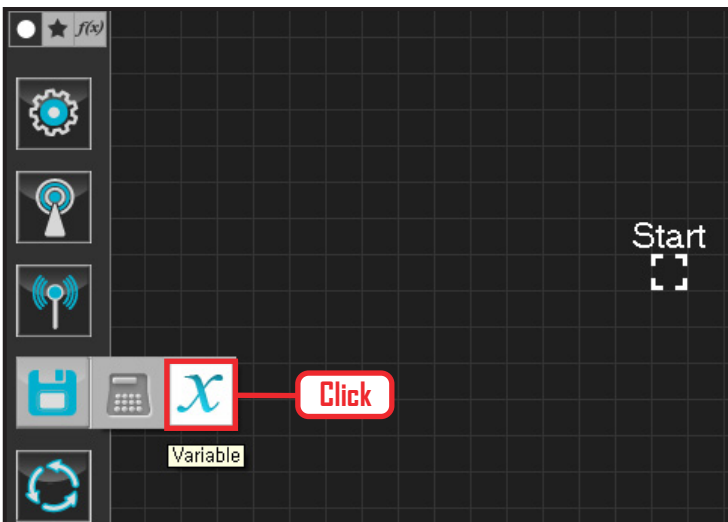


Light Example Step by Step

Example Description

This example uses the light luminosity to operate the robot motors.

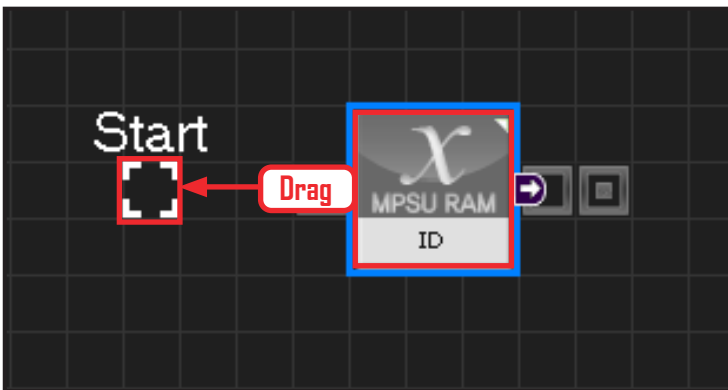
Robot will lift the left arm when luminosity decreases.



01 Assign Variable

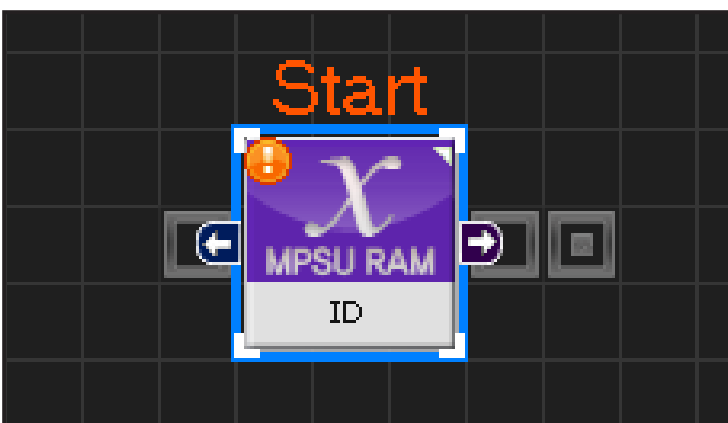
Operating the robot is same as operating the robot servo motor. Value has to be assigned so that servo will be able to operate.

Click Data > Variable module.



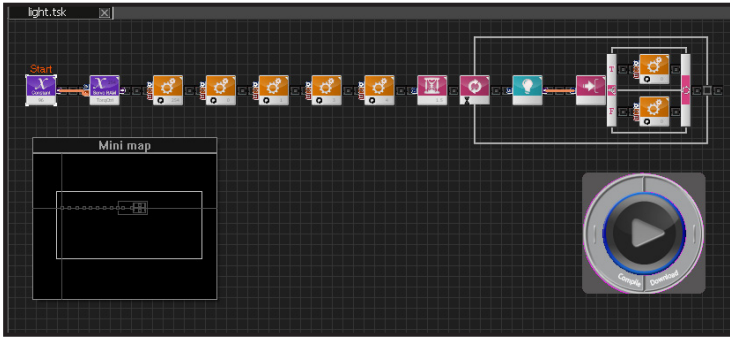
02 Start

Click and drag the connecting line located at left side of the module to the Start Point and dock.



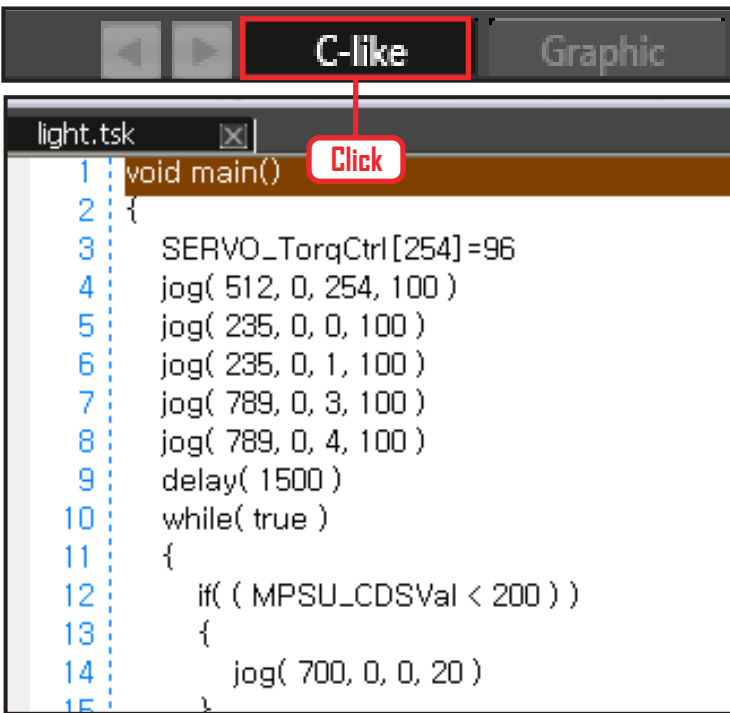
03 Start Programming

When the module and the Start Point is docked properly, module will become active and change color as seen in the photo to the left. This means programming has started.



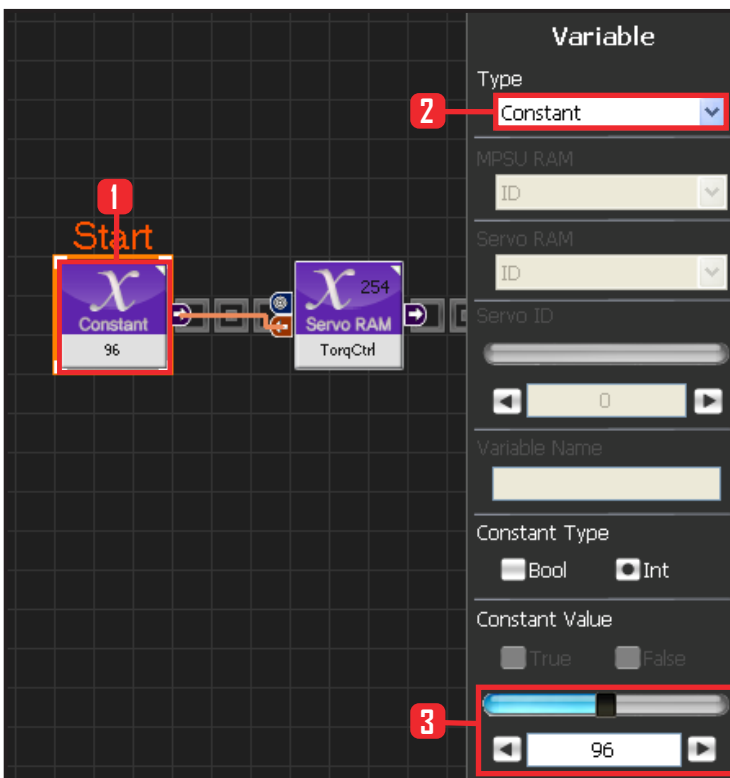
04 Entire Program

Entire program showing the light sensor to operate the robot motors.



05 Viewing C-Like

Click the 'C-like' tab near the top right and task programming window will open as shown in the photo to the left. This is the task window of the entire program. Codes are very similar to the C language structure so studying the codes will help the user become familiar with the C language structure. Cursor will jump following the clicked module, making it easy to see the module changing to text.

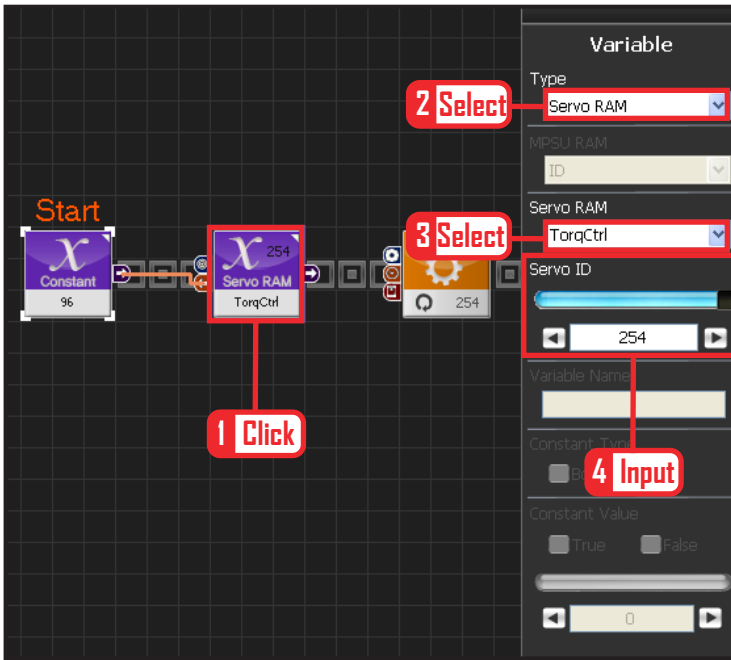


06 Setup Constant

This section allows the servo motor to operate on it's own.

Select Constant as the Variable Type. In properties, set constant value as 96.

When 96(0x60) is entered in the servo TorqControl register, servo becomes ready to operate. This value is sent to the torque value of the next modul through the output connector.



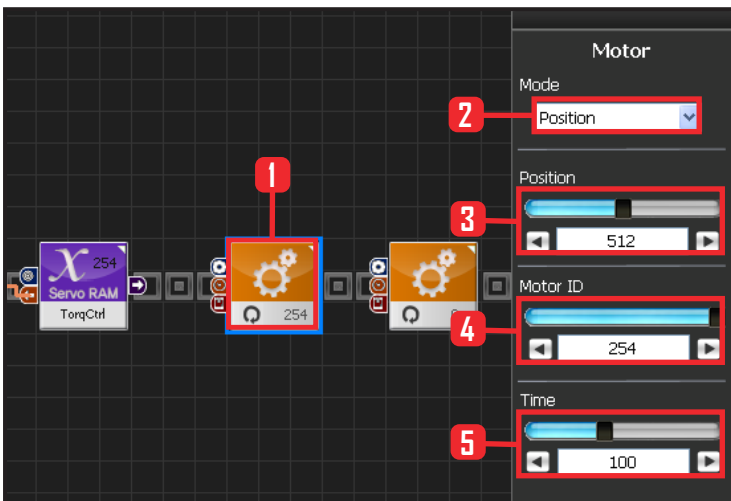
07 Apply to All Servos

This section applies contact value 96 to all servos.

Select Variable > Type : Servo RAM.

Select Servo RAM : TorqCtrl .

Set Servo ID : 254. 254 means it will be applied to all connected servos.



08 Set Angle to All Servos

This section sets all servo motor angles to the center.

Select Motion > Motor.

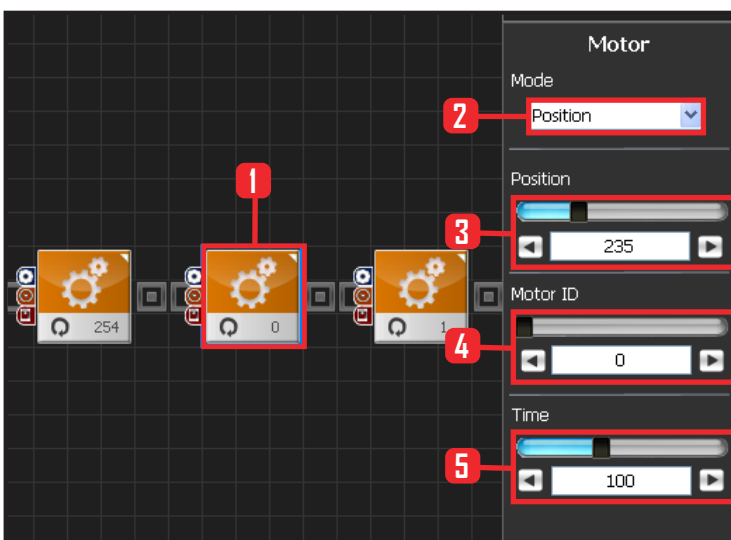
Select Mode : Position, adjust angle.

Set Position : 512 . 512 means motor will be sent to the center

Set Motor ID : 254 . 254 means it will be applied to all connected servos.

Set Time : 100 . 1 unit = 11,2ms, 100 units would be approximately 1,12s.

It means motors will be positioned at the desired angle for 1,12s.



09 Setup Motor ID 0 (Right Shoulder)

Creating attention posture (Basic Posture)

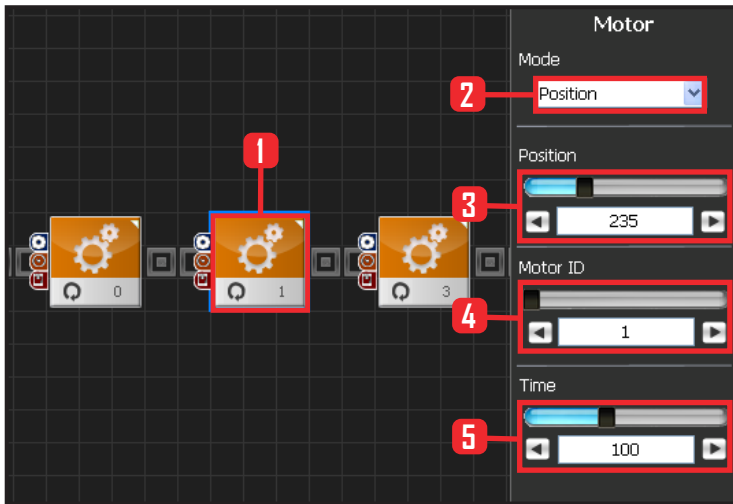
When all robot motors are aligned to the center, humanoid robot arms will be stretched out to the side. Setup below lowers one arm to the side of the body.

Select Motion > Motor .

Select Mode : Position.

Set Position : 235, 235 turns the motor so that that the arm stretched out horizontally will be lowered to vertical down position.

Set Motor ID : 0, Right shoulder motor has ID 0
Set Time : 100. Motor will turn to the desired angle in approximately 1,12s.



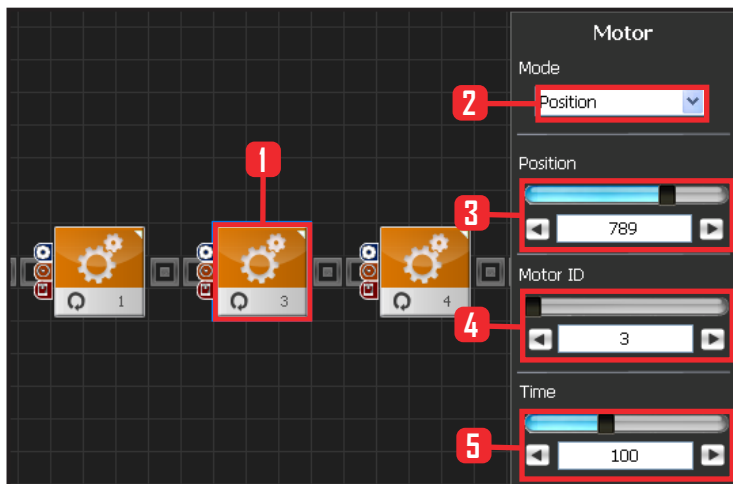
10 Setup Motor ID 1 (Right Arm)

Select Mode : Position.

Set Position : 235. 235 lowers the horizontally stretched arm to vertical down position.

Set Motor ID : 1. Right upper arm motor connected to the should has motor ID 1.

Set Time : 100 . Motor will turn to the desired angle in apporoximately 1,12s.



11 Setup Motor ID 3(Left Shoulder)

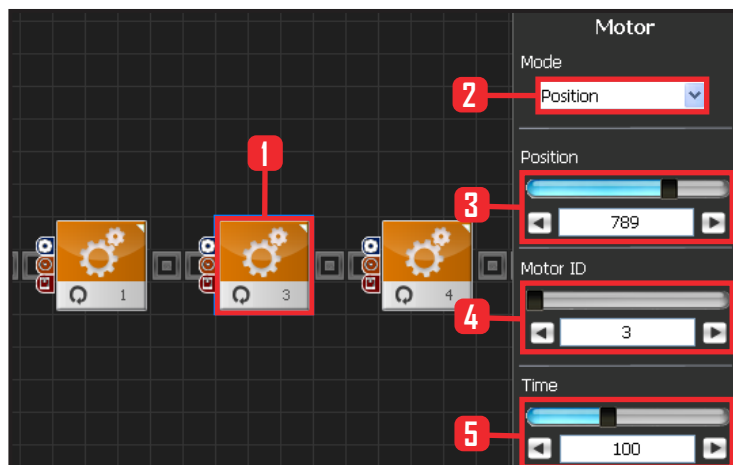
Select Motion > Motor.

Select Mode : Position.

Set Position : 789. 789 turns the motor so that that the arm stretched out horizontally will be lowered to vertical down position.

Set Motor ID : 0. Left shoulder motor has ID 3

Set Time : 100. Motor will turn to the desired angle in apporoximately 1,12s.



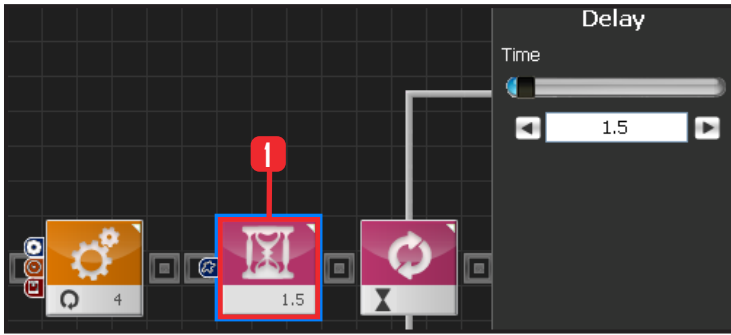
12 Setup Motor ID 4 (Left Arm)

Select Mode : Position.

Set Position : 789. 789 lowers the horizontally stretched arm to vertical down position.

Set Motor ID : 4. Right upper arm motor connected to the should has motor ID 4.

Set Time : 100 . Motor will turn to the desired angle in apporoximately 1,12s.



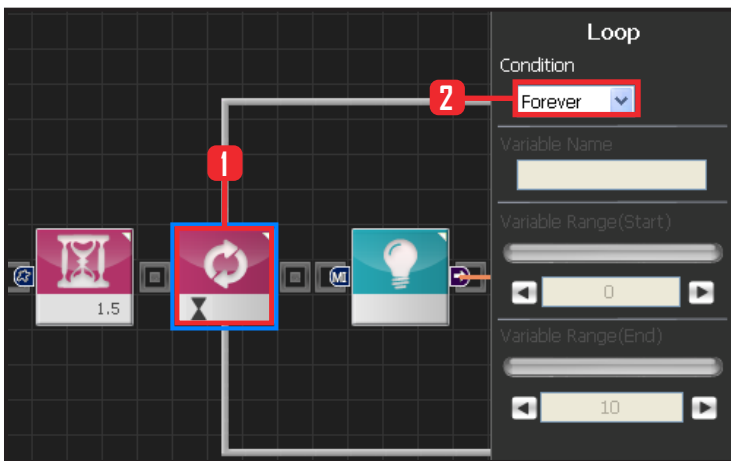
13 Delay

This section makes the robot wait until the robot is at attention posture and ready to run the next module.

Select Flow > Delay module.

Set Time : 1.5 . Unit is in seconds.

Delay 1.5s.

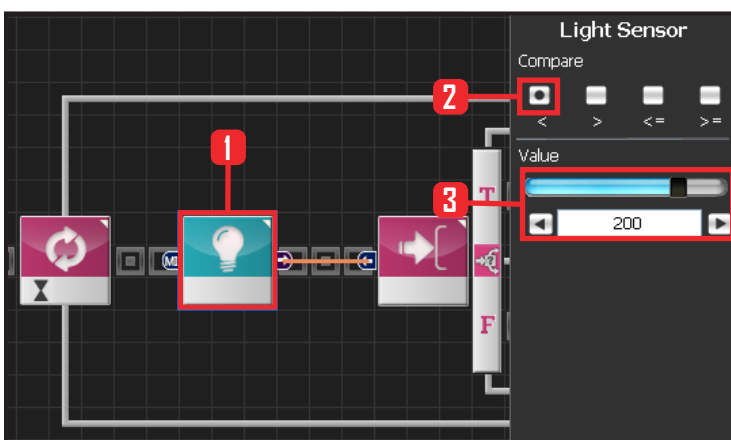


14 Loop

Select Flow > Loop module.

Select Condition: Forever.

Infinite loop.



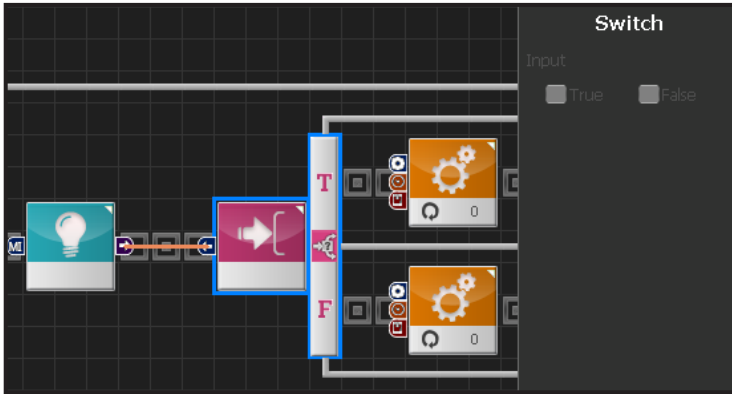
15 Light Sensor

Select Sensor > Light module.

Select Compare : < . Smaller than certain value.

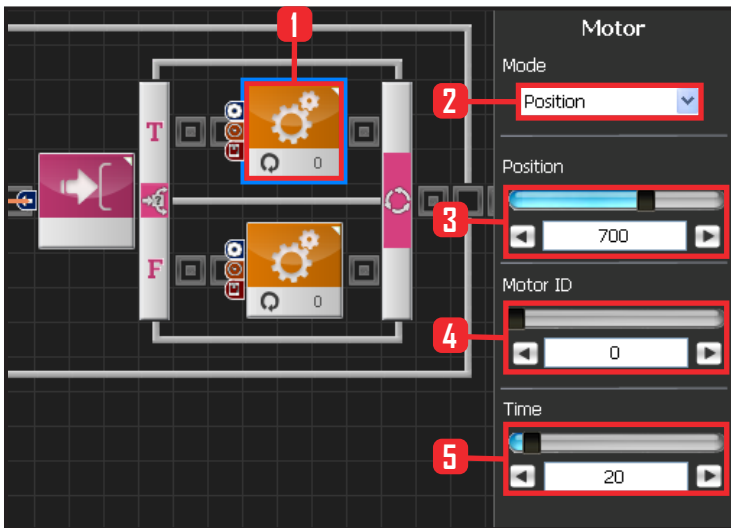
Set Value : 200. Luminosity 200.

Module output is True if the luminosity is smaller than 200 and False if larger than 200.



16 Switch IF Conditional Statement

Run applicable section depending on True or False value.



17 Setup Motor ID 0(Right Shoulder)

Lift right arm if the luminosity is less than 200(True), If the luminosity is greater than 200(False) keep current posture with the arm lowered.

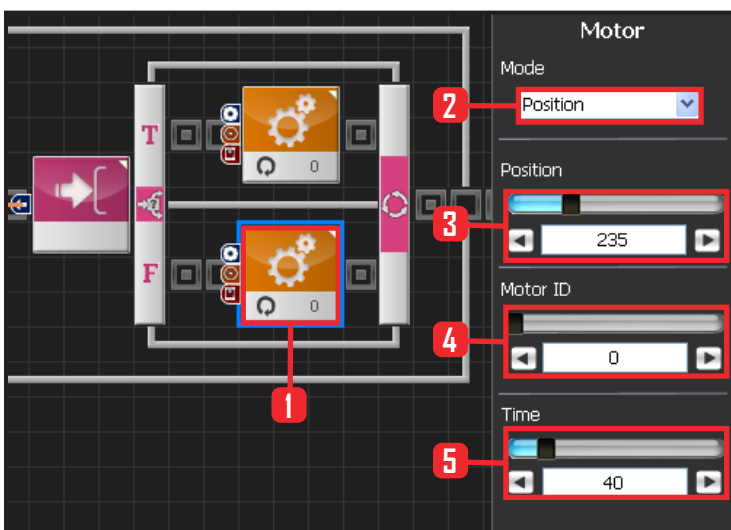
Select Motion > Motor.

Select Mode : Position .

Set Position : 700 , 700 lifts the arm.

Set Motor ID : 0 , Right shoulder moto ID is 0

Set Time : 20 .



18 Set Motor ID 0(Shoulder)

Uncover the controller cds sensor and the robot will go back to the attention posture.

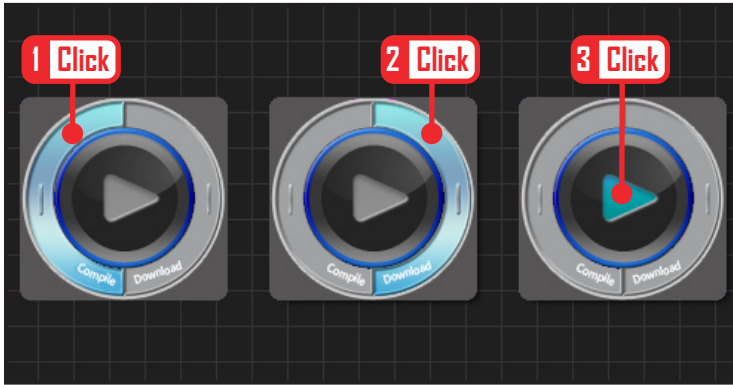
Select Motion>Motor.

Select Mode : Position .

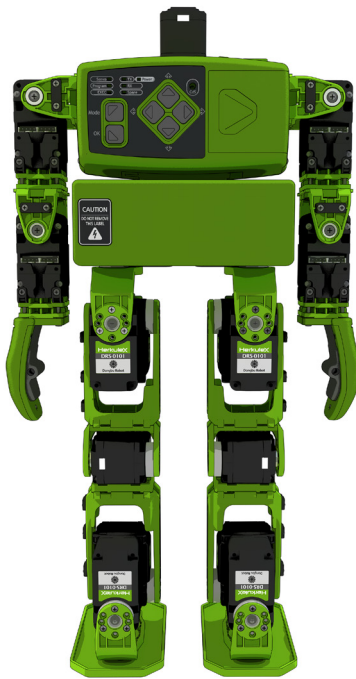
Set Position : 235 , 235 lowers the arm to the side.

Set Motor ID : 0 , Right shoulder motos has ID 0.

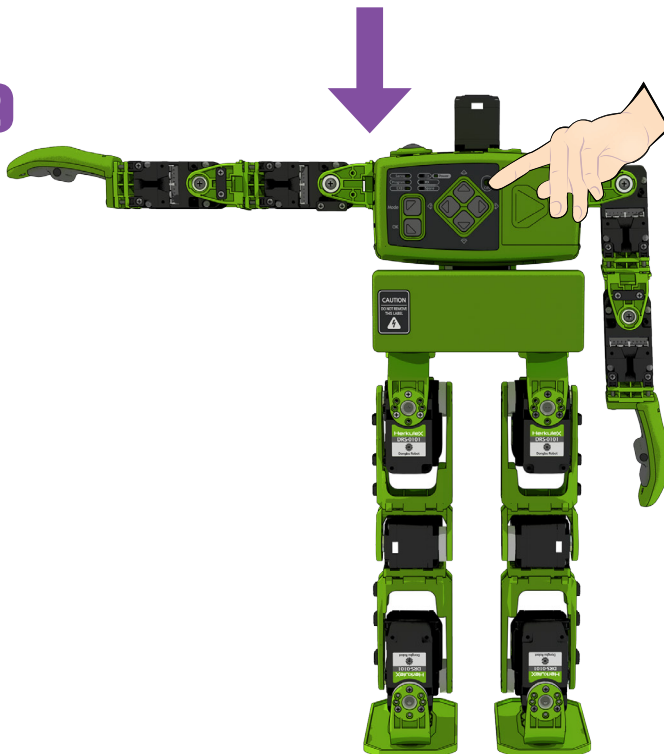
Set Time : 40, Arm comes down at slower pace than when it was going up.



1



2



18 Download

Click 'Compile'. Click 'download' on the right if there is no compilation error. Download to robot. Click 'Run' button (Arrow button) after the download.

19 Robot Motion

Robot is at attention posture under the bright light. Robot will lift the right arm when the controller cds is covered.

Robot will lower the arm when the cds is uncovered.