Let me remember

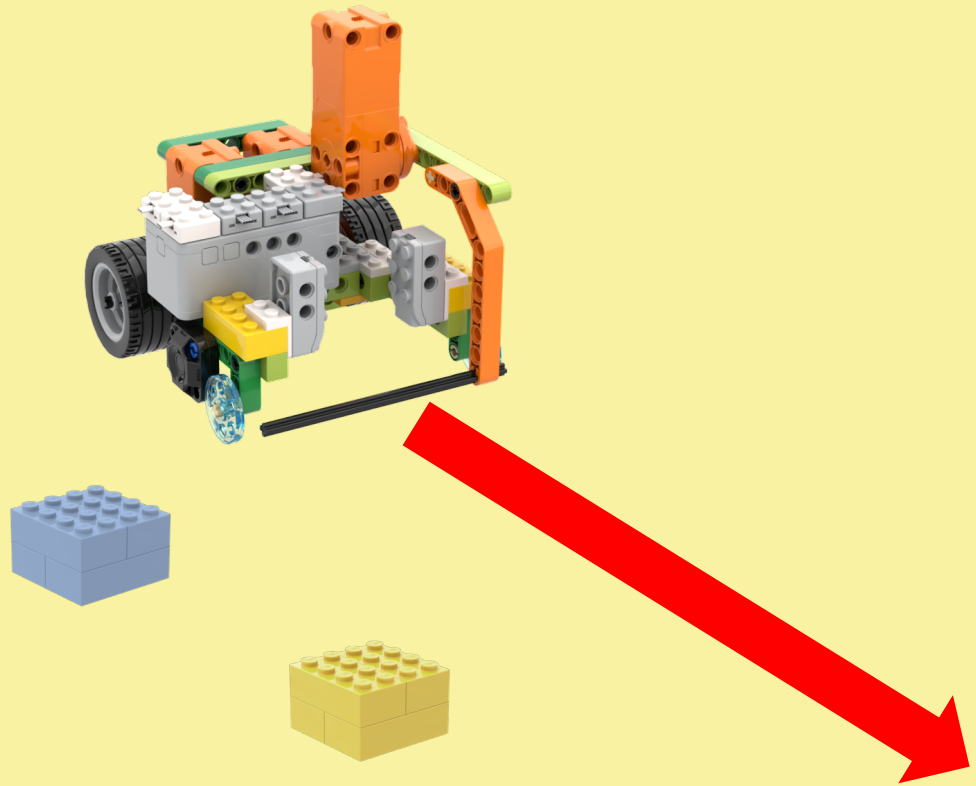
Target

- Learn the application of variables.
- Complete an LED lighting scheme using multiple variable storage and applications.
- Understand how the robot performs memory storage and retrieval.

01 Task

Task

- **Task 1: Detect two colors, and then light up the color LEDs in sequence.**

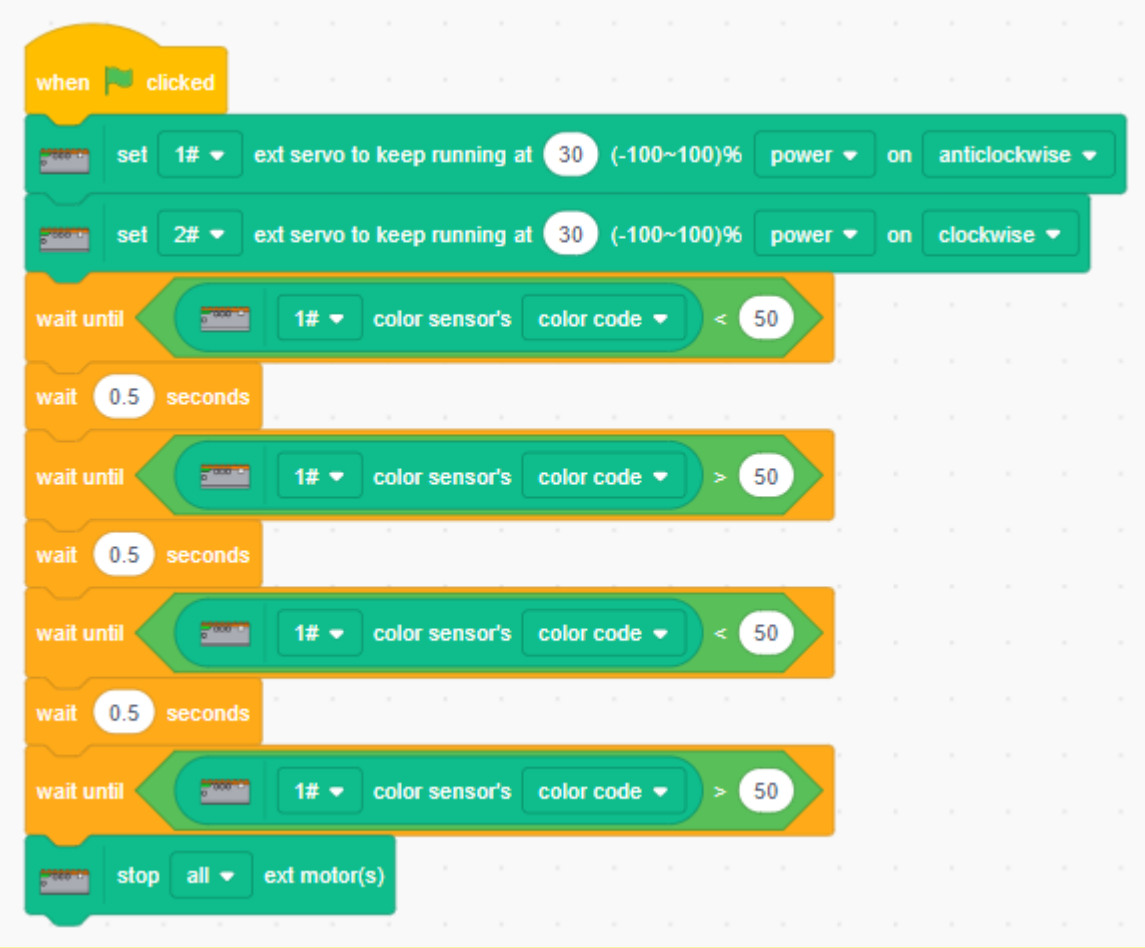


Task Segmentation

- First, complete the color detection.
- You can refer to the line-following program for guidance.

Task Segmentation

- **Referrable program**



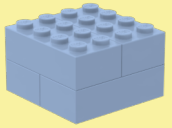
Task Segmentation

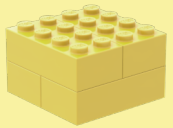
- Use variables to store the two colors.
- After the robot stops, read, evaluate, and display the colors.

variable a

variable b

Read variable a
Read variable b

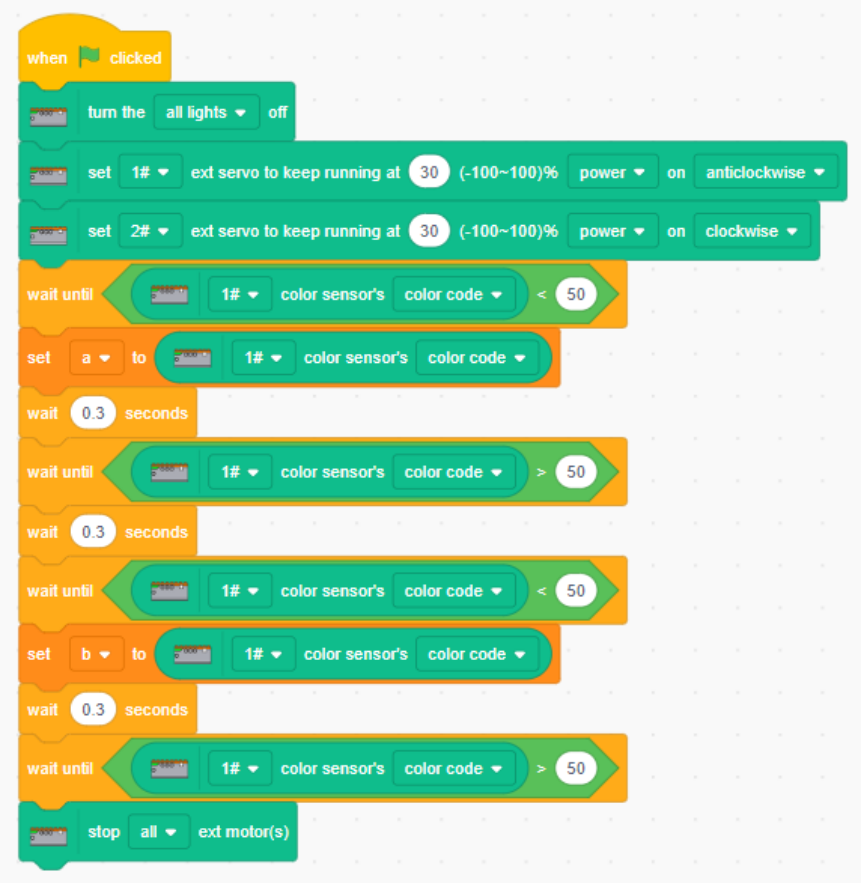




Task Segmentation

Referrable program

Color Storage



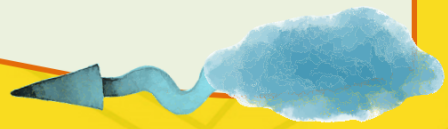
Color reading and judgment

Precautions

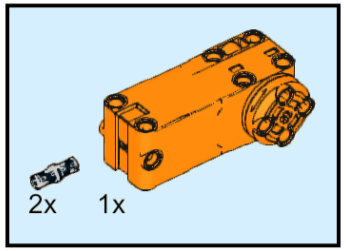
Note: Color code 5 is actually green. When the color sensor detects a yellow block, color code 5 appears when the distance is 1-3 cm, and the correct color code 7 only appears when the distance is less than 1 cm.

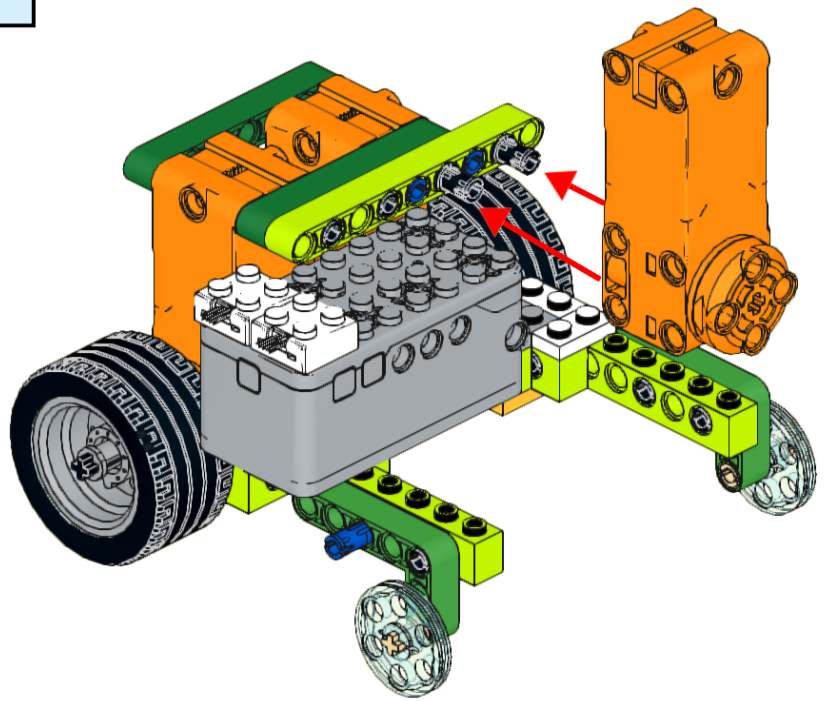
To accurately distinguish between yellow and green, let's make a slight structural adjustment.

02 Assembly

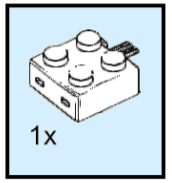


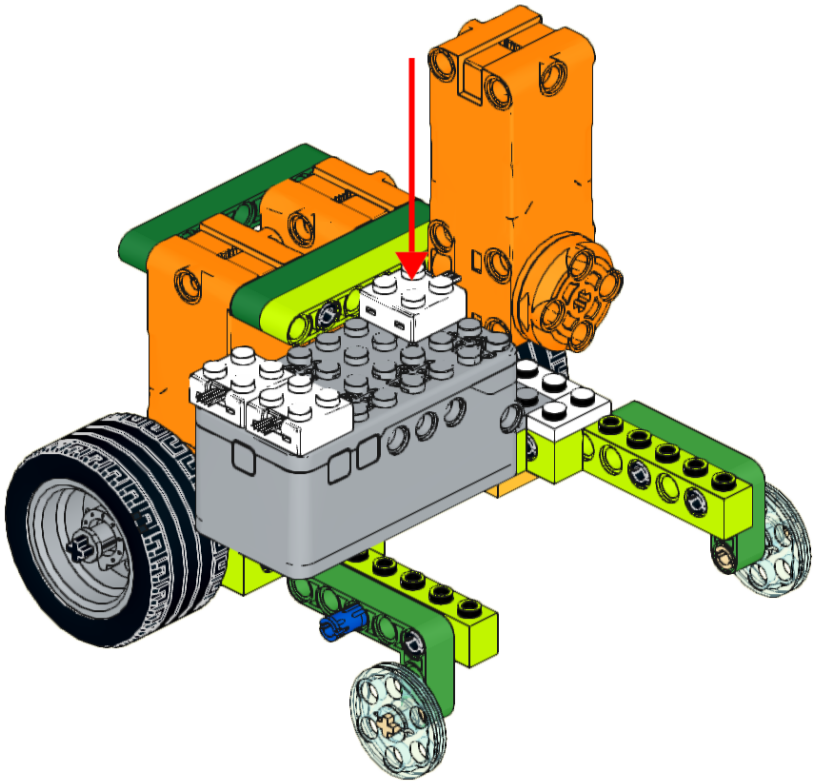
Assembly



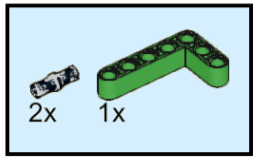


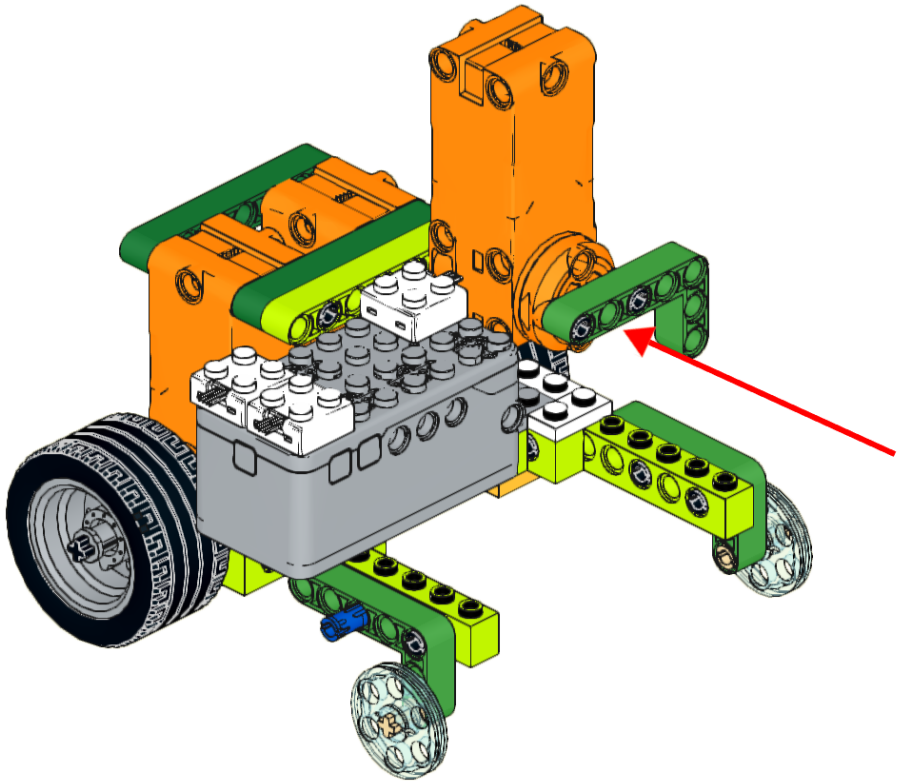
Assembly



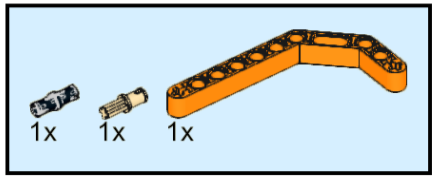


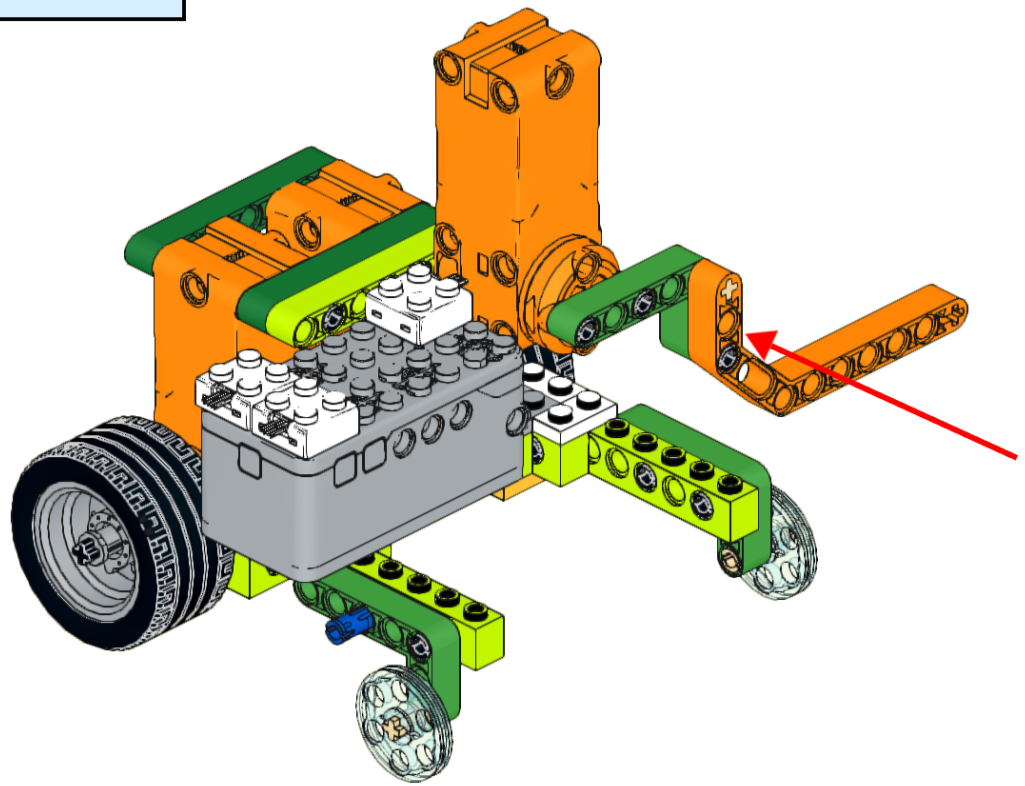
Assembly



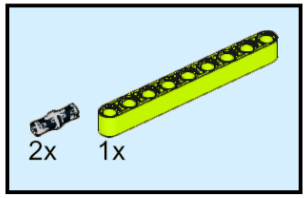


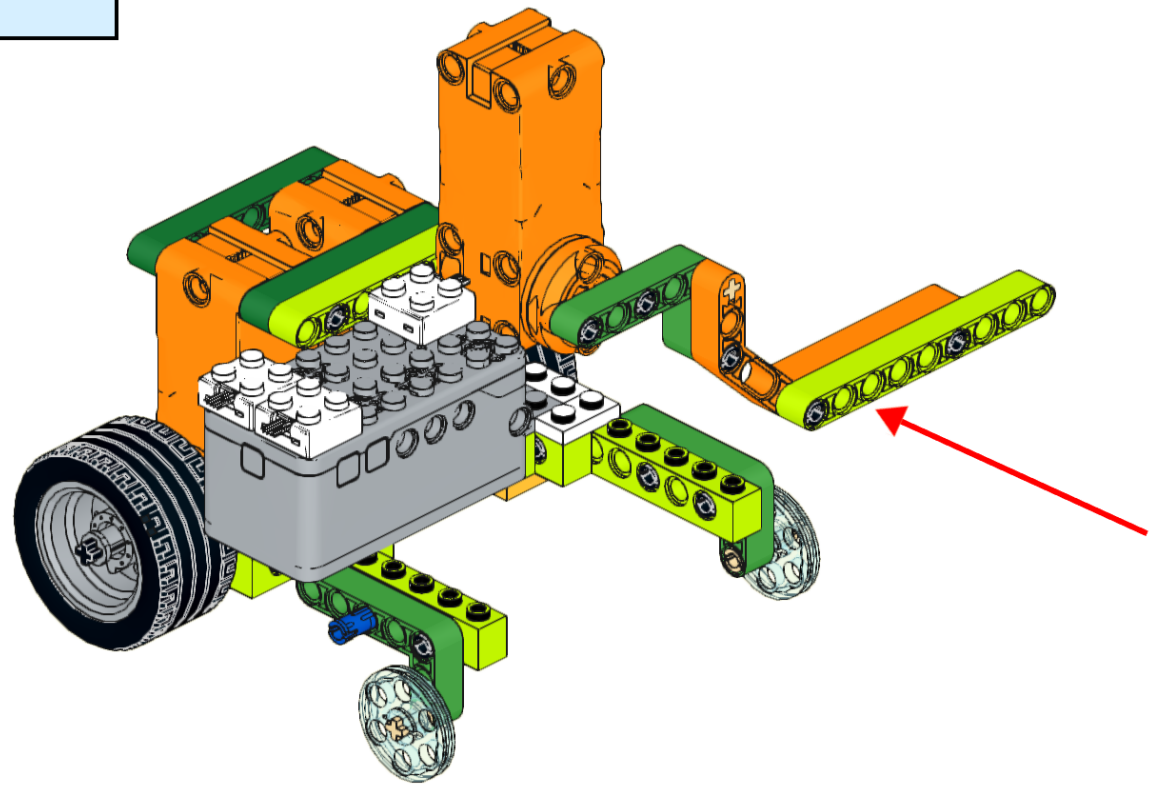
Assembly



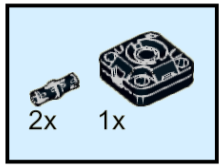


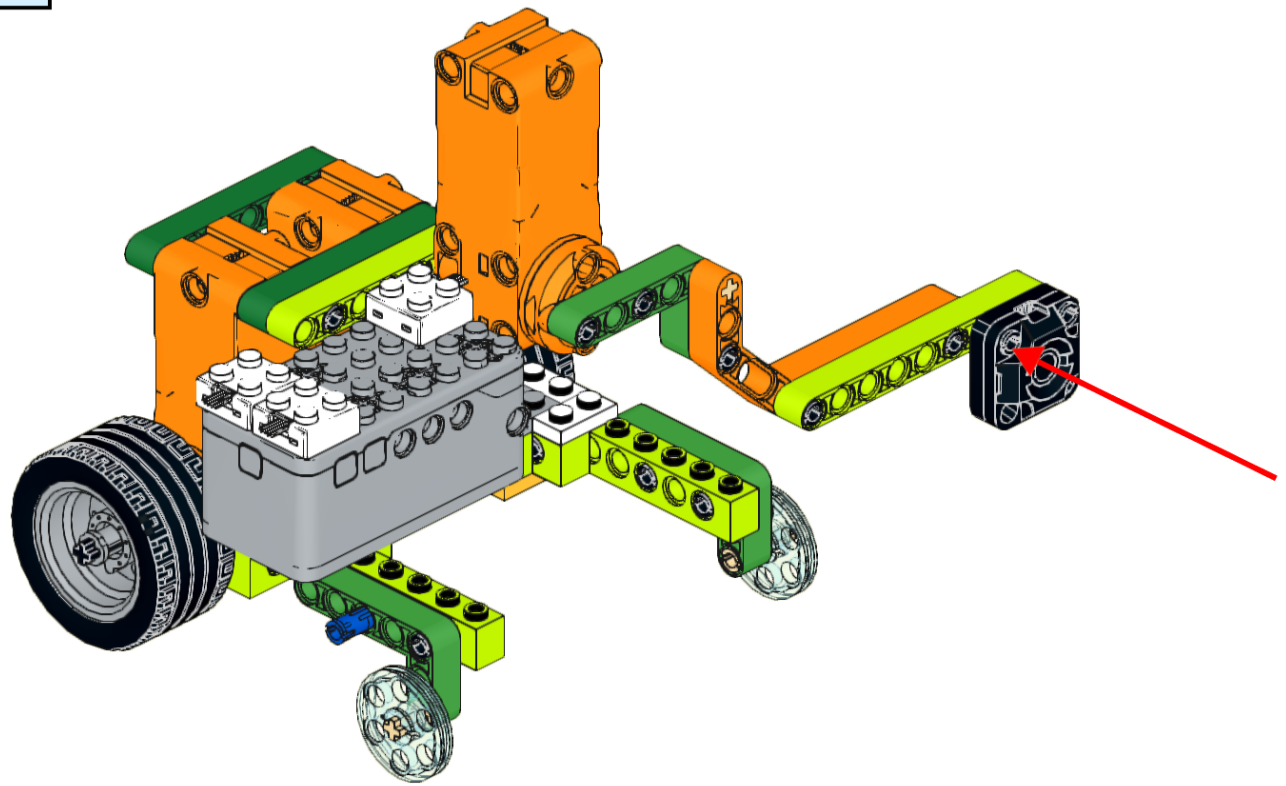
Assembly





Assembly





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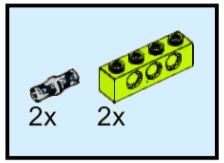
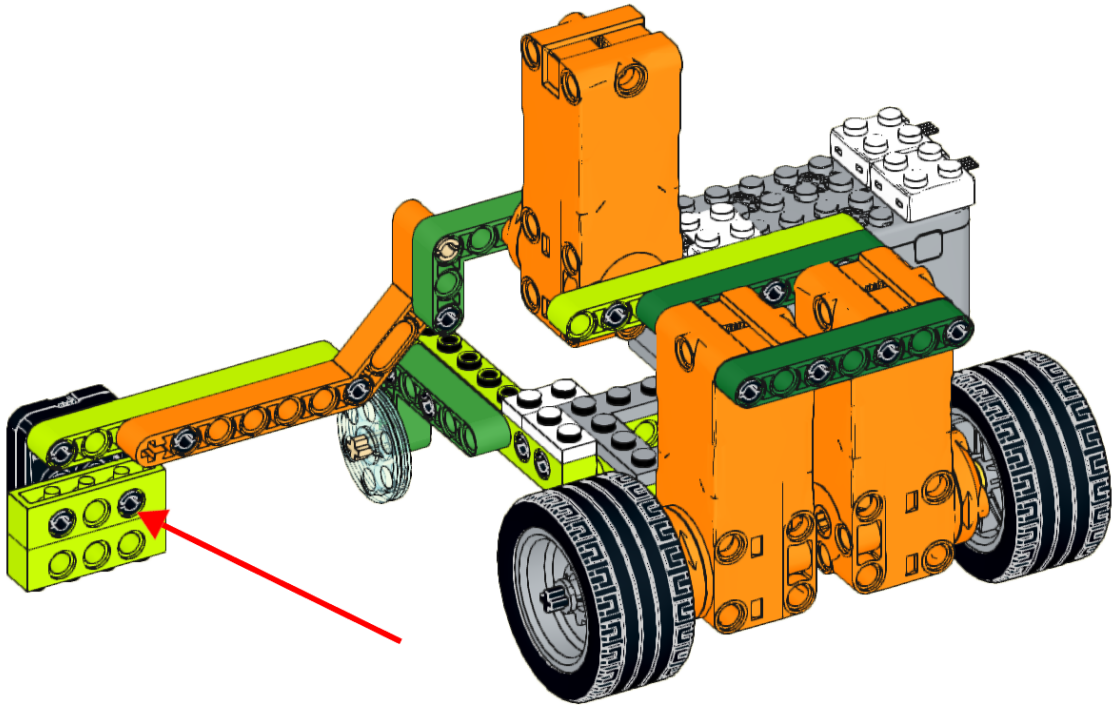
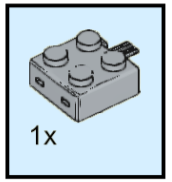
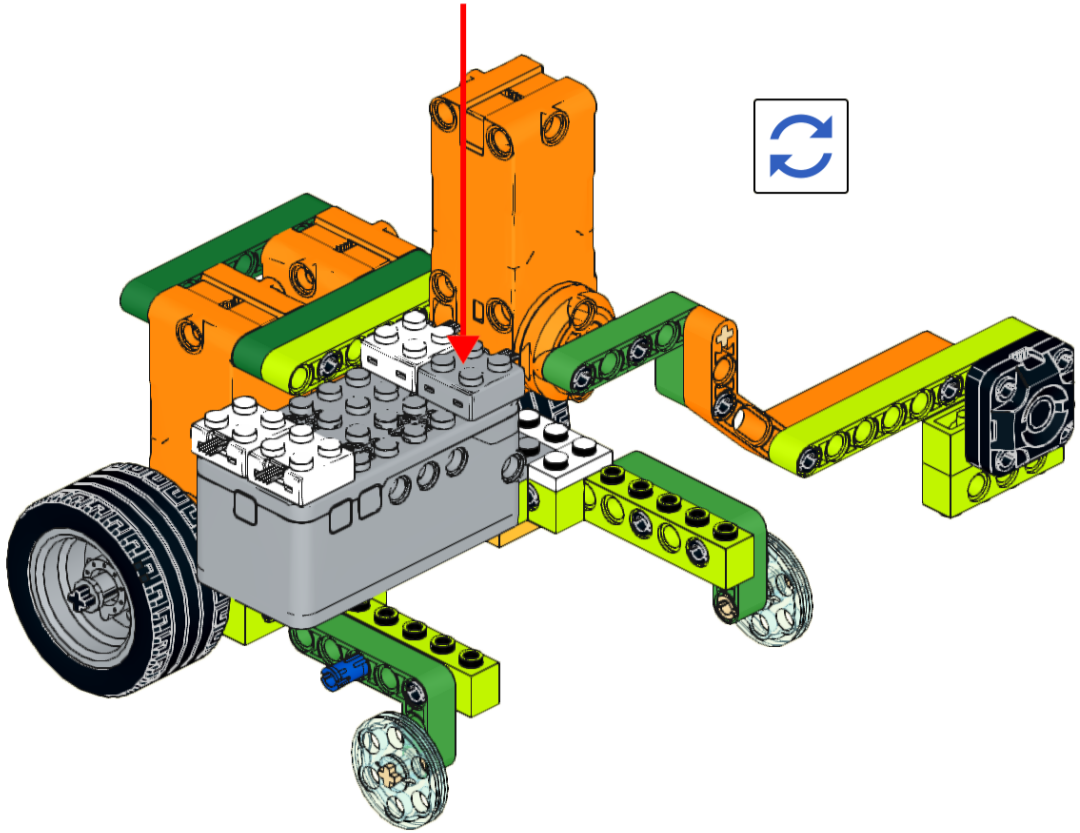


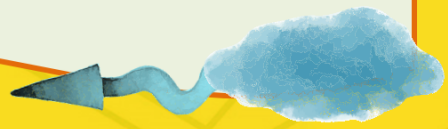


Assembly



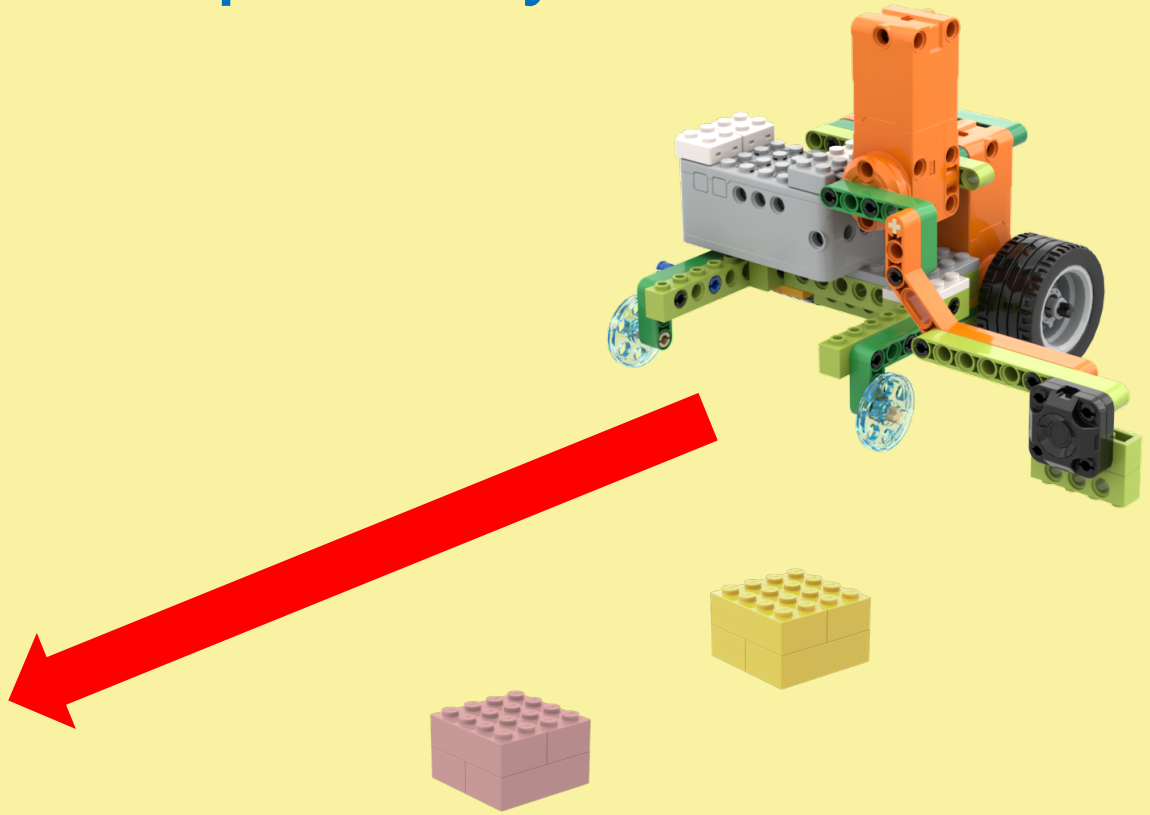


03 Task



Task

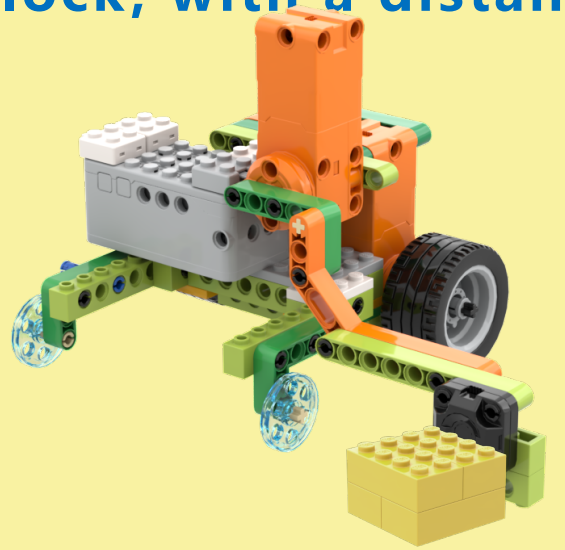
- **Task 2: Detect red and yellow. After detection, light up the color LEDs in the order specified by the teacher.**



Task Segmentation

- Before starting, raise the robotic arm to ensure the robot meets the size requirements. After starting, lower the robotic arm and align the color sensor with the block.

- When the color sensor detects the color, for more accurate detection, the robot should move forward a small distance, bringing the sensor closer to the block, with a distance of less than 1 cm.



Task Segmentation

- Task Flow

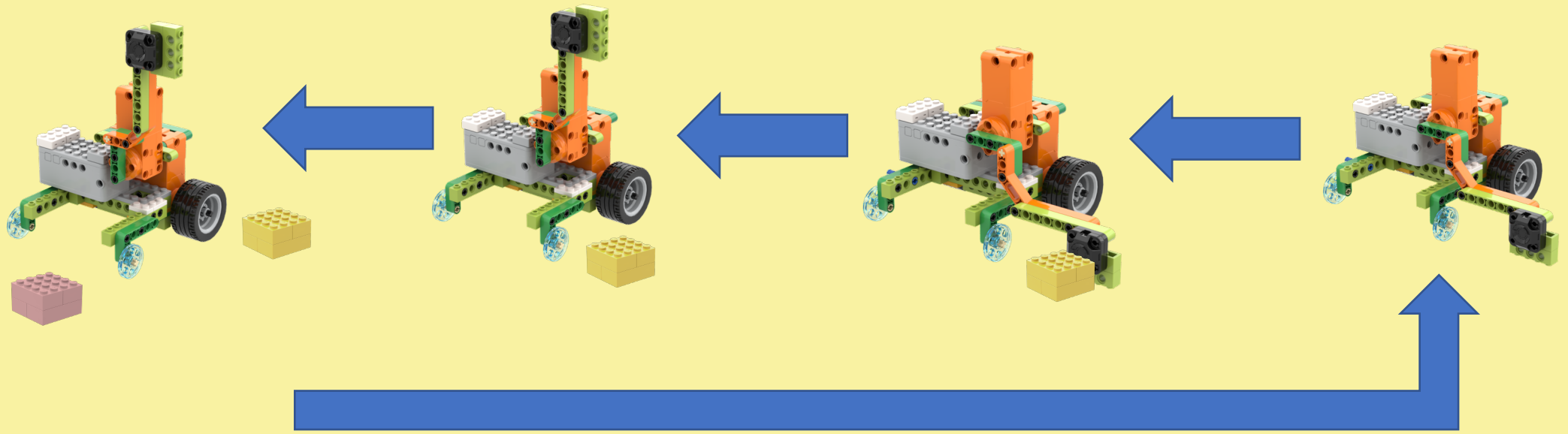
Color detection process

1.Put down the robotic arm

2.Detecte the color

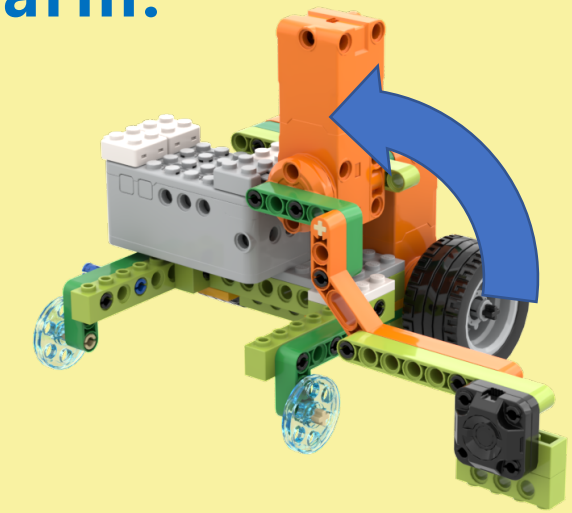
3.Raise the robot arm

4.Go a little further

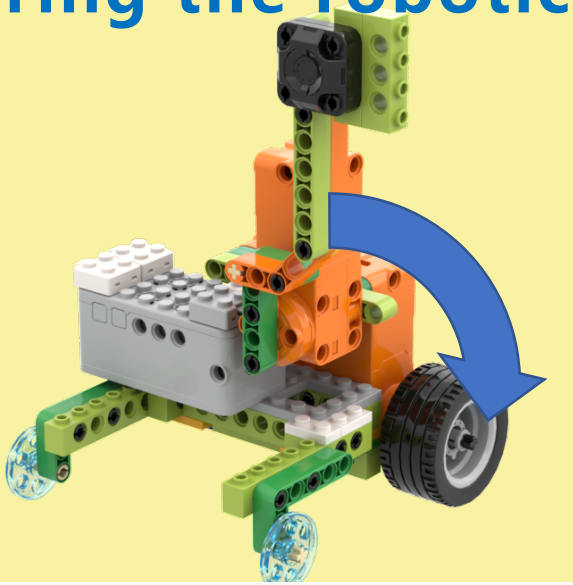


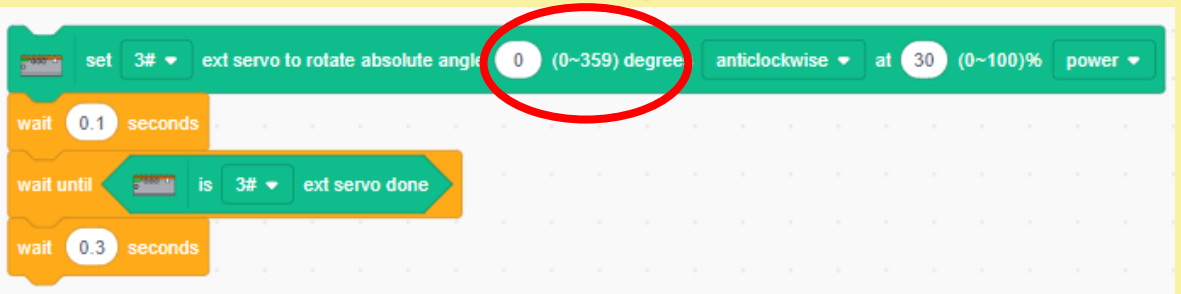
Task Segmentation

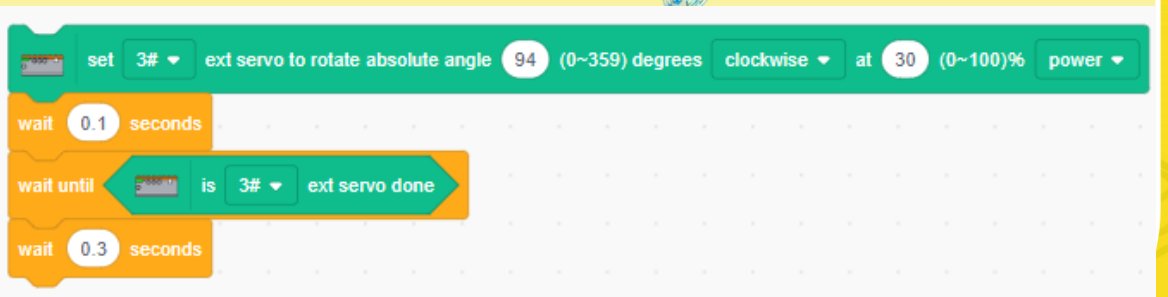
- Complete my module for raising and lowering the robotic arm.



It is recommended to use the absolute angle module for controlling the robotic arm. The absolute angle module can be used for operations up to 360 degrees.

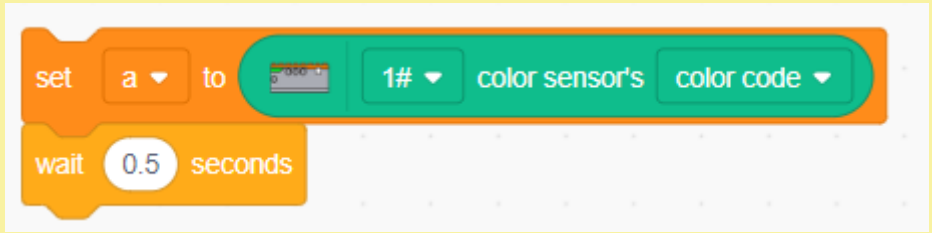


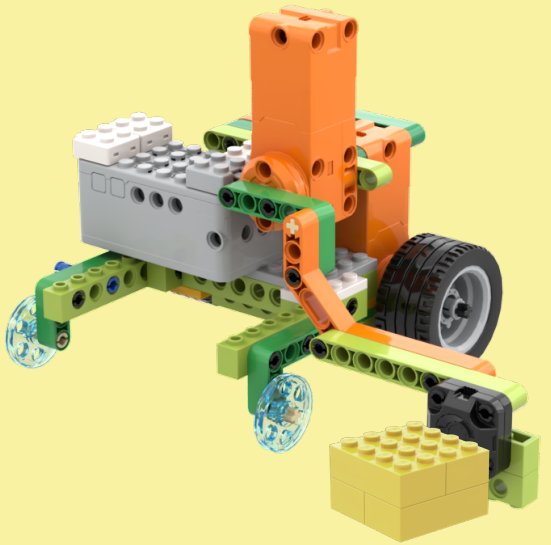




Task Segmentation

- To accurately detect colors, after detecting a color, move forward a short distance to get close to the color block, and then make the record.

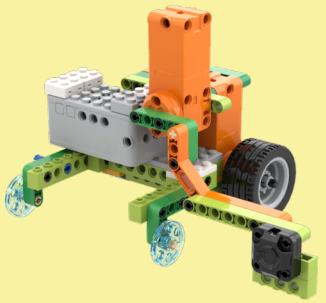


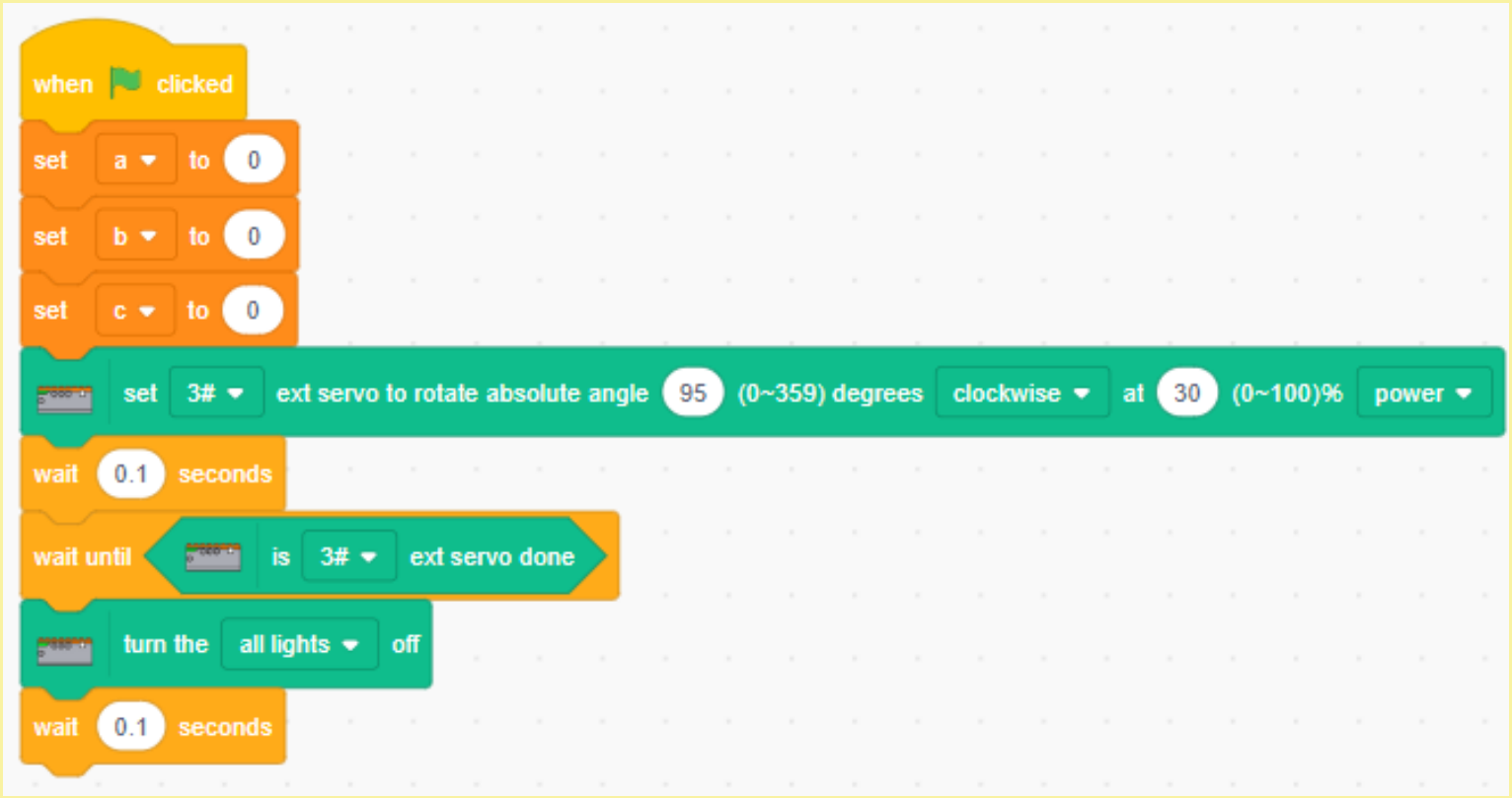


Task Segmentation 1

- **Task Flow**

1.Put down the robotic arm

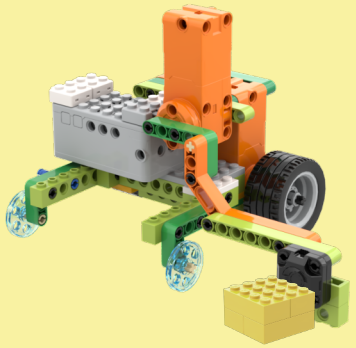


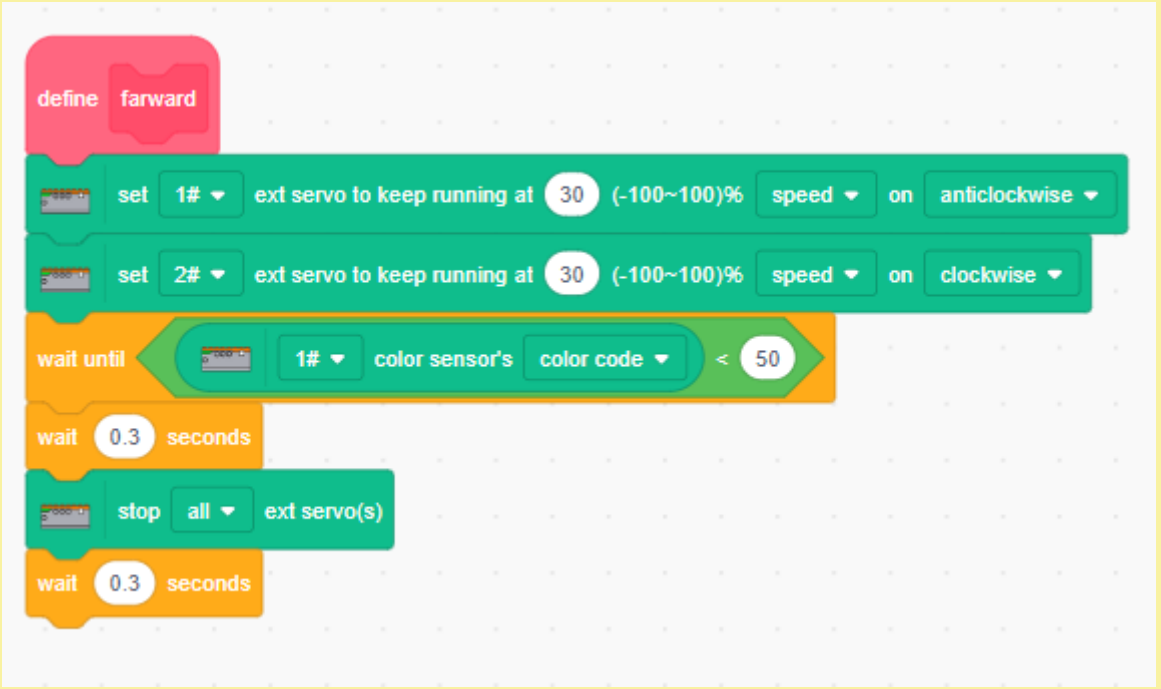


Task Segmentation 2

- **Task Flow**

2.Detecte the color

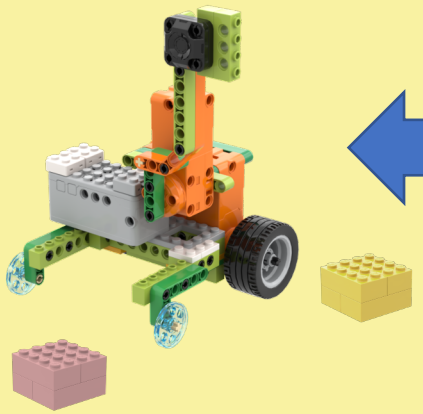




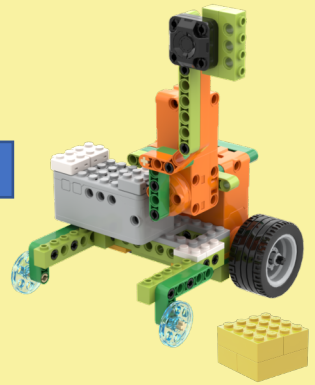
Task Segmentation 3

- **Task Flow**

4.Go a little further



3.Raise the robot arm

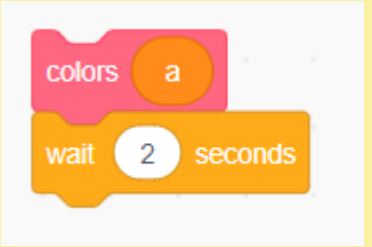


```
define arm
set 3# ext servo to rotate absolute angle 0 (0~359) degrees anticlockwise at 30 (0~100)% power
wait 0.1 seconds
wait until is 3# ext servo done
set 1# ext servo to keep running at 30 (-100~100)% speed on anticlockwise
set 2# ext servo to keep running at 30 (-100~100)% speed on clockwise
wait 0.5 seconds
stop all ext servo(s)
set 3# ext servo to rotate absolute angle 94 (0~359) degrees clockwise at 30 (0~100)% power
wait 0.1 seconds
wait until is 3# ext servo done
wait 0.3 seconds
```

Task Segmentation 4

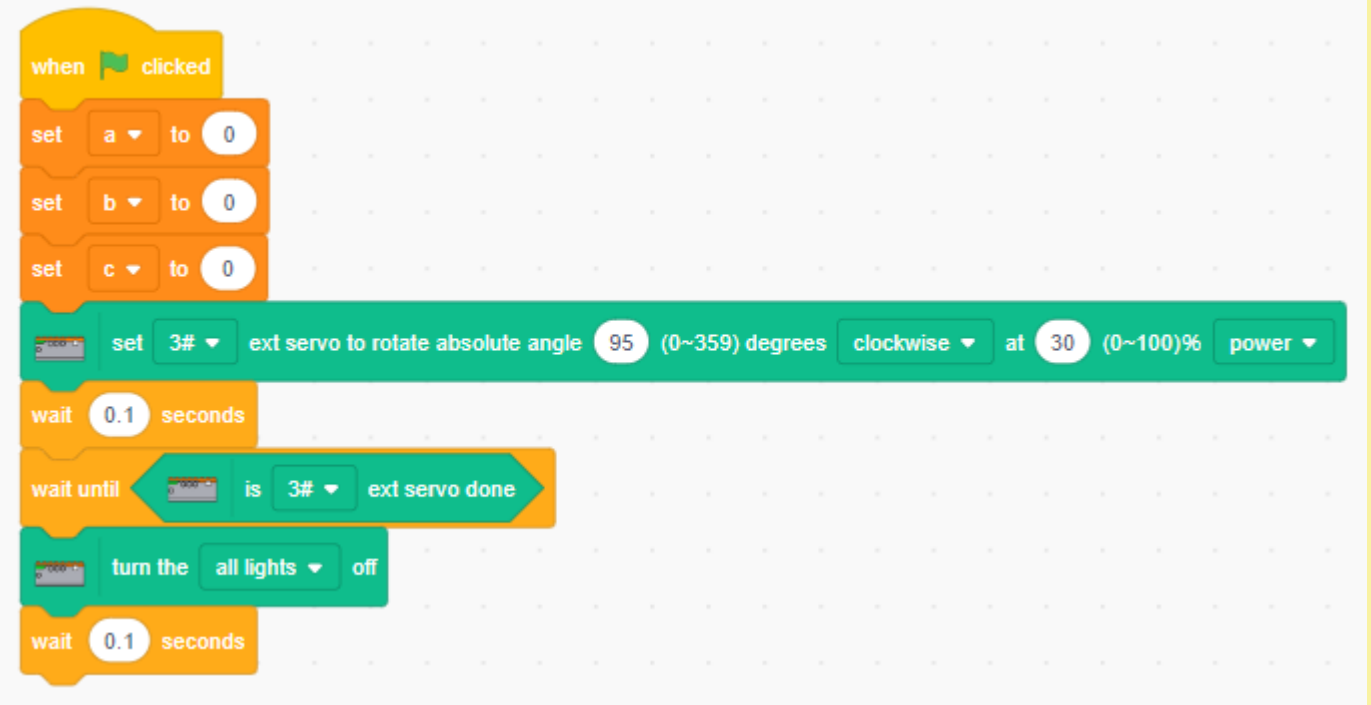
- **Task Flow**

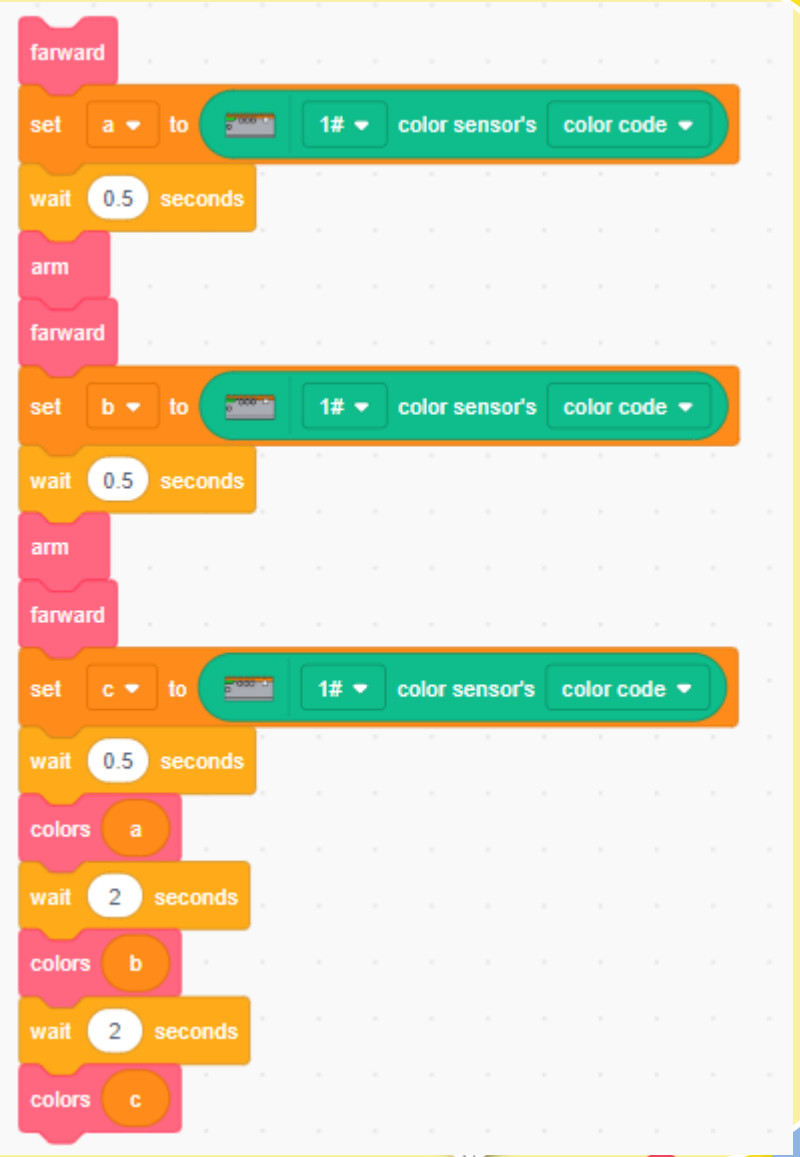
- **After completing the detection and saving, finally display the color.**



Task Integration

- My module uses the modules from the first three pages. Connect the overall program to complete the detection of multiple color blocks.





Connect the remaining program content with the right side.