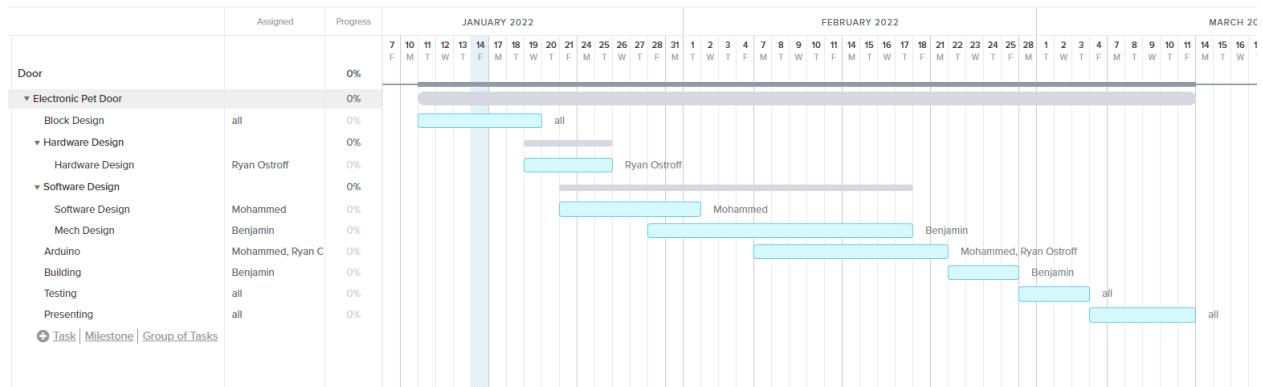*Project Summary*

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The purpose of this project was to let the pet enter or exit the door mechanism without human input. In other words, the pet will implement everything on the project. There are some requirements that we followed in order to implement the project well. So we used two pressure plates that a pet can press on it in order to unlock the door, and we set it up to 10 seconds, after that the door would be locked. We used an SD card that can record the time and day when the pet enters or leaves. We powered the solenoid to allow the door to be pressed by using around 16.5 volt, so initially we used 8 AA battery, but when we tested it, we got 11 volt, this was insufficient to operate the solenoid. Later on, we added 3 AA batteries in order to increment the output. We also showed that the system is secured by putting 30Ibs of the force into the door mechanism.

When we started the project we were given a list of requirements that needed to be fulfilled and nothing else, so we had a lot of design freedom to build our own device. The beginning development phase we decided that an arduino uno as a microcontroller would be able to handle the scope of the project and incorporate everything we wanted, such as an sd card, LCD display, leds. At this point in the project we planned to use a motor controller and use two motors to move a door up and down. When we knew what externals we needed we started to develop specific modules for the arduino, examples such as 16x2 lcd module using I2C, SC card Module with 32 gb card, and a 9v battery. Development of the pressure plates and design of the door mechanism was created. It was at this time that we decided to change things up in order to simplify the project, due to no requirement being that the door needed to move we decided to switch to a solenoid locking device and a free moving door.  This changed our power supply as we wanted to be able to power both the arduino and the solenoid with the same battery pack. The solution was to up the battery pack to 16.5V by using 11 AA batteries. Next, was the creation of the PCB which held all the buttons and LEDs within the system. This board was designed to be the same size as our 16x2 LCD display, so that fitting it within an enclosure would be very easy. Development of the code for the arduino modules was happening throughout the whole project, but towards the end when the system was all created we started incorporating the code into one file. Building of the door mechanism and housing was completed last, so that we could easily test and get the system ready for show.

The project timeline

| | Assigned | Progress | | | |
|---|---|---|---|---|---|
| Door | | 0% | | | |
| ▾ Electronic Pet Door | | 0% | | | |
| Block Design | all | 0% | all | | |
| ▾ Hardware Design | | 0% | | | |
| Hardware Design | Ryan Ostroff | 0% | Ryan Ostroff | | |
| ▾ Software Design | | 0% | | | |
| Software Design | Mohammed | 0% | Mohammed | | |
| Mech Design | Benjamin | 0% | Benjamin | | |
| Arduino | Mohammed, Ryan O | 0% | Mohammed, Ryan Ostroff | | |
| Building | Benjamin | 0% | Benjamin | | |
| Testing | all | 0% | all | | |
| Presenting | all | 0% | all | | |

⊕ Task | Milestone | Group of Tasks

Key lessons
- We learned on how to do a full project instead of basic because this can support us for doing advanced projects on Senior classes
- We learned how to communicate with each other in order to implement our project successfully
- We learned on how to using software schematic instead of hand-drawing
- We learned on figuring out additional requirements to operate the pet door
- We learned how effective communication within a group setting can be