Connect servos

LESSON 02

let's Think

If the servo motor can control the direction of the conveyor belt, what do you think would happen if it stopped working? How could you design a backup system to ensure that the candies still reach the correct sorting area?

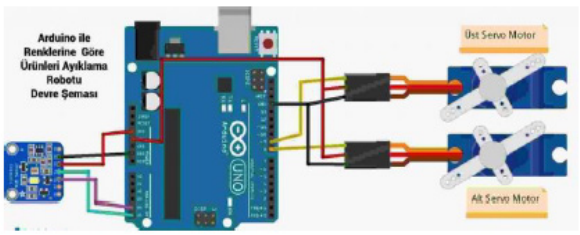
The servo motor relies on sensors to know where to guide the candies. What challenges might arise if the sensors fail to detect the candies properly, and how could the factory prevent or fix this issue?

Explore

do it

Connect the servo motor with the color sensor on the Arduino board.

What challenges might we face in controlling multiple servomotors independently?



Watch it..

Let's watch the following video:

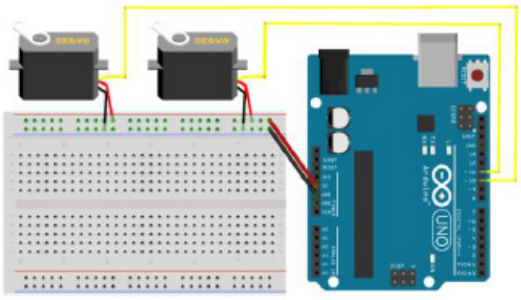
Scan Here!

https://youtu.be/tHOH-bYjR4k?si=Jzih_eAuHloMf_iQ

Assessment

Practice

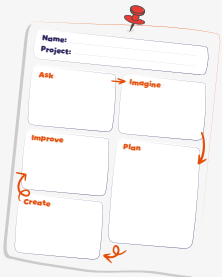
Now try to attach more than one servo to Arduino circuit.



Showcase..

Adding color sensor to the design.

After we learned what are the parts we need for our machine, let's go back to our EDP paper and add these parts to the create part..



Now I can...

- Understand the concept and how to connect a color sensor in circuit.
- Wire and connect sensor to a circuit, including and understanding sensor specifications and outputs.
- Understanding how to control servo motors, including the use of PWM (Pulse Width Modulation) signals.
- How to link between the i/p signals from the sensor and the brain then the o/p to the servo motors.

Stepping Stone:

You need to know...

- How the color sensor reads data (e.g., RGB values) and communicates this information to the microcontroller.

You will be able to...

- Writing code to interface with the LCD, color sensor, and servo.

let's Think

What if we needed to see the whole process from the control room, which component should we add?

.....

.....

.....

Explore

Watch it..

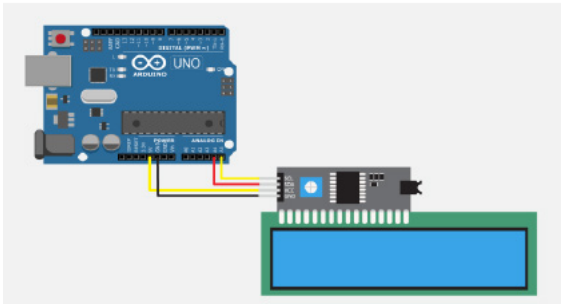
Let's watch this video.

Scan Here!

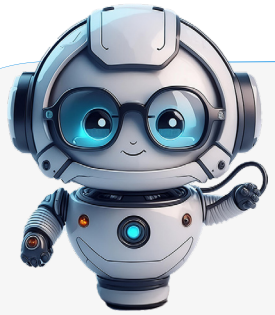
https://www.youtube.com/watch?v=HsjrcjRNFwk

Assessment

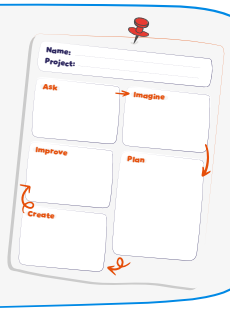
Practice



Attach LCD to your system and have fun watching your work coming into life!



Don't forget to go back to the improve part in your EDP paper and add this enhancement.



Showcase..

Now let's program the LCD ...

Now I can...

- **Writing code to interface with the LCD, color sensor, and servo.**

Stepping Stone:

You need to know ...

- How to use python.
- How to use tkinter.

You will be able to...

- Understand the new functions and loops needed.
- link between the Arduino and python.

let's Think

At the control room, we finally got the LCD to display the results of the sensor, now what if we needed to know the number of each coloured object, how?

.....

.....

.....

Explore

Think of a python program that we can use to know the number of each color.

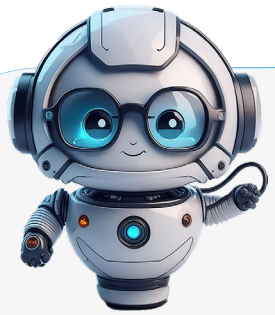
Assessment

Practice

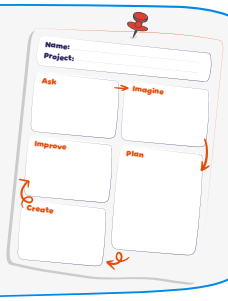
Write the python code and
Arduino code for your progam.

Challenge

Gather the data from the sorting program and analyze it using Google Sheets and graphs.



Don't forget to go back to the improve part in your EDP paper and add this enhancement.



Now I can...

- [ ] Understand what is a GUI.
- [ ] Control my project from remotely from my PC.

Adam and Laila successfully fixed the color sorting machine.

The chief engineer expressed his gratitude to them for their outstanding effort today.