictions. One of these safety protocols issued by public health agencies is that individuals should maintain six feet apart from one another. This can be challenging for those that work at front desks or are in contact with many people at the office throughout the day. To ensure the safety of everyone, the *Covid Distance Sensor (CDS)* detects the distance of those approaching the front desk and alerts them if they break compliance by displaying the distance of the individual and flashing a red light if they are within 6 feet. If compliance is not broken, then the device will display a green light, signifying that it is safe to either approach or being a conversation with the person at the front desk. Additionally for the user, the CDS will track the number of individuals that approach the desk according to a time period and the minimum distance of the most recent visitors.

Section 2: Design Requirements

1. Will detect whether the approaching party is in violation of the 6 feet safety guideline
2. Will alert both the approaching individual and the user that the visitor is in violation
3. Shall track the distance of the approaching individual and display it for the visitor and the user
4. Will indicate to both the approaching individual and the user if the visitor is in a safe distance from the user
5. Shall have two displays: one visible for the approaching party to show their distance from the desk and another that does the same for the user but also displays the number of visitors within a certain time period and each of their minimum distances between the device.
6. Will have a speaker that will alert both parties if the visitor is violating the 6-feet parameter.

Section 3: Block Diagram