Developer Guide

For this project we were tasked to develop an automatic pet door that could let a pet go in and out as they pleased. The door should work without human interaction, and be able to lock itself while withstanding a force of at least 30 lbs for security. It was also recommended to keep track of the usage and alert the owner if it was being used by the pet or not. We also took it upon ourselves to create an app that would alert the owner of the usage of the device and keep track of it on their phones.

This device has a fairly simple installation. You will need a 10.5 inch high and 4.5 inch wide slot for the locking mechanism as seen in figure 1.

Figure 1. The open slot for the lock along the door.

For our purposes we built a stand for it for simplicity of testing. But can be bolted from the side or bottom of the door. Figure 2 has an example of what we chose to go with for our installation. The lock is about 2.5 inches thick, to accommodate the 3/4 inch pet door.

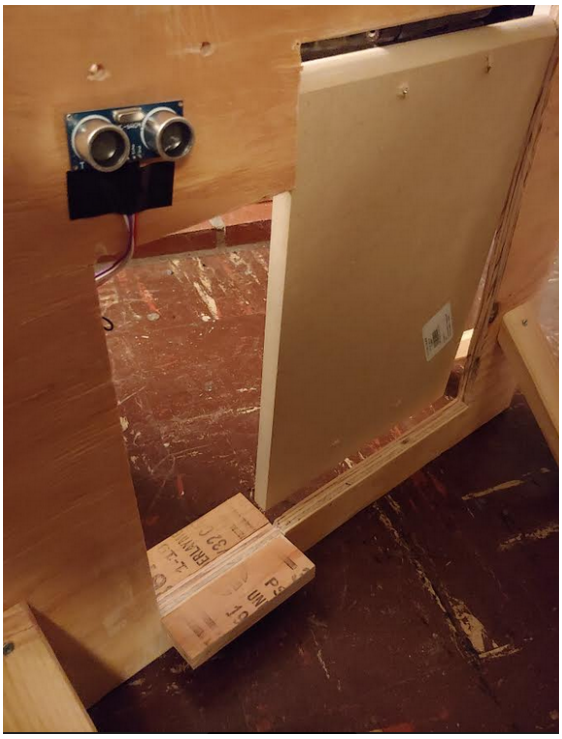

Figure 2. Picture of the stand.

The sensors themselves can be installed any way the user wishes. It can be tapped as seen in figure 2. Or it can be tapped or glued from the back to the door, there are two sensors as one should be on each side of the door.

Figure 3 shows the enclosure has 4 slots for screws to put on either the wall next to the door or to be placed on the door itself.

Figure 3. Top view of the enclosure.

After that is done all that is left is to download the app we programmed from the google play store linked here.

https://play.google.com/store/apps/details?id=project.bluetoothterminal&hl=en_US&gl=US

This app when connected through bluetooth will keep track of the day, time, and amount it was used. It does not have to be open to keep track. It will let you know as soon as you connect to the bluetooth device.

Figure 4 shows an example of how it will look when it is completed. Installation may differ depending on each door setup and space available.

Figure4. Example of complete installation.

The device runs on a battery to power everything, connected through USB. This connection should not exceed 12V as it will be powering the Arduino inside. The voltage regulator inside the arduino will deliver the 5V operating voltage. Figure 5 shows the layout of the schematic including the PCB inside.

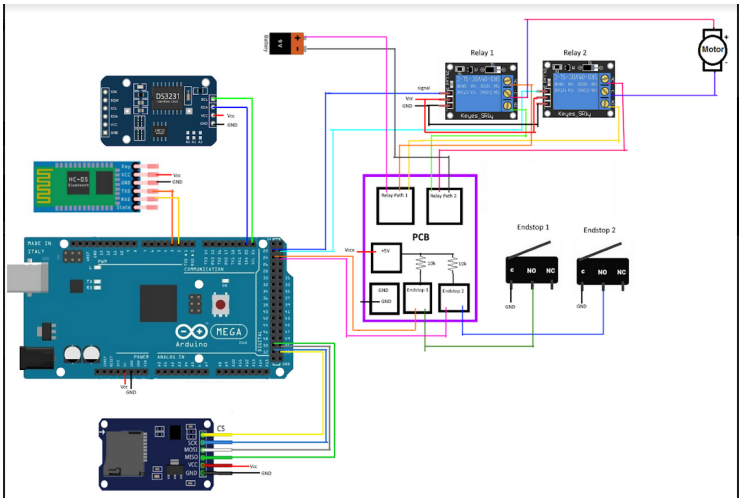

FIgure 5. Layout of the schematic and PCB inside the enclosure.

A list of all the components used can be seen below.

Name:	Quantity:
Greartisan DC 24V 1000RPM Gear Motor	1
Relay Module	2
9V battery	1
Arduino ATMega 2560	1
PCB	1
Ultrasonic Ranging Module HC - SR04	2
SD Card Reader/Writer for Arduino	1
Clock Module for Arduino	1
Wireless Bluetooth Transceiver for Arduino	1
Flat Washer 1/4"	4
M3 x 12mm Bolts	8

Jumper Cables	Many
12.5" Tall 8.5" Wide 0.5" Thick Pet Door	1
Door	1
3D Printed Parts	
Enclosure Bottom	1
Enclosure Top	1
Lock	1
Encasing Slide for Lock	1
Herringbone Rack	1
Herringbone Gear	1
Endstop Holder	2

After the power is connected you are all done with installation and can test our your new pet door.