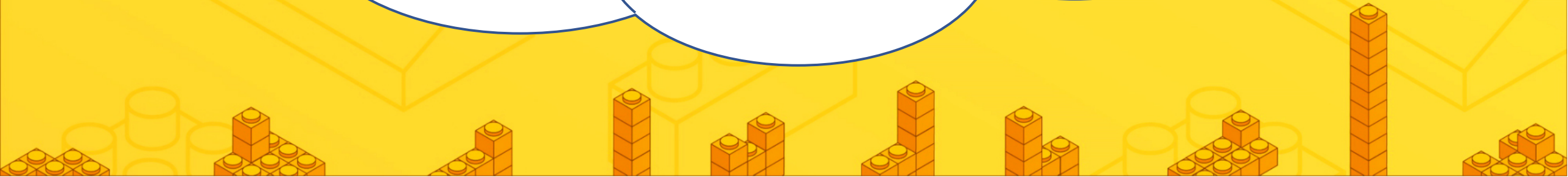


# Precision Walking

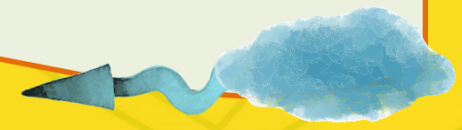


# Target

- Learn distance walking and angle walking.
- Understand the speed control.
- Complete precise walking control of the robot moving forward and backward.



# 01 Task

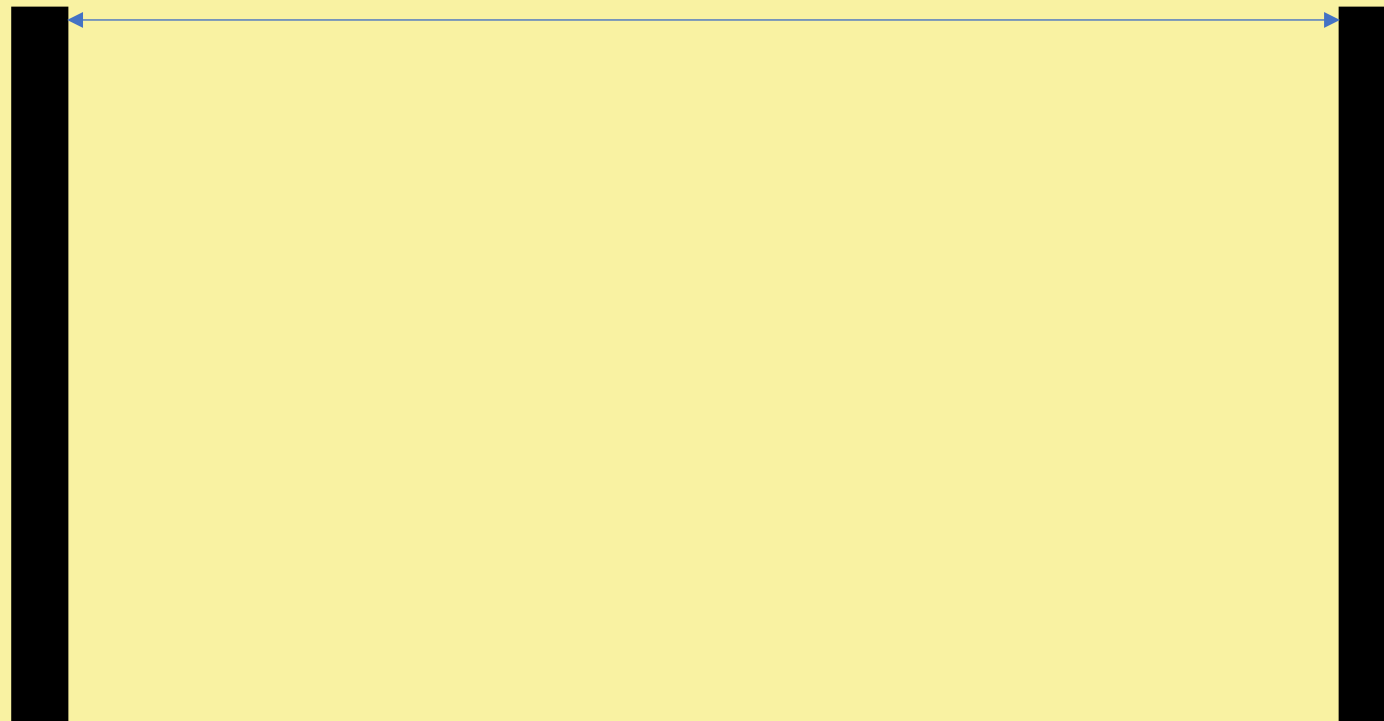
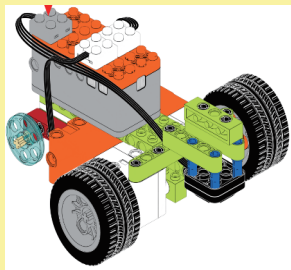




# Task

## Task 1: Make the car move forward and backward

0.5meter or 1meter





# Task

## Task 1: Make the car move forward

### Relative angle control via a motor

```
when clicked
  set 1# ext servo's origin
  set 2# ext servo's origin
  wait 0.3 seconds
  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 until 2# ext servo's counted degrees > 360
  set 1# ext servo to keep running at 0 (-100~100)% speed on anticlockwise
  set 2# ext servo to keep running at 0 (-100~100)% speed on clockwise
```

In online mode, there is a certain delay, and you need to wait for a little while.

Should the motor move clockwise or counterclockwise for moving forward?

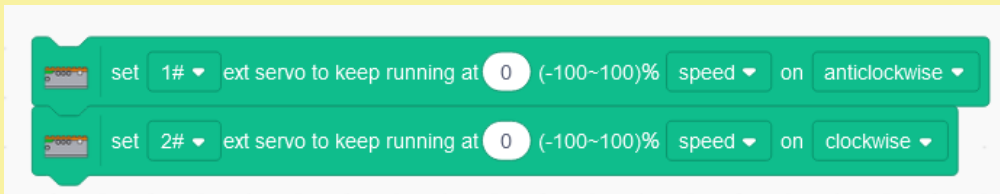
How many degrees do we need to use to move forward by 1 meter? Let's try it a few times.



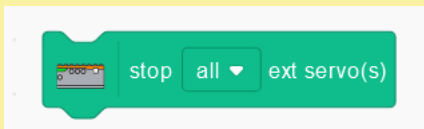
# Coding Technique 1

There are two ways to stop the motor.

Method 1: Set the power to 0.



Method 1: Stop the motor.





# Coding Technique 2

## The selections of waiting for the motor

When using  "greater-than" comparison, please choose the motor rotating clockwise for the evaluation.

```
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 clockwise
```

```
wait until 2# ext servo's counted degrees > 360
```





# Task

**Task 1: Make the car move forward.**

**Referrable program**

```
when clicked
  set 1# ext servo's origin
  set 2# ext servo's origin
  wait 0.3 seconds
  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 until 2# ext servo's counted degrees > 2700
  set 1# ext servo to keep running at 0 (-100~100)% speed on anticlockwise
  set 2# ext servo to keep running at 0 (-100~100)% speed on clockwise
```





# Task

## Task 2: Make the car move backward the same distance.

Control through "counted degrees" / "relative angle"

```
when clicked
  set 1# ext servo's origin
  set 2# ext servo's origin
  wait 0.3 seconds
  set 1# ext servo to keep running at 30 (-100~100)% speed on clockwise
  set 2# ext servo to keep running at 30 (-100~100)% speed on clockwise
  wait until 1# ext servo's counted degrees 360
  set 1# ext servo to keep running at 0 (-100~100)% speed on clockwise
  set 2# ext servo to keep running at 0 (-100~100)% speed on clockwise
```

Should the motor move clockwise or counterclockwise when the car moves backward?

How many degrees do we need to use to move backward by 1 meter? Let's try it a few times.





# Task

## Task 3: Second method for moving the car forward and backward

Control the movement by counted degrees to move 0.5 meters.

```
when clicked
  set 1# ext servo's origin
  set 2# ext servo's origin
  wait 0.3 seconds
  set 1# ext servo to rotate relative angle -180 degrees at 30 (0~100)% speed
  set 2# ext servo to rotate relative angle 180 degrees at 30 (0~100)% speed
```

Angle control uses **negative** sign to represent counterclockwise.



## Coding Technique 3

### Program download and reconnection operation

- 1、 Green flag: Run the program online
- 2、 Red stop: Stop the online operation
- 3、 Upload the program to the robot and run it

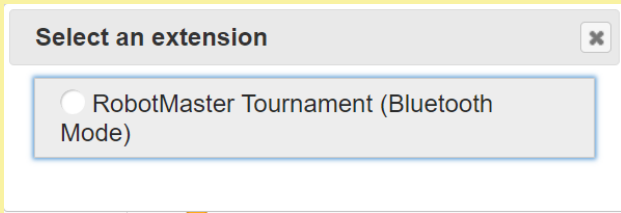
Next, after selecting a movement program, we will begin uploading and running it.

Downloading and running can eliminate the delay in motor startup that occurs during online operation.

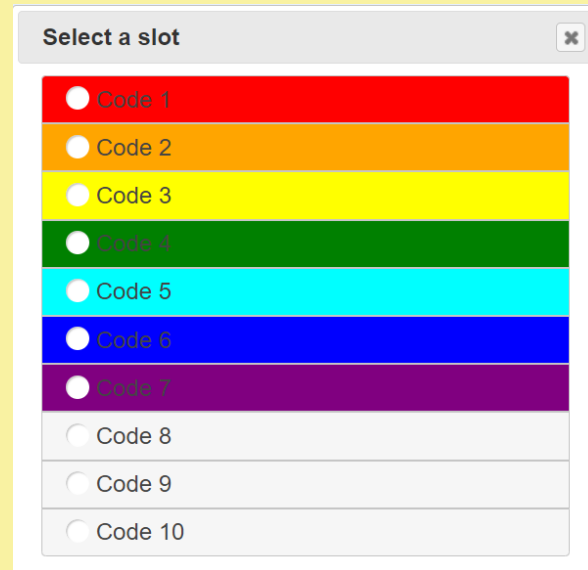
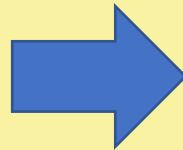


# Coding Technique 3

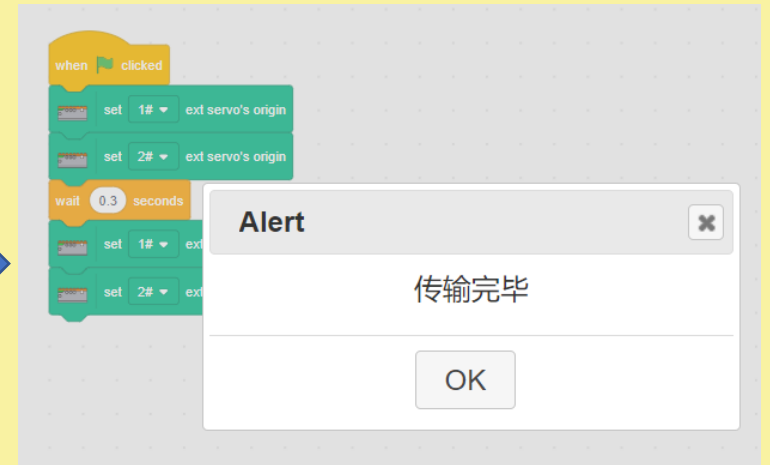
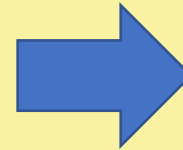
## Program download and reconnection operation



Select an extension



Choose the program color



Automatically run after successful download.



# Coding Technique 3

## Program download and reconnection operation

Press the power button on the controller **twice** to complete the shutdown and power-up process. Then reconnect in the software.

