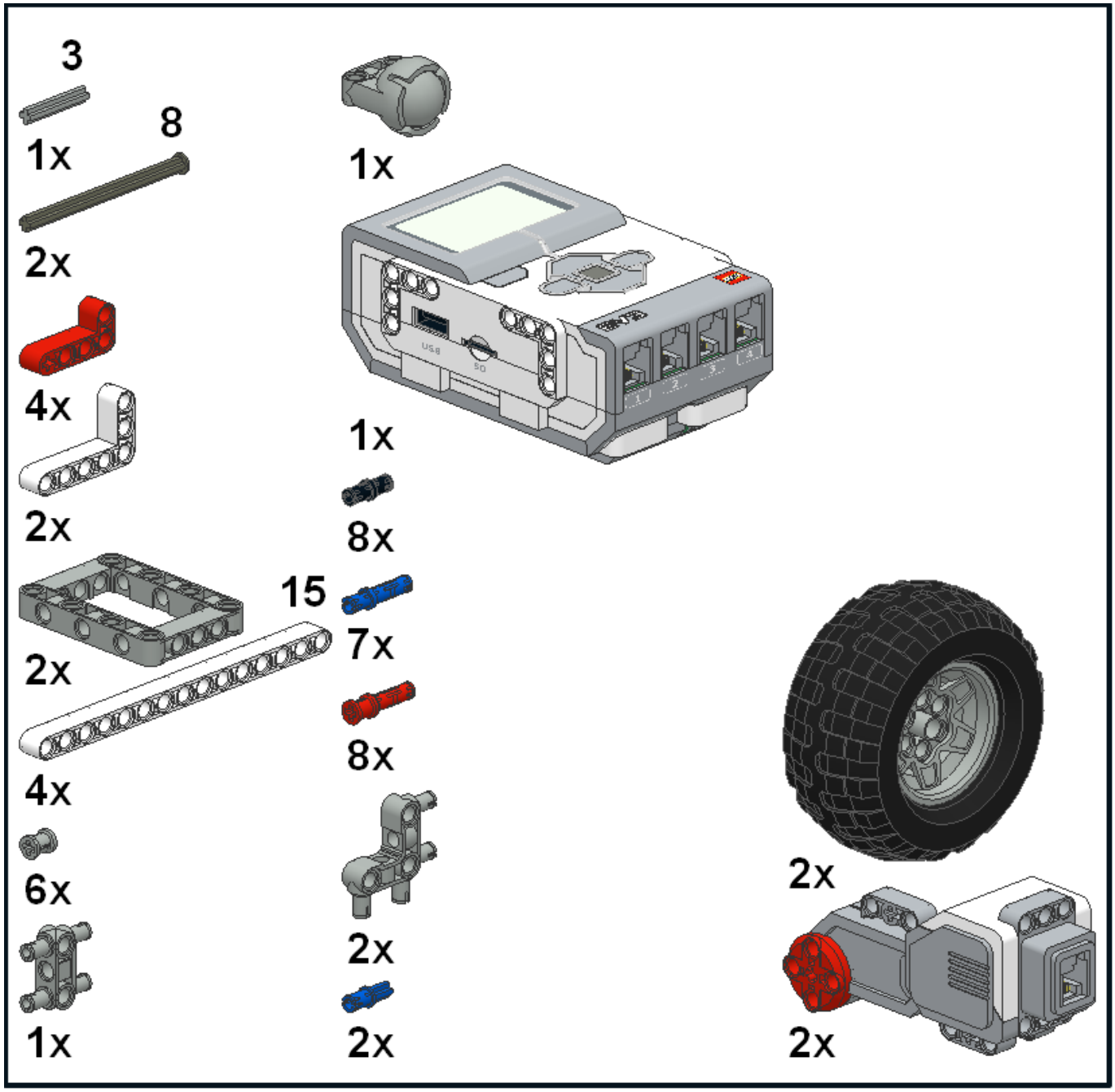
Building a robot (Simple)



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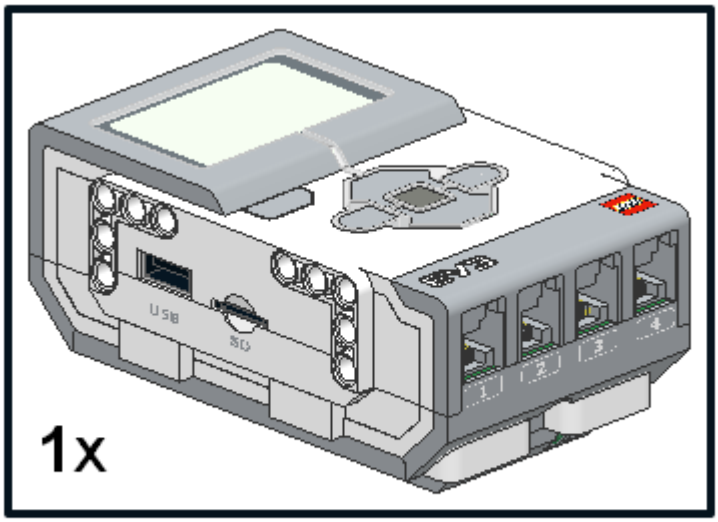

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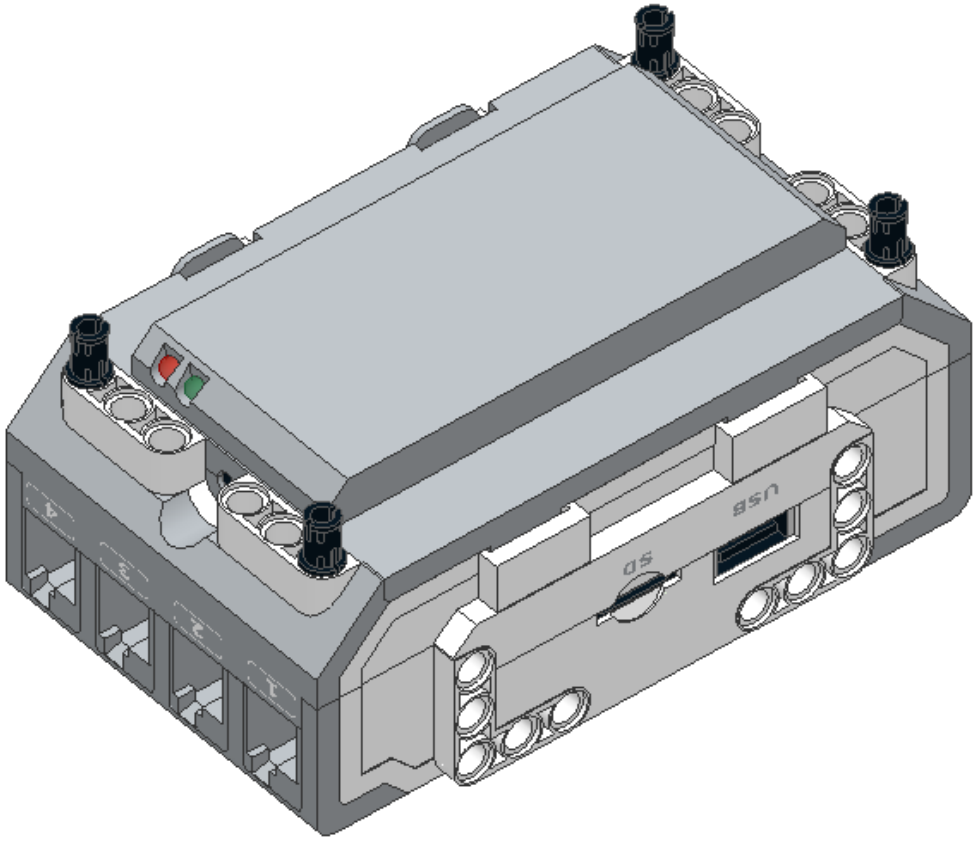

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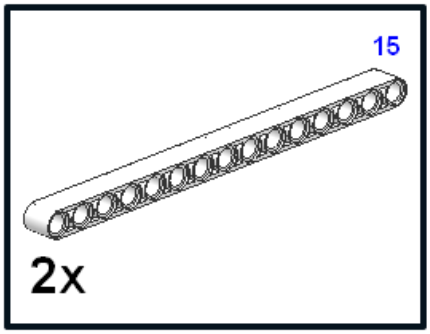

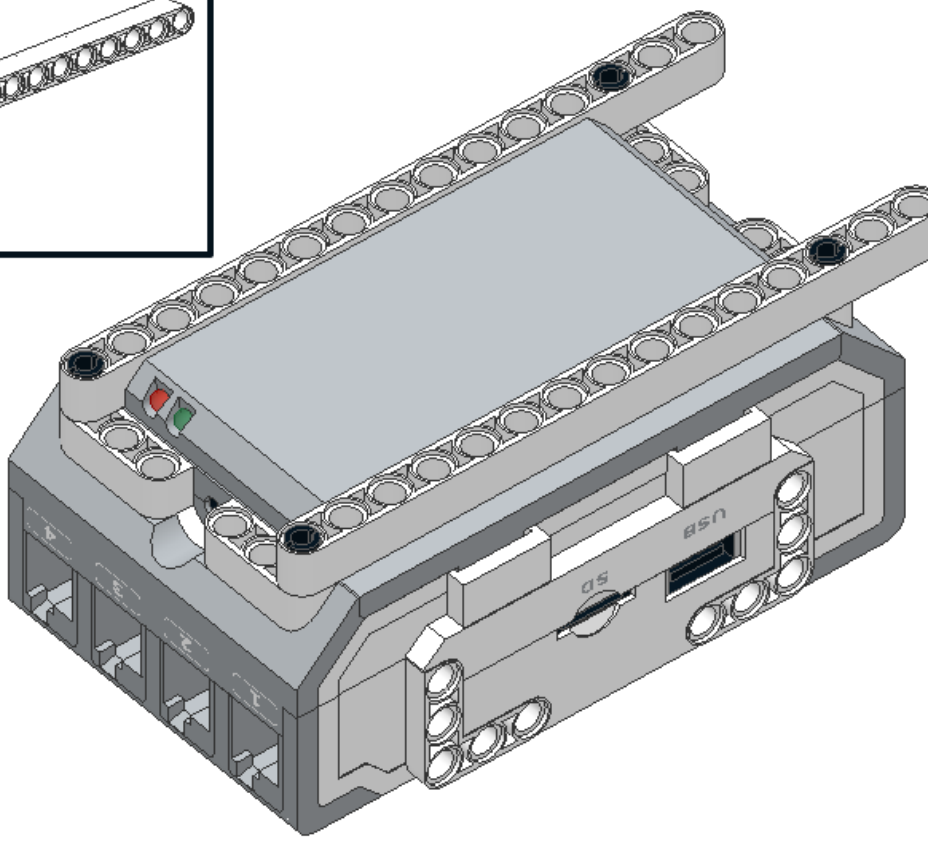

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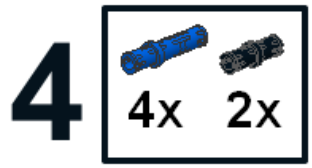

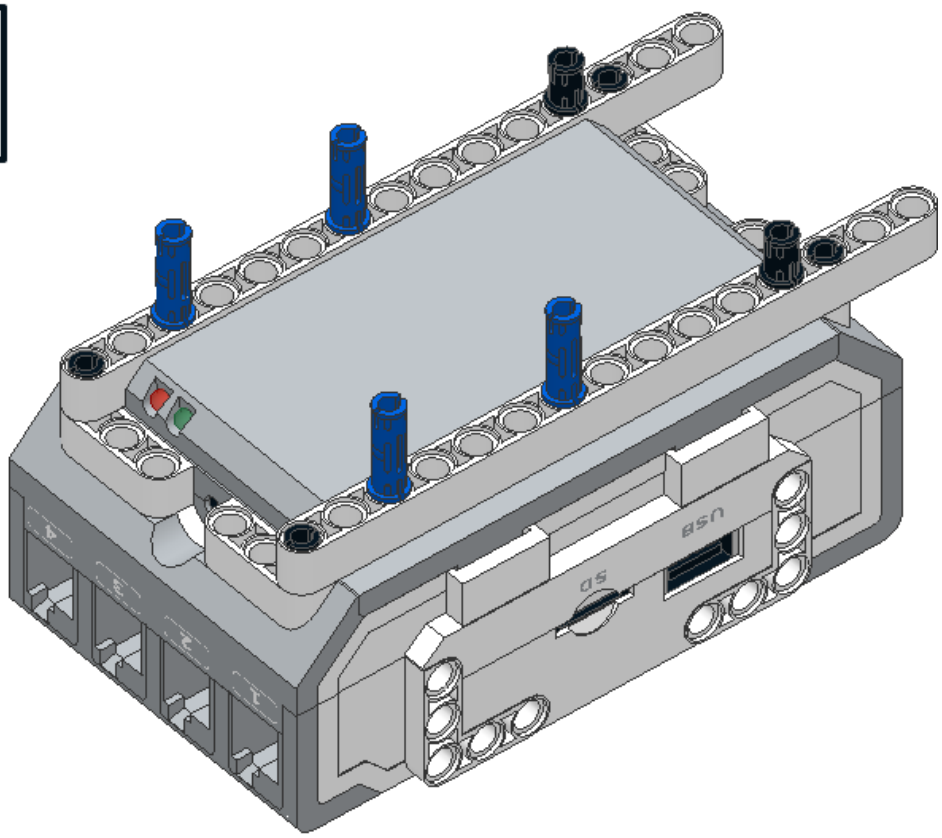

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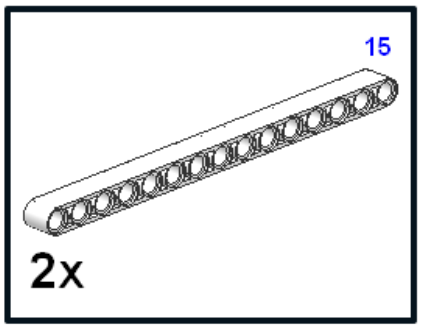

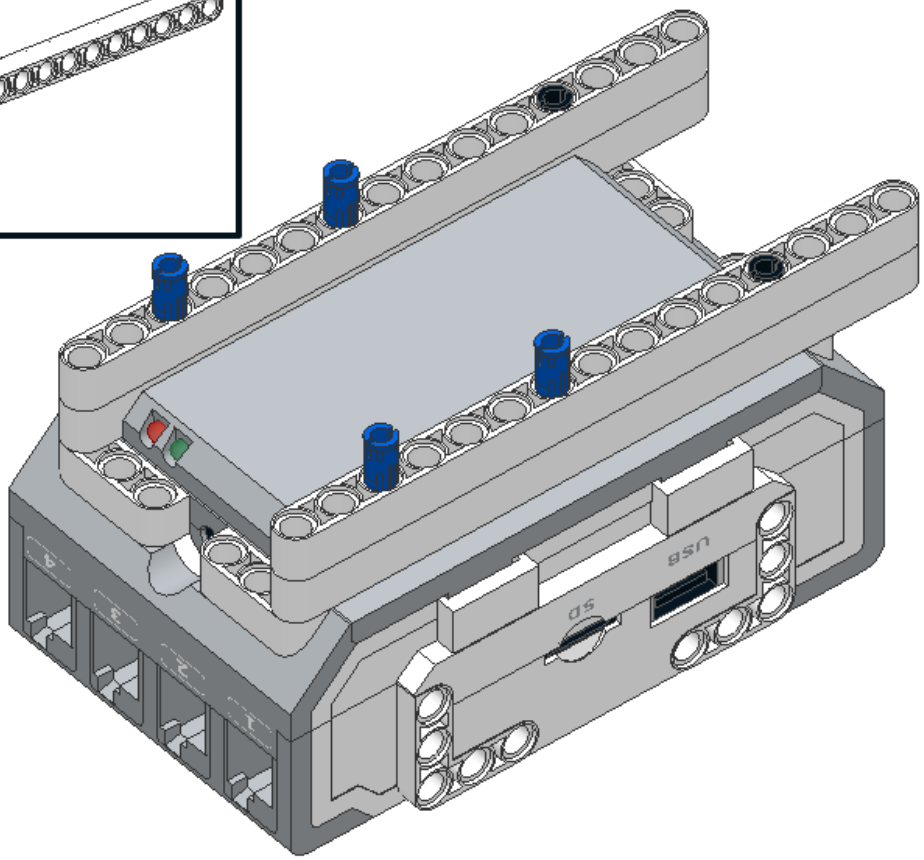

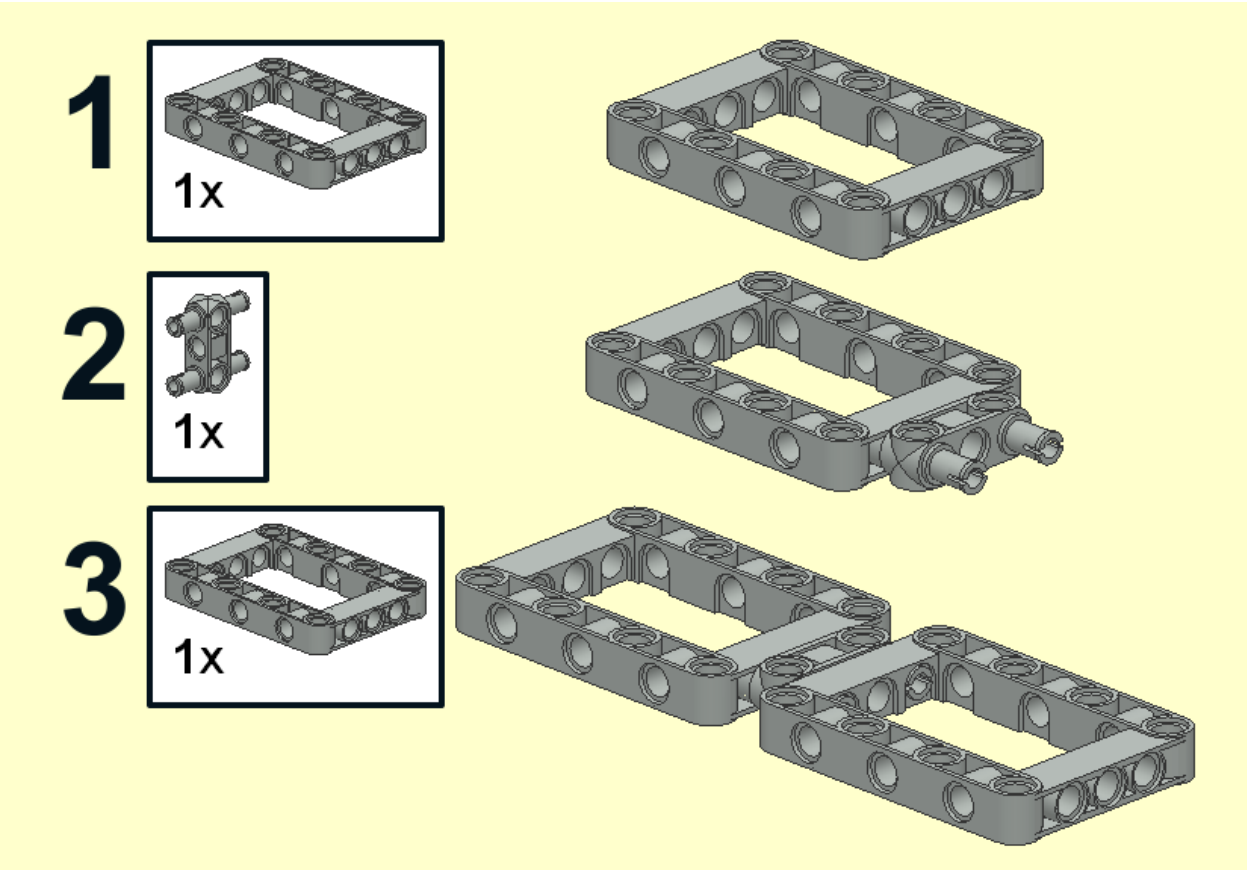
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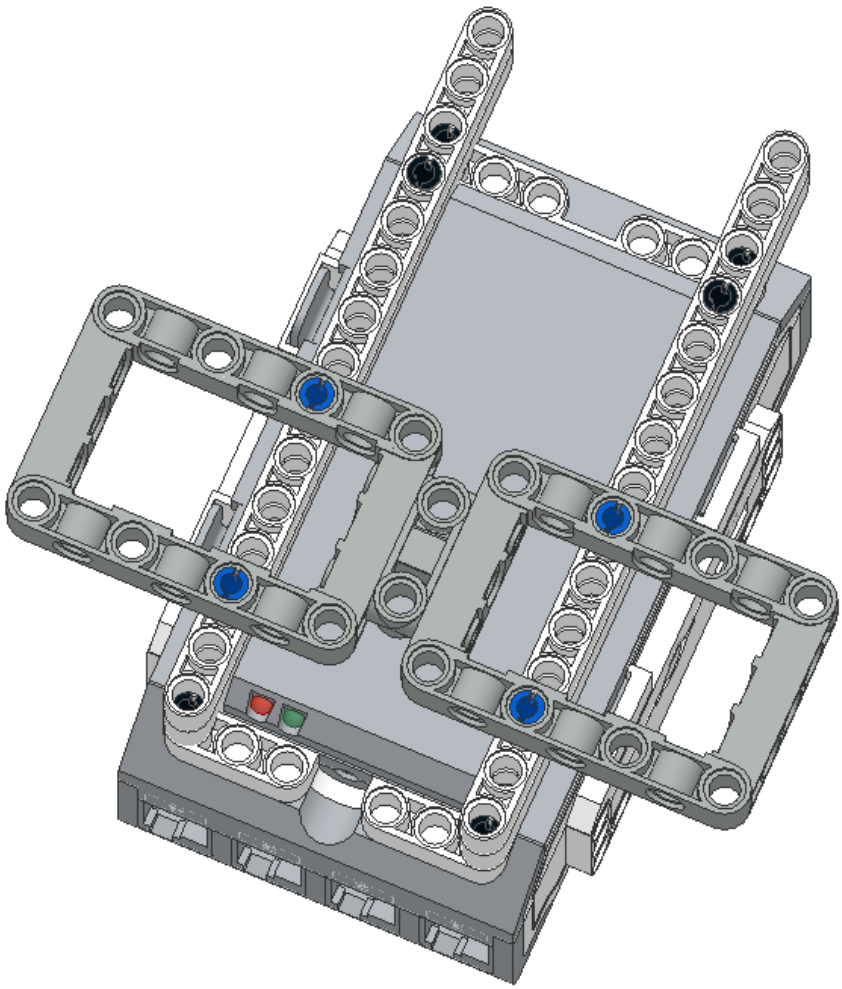

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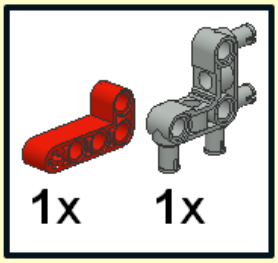

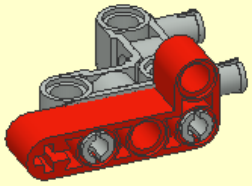

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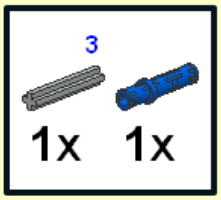

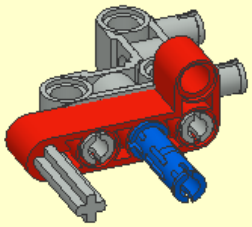

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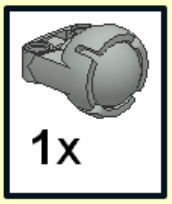

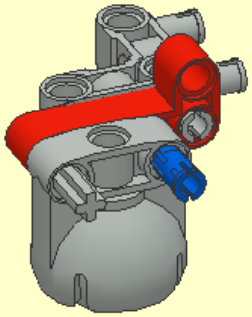

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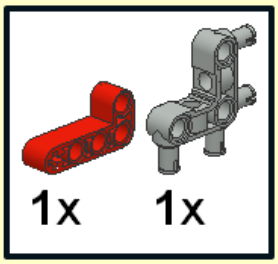

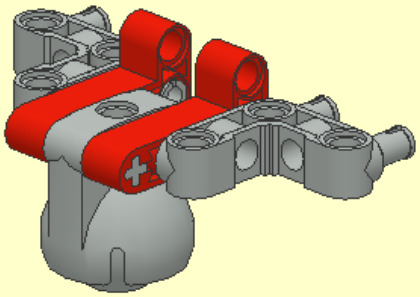

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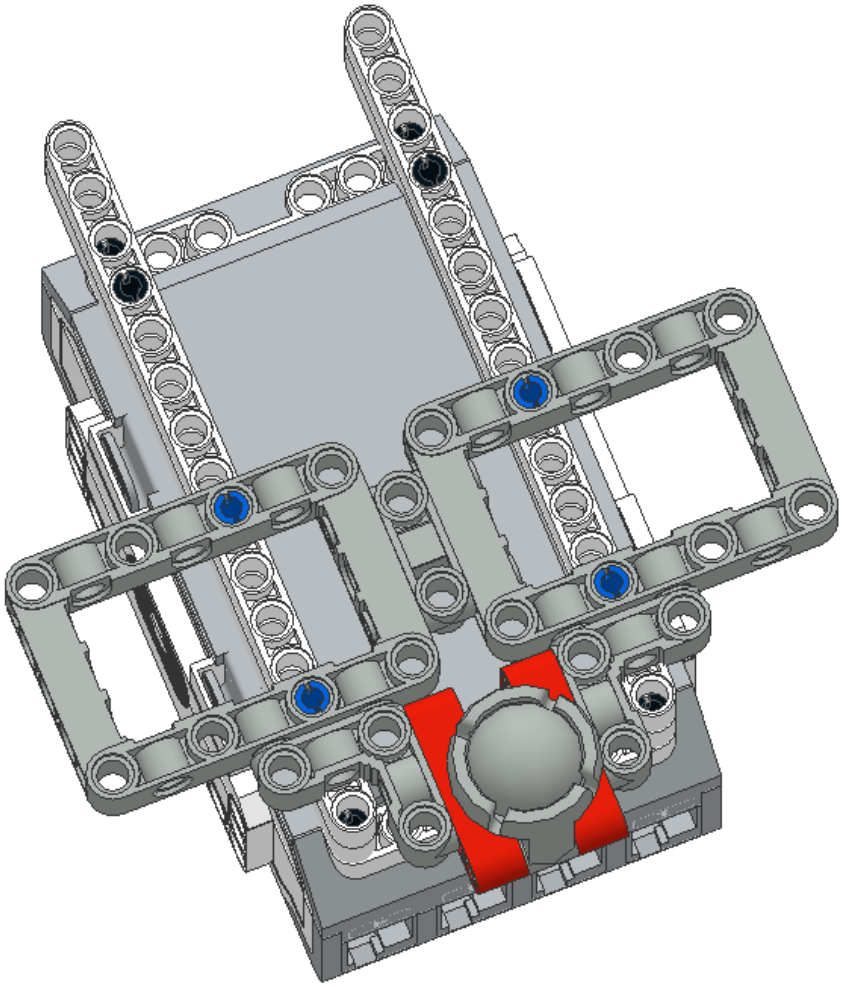

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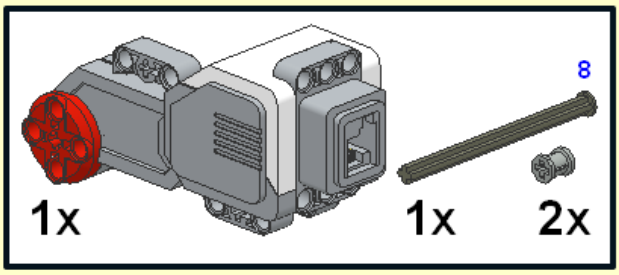

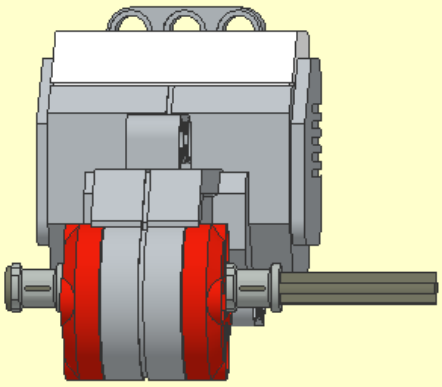

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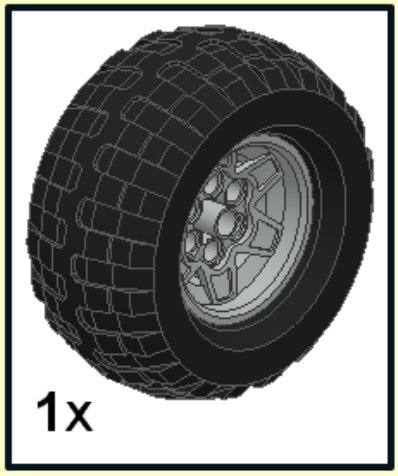

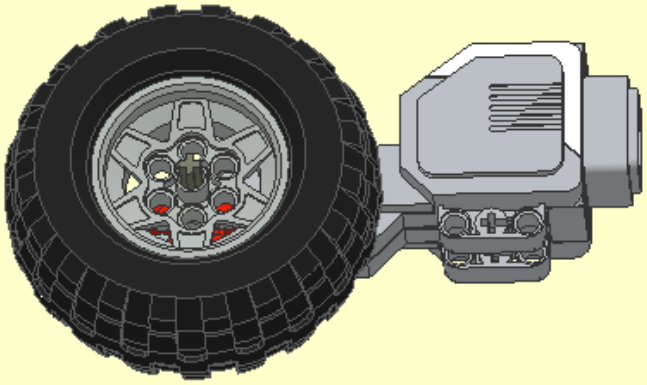

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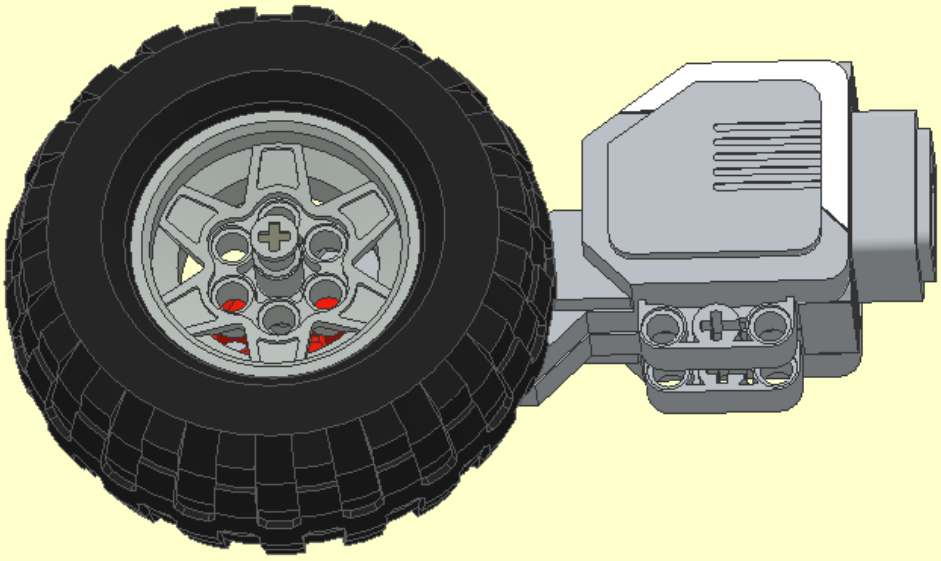

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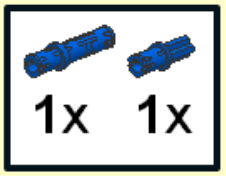

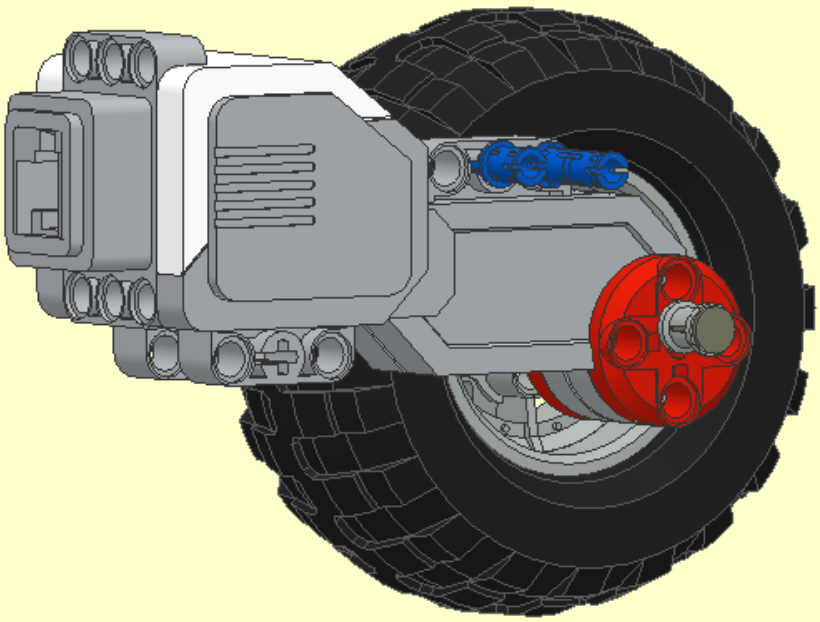

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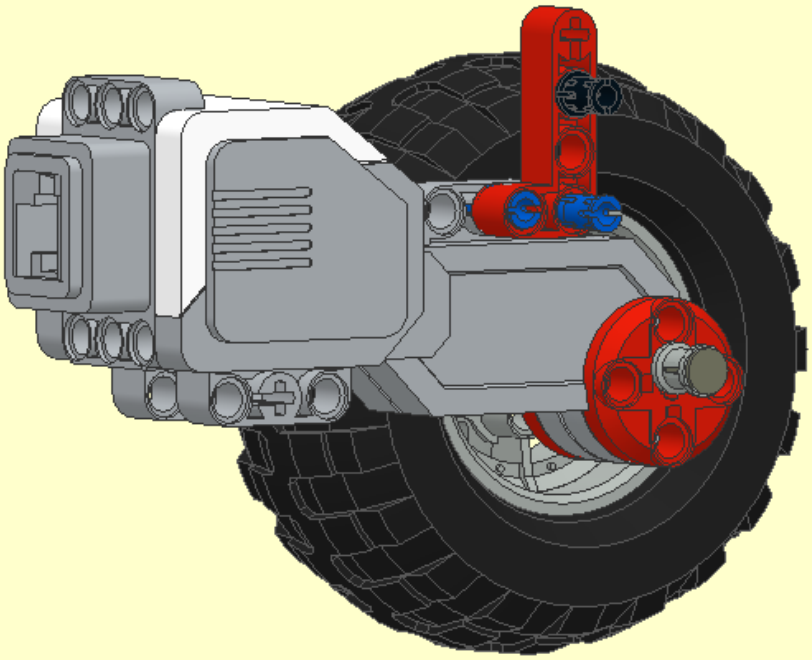

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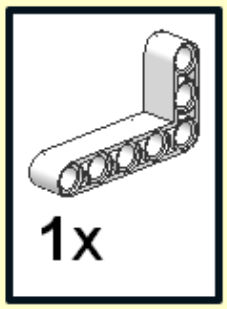

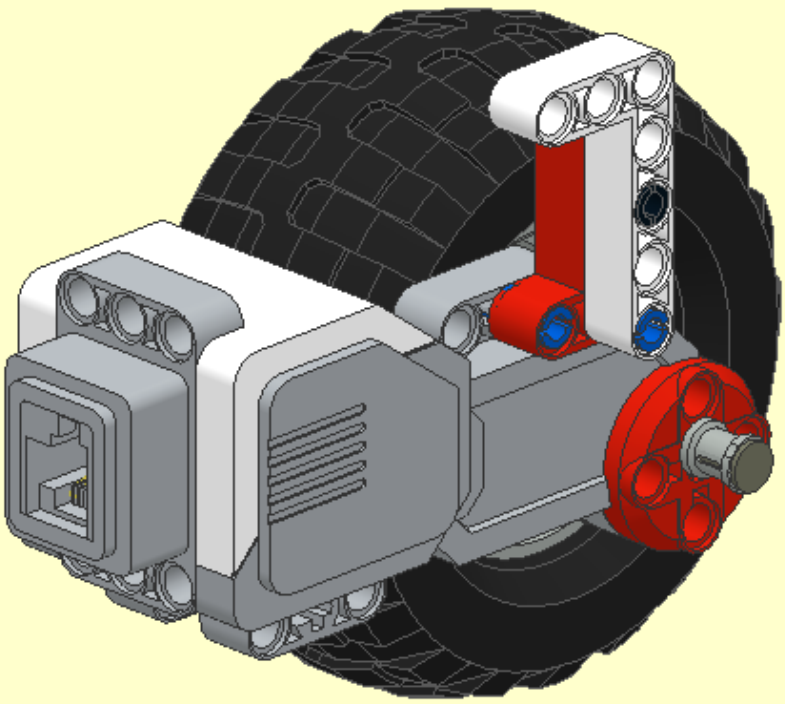

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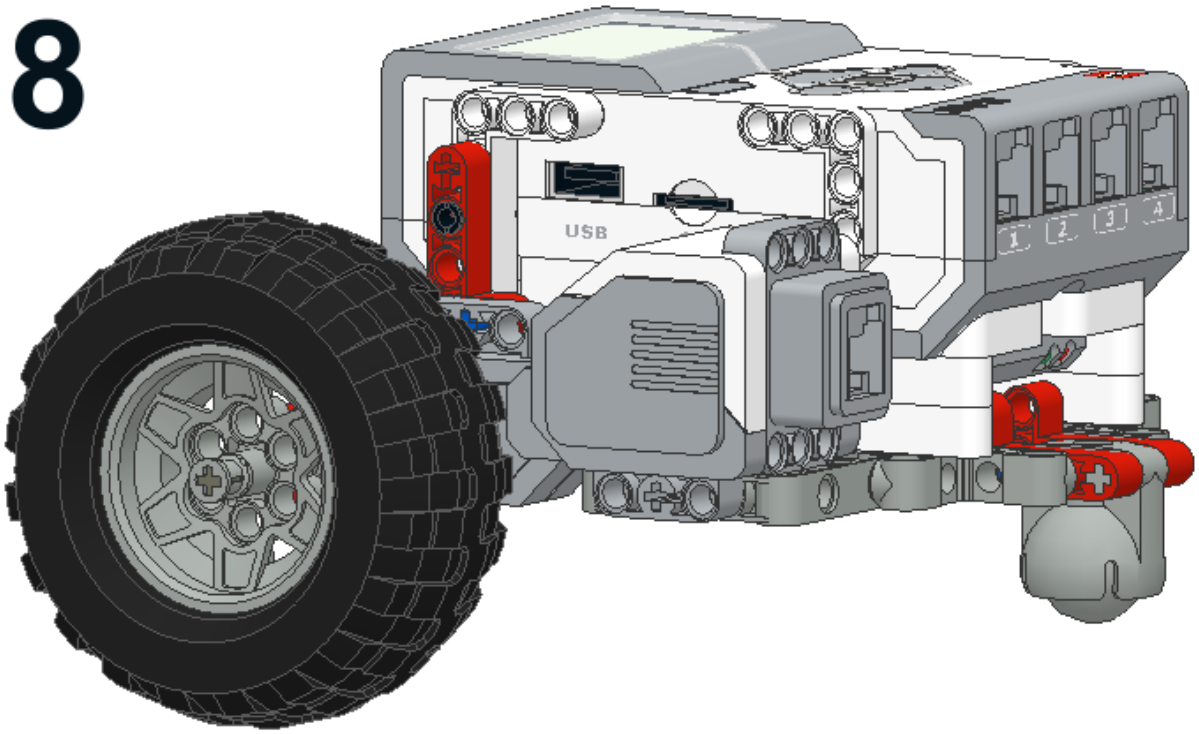

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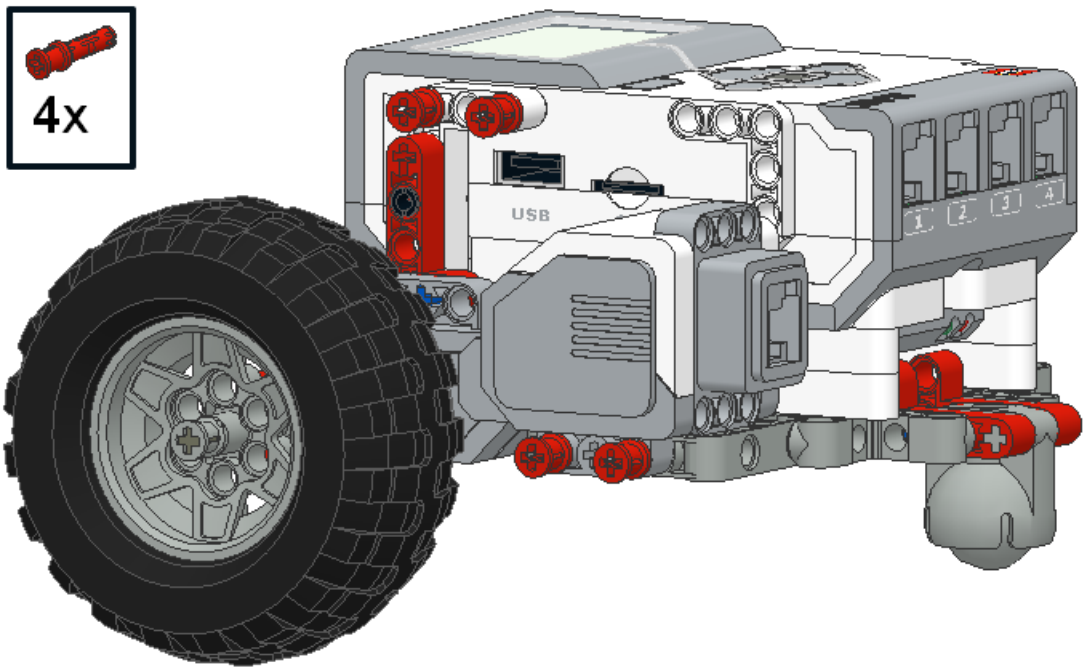

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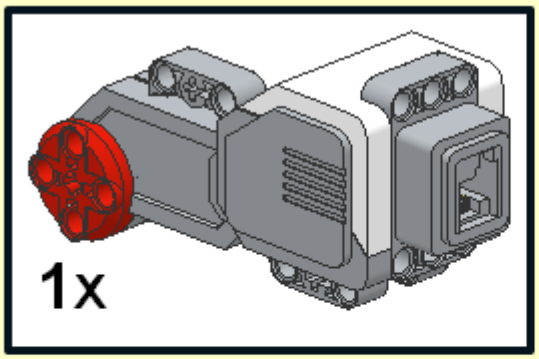

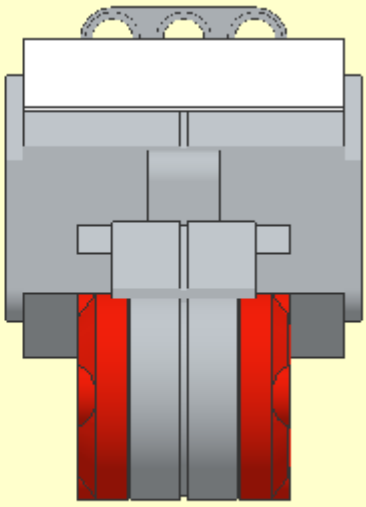

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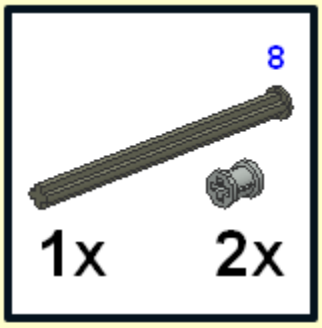

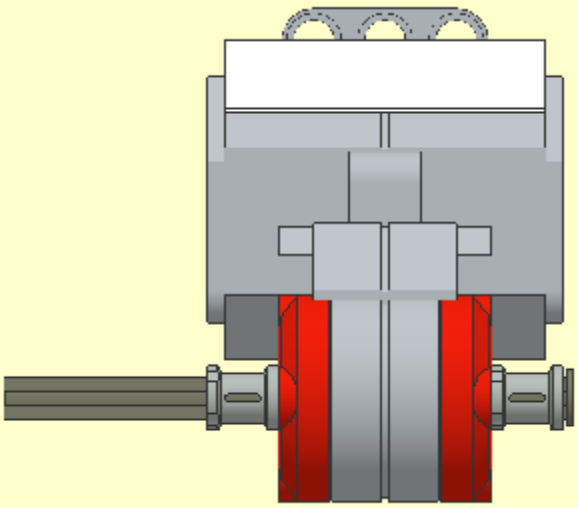

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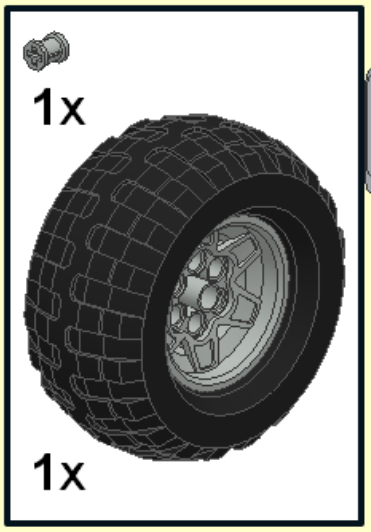

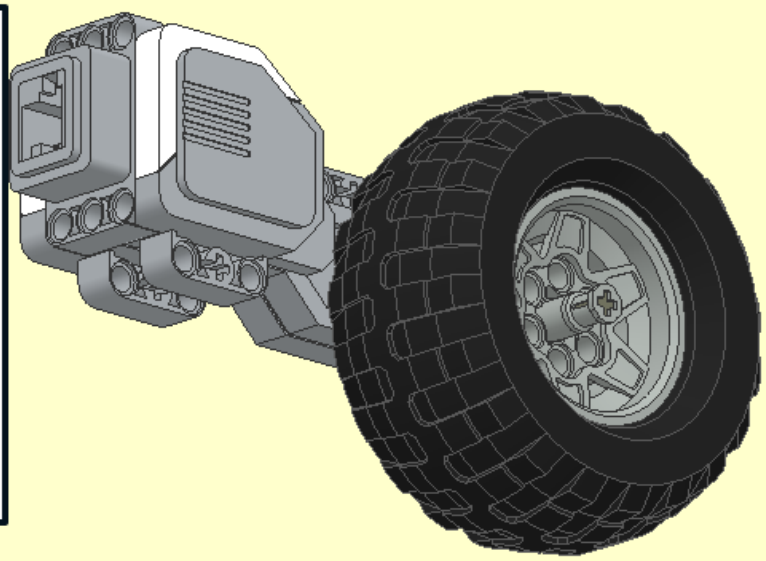

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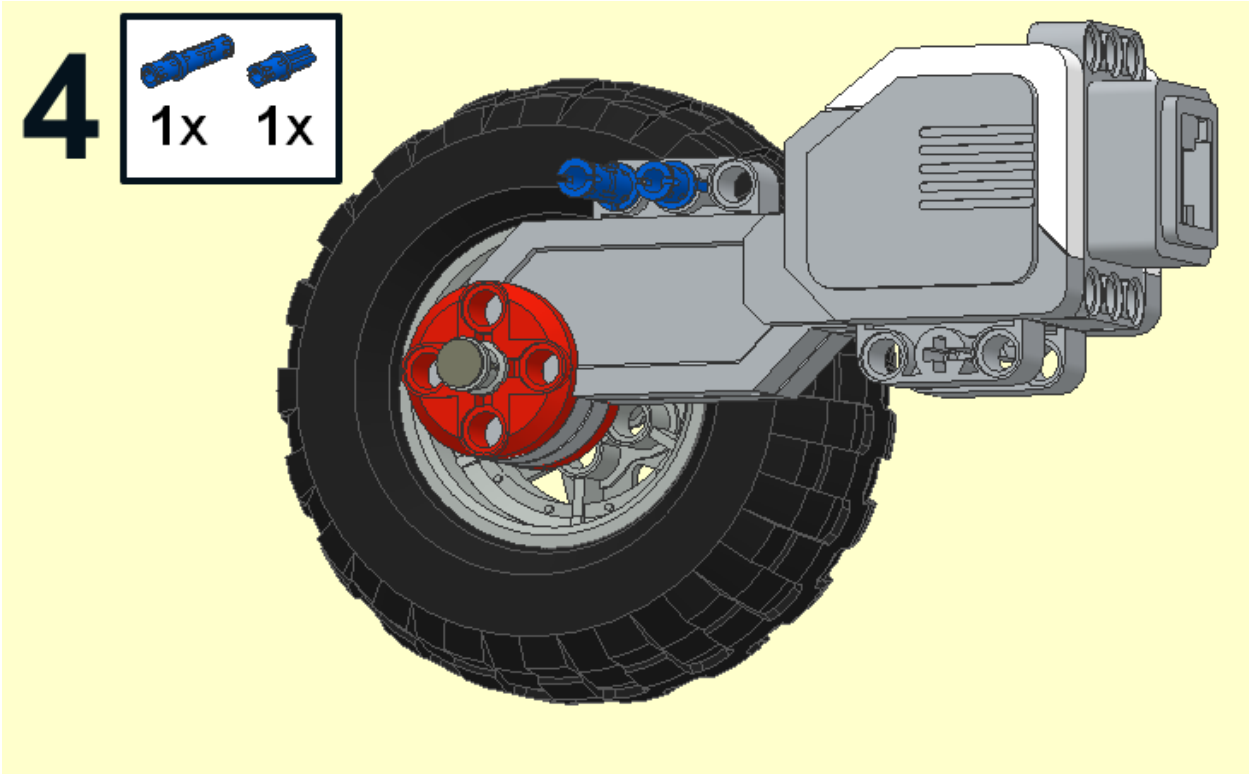

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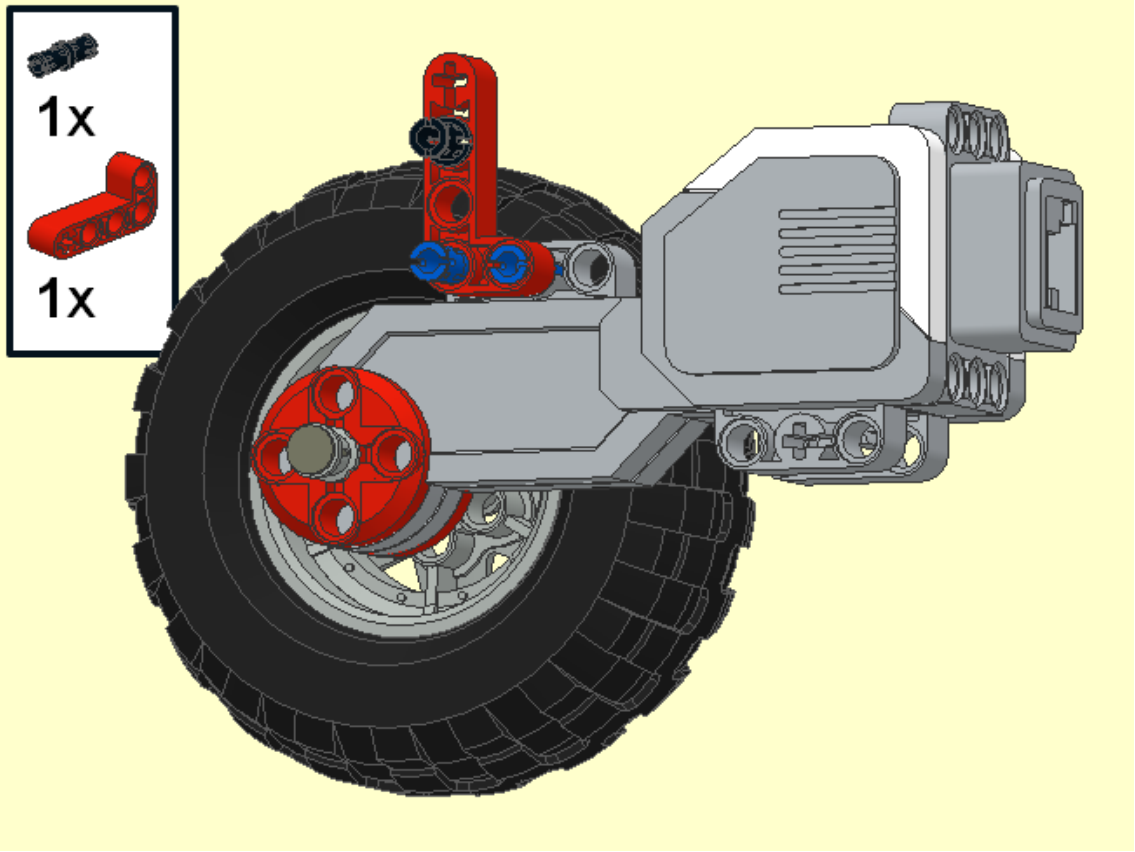

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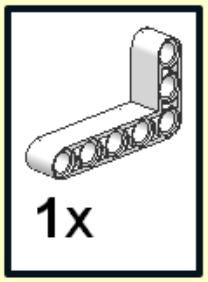

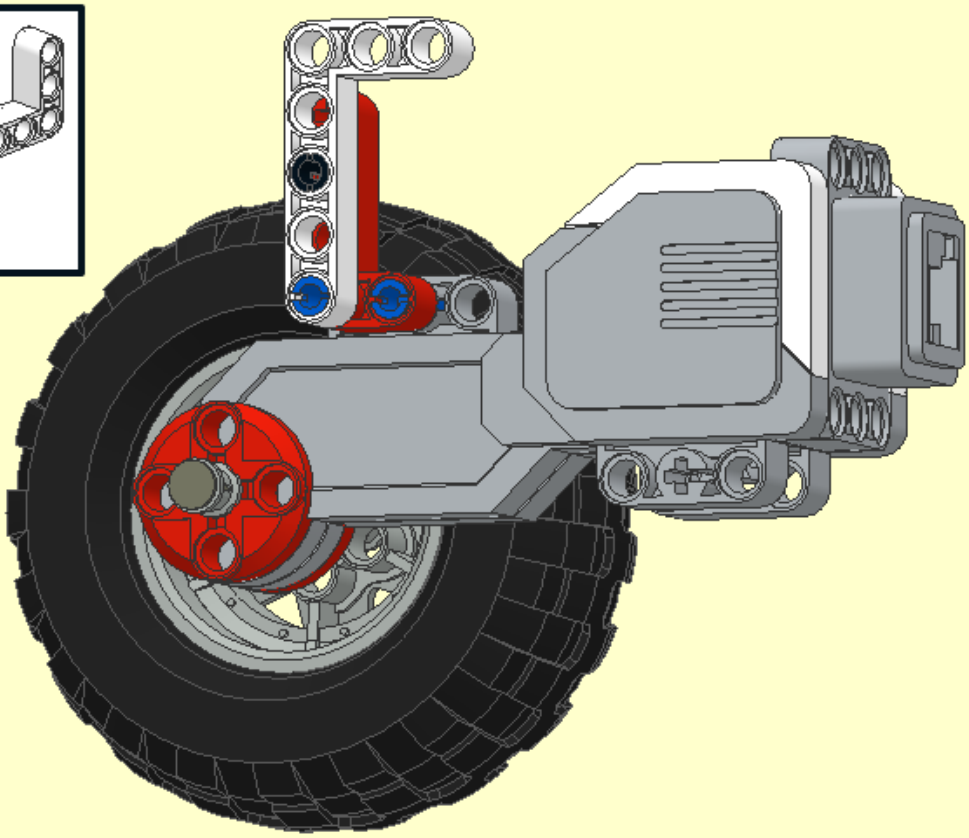

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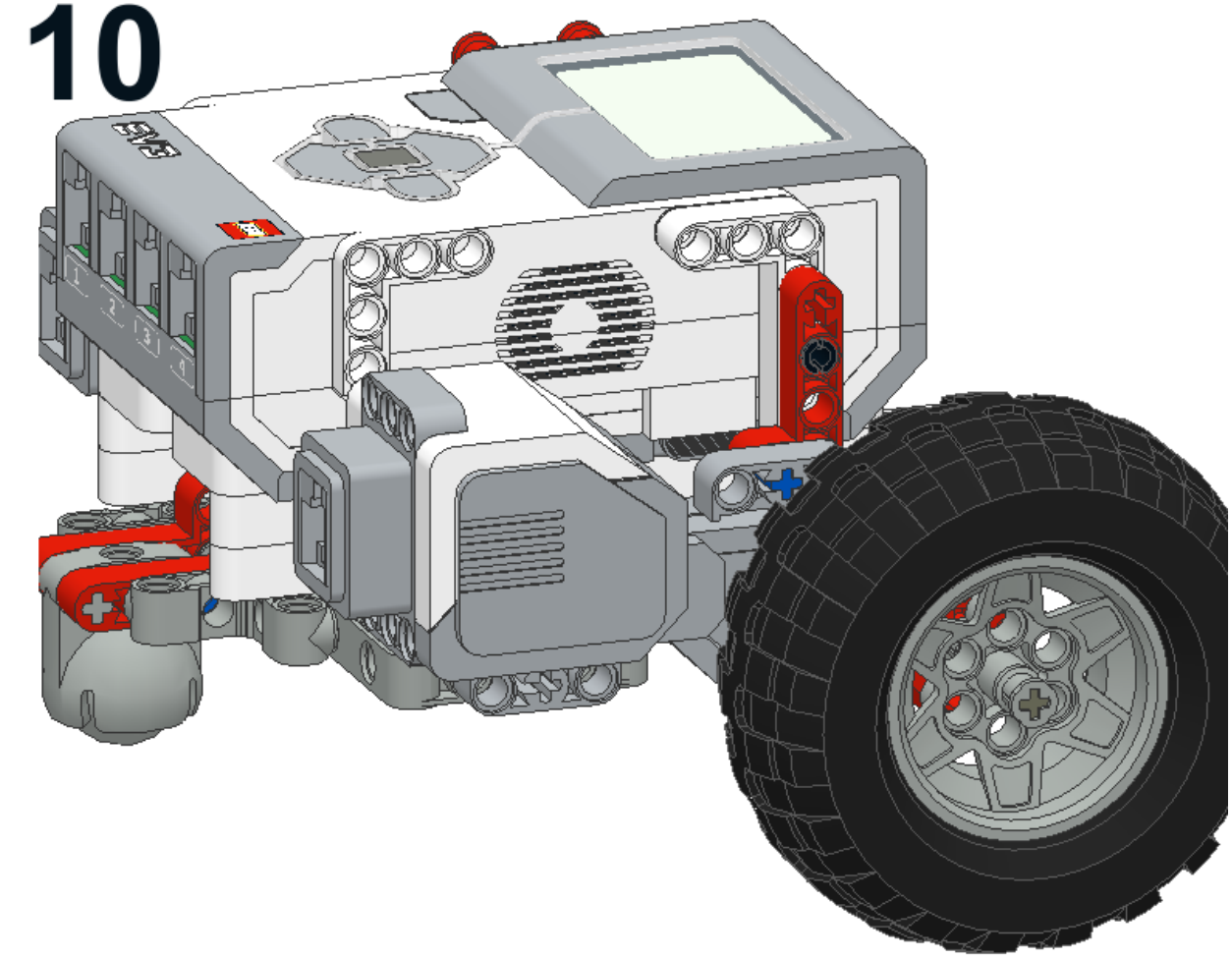
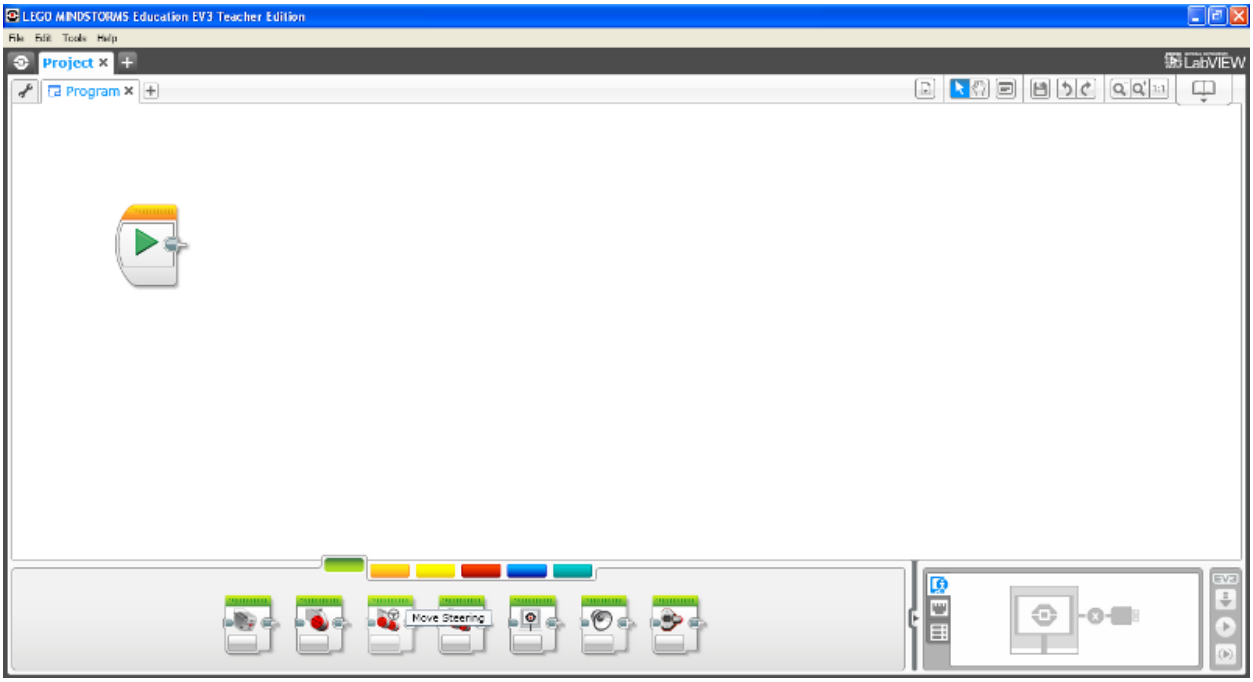
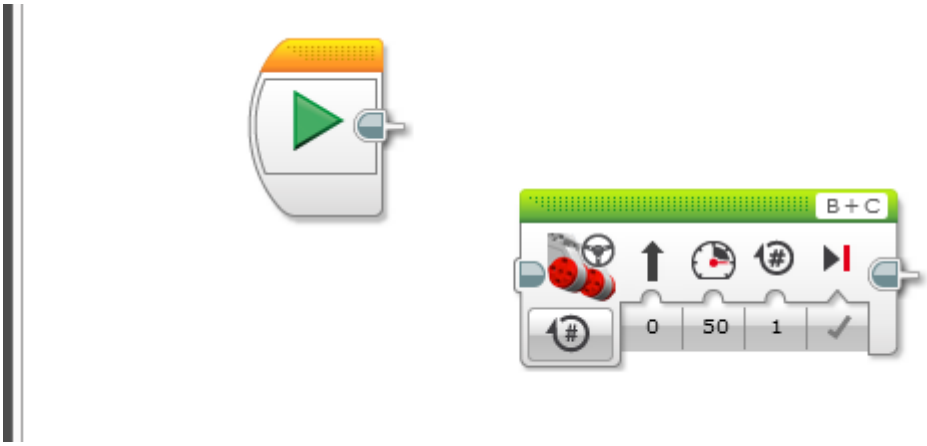


Model Core Set
Quick Start
File
Robot Educator
Open Project
New Project
Open Recent
Program
Experiment
2
New Project
Create a new project containing experiments and programs.


LEGO MINDSTORMS Education EV3 Teacher Edition
File Edit Tools Help
Project
Program
LabVIEW
Move Steering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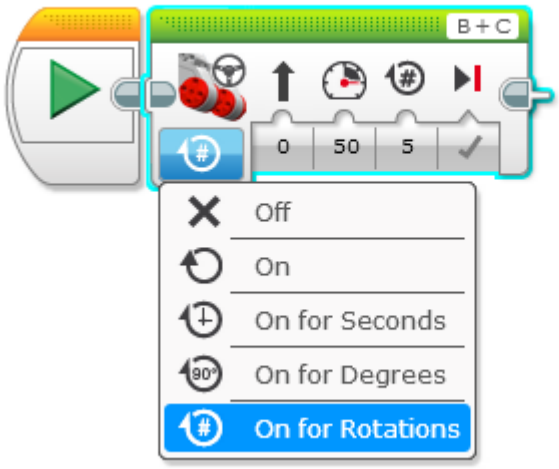
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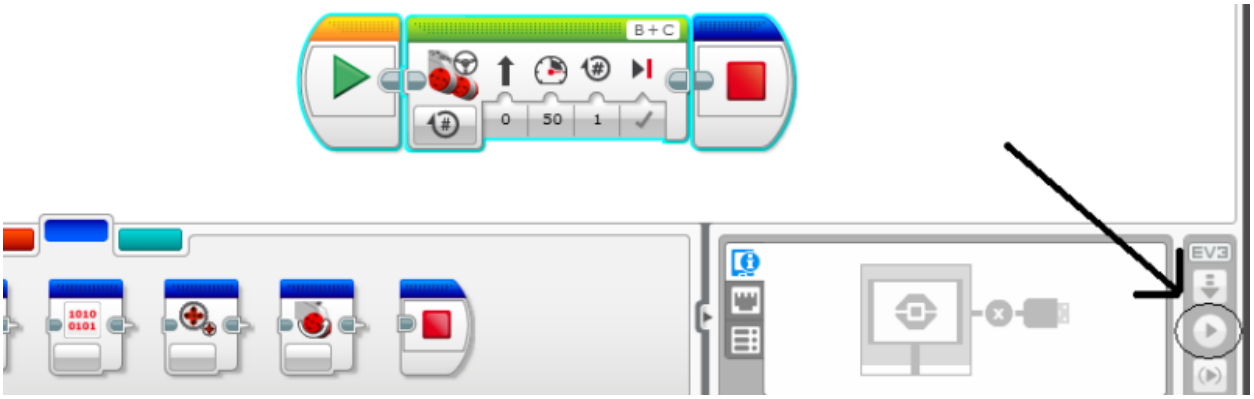
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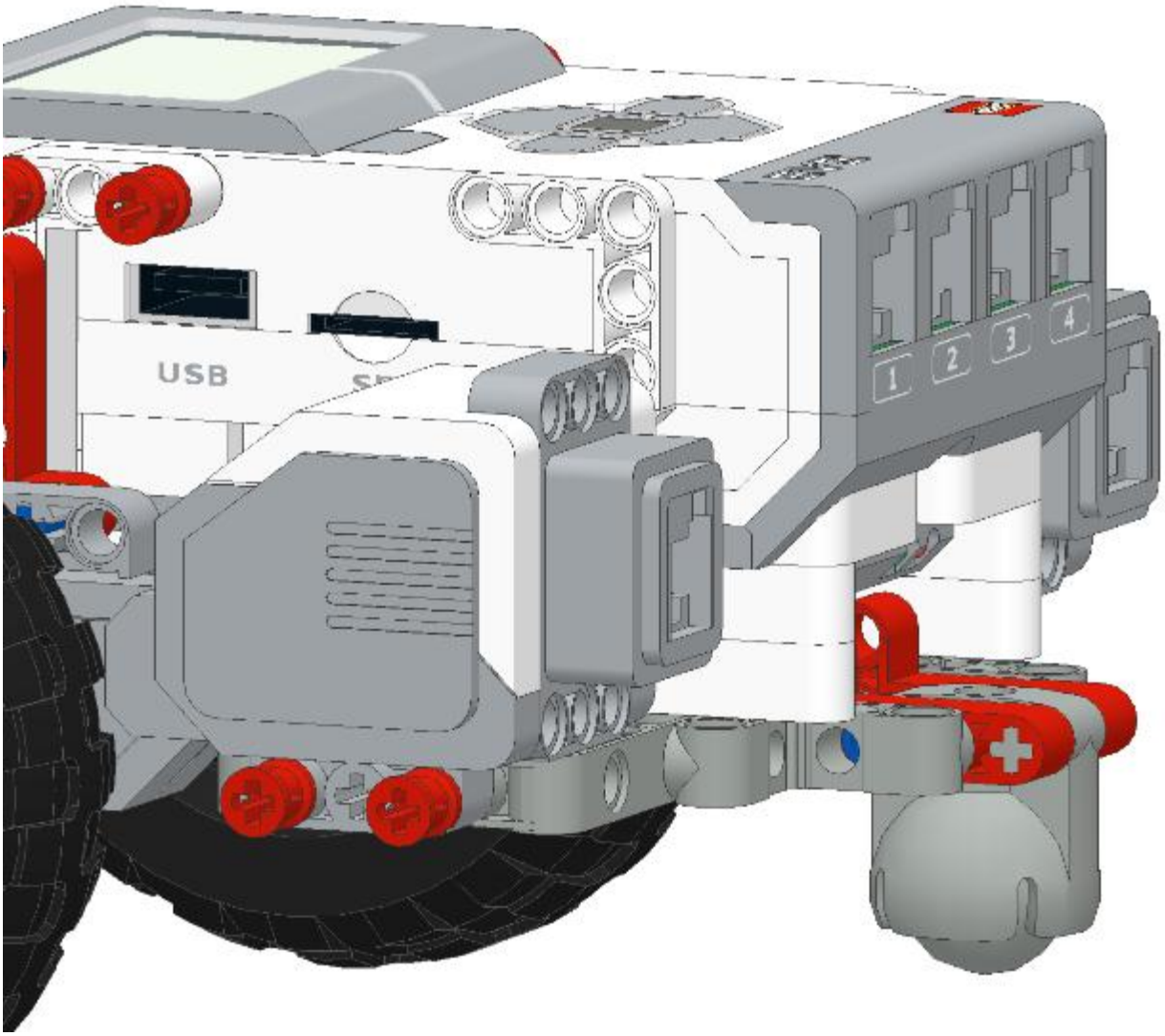

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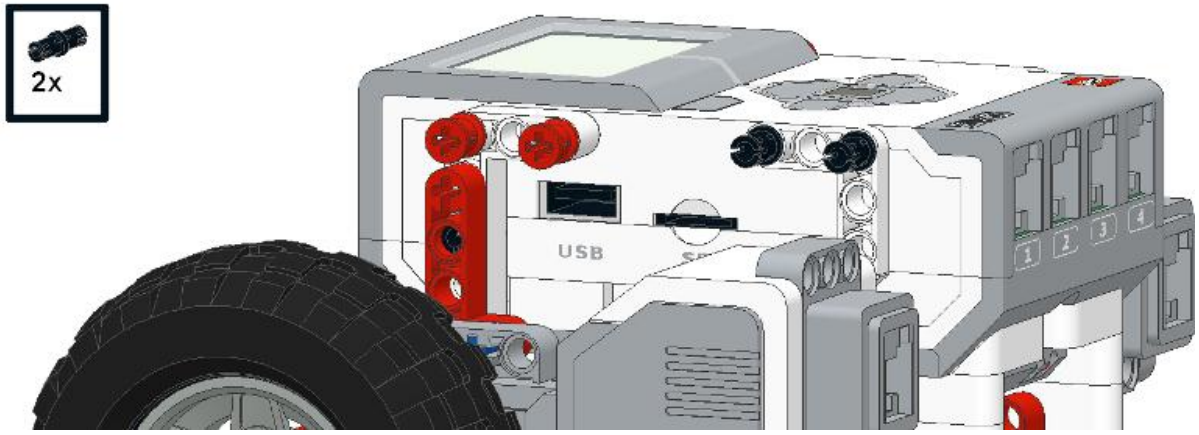

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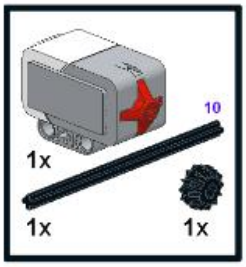

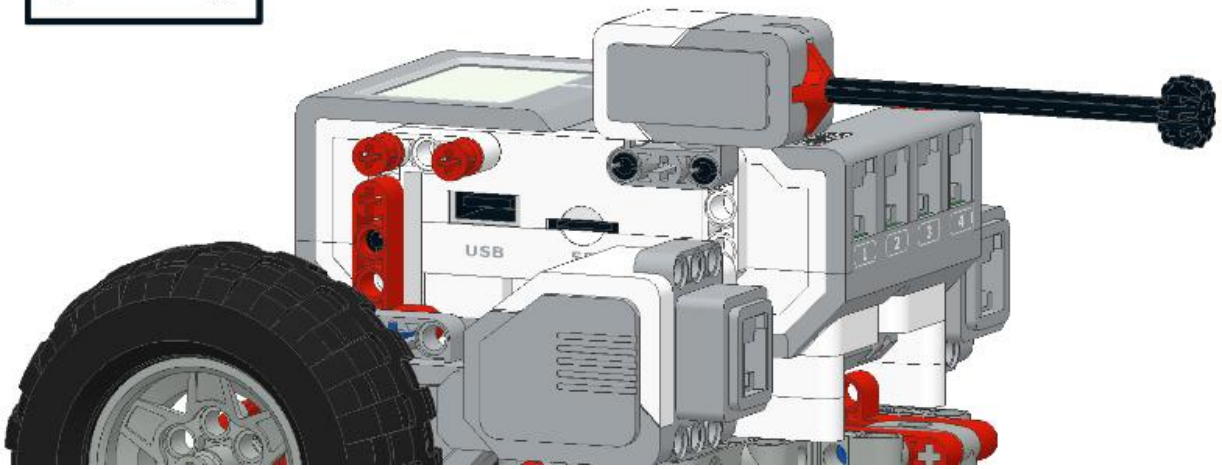

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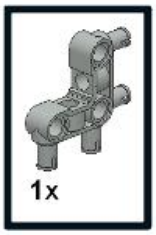

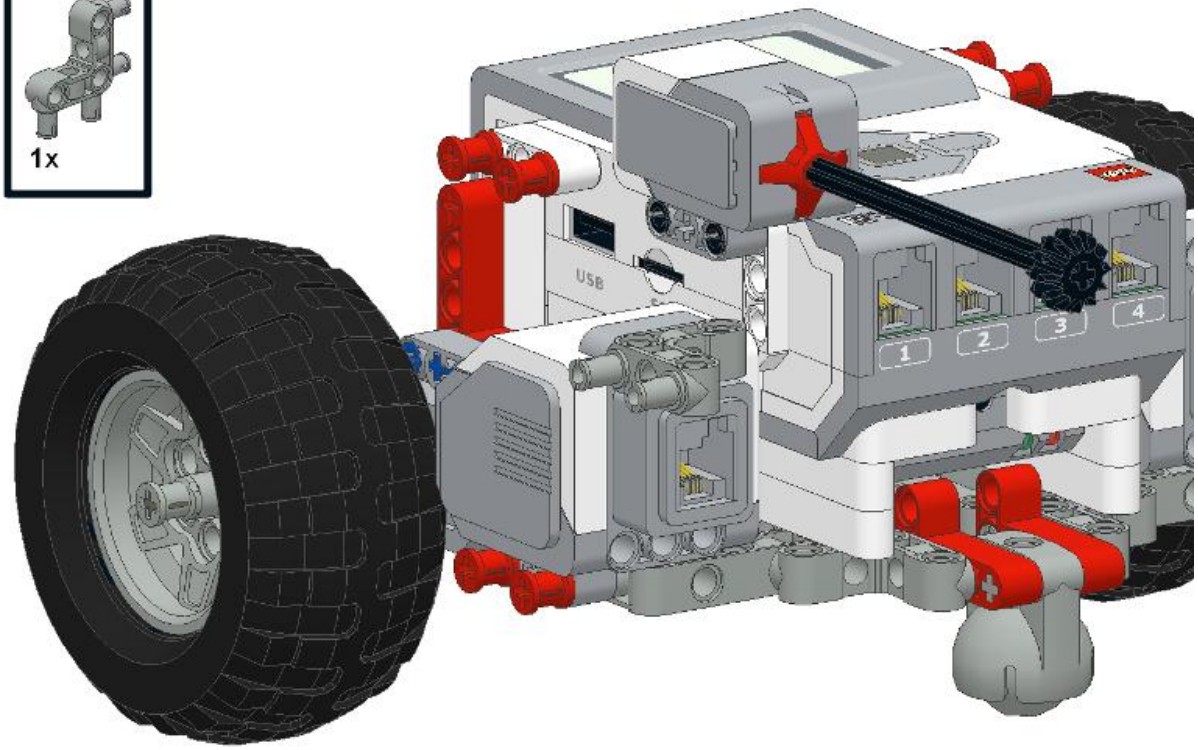

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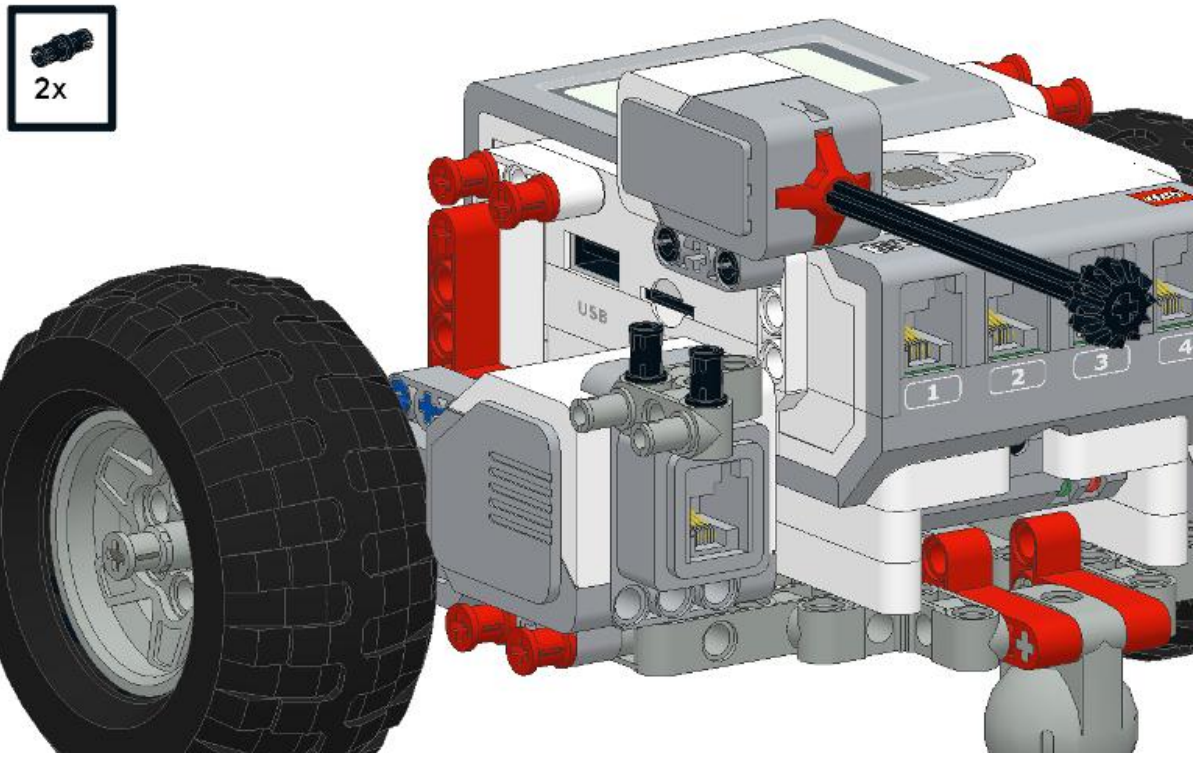

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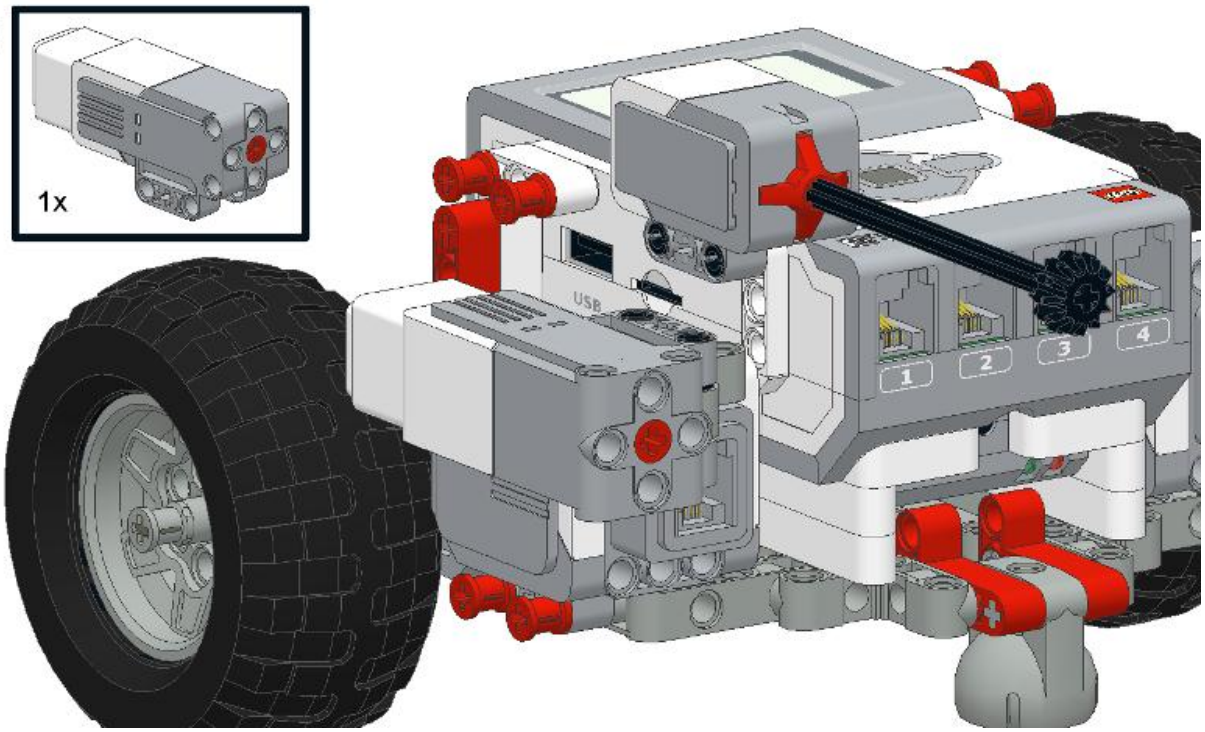

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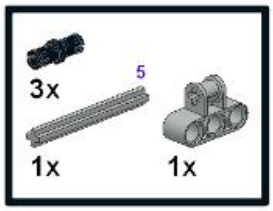
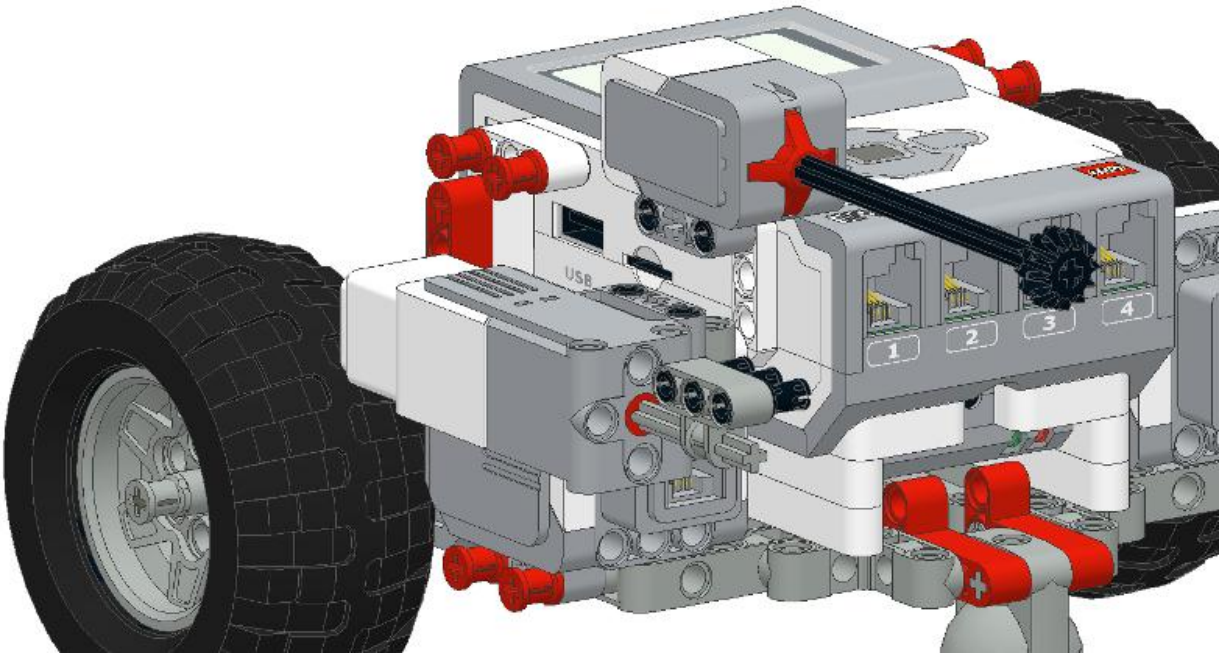
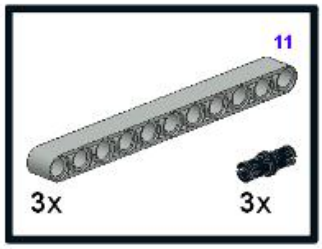
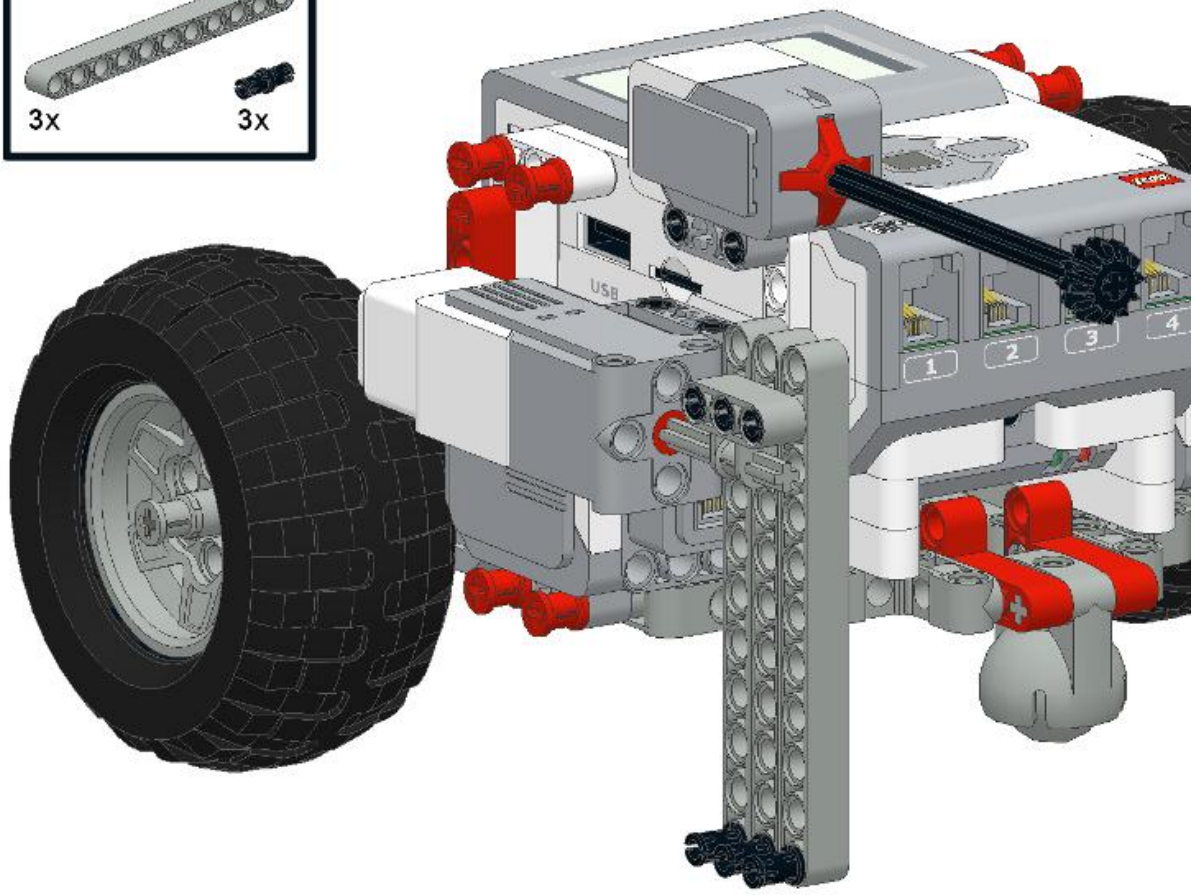


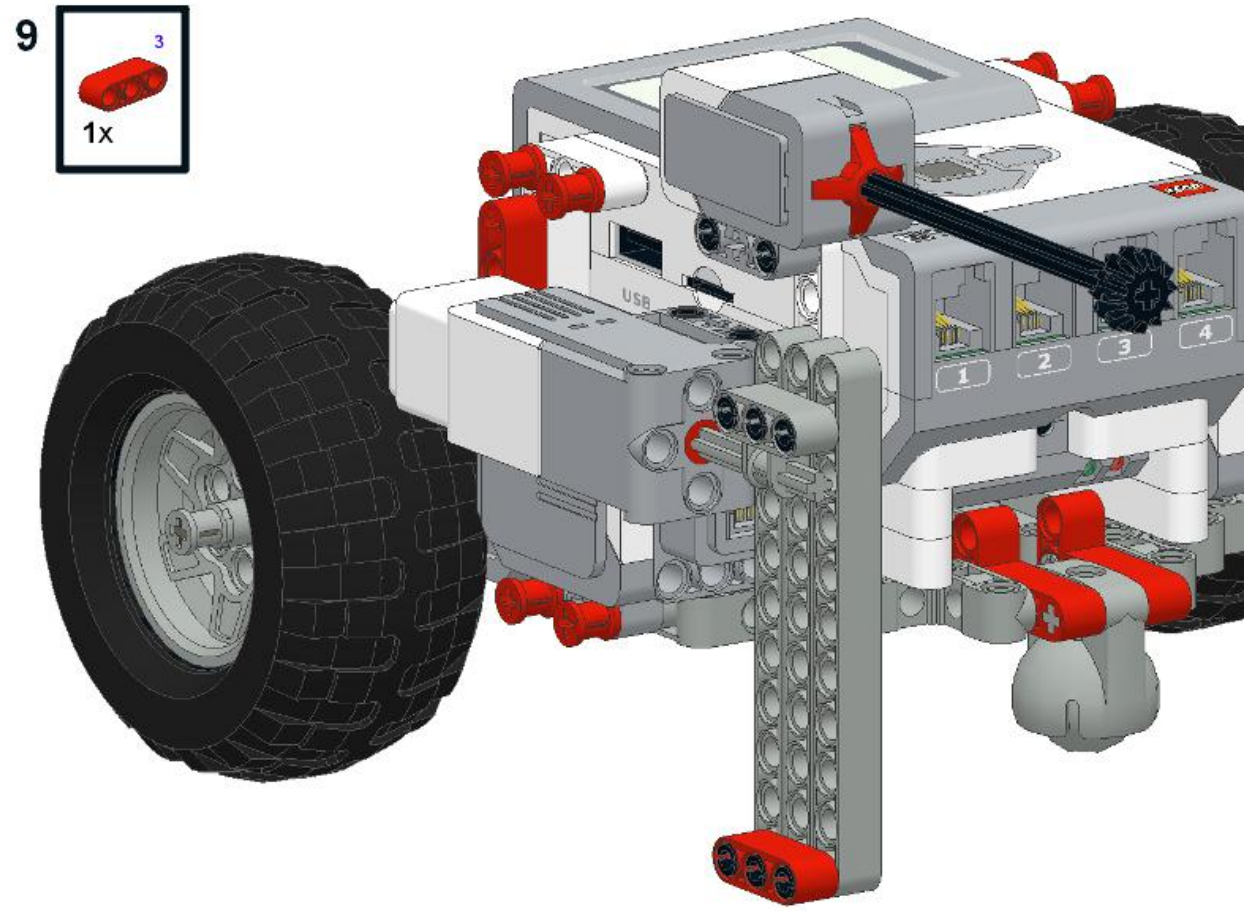


8

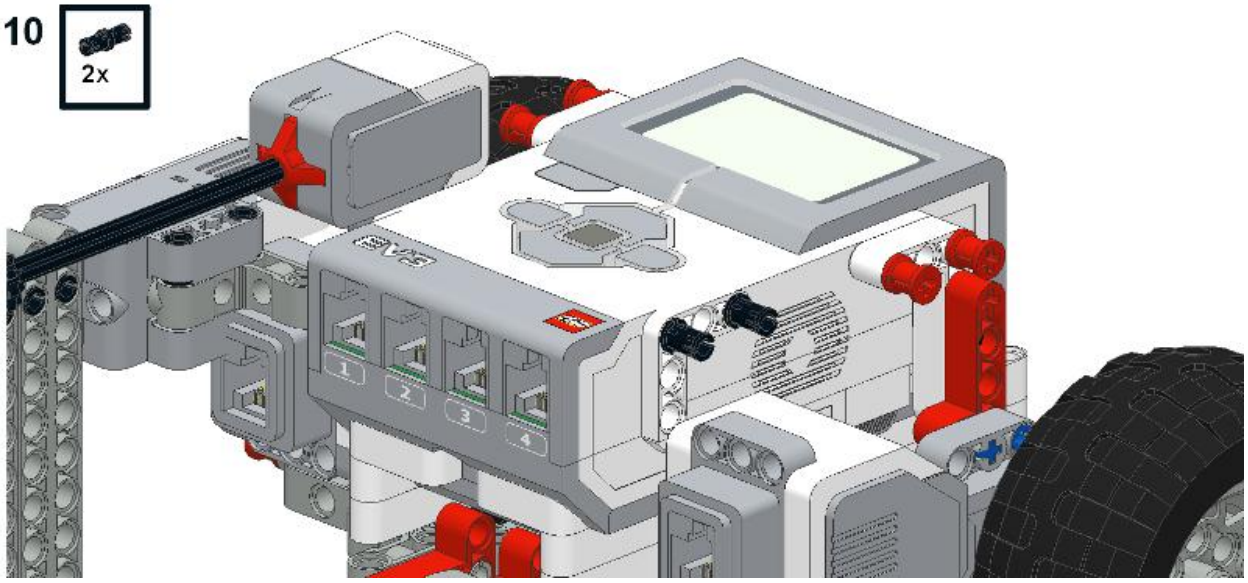




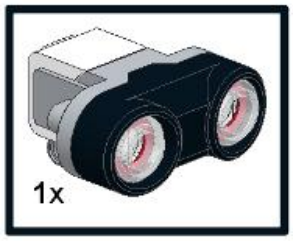
9

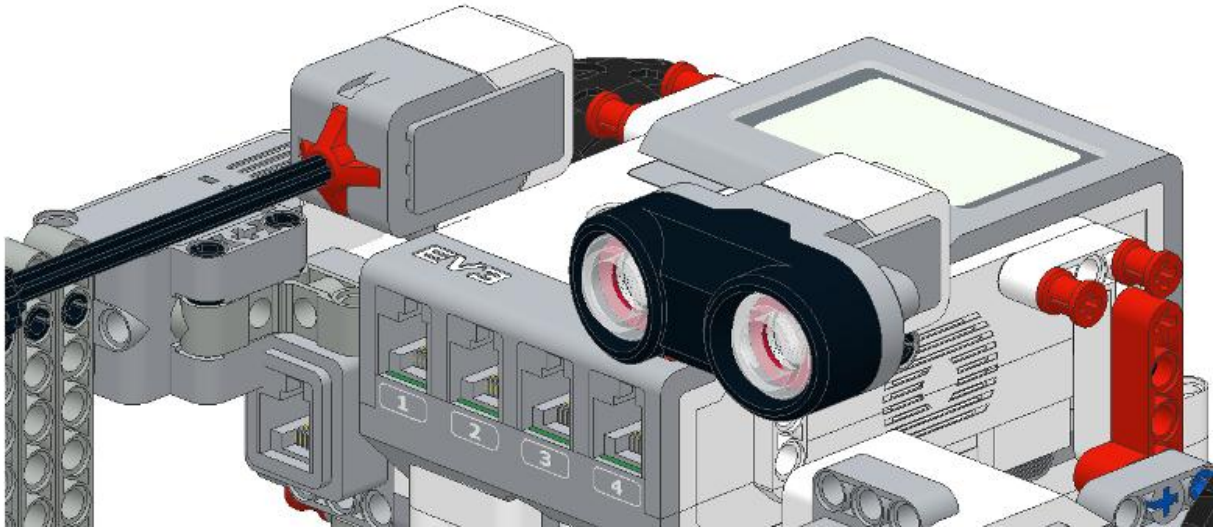


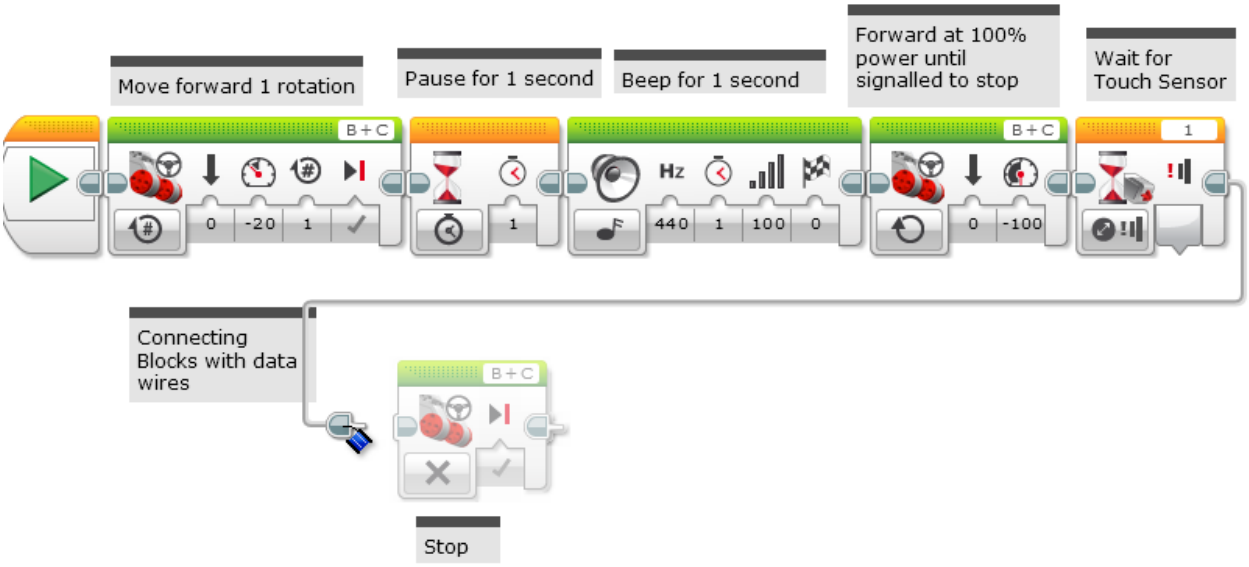
10

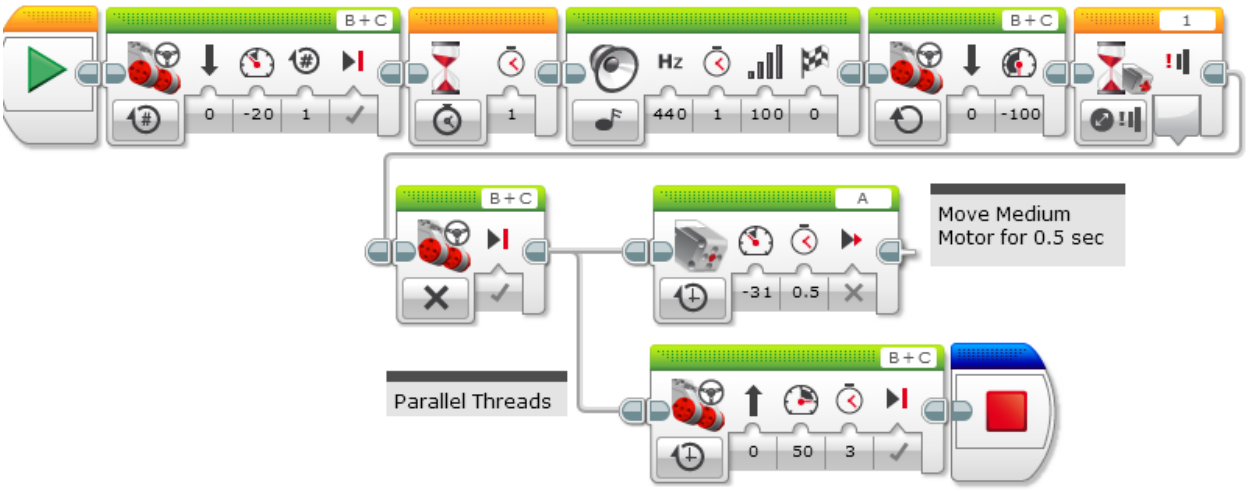


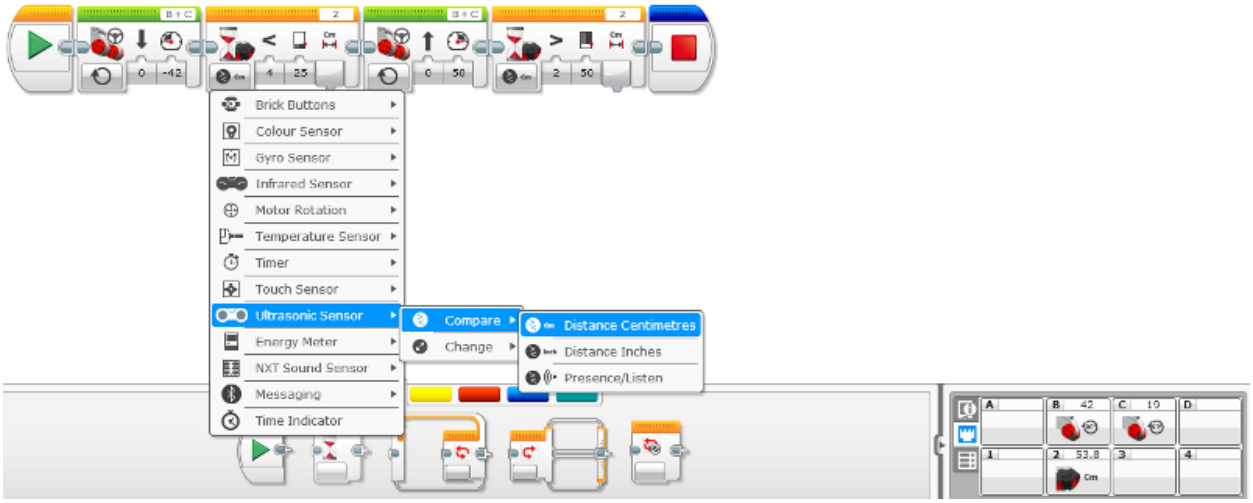
11

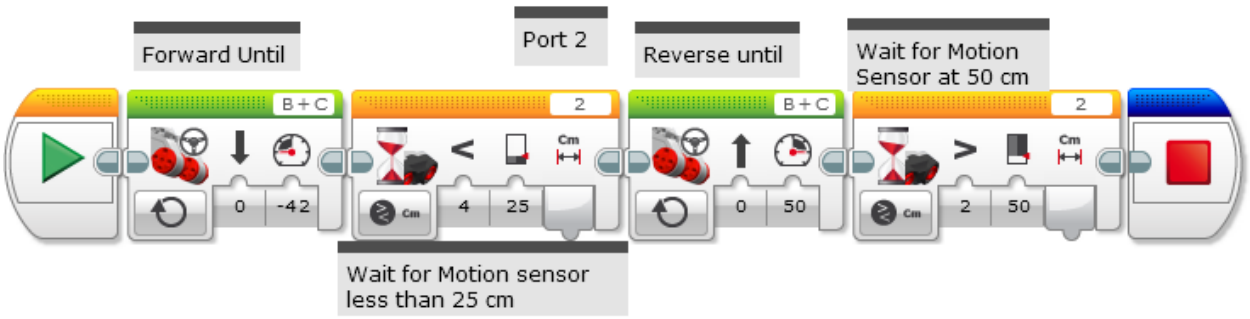

1x

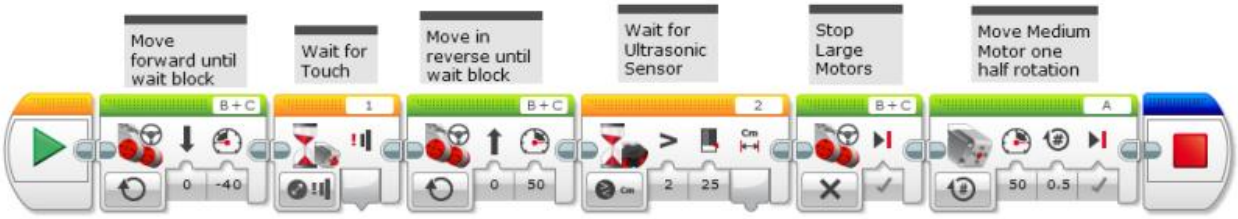



Move forward 1 rotation
Pause for 1 second
Beep for 1 second
Forward at 100% power until signalled to stop
Wait for Touch Sensor
B+C
0
-20
1
1
Hz
440
1
100
0
B+C
0
-100
1
Connecting Blocks with data wires
B+C
Stop

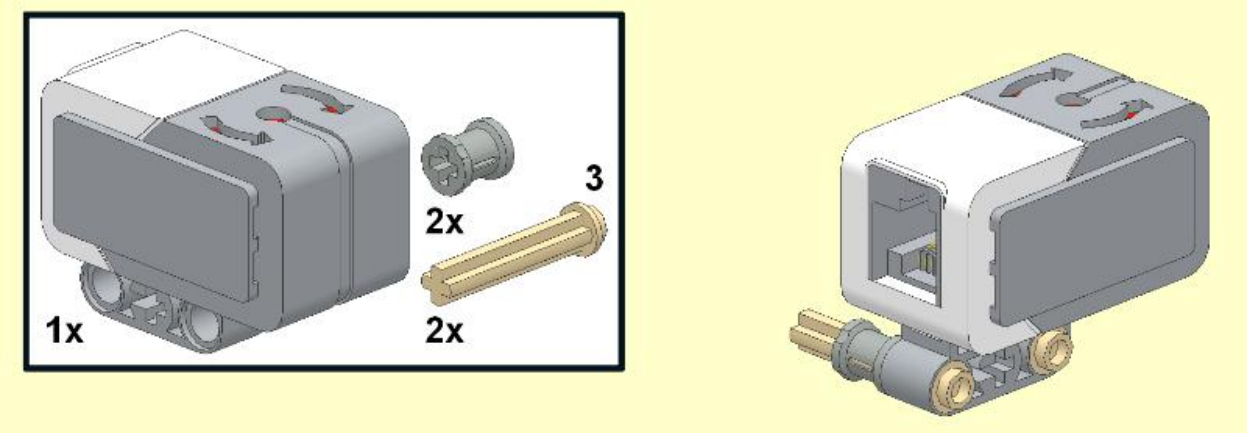

B+C
0 -20 1
1
Hz
440 1 100 0
B+C
0 -100
1
B+C
A
-31 0.5
Move Medium Motor for 0.5 sec
Parallel Threads
B+C
0 50 3

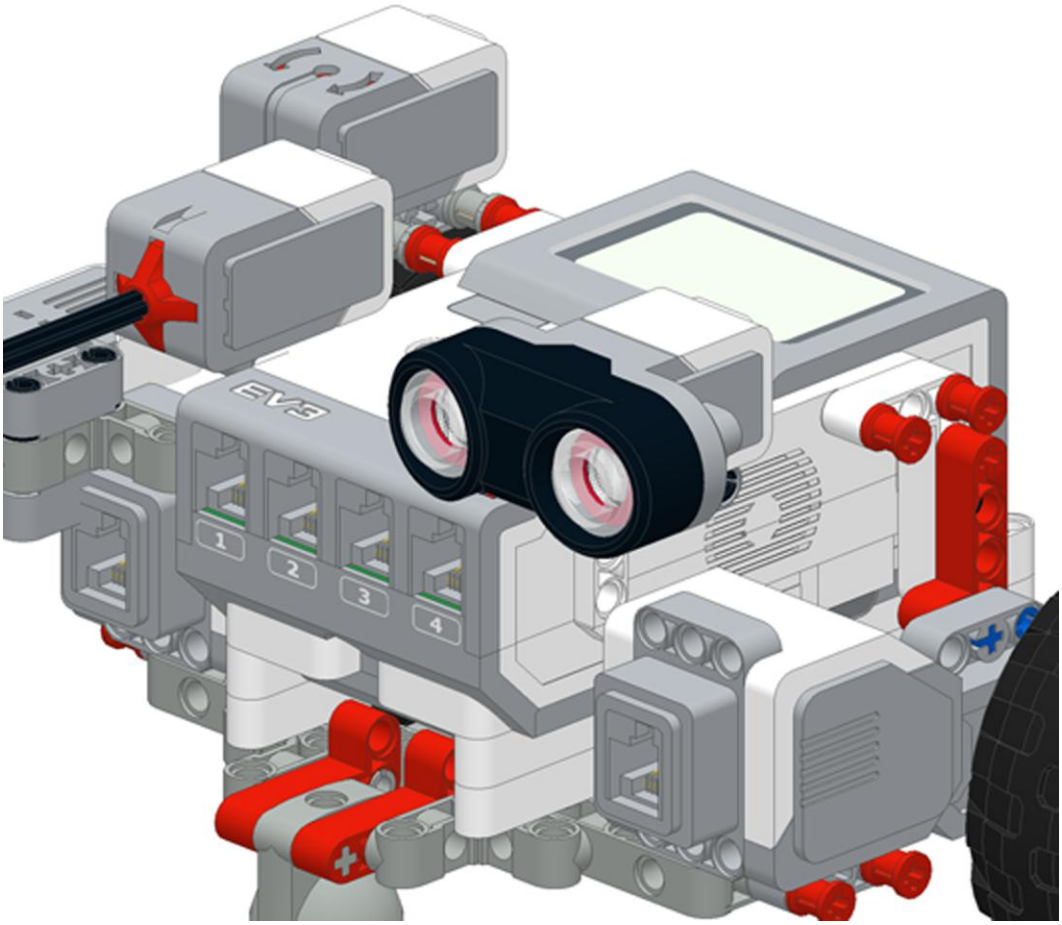

Brick Buttons
Colour Sensor
Gyro Sensor
Infrared Sensor
Motor Rotation
Temperature Sensor
Timer
Touch Sensor
Ultrasonic Sensor
Energy Meter
NXT Sound Sensor
Messaging
Time Indicator
Compare
Change
Distance Centimetres
Distance Inches
Presence/Listen

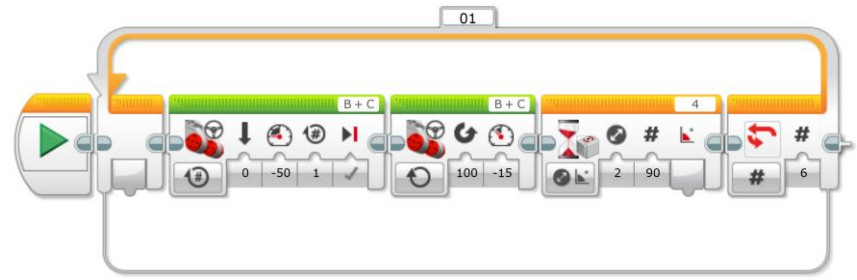

Forward Until
Port 2
Reverse until
Wait for Motion Sensor at 50 cm
B+C
0 -42
2
4 25
B+C
0 50
2
2 50
Wait for Motion sensor less than 25 cm

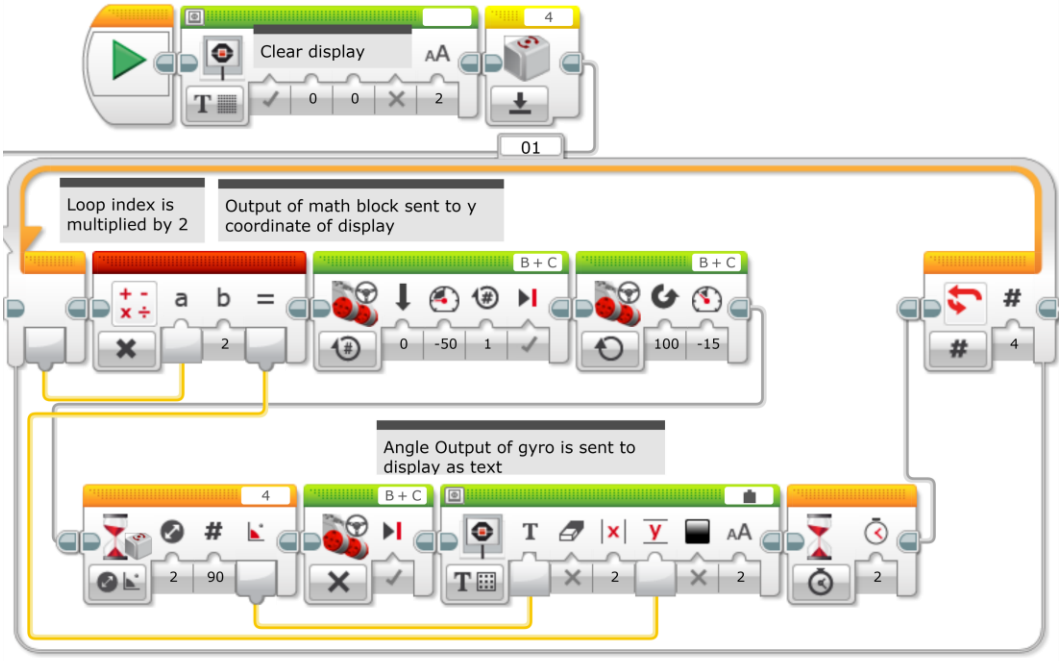

Move forward until wait block
Wait for Touch
Move in reverse until wait block
Wait for Ultrasonic Sensor
Stop Large Motors
Move Medium Motor one half rotation
B+C
1
B+C
2
B+C
A
0
-40
0
50
2
25
50
0.5

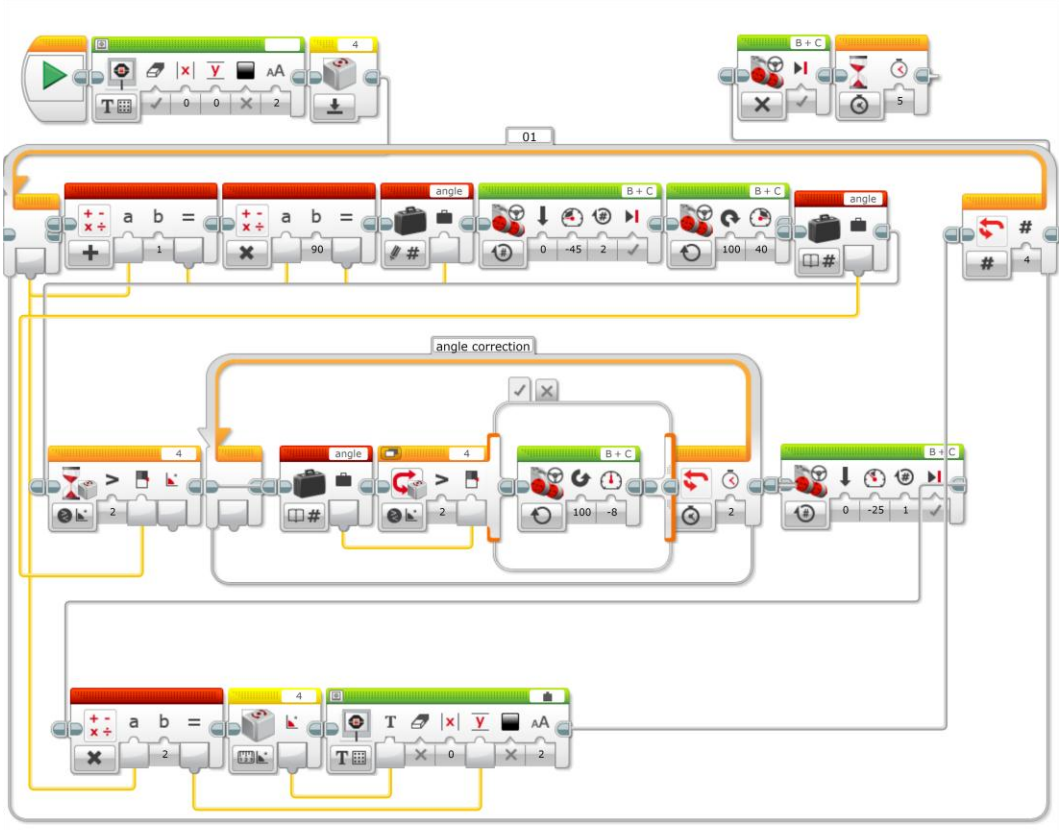
Gyro sensor movement (Medium)

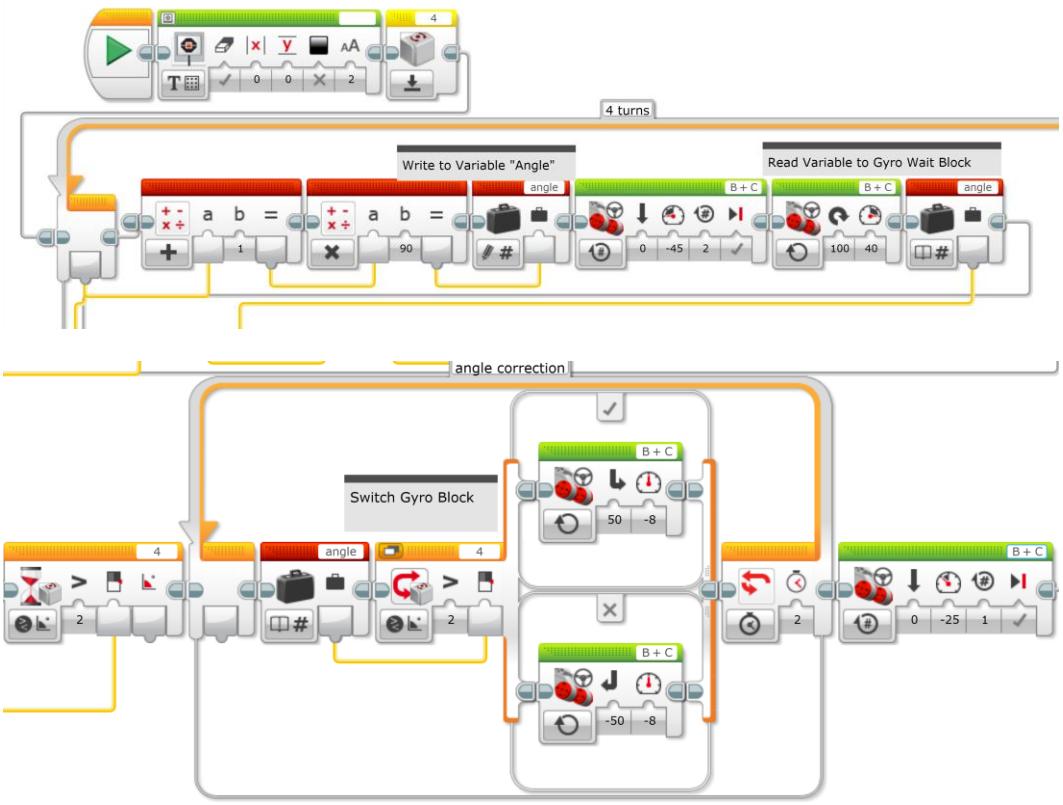


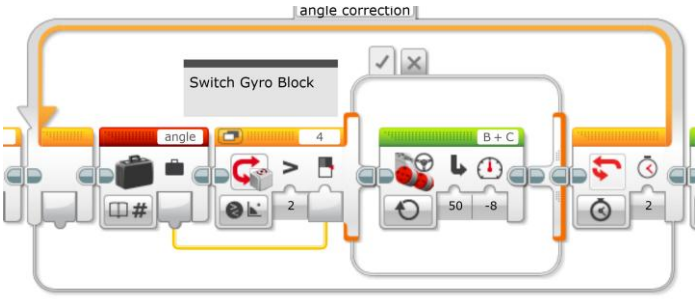


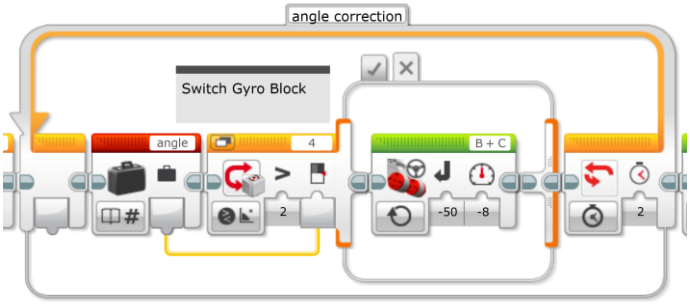

01
B + C
0
-50
1
B + C
100
-15
4
2
90
#
6

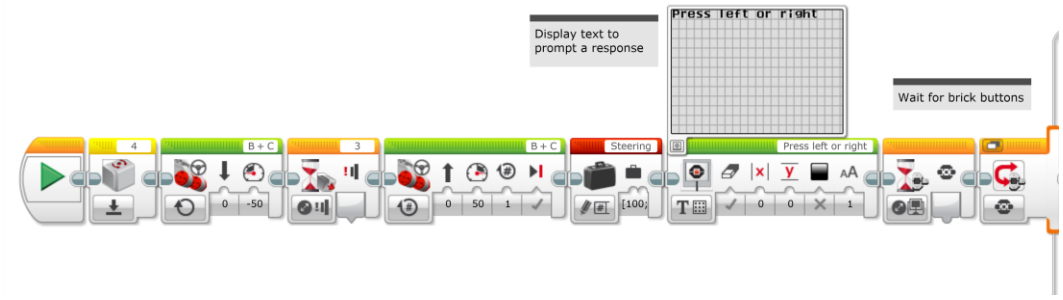

Clear display
AA
0
0
2
4
01
Loop index is multiplied by 2
Output of math block sent to y coordinate of display
a
b
=
2
B + C
0
-50
1
B + C
100
-15
#
4
Angle Output of gyro is sent to display as text
4
2
90
B + C
T
y
AA
2
2
2

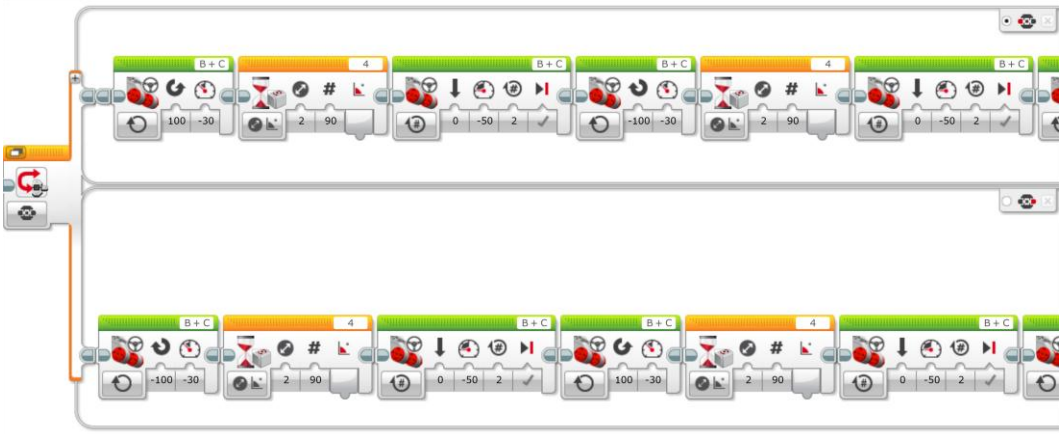

01
angle correction

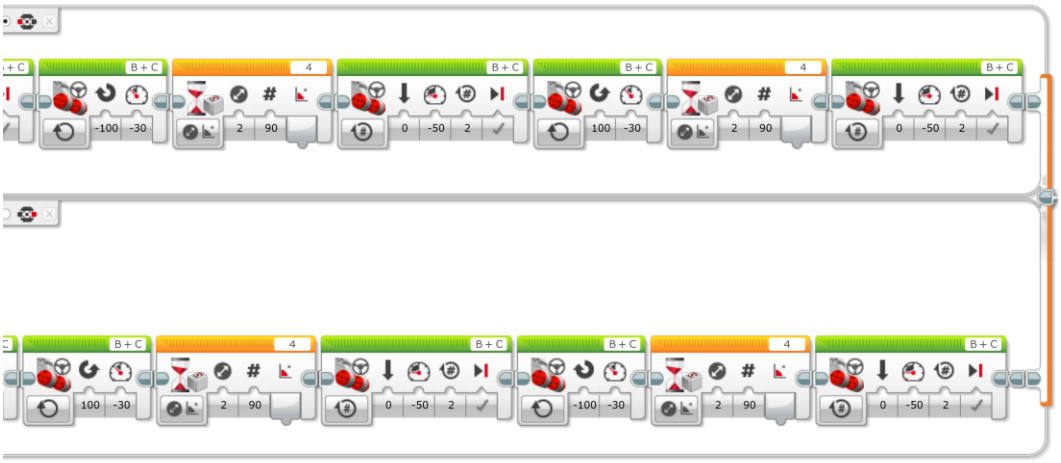

4 turns
Write to Variable "Angle"
Read Variable to Gyro Wait Block
angle correction
Switch Gyro Block

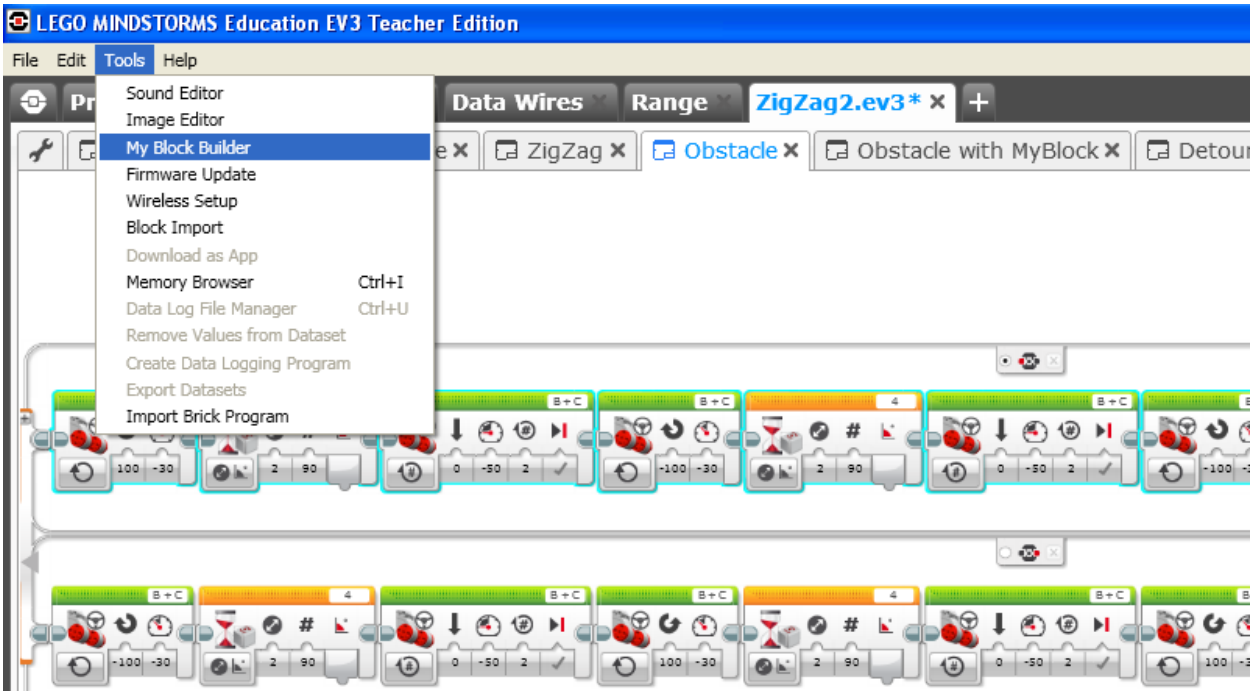

angle correction
Switch Gyro Block
angle
4
2
B + C
50
-8
2

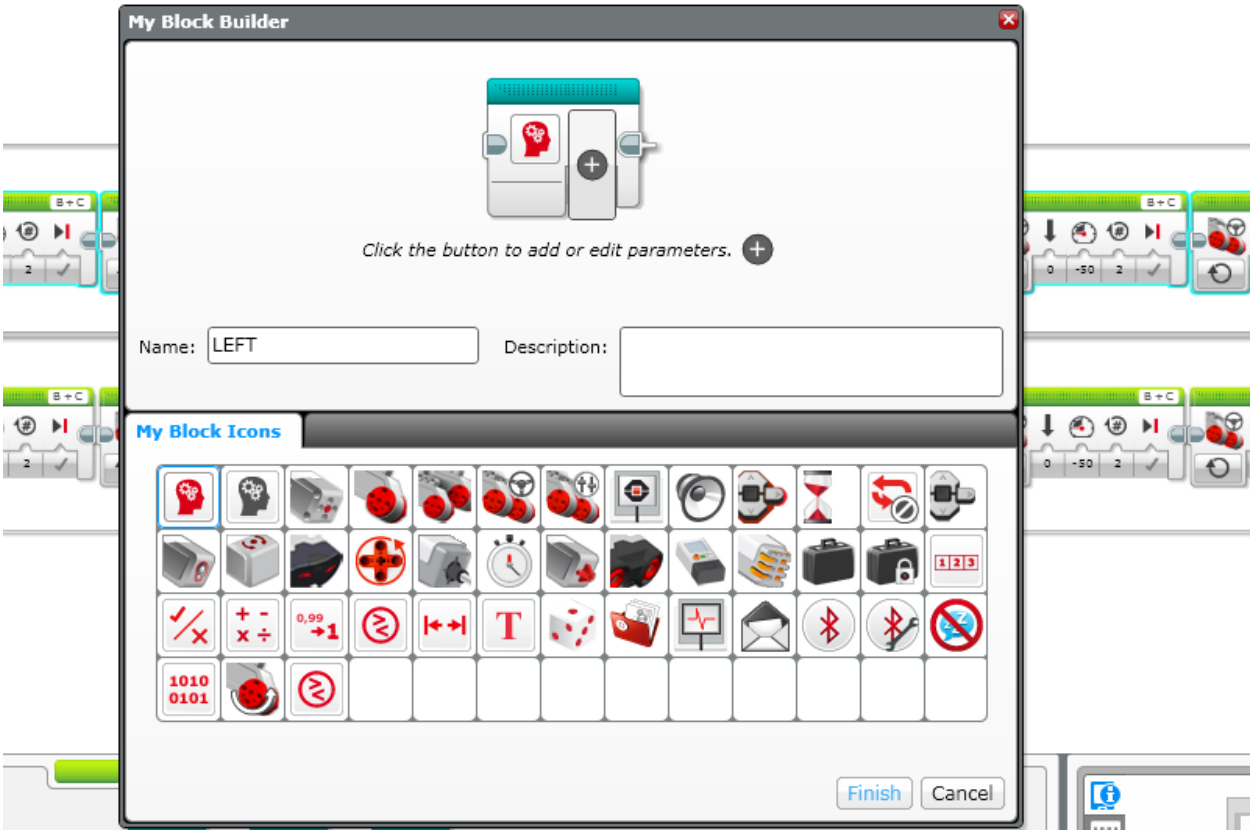

angle correction
Switch Gyro Block
angle
4
2
B + C
-50
-8
2

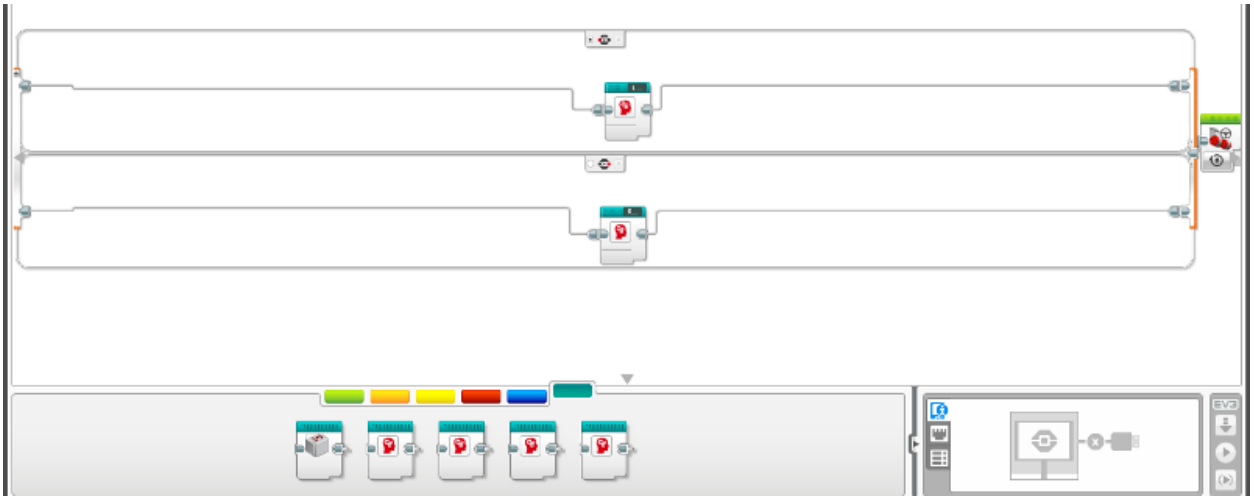

Display text to prompt a response
Press left or right
Wait for brick buttons
4
B + C
0
-50
3
B + C
0
50
1
Steering
Press left or right
0
0
1

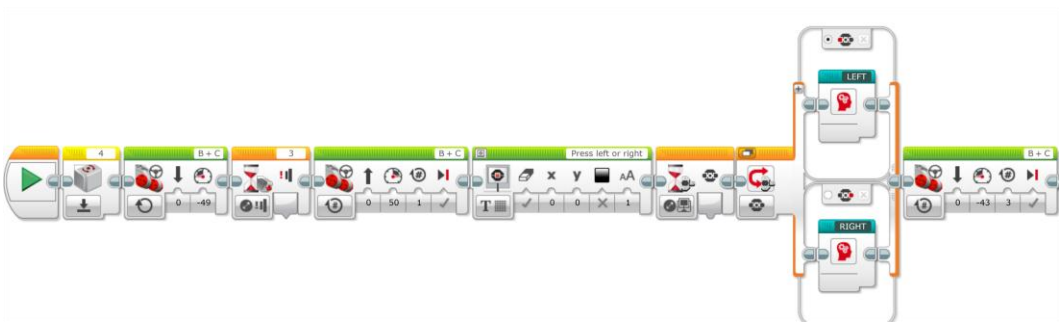

B + C
100
-30
4
2
90
B + C
0
-50
2
B + C
-100
-30
4
2
90
B + C
0
-50
2
B + C
-100
-30
4
2
90
B + C
0
-50
2
B + C
100
-30
4
2
90
B + C
0
-50
2

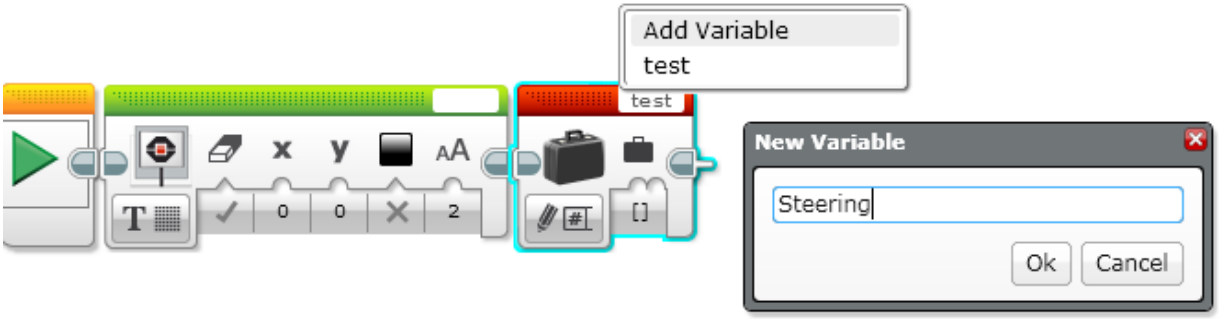


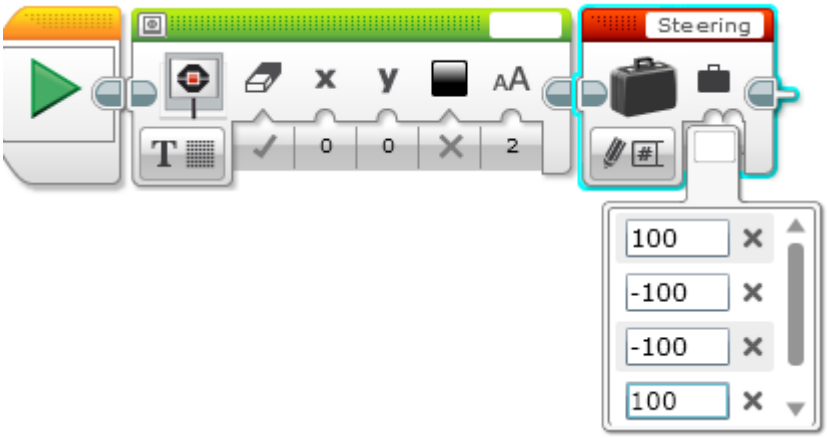

LEGO MINDSTORMS Education EV3 Teacher Edition
File
Edit
Tools
Help
Sound Editor
Image Editor
My Block Builder
Firmware Update
Wireless Setup
Block Import
Download as App
Memory Browser Ctrl+I
Data Log File Manager Ctrl+U
Remove Values from Dataset
Create Data Logging Program
Export Datasets
Import Brick Program
Data Wires
Range
ZigZag2.ev3*
ZigZag
Obstacle
Obstacle with MyBlock

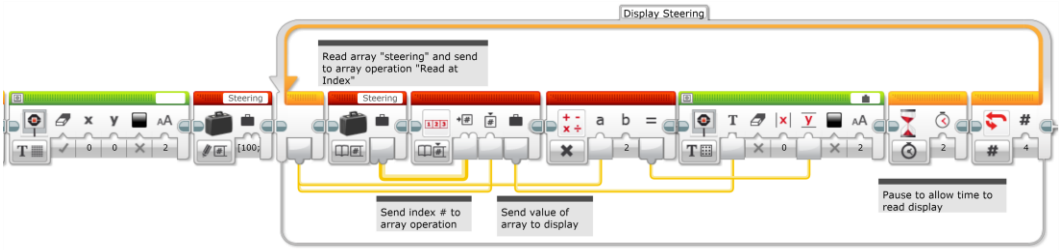

My Block Builder
Click the button to add or edit parameters.
Name: LEFT
Description:
My Block Icons
Finish
Cancel

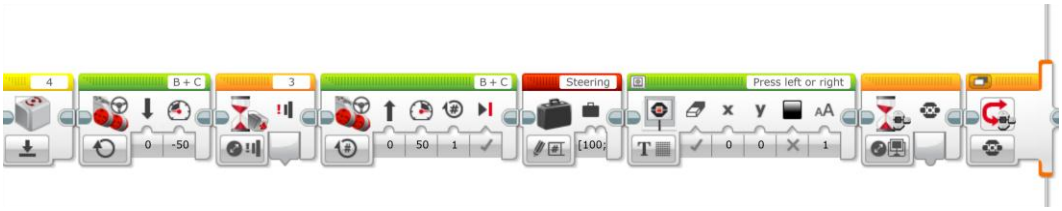


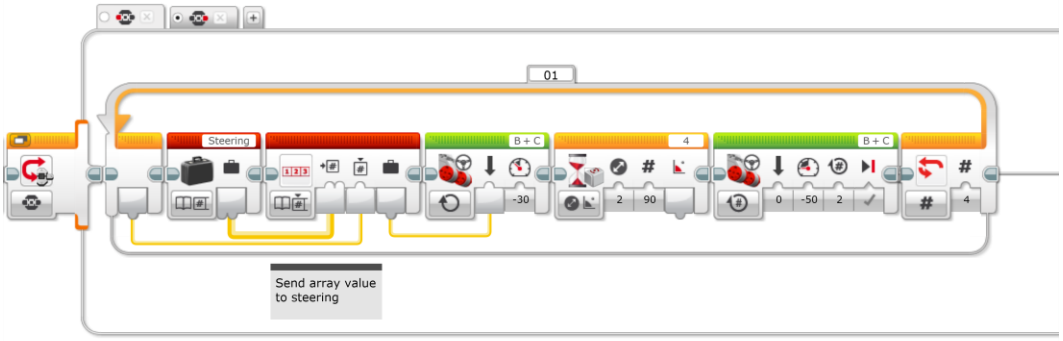

LEFT
RIGHT

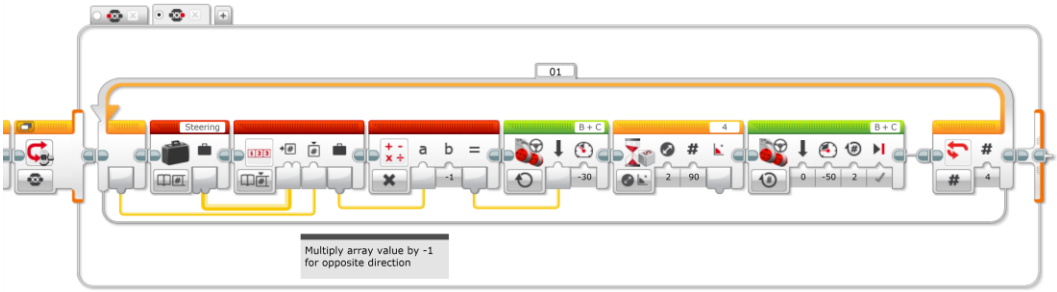

Add Variable
test
test
New Variable
Steering
Ok
Cancel

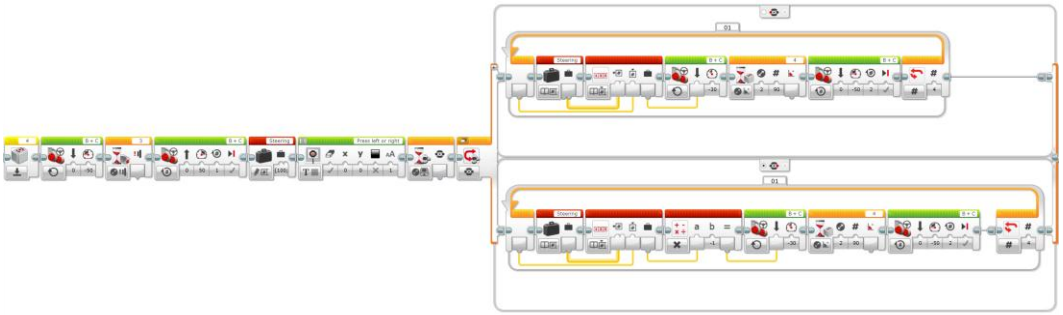

Steering
100
-100
-100
100


Display Steering
Read array "steering" and send to array operation "Read at Index"
Steering
Steering
Send index # to array operation
Send value of array to display
Pause to allow time to read display

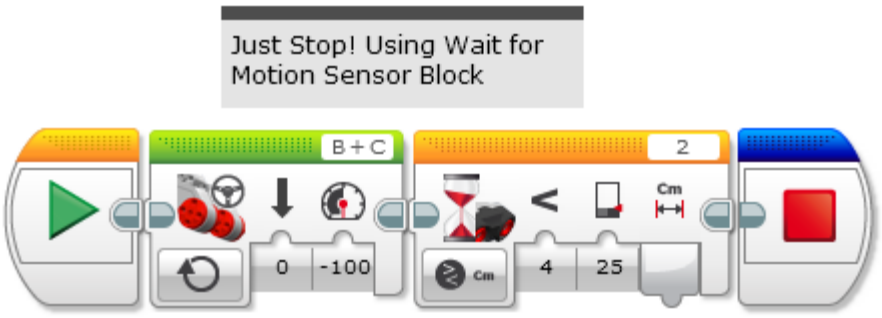

B + C
B + C
Steering
Press left or right

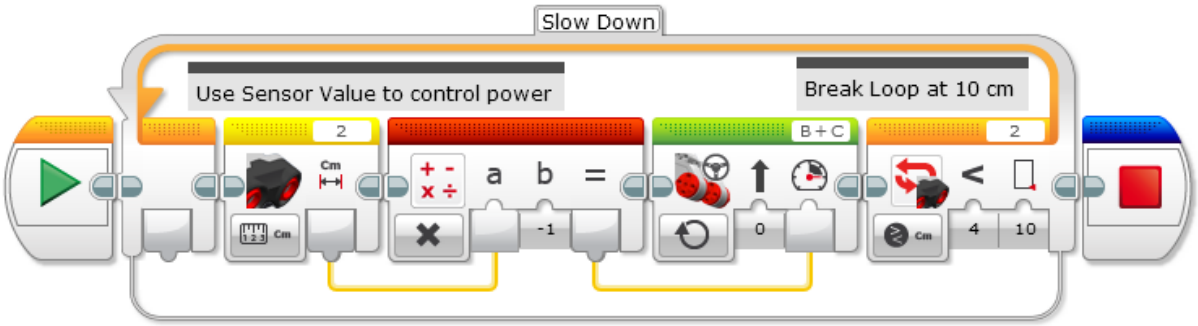

01
Steering
B + C
-30
4
2
90
B + C
0
-50
2
4
Send array value
to steering

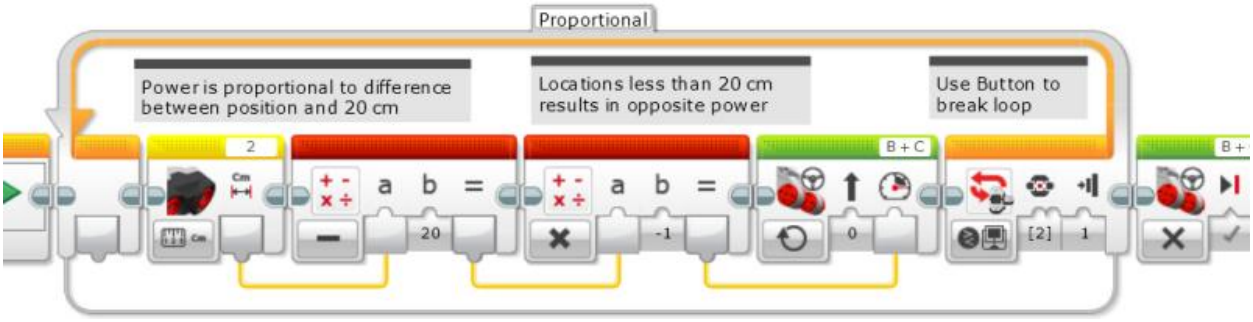

01
Steering
a
b
=
-1
B + C
-30
4
2
90
B + C
0
-50
2
4
Multiply array value by -1
for opposite direction

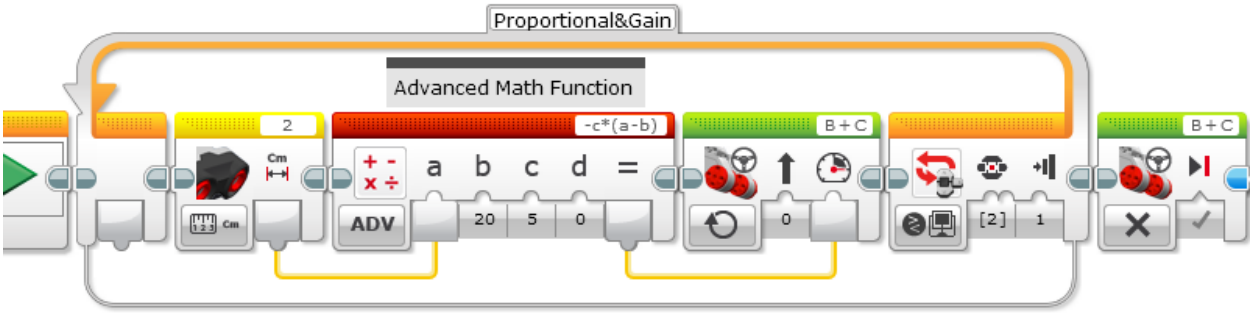


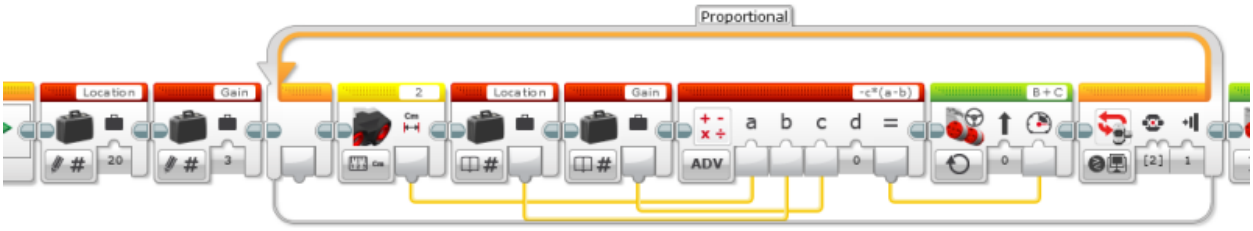
Ultrasonic motion sensing (Advanced)

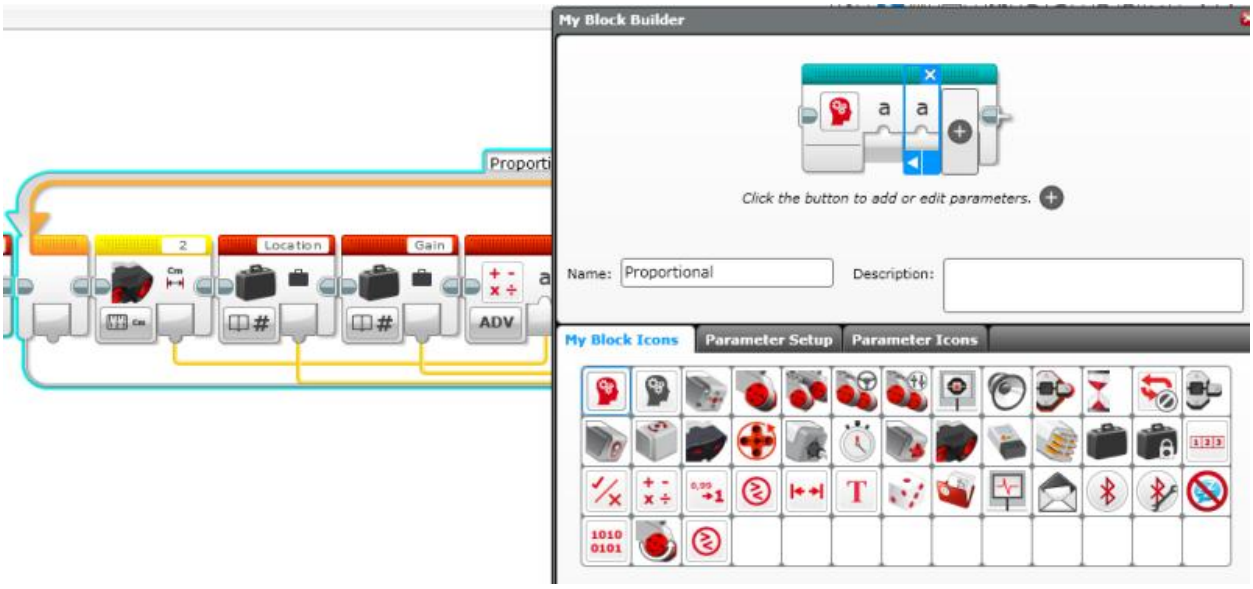


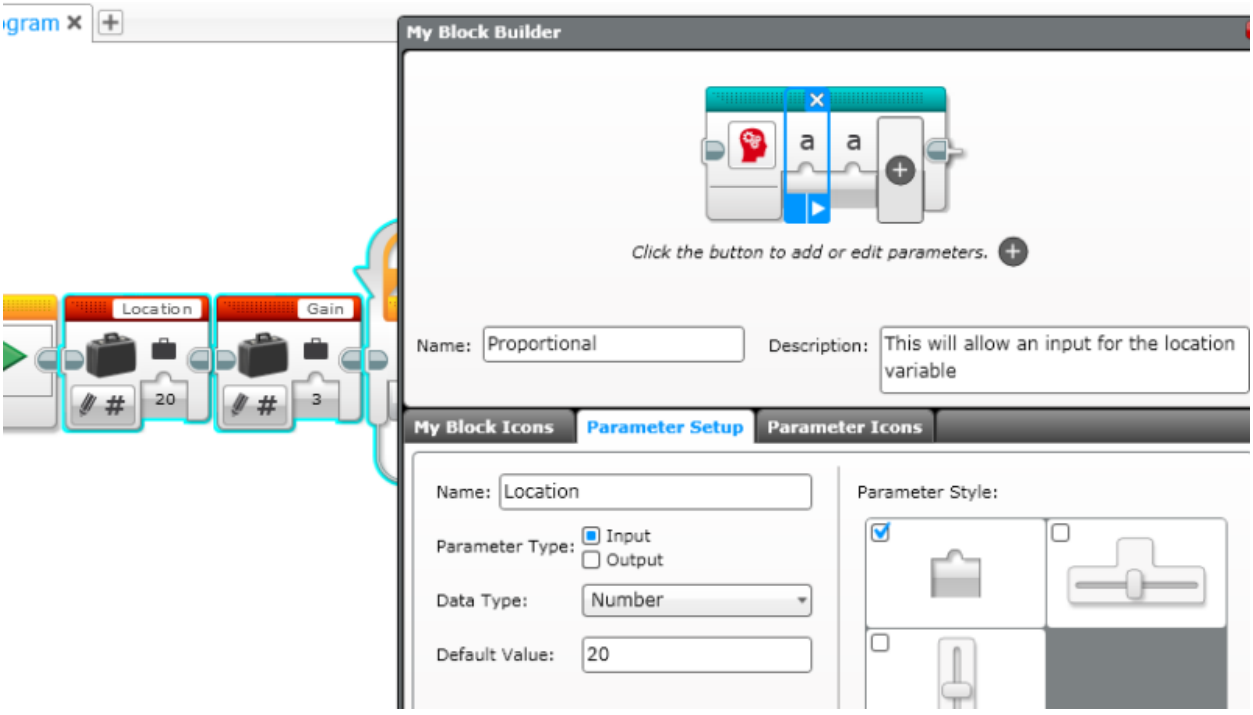


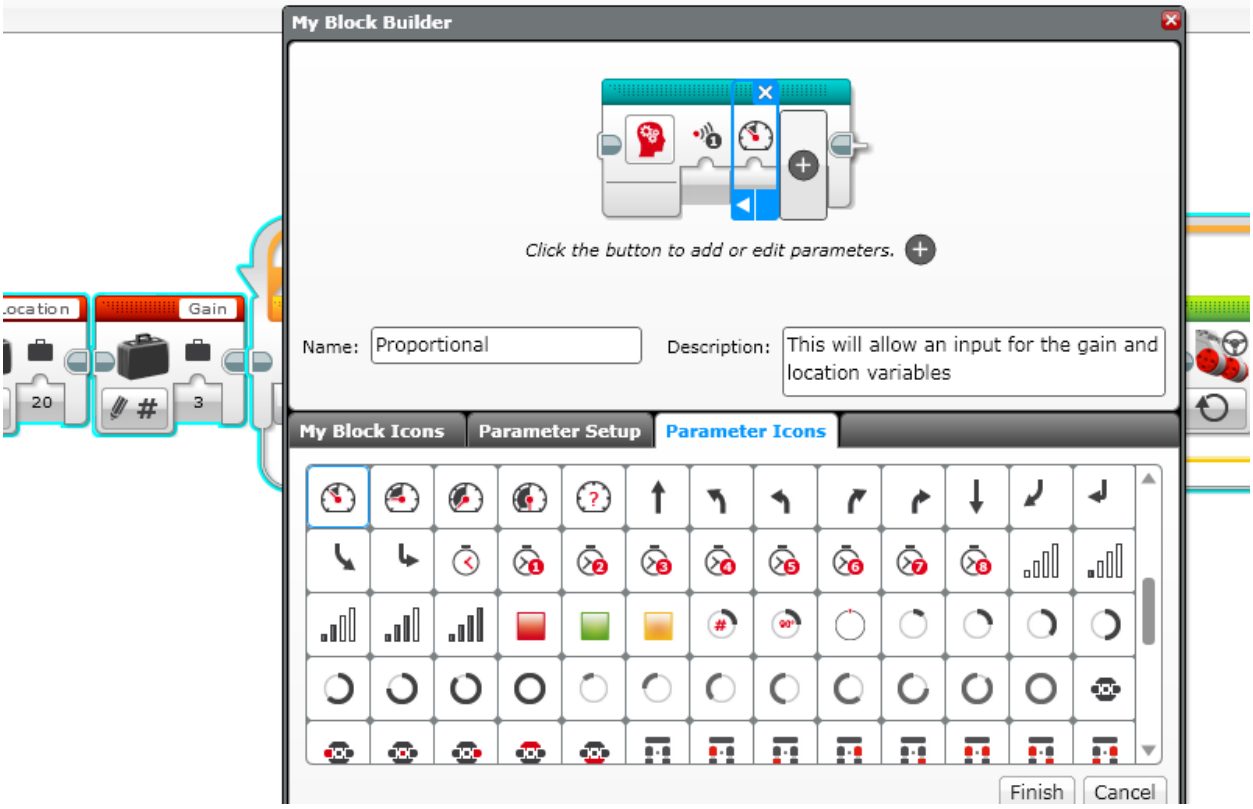




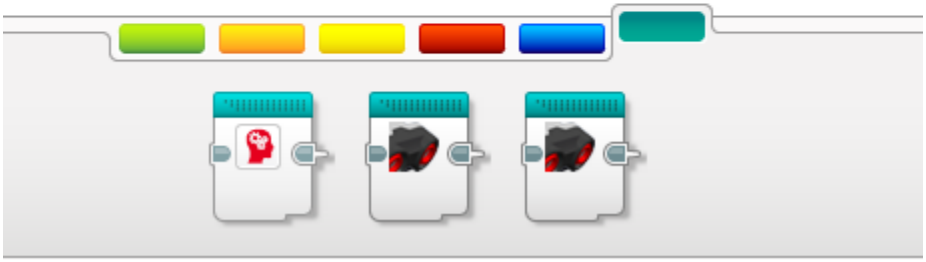

Proportional
Location
Gain
20
3
2
Location
Gain
ADV
a b c d =
-c*(a-b)
0
B+C
0
[2]
1

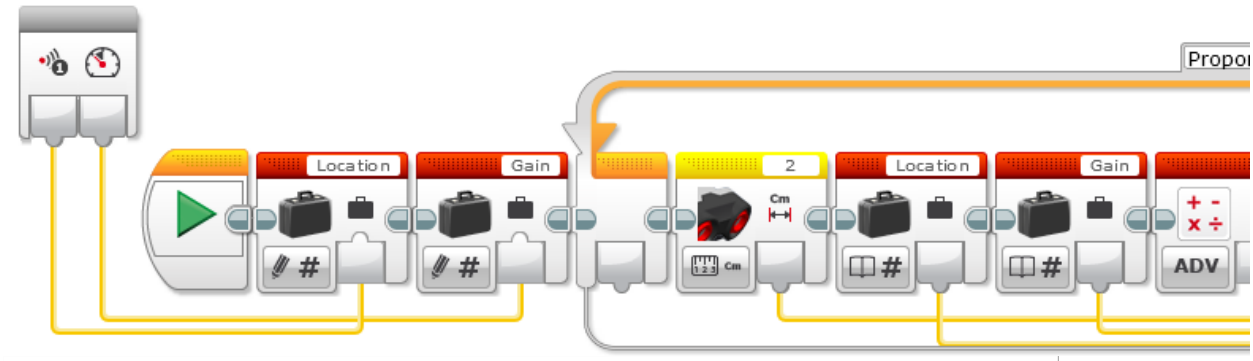

My Block Builder
a
a
Click the button to add or edit parameters.
Name:
Proportional
Description:
My Block Icons
Parameter Setup
Parameter Icons
2
Location
Gain
ADV

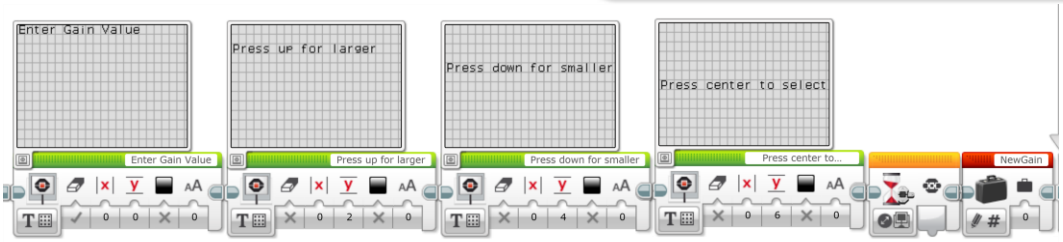

My Block Builder
a
a
Click the button to add or edit parameters.
Name:
Proportional
Description:
This will allow an input for the location variable
My Block Icons
Parameter Setup
Parameter Icons
Location
Gain
20
3
Name:
Location
Parameter Type:
Input
Output
Data Type:
Number
Default Value:
20
Parameter Style:

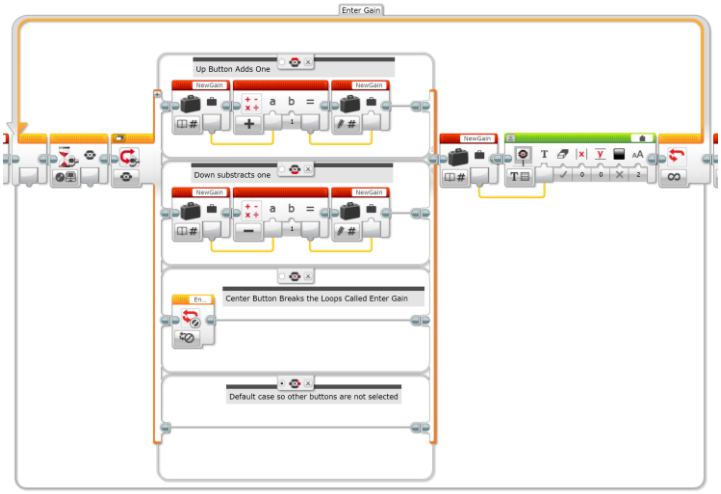

My Block Builder
Click the button to add or edit parameters.
Name:
Proportional
Description:
This will allow an input for the gain and location variables
My Block Icons
Parameter Setup
Parameter Icons
Finish
Cancel
Gain
20
3

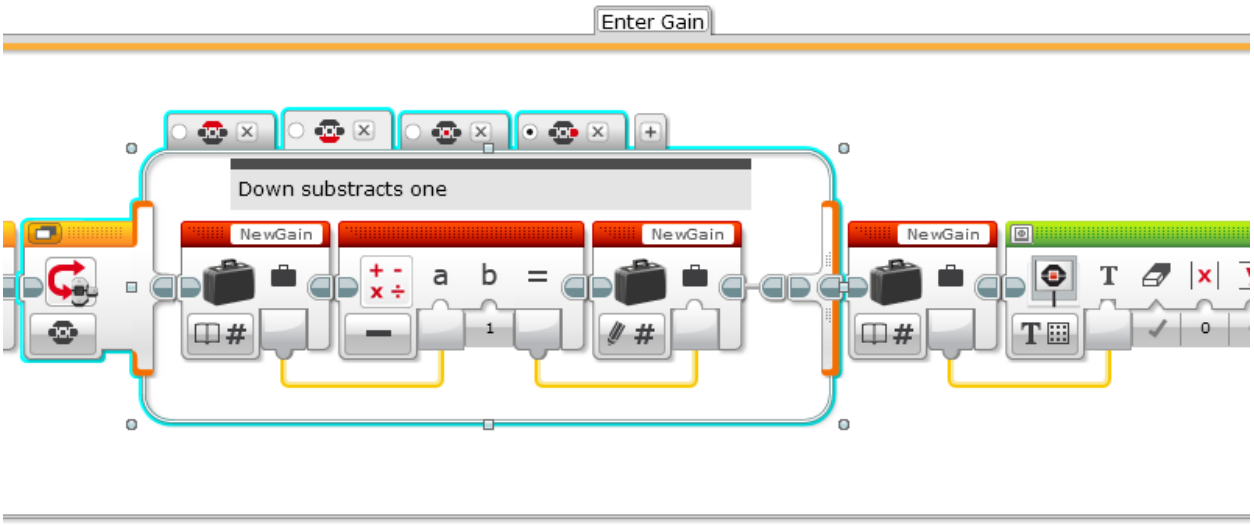
Proportional
20
3
B+C
0
50
1

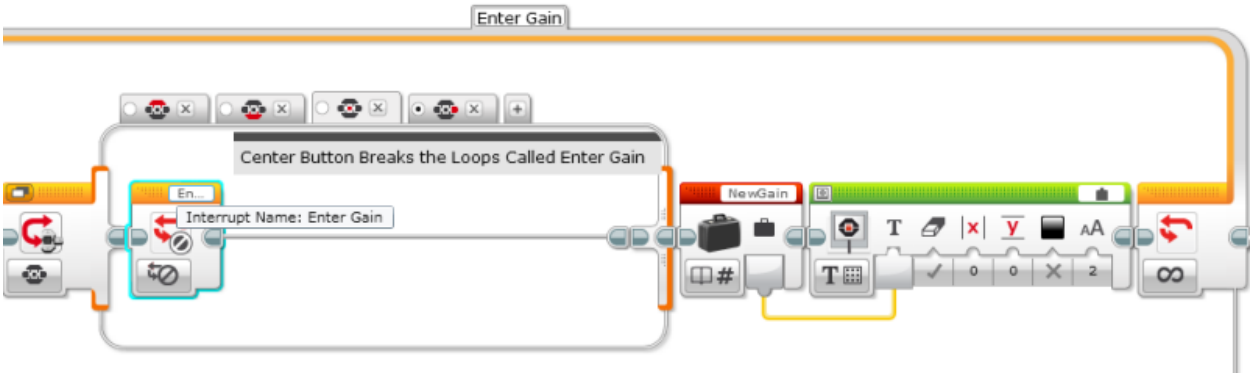


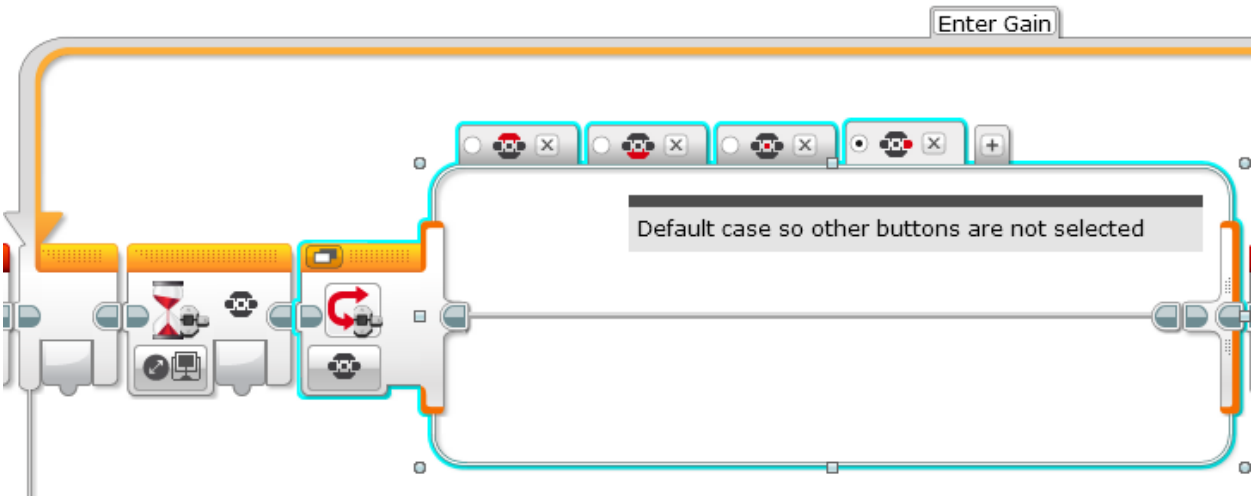

Propo
Location
Gain
2
Cm
Location
Gain
ADV

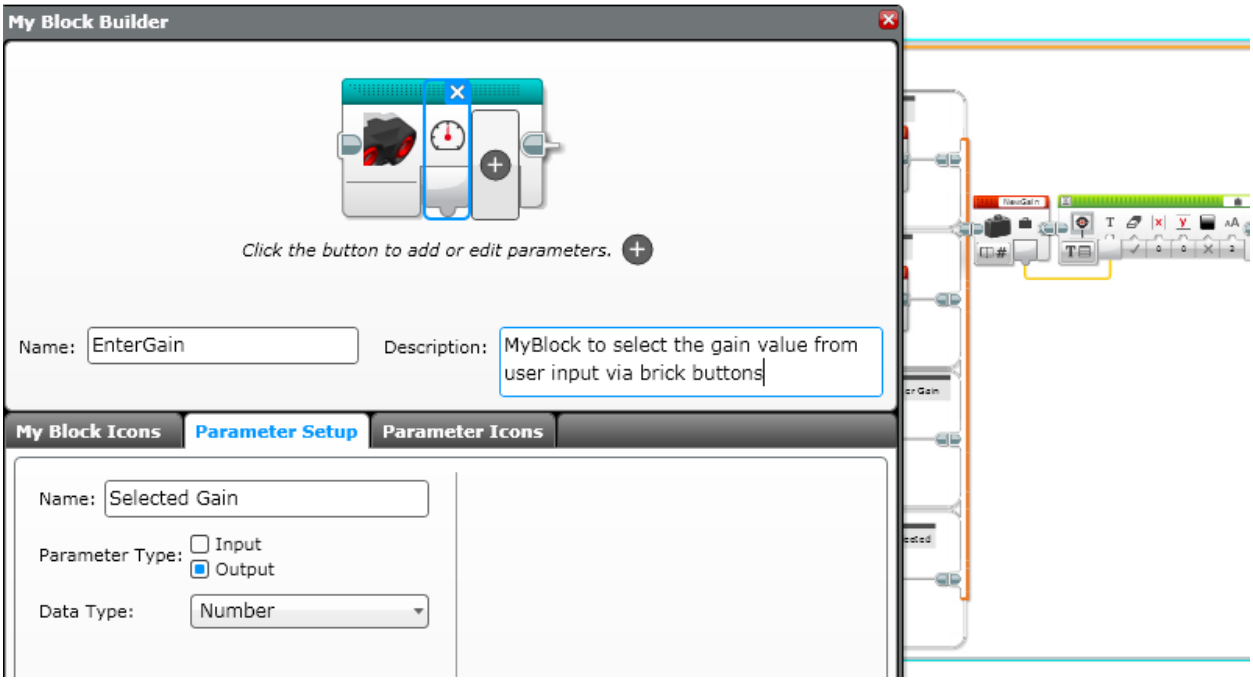

Enter Gain Value
Press up for larger
Press down for smaller
Press center to select
Enter Gain Value
Press up for larger
Press down for smaller
Press center to...
NewGain

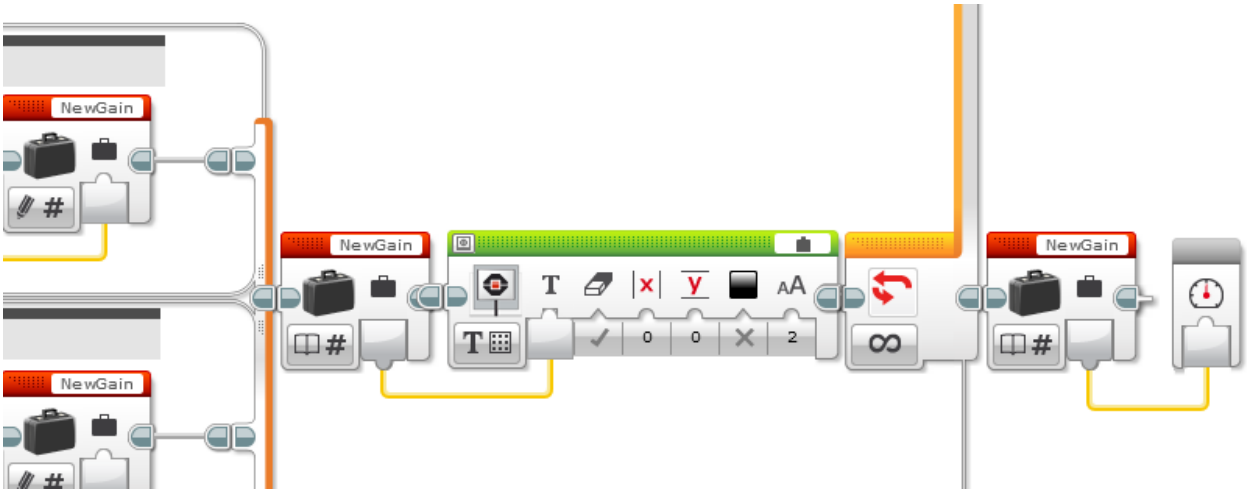

Enter Gain
Up Button Adds One
Down substracts one
Center Button Breaks the Loops Called Enter Gain
Default case so other buttons are not selected


Enter Gain
Down substracts one
NewGain
NewGain
NewGain
a
b
=
1
0

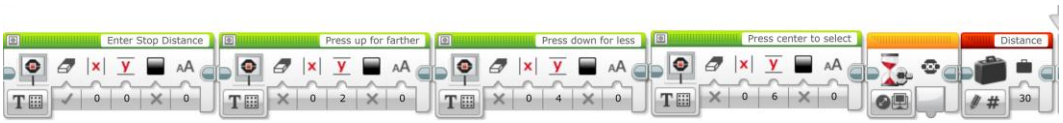

Enter Gain
Center Button Breaks the Loops Called Enter Gain
En...
Interrupt Name: Enter Gain
NewGain
0
0
2

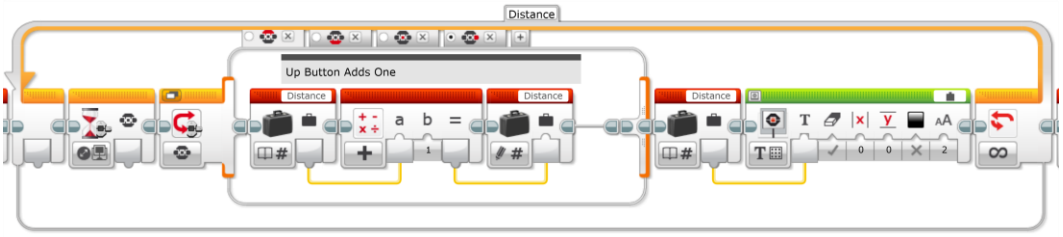

Enter Gain
Default case so other buttons are not selected

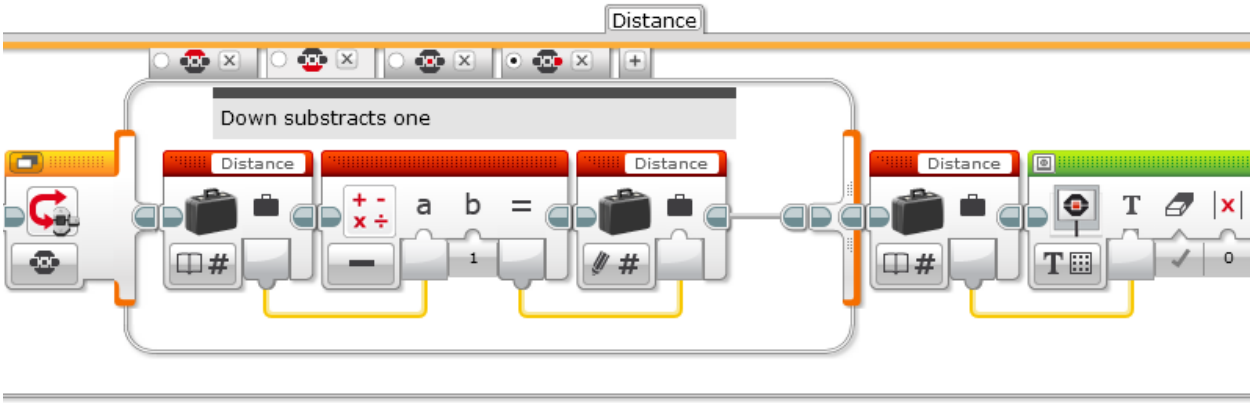

My Block Builder
Click the button to add or edit parameters.
Name: EnterGain
Description: MyBlock to select the gain value from user input via brick buttons
My Block Icons
Parameter Setup
Parameter Icons
Name: Selected Gain
Parameter Type: Input Output
Data Type: Number

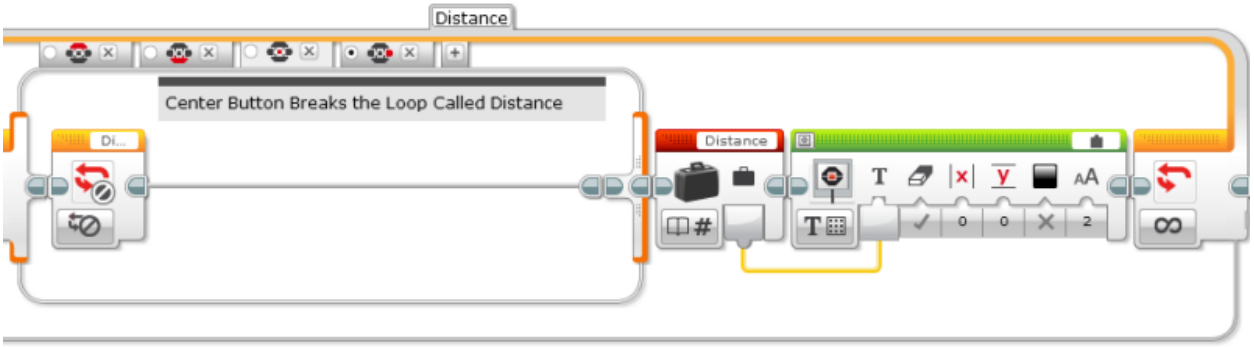

NewGain
NewGain
NewGain
NewGain
0
0
2

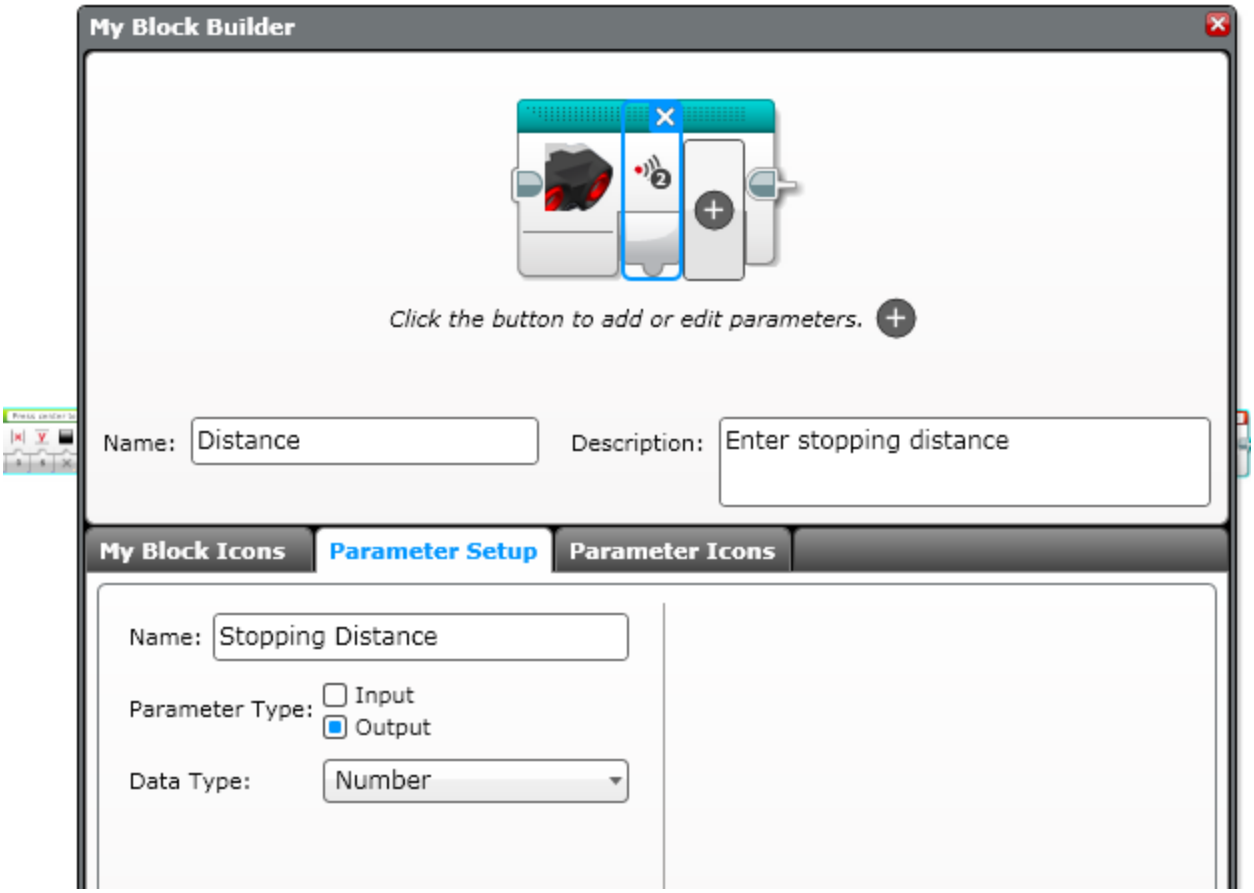
EnterGain
Proportional
20

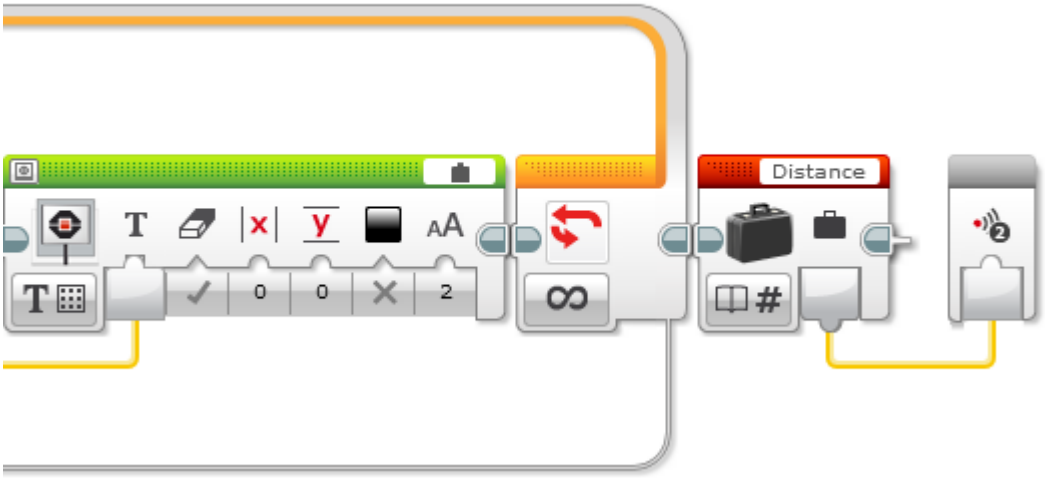

Enter Stop Distance
Press up for farther
Press down for less
Press center to select
Distance

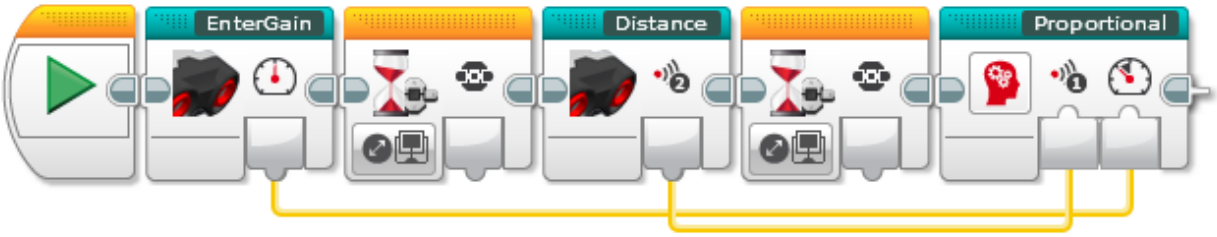

Distance
Up Button Adds One
Distance
a b =
Distance
Distance

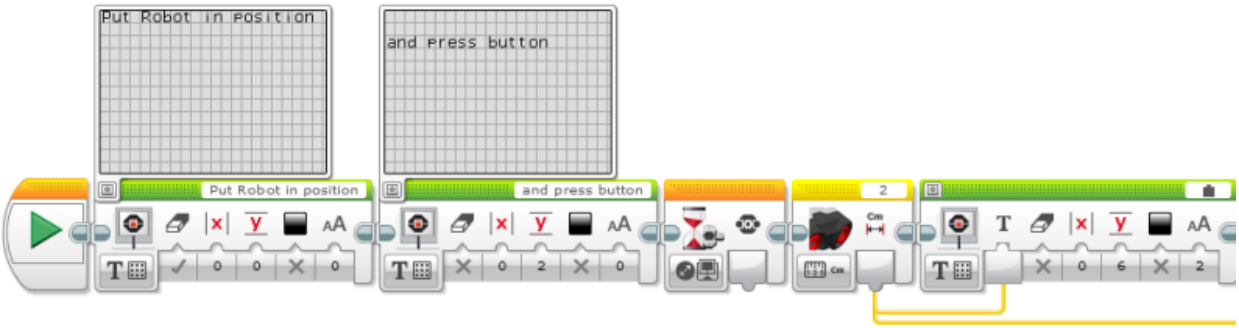

Distance
Down substracts one
Distance
a b =
Distance
Distance

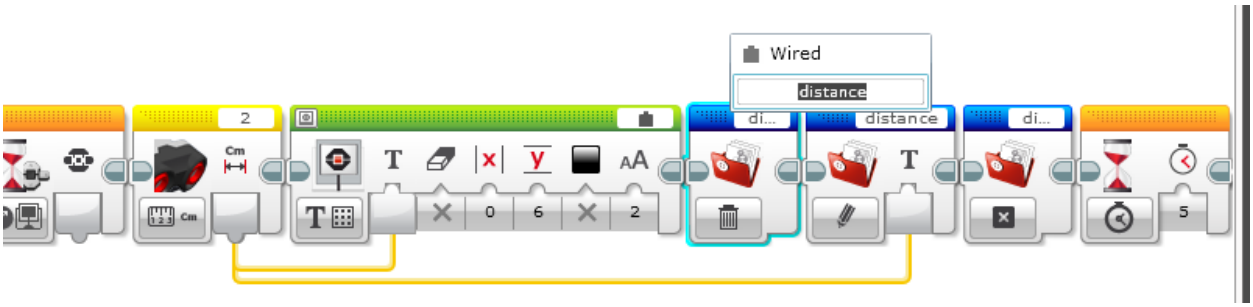

Distance
Center Button Breaks the Loop Called Distance
Distance

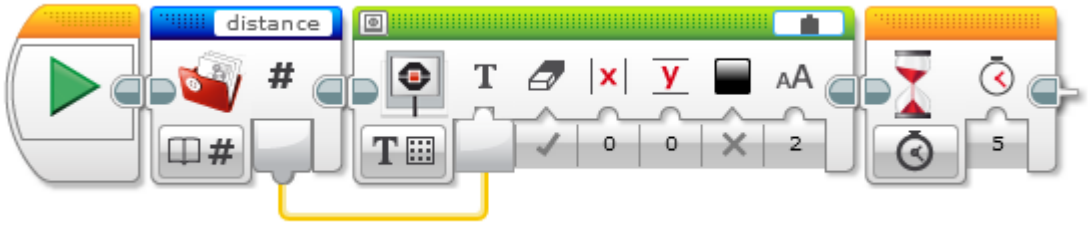

My Block Builder
Click the button to add or edit parameters.
Name: Distance
Description: Enter stopping distance
My Block Icons
Parameter Setup
Parameter Icons
Name: Stopping Distance
Parameter Type: Input Output
Data Type: Number

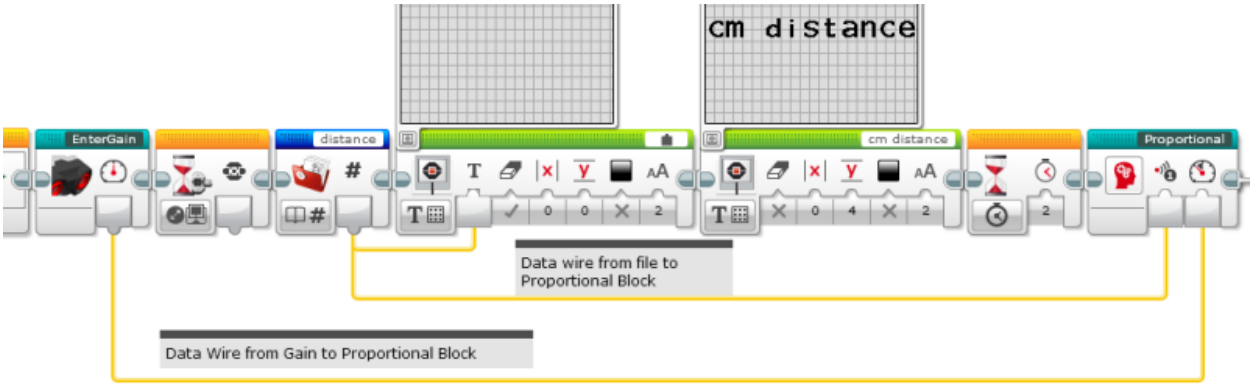

Distance


EnterGain
Distance
Proportional


Put Robot in position
and press button
Put Robot in position
and press button
2

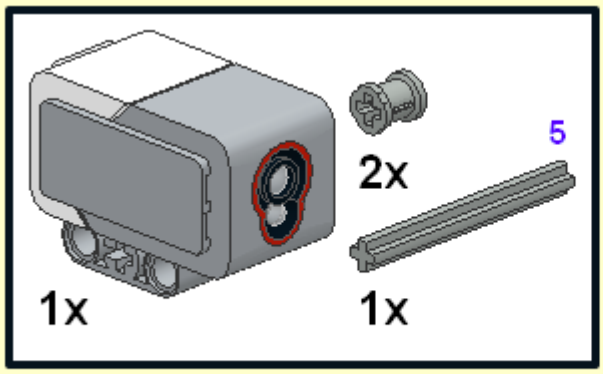

Wired
distance
2
distance
distance
5

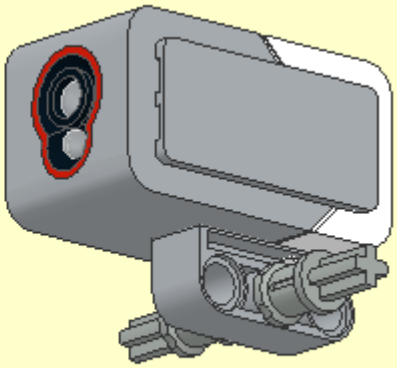

distance
0
0
2
5


cm distance
EnterGain
distance
cm distance
Proportional
Data wire from file to Proportional Block
Data Wire from Gain to Proportional Block

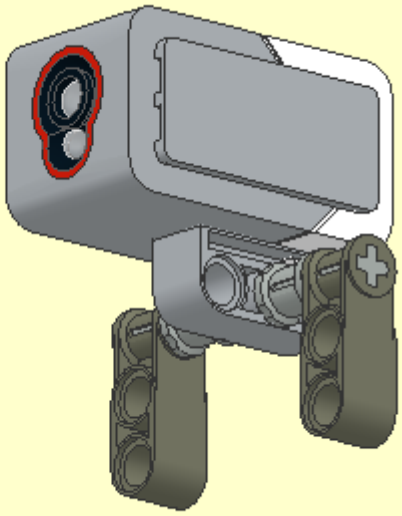
Proportional line follower (Advanced)

1

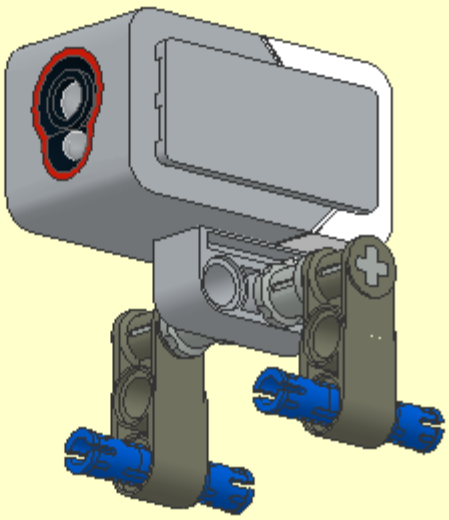


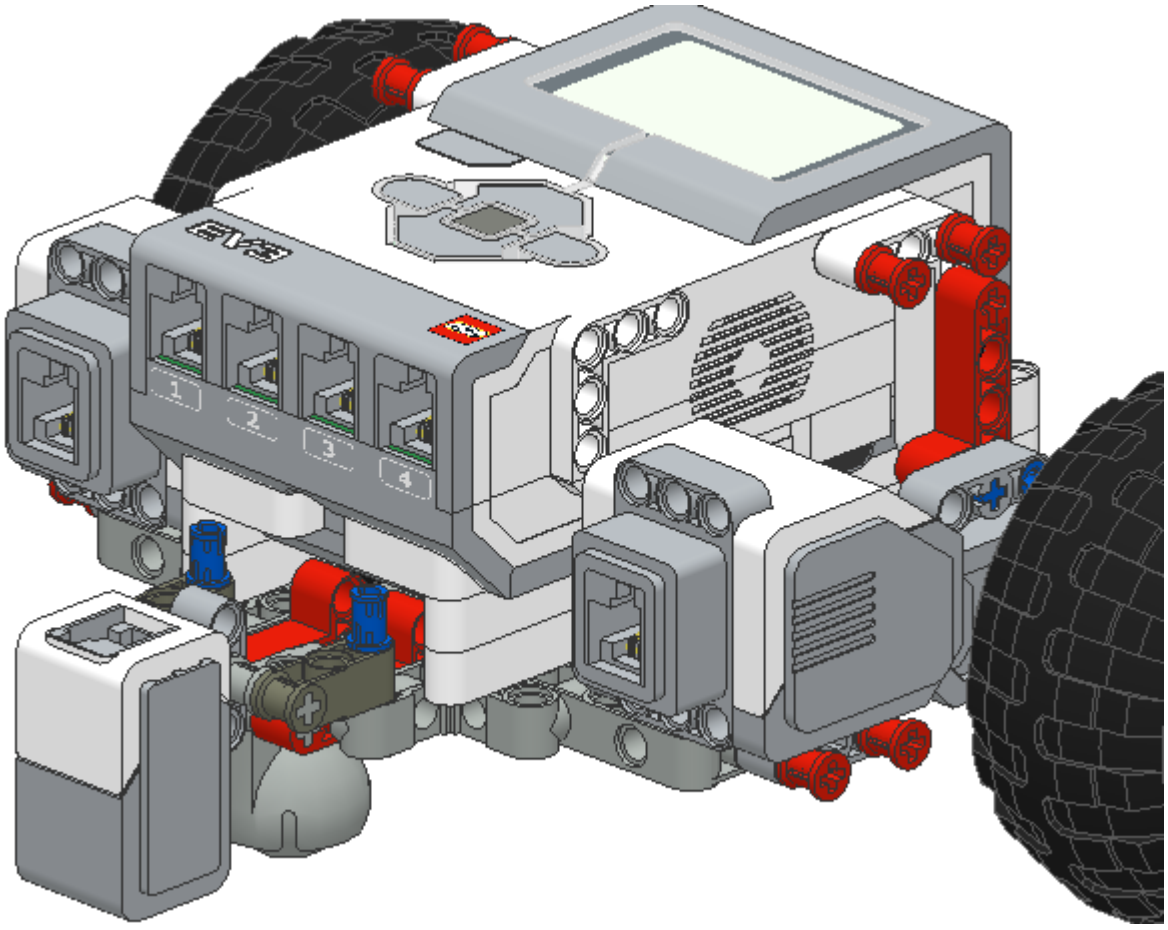


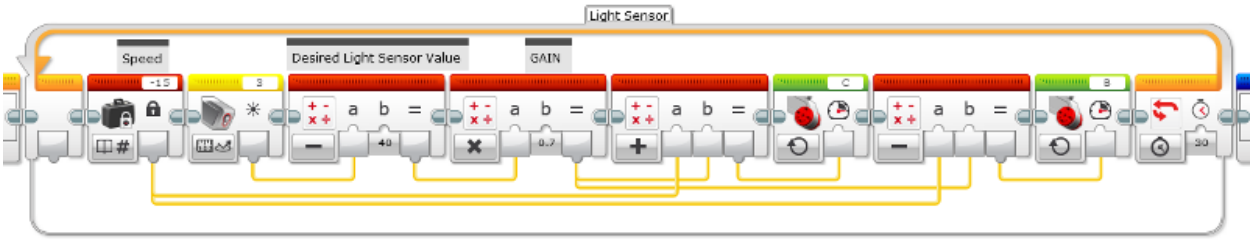
2

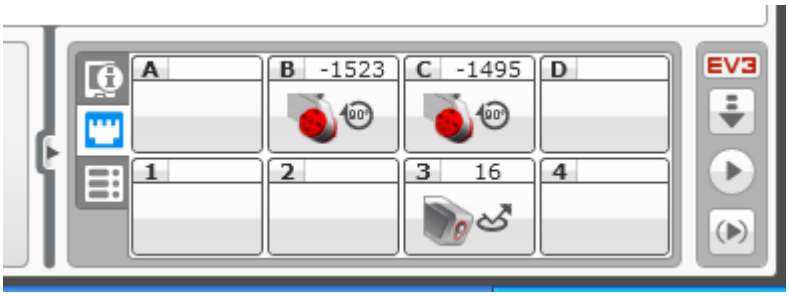


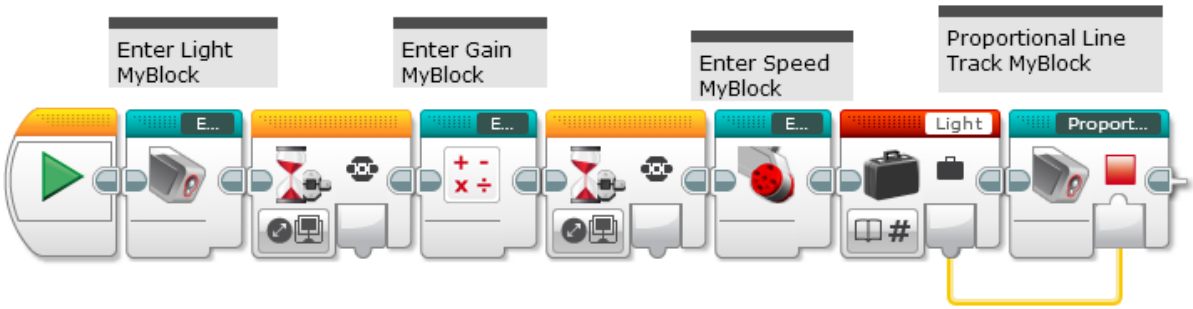
3

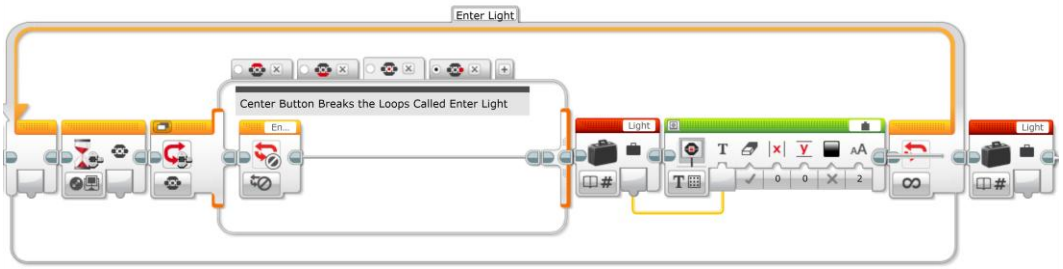


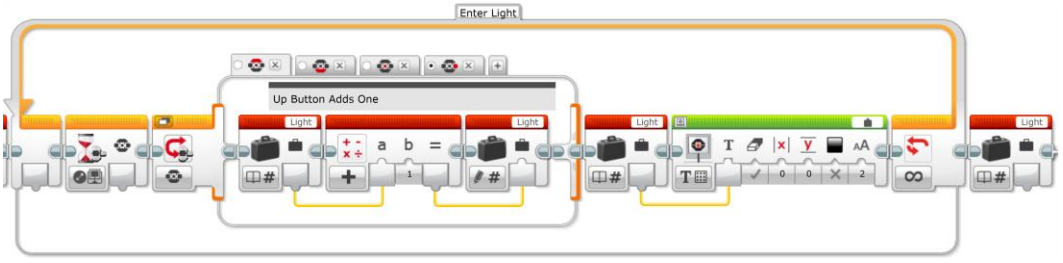


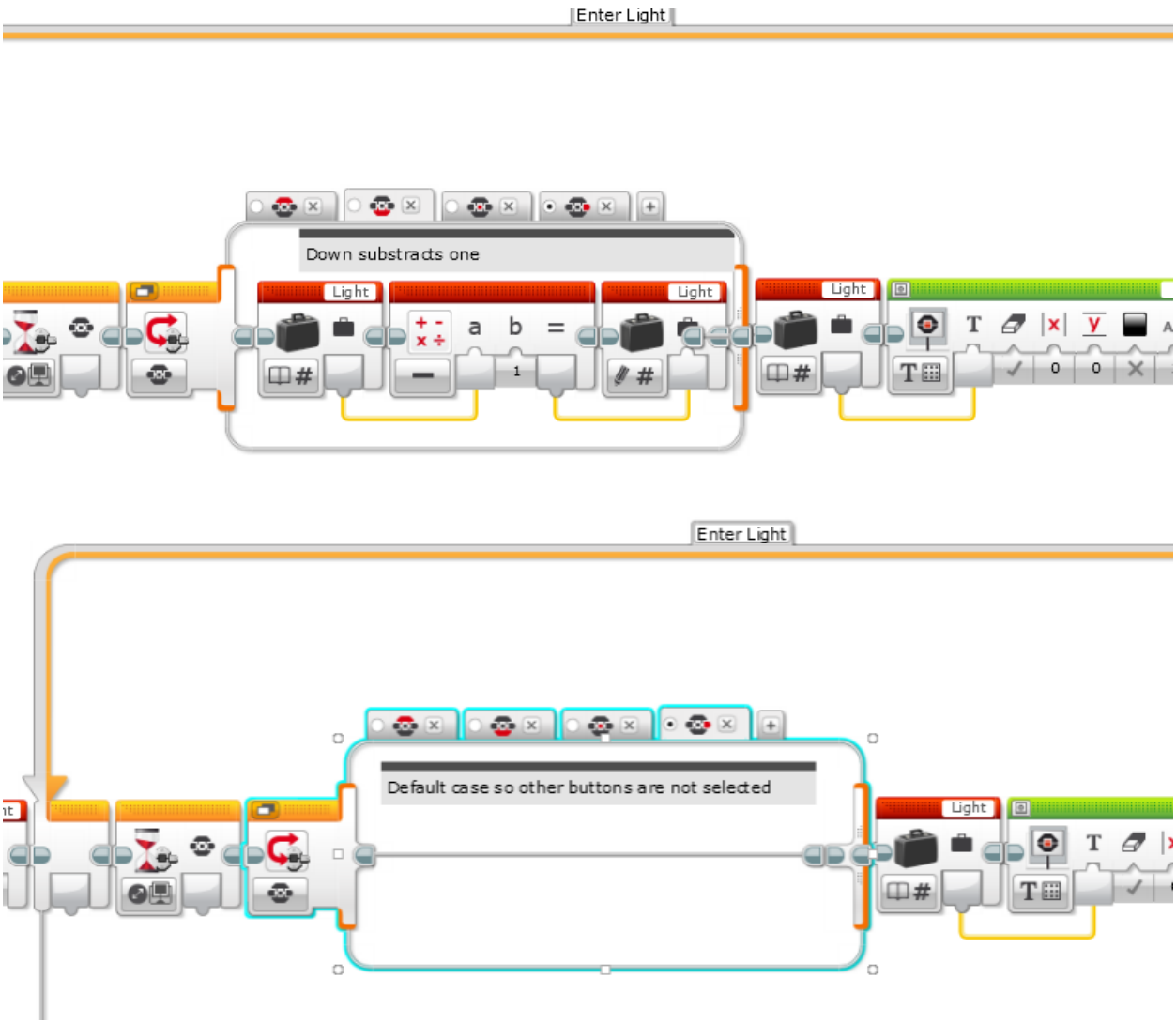

Light Sensor
Speed
Desired Light Sensor Value
GAIN

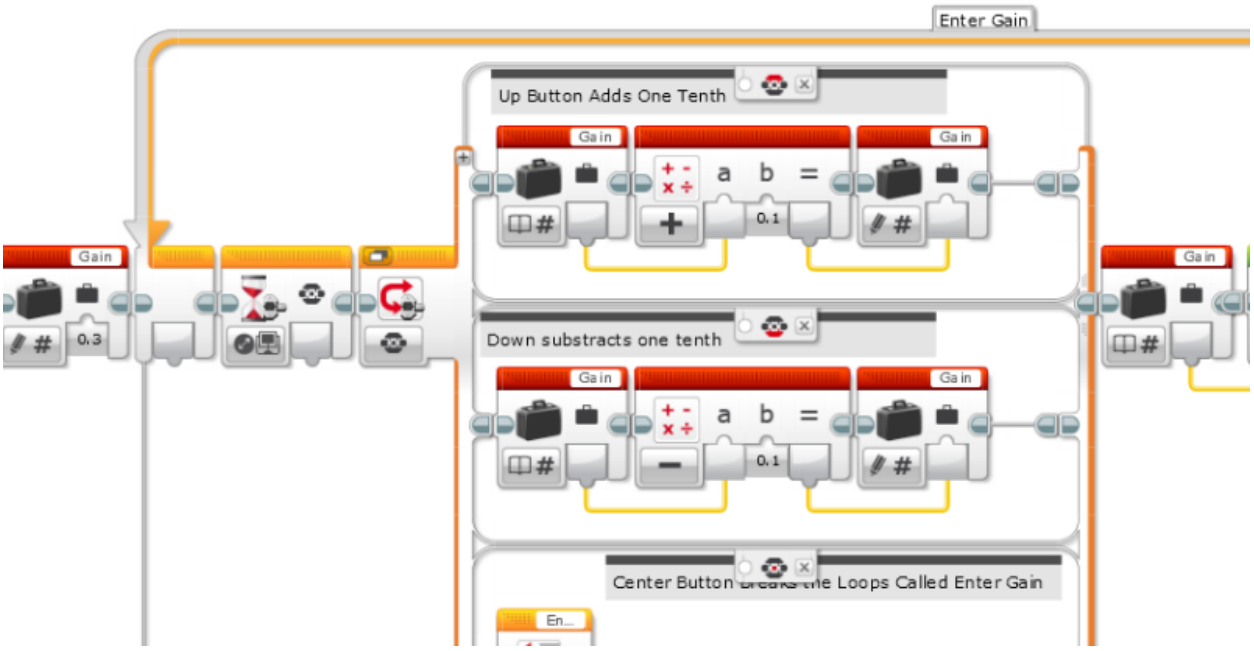

A
B -1523
C -1495
D
1
2
3 16
4
EV3

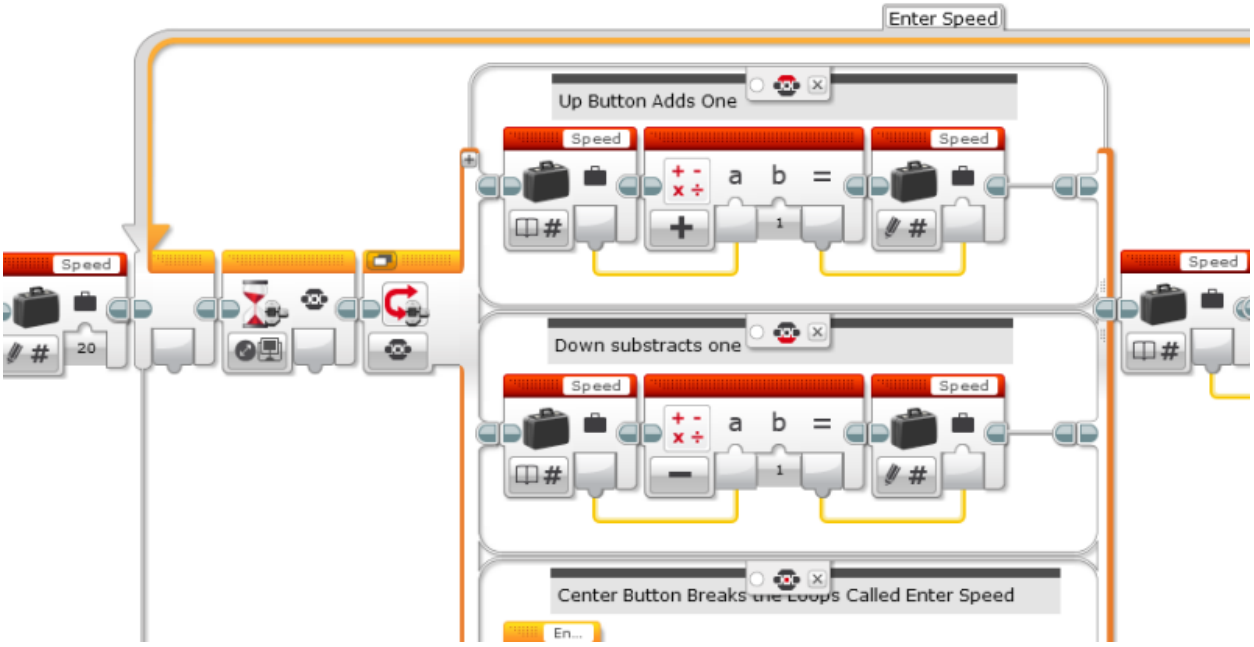

Enter Light MyBlock
Enter Gain MyBlock
Enter Speed MyBlock
Proportional Line Track MyBlock
Light
Proport...

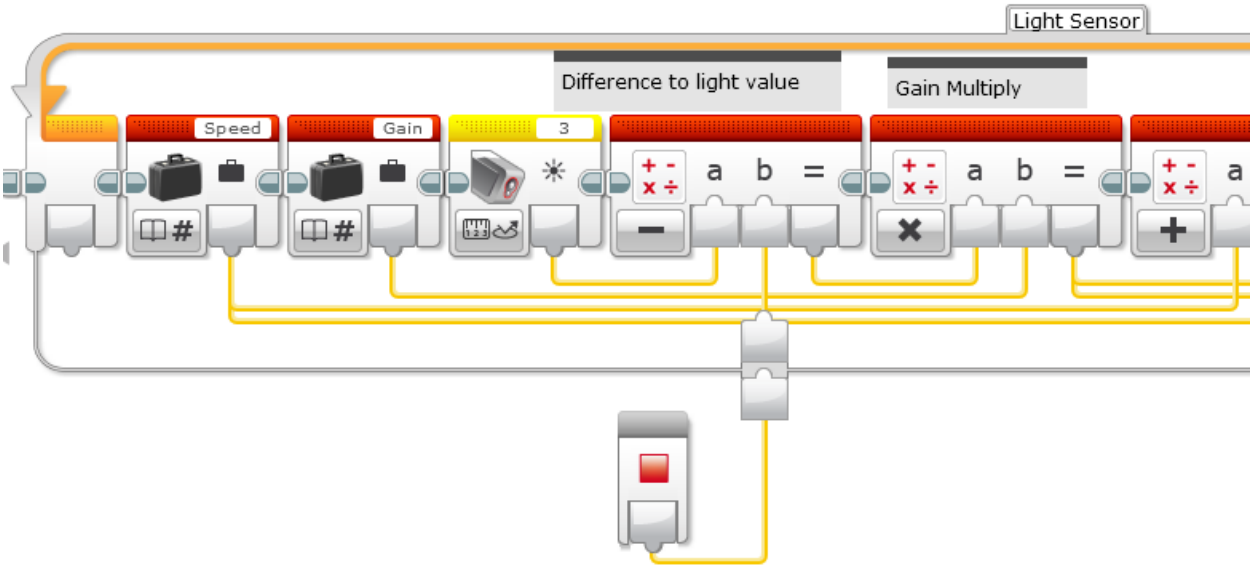

Enter Light
Center Button Breaks the Loops Called Enter Light

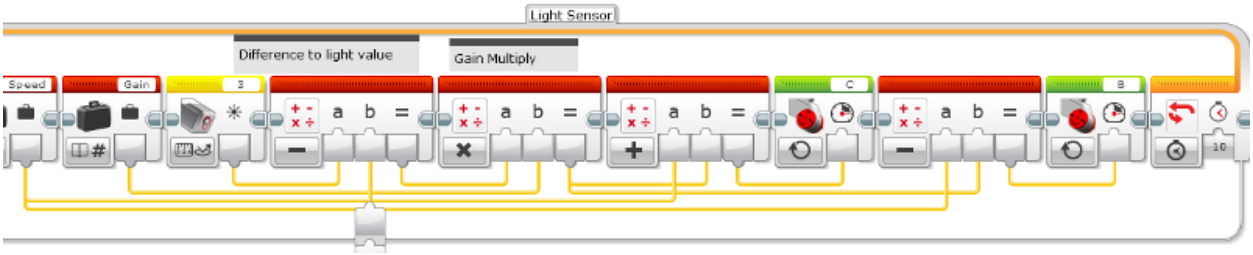

Enter Light
Up Button Adds One


Enter Light
Down substracts one
Light
a
b
=
1
Light
Light
T
x
y
0
0
Enter Light
Default case so other buttons are not selected
Light
T

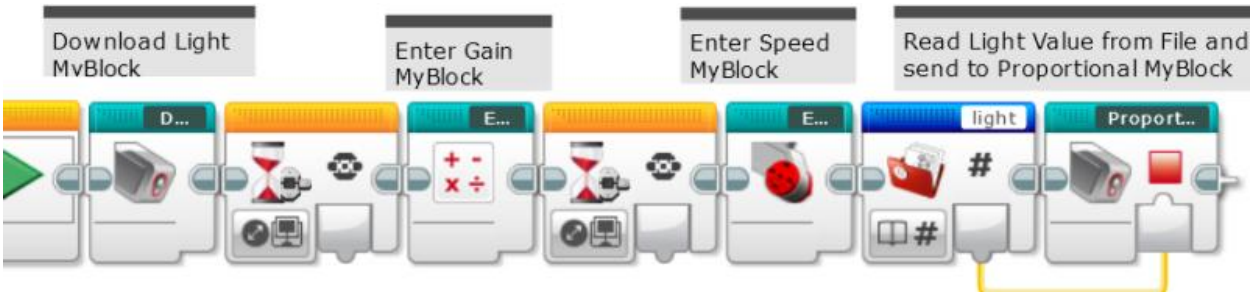

Enter Gain
Up Button Adds One Tenth
Gain
a b =
0.1
Down substracts one tenth
Center Button Breaks the Loops Called Enter Gain
0.3

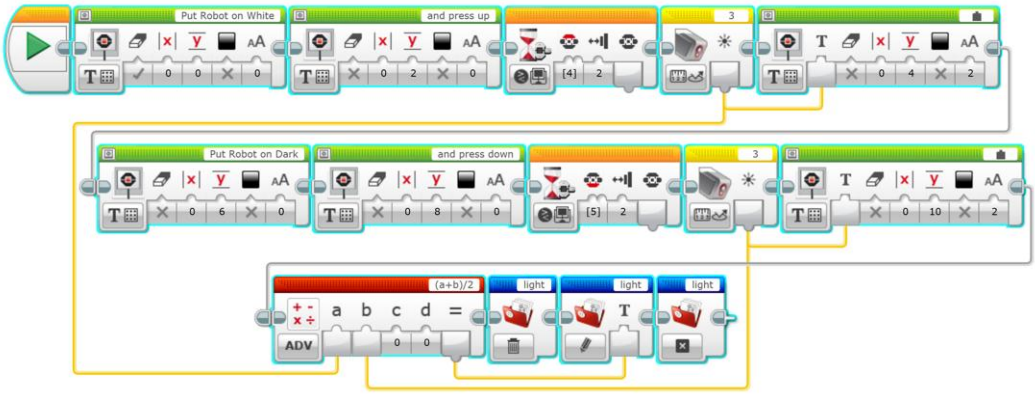

Enter Speed
Up Button Adds One
Speed
a b =
1
Down substracts one
Center Button Breaks the Loops Called Enter Speed
20


Light Sensor
Difference to light value
Gain Multiply
Speed
Gain
3
a
b
=


Light Sensor
Difference to light value
Gain Multiply

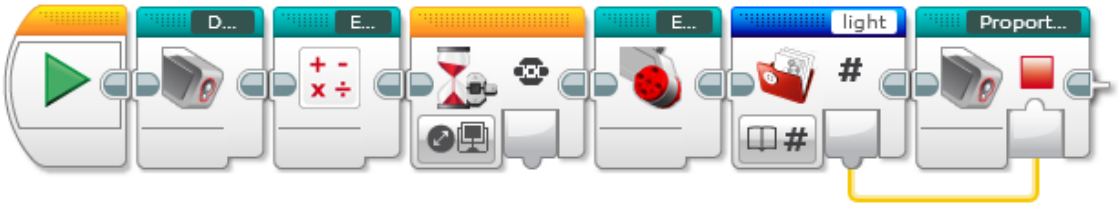
Put Robot in position
and press button
light


Download Light MyBlock
Enter Gain MyBlock
Enter Speed MyBlock
Read Light Value from File and send to Proportional MyBlock
D...
E...
E...
light
Proport...



Download Avg Light MyBlock

Enter Gain MyBlock

Enter Speed MyBlock

Read Light Value from File and send to Proportional MyBlock