HW Wk 10 - Test plan

Team 10

Puzzle Lock

12/2/2021

Test Author: Team 10							
	Test Case Name:	PCB “Mount” Functional test				**Test ID #:**	001
	Description:	Discover wrong part, part backwards, bent/broken pin, bad solder joint (stuck at 0/1, open/short model). Check functionality works correctly on PCB.				**Type:**	■ white box □ black box □ _____
Tester Information							
	Name of Tester:	Bradley Huntington				**Date:**	12/1/21
	HW/SW Version:	HW				**Time:**	
	Setup:	Multimeter					
STEP	**Action**	**Expected Result**	**PASS**	**FAIL**	**N/A**	**Comments**	
1	Test continuity with the IR sensors to the chip	Should have good contact and see short from IR sensors to chip	X				
2	Test continuity from all parts to GND	Servo motor, and chip should connect to ground. (not open)	X				
3	Insert Battery and test voltage levels	Each IR sensor should see 5V on the positive lead, as well as the servo motor	X				
4	Appy IR to sensors and test voltage changes on chip.	The chip should see somewhere between 4V-5V when the sensor sees IR. There will be fluctuation based on the alignment of the diode to the sensor		X		Needed to make some adjustments to the design by adding resistors outside the PCB. Final results look good	
5							
6							
	Overall test result:		X			Only minor adjustments needed to make everything work	

Test Author: Team 10						
	Test Case Name:	PCB “Key” Functional test			**Test ID #:**	001
	Description:	Discover wrong part, part backwards, bent/broken pin, bad solder joint (stuck at 0/1, open/short model). Check functionality works correctly on PCB			**Type:**	■ white box □ black box □ _____
Tester Information						
	Name of Tester:	Bradley Huntington			**Date:**	12/1/21
	HW/SW Version:	HW			**Time:**	
	Setup:	Multimeter, any video camera that can see IR				

STEP	**Action**	**Expected Result**	**PASS**	**FAIL**	**N/A**	**Comments**
1	Test continuity for all traces on PCB	All traces should have a good connection (not open)	X			
2	Test button works properly	When button is pushed, it should create a short, and when it is not the connection is open	X			
3	Connect battery and test that IR diodes light up using a video camera	Using the camera, you should see the IR diodes light up releasing an IR signal		X		Needed to replace the resistor with a jumper and add a second battery in order to have enough power. Second test looks good.
5						
6						
	Overall test result:		X			Only minor adjustments needed to make everything work

Test Author: Team 10						
	Test Case Name:	Functional Test (Code)			**Test ID #:**	001
	Description:	Write a program to connect the Arduino Uno R3 and test if it can successfully run and control the servo.			**Type:**	■ white box □ black box □ _____
Tester Information						
	Name of Tester:	Tianshu Chu			**Date:**	12/1/21
	HW/SW Version:	SW			**Time:**	
	Setup:	Circuit board, circuit components to be used, USB interface.				

STEP	Action	Expected Result	PASS	FAIL	N/A	Comments
1	Test if I can get an IR receiver to pick up the signal from the IR transmitter and show a high level.	The IR receiver receives the signal from the IR transmitter and shows "1" on the port, which I can see on my computer.	X			
2	Set the IR receivers to 8, they receive the signal from the 4 IR transmitters and read in the computer whether the signal is received or not, if it is received then it shows a high level "1".	All 8 IR receivers should be able to receive and read the signal from the IR transmitter.		X		The reason for the lack of success is that the signal strength from the IR emitter is not strong enough and the voltage to the IR emitter needs to be increased.
3	Retest whether the IR receiver can read the signal. The IR receiver that receives the signal shows a high level.	In the case of an infrared receiver and an infrared emitter, the corresponding infrared receiver should display a "1", thus forming an 8-digit code.	X			

4	Test if a high level signal from the IR receiver can control servo operation.	If the 8 codes from the IR receiver are correct, the servo can be controlled to rotate 90 degrees.	X			The 8-digit password can now control servo operation, which is the most critical step in my testing.
5	Repeat the password change several times to test if a different password will also make Servo work properly.	The 8 IR receivers form the correct password when they receive the correct signal. Servo should work properly no matter what 8-digit password is set.	X			I can set different passwords as needed to make Servo work properly when reading passwords that match the set password.
9						
	Overall test result:		X			The code was finally tested successfully. But IR signal has a disadvantage, it is not very stable, sometimes it will not receive the signal.