

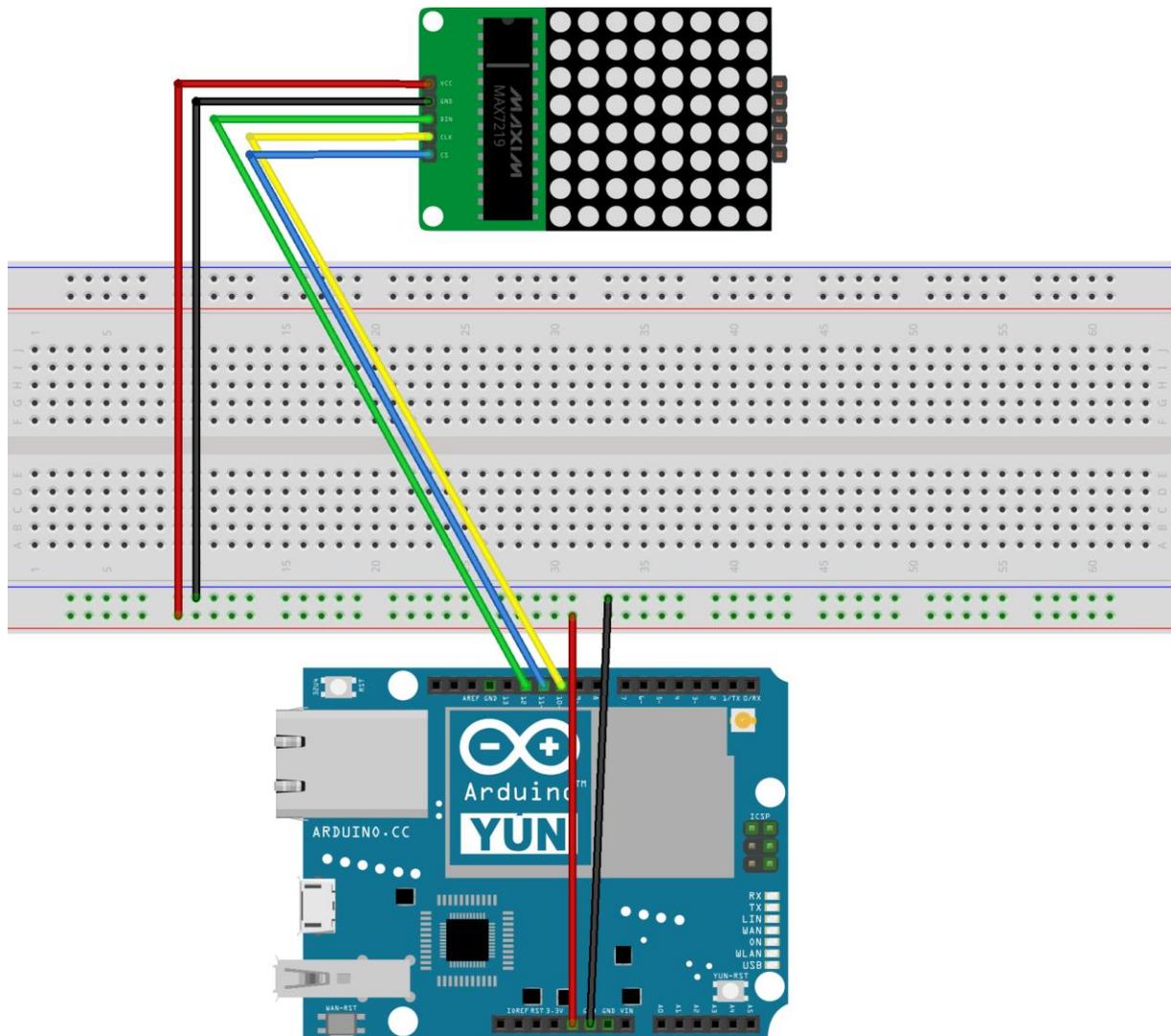
How to create Weebee

The arduino part.

For the arduino part of creating weebee you need a couple of things:

- 1 small breadboard
- 1 arduino uno or other (we have used an arduino yun)
- 1 Sharp IR sensor from 4 to 30 cm
- 1 MAX7219 LED matrix 8x8
- 2 red led's
- 1 servo motor (we have used a TG9e)
- Enough jumper wires to connect all the pieces

First of all start with connecting the led matrix to your arduino. Most of the led matrixes comes with a couple of cables to easily connect it to your arduino. Make sure to connect the led matrix like shown on the following picture.



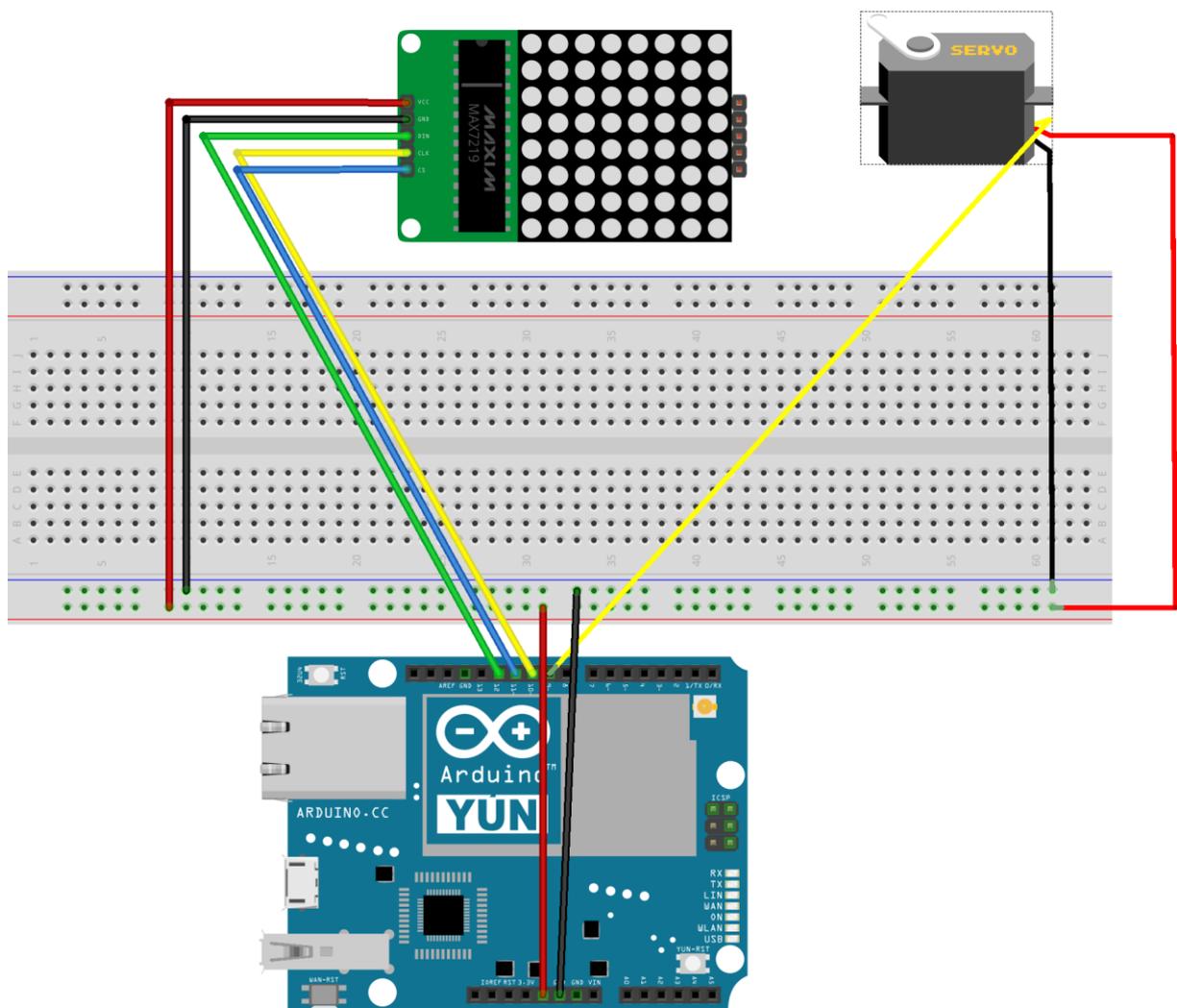
As you can see in the image above we have connect our arduino tot he breadboard with a red cable for the vcc and a black cable for the ground. The red cable goes from the 5v port from the arduino to the row with the red stripe underneath it on the breadboard. The black cable goes from one of the ground ports from the arduino to the row with a red stripe above it on the bread board.

Now every port on the row with the red stripe underneath it is powered with 5v. The same for the ground except that this is the ground.

Now you can connect the vcc and the ground of the led matrix by simply sticking some jumper wires from your matrix to your bread board to the corresponding rows.

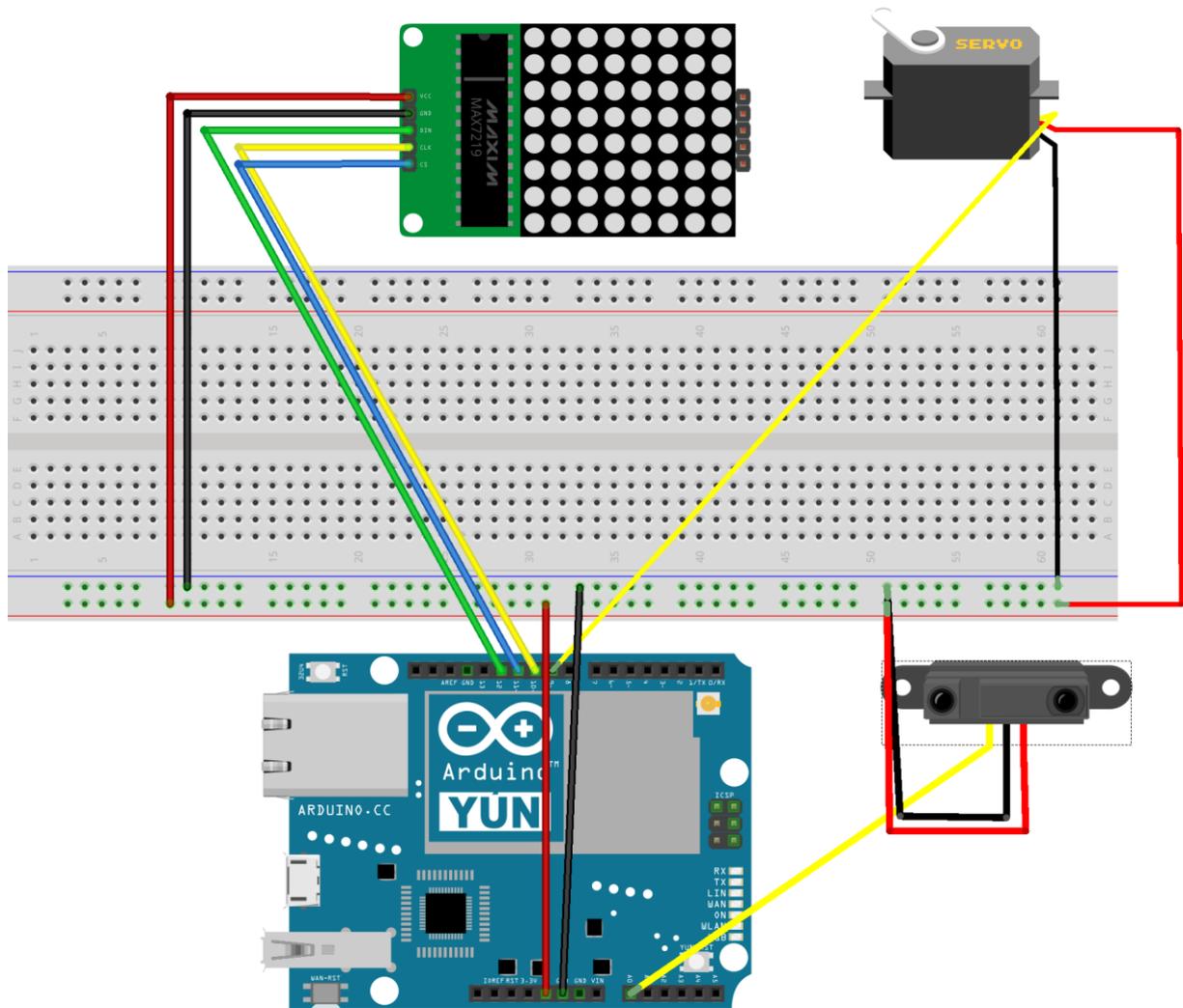
The din of the led matrix (represented by the green cable) is connected to port 12 of the arduino. The clk to port 10 and the cs to port 11.

The next thing you have to do is connecting your servo to the arduino.



fritzing

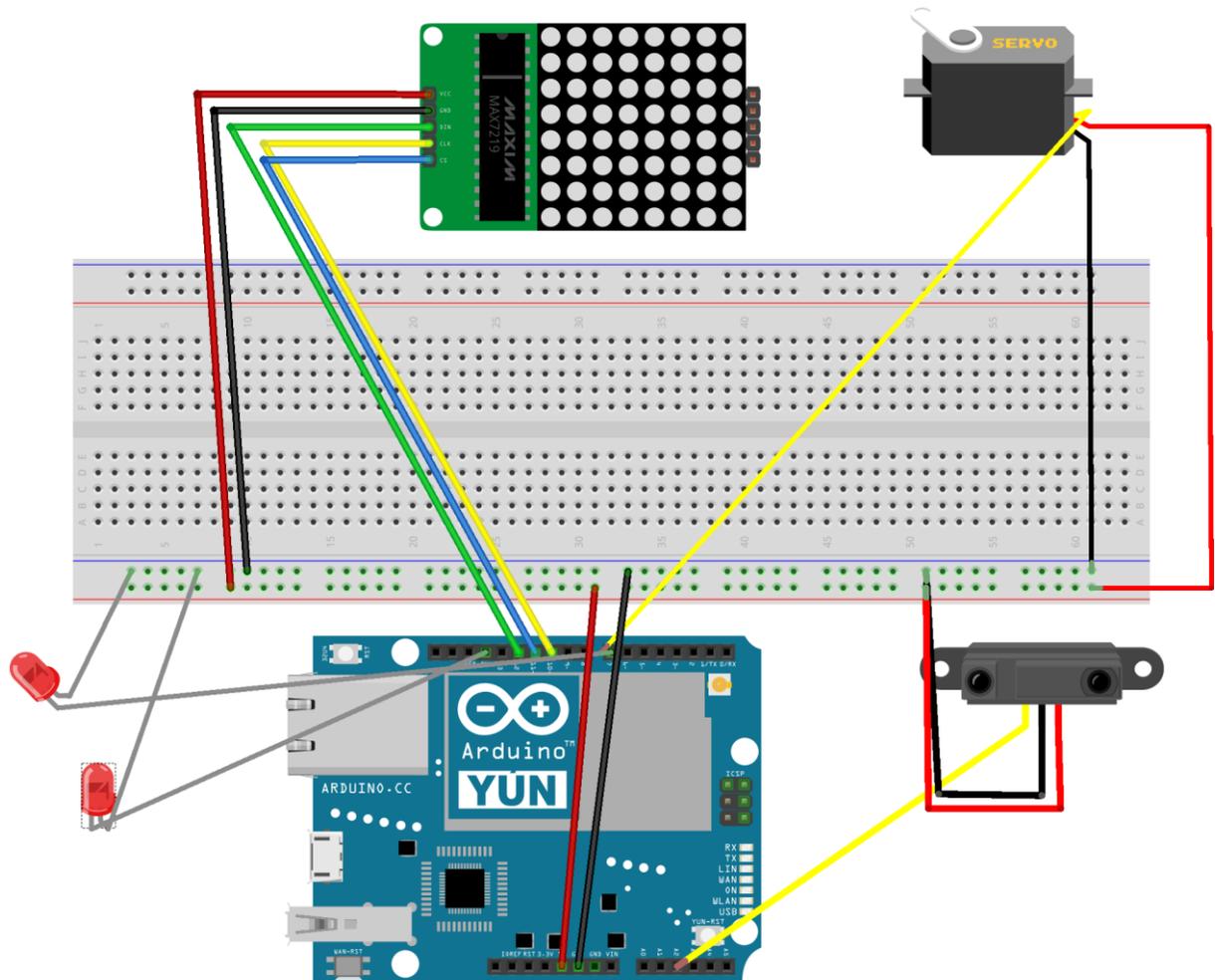
As you can see the red and the black cable(which are the vcc and the ground). Are connected to the corresponding rows on the breadboard again. Thats what gives the servo it's power. The yellow cable(through which the servo gains it's data) is connected to port 9 on the arduino. Now we can write commands from our arduino software to this servo and the led matrix. First we need our sharp sensor to get working with our arduino.



fritzing

As you can see the gnd and the v5 of the sharp sensor are once again connected to one of the little holes on the breadboard in the right row. Our yellow cable is connect to the first analog port of our arduino A0. This will make us able to read values out of our ir sensor.

When you are done with that the only thing that is there to do is plugging in the leds.



fritzing

As you can see in this beautifully created fritzing sketch the leds are plugged in to port 13 and 7 of the arduino. Also the ground of the leds(which is most of the time the shortest one) is plugged in the correct row on our bread board.

Now with everything plugged in we just need to write our code.

```
//include servo library to control your servo.
#include <Servo.h>

//include the library for the led matrix. Also include the binary.h file so
you can write to your led matrix easily
#include "LedControl.h"
#include <binary.h>

//This variable is set to point out that there is a servo
Servo servol;

//This variable is created to refer to our led matrix which is plugged in
port 12, 11 and 10, the last
//number represents the amount of led matrixes we want to use.
LedControl lc=LedControl(12,11,10, 1);

void setup() {
  //Where is the servo plugged?
  //This is the pin on which the servo is attached.
  servol.attach(9);
```

```

// We also need to set our pins if they are going to read or send stuff.
pinMode(13, OUTPUT);
pinMode(7, OUTPUT);
pinMode(A0, INPUT);

//neutralize the led matrix before doing something with it.
lc.shutdown(0, false);
lc.setIntensity(0, 5);
lc.clearDisplay(0);

}

void loop() {
  //the variable in which the value of the infrared sensor is stored.
  int value = analogRead(A0);
  //this makes it possible to read the value of the sensor in the serial
  monitor
  Serial.println(value);

  //if the value of the sensor is above 450 tho a little animation.
  if(value>450)
  {
    //write the amount of degrees to the servo
    servol.write(40);
    //Delay the program for 300 milli seconds
    delay(300);
    //turn on both of the leds
    digitalWrite(13, HIGH);
    digitalWrite(7, HIGH);

    //this is the code which writes to the led matrix
    //take not that you can create figures by simply putting binary ones
    and zeroes in there
    //the first digit is on which led matrix you want to write. The second
    digit is the row you want to write to.
    //the last number is which leds on that row do you want to turn on. a 1
    is on a 0 is off.
    lc.setRow(0,0,B00000000);
    lc.setRow(0,1,B00000000);
    lc.setRow(0,2,B00000000);
    lc.setRow(0,3,B00111100);
    lc.setRow(0,4,B01000010);
    lc.setRow(0,5,B01000010);
    lc.setRow(0,6,B00000000);
    lc.setRow(0,7,B00000000);

    //The rest of the animation has no new pieces of code just different
    values
    delay(300);
    servol.write(0);
    delay(300);
    servol.write(40);
    delay(300);
    servol.write(0);
    delay(300);
    servol.write(40);
    delay(300);
    servol.write(0);
    delay(300);
  }
}

```

```

digitalWrite(13, LOW);
digitalWrite(7, LOW);

//always set the led matrix to 0 after printing something on there.
lc.setRow(0,0,0);
lc.setRow(0,1,0);
lc.setRow(0,2,0);
lc.setRow(0,3,0);
lc.setRow(0,4,0);
lc.setRow(0,5,0);
lc.setRow(0,6,0);
lc.setRow(0,7,0);

}

else if(value > 300)
{

servo1.write(80);
delay(500);
digitalWrite(13, HIGH);
digitalWrite(7, HIGH);

//SMILE!
lc.setRow(0,0,0);
lc.setRow(0,1,0);
lc.setRow(0,2,B01111110);
lc.setRow(0,3,B01000010);
lc.setRow(0,4,B01000010);
lc.setRow(0,5,B001111100);
lc.setRow(0,6,0);
lc.setRow(0,7,0);

delay(2000);
digitalWrite(13, LOW);
digitalWrite(7, LOW);
lc.setRow(0,0,0);
lc.setRow(0,1,0);
lc.setRow(0,2,0);
lc.setRow(0,3,0);
lc.setRow(0,4,0);
lc.setRow(0,5,0);
lc.setRow(0,6,0);
lc.setRow(0,7,0);
delay(500);
servo1.write(0);
delay(1000);
value = analogRead(A0);

}
else if(value > 200)
{
servo1.write(60);
delay(300);
digitalWrite(13, HIGH);
digitalWrite(7, HIGH);

//someone there :O?
lc.setRow(0,0,B00000000);

```

```

lc.setRow(0,1,B00000000);
lc.setRow(0,2,B00111100);
lc.setRow(0,3,B00100100);
lc.setRow(0,4,B00100100);
lc.setRow(0,5,B00111100);
lc.setRow(0,6,B00000000);
lc.setRow(0,7,B00000000);

delay(2000);
digitalWrite(13, LOW);
digitalWrite(7, LOW);
lc.setRow(0,0,0);
lc.setRow(0,1,0);
lc.setRow(0,2,0);
lc.setRow(0,3,0);
lc.setRow(0,4,0);
lc.setRow(0,5,0);
lc.setRow(0,6,0);
lc.setRow(0,7,0);
delay(500);
servo1.write(0);
delay(1000);
value = analogRead(A0);
}
else if(value > 100)
{
servo1.write(40);
delay(300);
digitalWrite(13, HIGH);
digitalWrite(7, HIGH);

//someone there :O?
lc.setRow(0,0,B00000000);
lc.setRow(0,1,B01111110);
lc.setRow(0,2,B01000010);
lc.setRow(0,3,B01000010);
lc.setRow(0,4,B01000010);
lc.setRow(0,5,B01000010);
lc.setRow(0,6,B01111110);
lc.setRow(0,7,B00000000);

delay(2000);
digitalWrite(13, LOW);
digitalWrite(7, LOW);
lc.setRow(0,0,0);
lc.setRow(0,1,0);
lc.setRow(0,2,0);
lc.setRow(0,3,0);
lc.setRow(0,4,0);
lc.setRow(0,5,0);
lc.setRow(0,6,0);
lc.setRow(0,7,0);
delay(500);
servo1.write(0);
delay(1000);
value = analogRead(A0);
}
}

```

}

Hope you guys enjoy your own Weebie!

We are sure there are a lot of better ways to create all this. Please feel free to share them with us.