The Wakeup Call

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Assignment 2

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INDS-2007-004 Emerging Technology

Motivation

The Barisieur

Barisieur Tea & Coffee Alarm Clock

Shop Now

Barisieur Tea & Coffee Alarm Clock

Shop Now

I decided to build a device that could trigger my coffee maker. I only wake up to the smell of coffee and wanted an automated object that would press my Nespresso machines button when my alarm clock rings in the morning. Throughout my research I came across this design which encapsulates my concept in a more refined manner, but essentially both ideas execute the same function. My design consists of triggering a servo motor with a sound sensor and once activated would rotate its arm and release a brass ball into a plastic tube. The ball would fall on to the Nespresso start button and activate the brewing process done by the coffee machine.
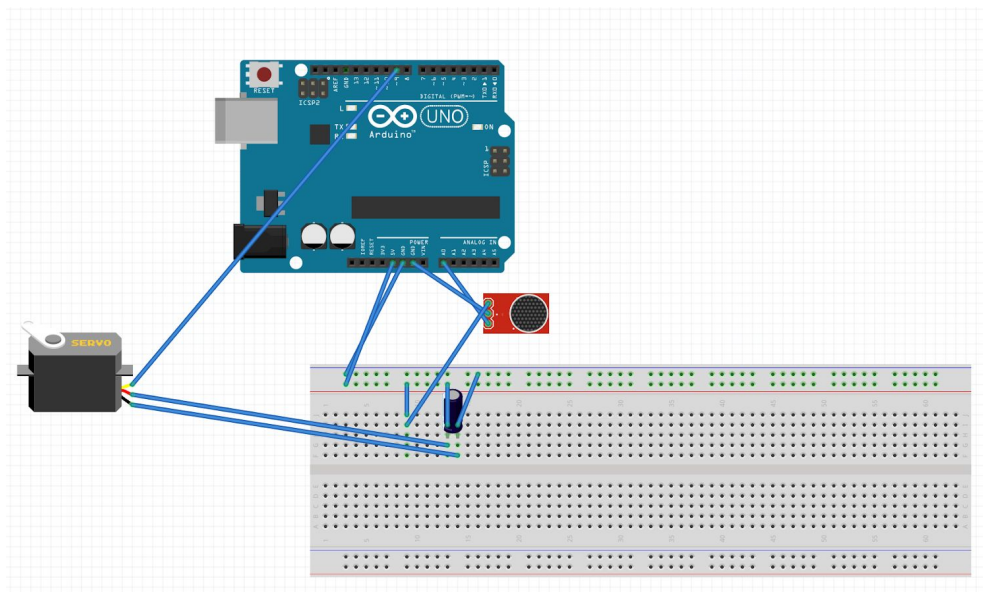
Goals

1. Input : Alarm ring sound is picked up by sound Sensor
2. Output : Servo Motor is triggered and rotates arm 180 degrees to let weight fall
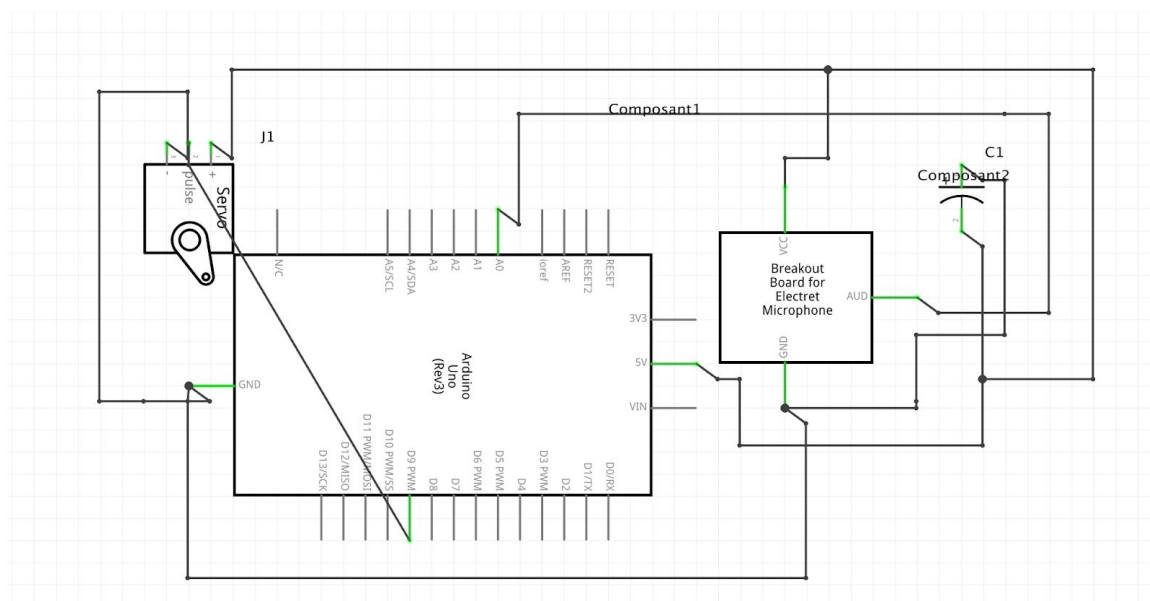
Specifications

Hardware required

For this project, the circuit needed to include :

- A microphone module (sound sensor)
- A Standard Servo motor
- Jumper cables
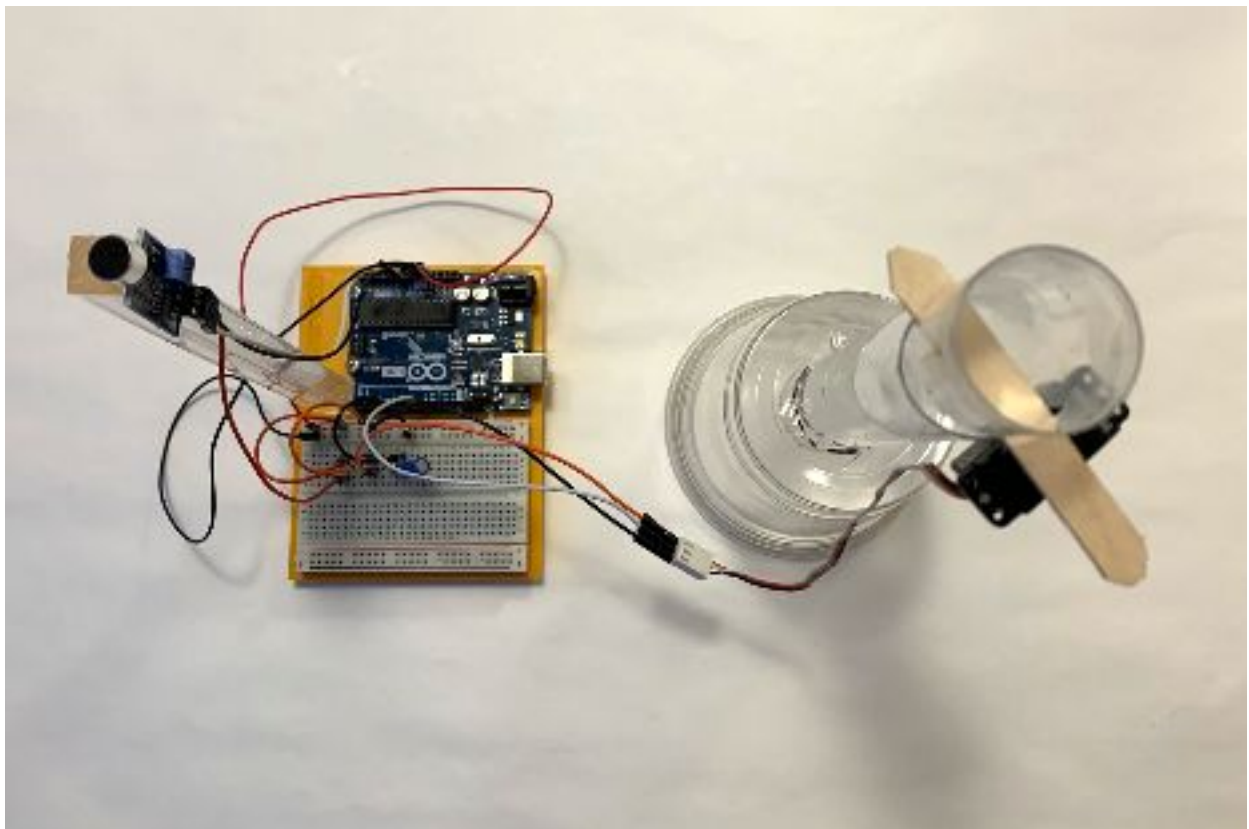- A breadboard
- The Arduino Uno card
- A Capacitor

Schematic

Code

The Code I used was the Knob code given as an example in the Arduino Library. I specified the angle that the servo motor would rotate at (180 degrees) and the delay (seconds) it would take to reset.

```
/*
Controlling a servo position using a sensor (variable resistor)
by Michal Rinott <http://people.interaction-ivrea.it/m.rinott>

modified on 10 Feb 2020
by Layla Chergui
http://www.arduino.cc/en/Tutorial/Knob
*/

#include <Servo.h>

Servo myservo;  // create servo object to control a servo

int potpin = 0;  // analog pin used to connect the sensor
int val;    // variable to read the value from the analog pin

void setup() {
  myservo.attach(9);  // attaches the servo on pin 9 to the servo object
}
```

Learning curves

I.   Circuit

Understanding the repartition of electricity on the breadboard was the first step. I learned that order is important ! Testing different Servo motors and experiencing glitches made me learn about voltage and how much power it takes to fuel different servo motors.Throughout this project I've researched ways to animate an arm. At first I had to understand the difference between a DC motor and a Servo Motor. A servo Motor can be programmed and so that is the piece of hardware best suited for my project.

II.   Code

I've familiarized myself with how to read codes. Since I chose to work with a Servo motor, I had to understand how to program it. You can choose to which angle the arm rotates to as well as the delay of time it takes it to reset to its original position. Even though I did not tamper with Sensor codes, I've learned that it is also possible to program the code of the sensor so it picks up a specific type of sound at a specific distance.

In retrospect, I would have liked to look into using a pulley attached to the weight and program my code in a way that the device can reset itself, instead of needing me to retrieve the weight and place it back on the top of the tube.

In the future... I would like to rebuild my prototype so the tube is longer and the weight is heavier, because as it is the brass ball is not heavy enough to press on the Nespresso machines start button. The heavier the weight the more powerful the Servo motor will have to be. The whole structure of the prototype will have to be more solid to support both those pieces.

References

https://joyresolve.com

https://www.arduino.cc/en/tutorial/knob