

Electronic Door Locker

INTRODUCTION

This project is a creation of an electronic door bolt or lock. The idea can be developed into a lot of useful projects for the society. For example, sometimes there might be chances for the door to close in a wrong way that might be harmful. This program ensures a safe closing happens. The most thing of that java program focuses on is being user friendly, meaning that it displays all the messages when door is locked or unlocked and give easy buttons for user to use.

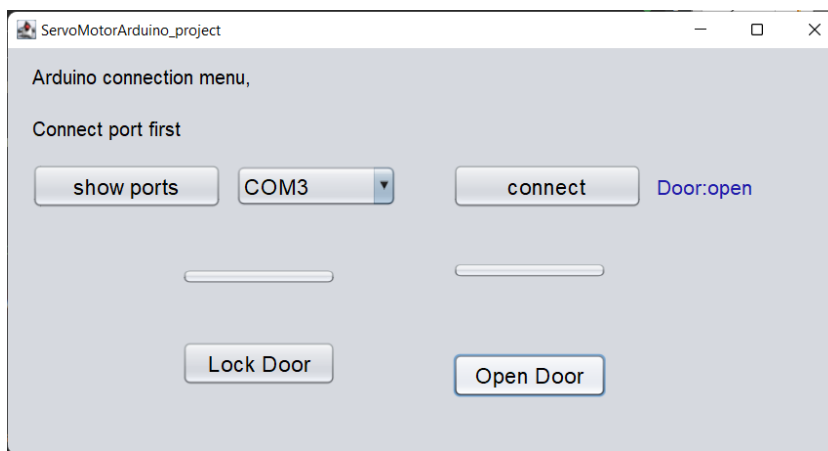
Context

This project is a small project with a big goal. This electronic door lock already helps as it secures the environment around the individual. The device focuses on people with disabilities because it gives them the option of locking their doors by just pressing one click without having to move physically from a place to a place. The focus of my system is to help people with disabilities or who aren't too rich to buy an electronic locker. It is a very user-friendly project that's designed to satisfy the user and perform the order while letting the user know anything that happens by displaying a message on the Arduino connection menu.

Technical Requirements/Specifications

1. The system first send data from the Arduino to java to be able to graphically see values.
2. Servo Motor is attached to D9 and defined in program.
3. Make sure that the board is connected to both Arduino and Java IntelliJ IDEA program

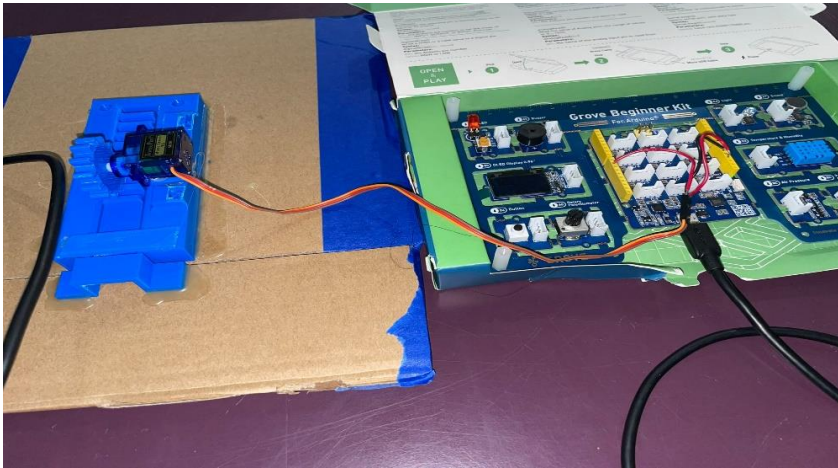
4. Make sure the servo motor is properly wired to the grove board (turns in Java)
5. Program the servo motor on Arduino to activate the components
6. Run Java software to display pop-up window to the servo motor can turn to desired angles using digital button in the software
7. Servo motor will rotate at 2 desired angles (45° and 135°).



Components List:

- Computer/Laptop
- Grove board
- Micro servo 9g sg90 tower pro
- Masking tape
- Pins
- 3D printed blue door latch
- USB cable
- Screws

- Cardboard



Procedure

I concluded that a servo motor can do many kind of tasks for moving forward and backward, then it came to my mind that a locker can be used in this situation so the motor can force the lock to lock and unlock it easily. While trying to determine how to assemble the servo on the 3d printed door latch, I realized the first attempt did not fit so I resized it. I had to be creative in assembling the wheel on the top of the latch, so it goes forward and backward smoothly.

For the programming part, I used a combination of labs that I learned through the course and a lot of additional research on google and YouTube to create my coding. I started off with the servo and I was able to find a code on how to test the servo to make sure it was working correctly. I ended up doing more research on how to turn a servo motor through Java and I found a video on YouTube that showed a video of how the code worked and they also provided the source code for both the Arduino and Java codes and I was able to start test my codes from this point.

Test

When I found my source codes for Arduino and Java, I used both, starting with Arduino where I combined both my sensor code and the servo code given and made sure I fixed all my errors, and then ran it. I then worked on the Java code and ran it to see what the initial pop-up window looked like. In the code provided, there were 2 components, turning on and off an LED and turning the servo 180° right and 180° left. From there I edited the code so that there were 2 buttons and removed the necessary labels of the degrees and changed it to door open and door close. I also adjusted the instructions at the top of the window to match the idea of my project. I then tested both codes first running Arduino then Java and I made sure everything worked properly.

Contingency

At the beginning, I wanted to use an ultra sonic sensor and make it beeps and graphs the distance between it and the object in front of it. Then I started but I realized there were so many libraries needed for that, I spent around 20 hours on it, but I kept getting infinite errors due to the huge amount of libs I needed, and they needed to be placed in the right place in order for everything to work perfectly. I ended up switching to this idea of the servo motor and I really liked it, it looks simple but indeed it hides creativity in it. I learned a lot of things during this major project, one is of course to start way earlier than the due date so I can spend more time with an ease of mind and let my creativity comes out without stressing. Also, I learned that simple ideas could turn into big projects, all the time I was doing this I kept thinking of how an

electric door locker is being used in a lot of places and also on how everyone needs to get access to it.

Additional Material

The system is basically designed for people with disabilities and people who needs to do less movements, this electronic lock can help in reducing the physical activity of people who are in need to decrease their movement or are not able to move. My project could exceed expectations if the productions of electronic locks start increasing and the prices reduce for people who wants to buy it. Increasing electronic locks systems will eventually increase the safety of the areas it gets used on. But prices should decrease a little for every home and house to buy it.

Conclusion

This project has taught me a lot of patience and discovered skills I had I never realized I do. Furthermore, the world of programming is huge and there is a lot of amazing and enjoyable things that can be done with the least tools nowadays. For instance, the substantial number of projects we can create using the Arduino kit, even without complex sensors like how we did our labs and created alarms and a lot of wonderful things.

Appendix:

https://www.youtube.com/watch?v=RIpoYMFfqLw&ab_channel=DanielRoss

https://www.youtube.com/watch?v=uefH_GZzEek&ab_channel=fuchungchi

https://www.youtube.com/watch?v=uefH_GZzEek&ab_channel=fuchungchi

https://www.youtube.com/watch?v=-V5GyuiB0Ac&ab_channel=aminegasa

<http://www.mediafire.com/file/9cq4andr97sa89o/javaArduinoProject.rar/file>