BottleSUMO
Putting it all together

Broadcast - EVENT BLOCKS

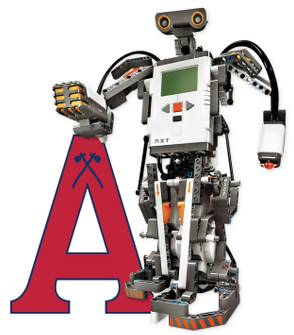
When I Receive Message BLOCK

Runs the blocks attached to it when a specific message is broadcasted by either the Broadcast Message or the Broadcast Message and Wait Block.

Broadcast Message BLOCK

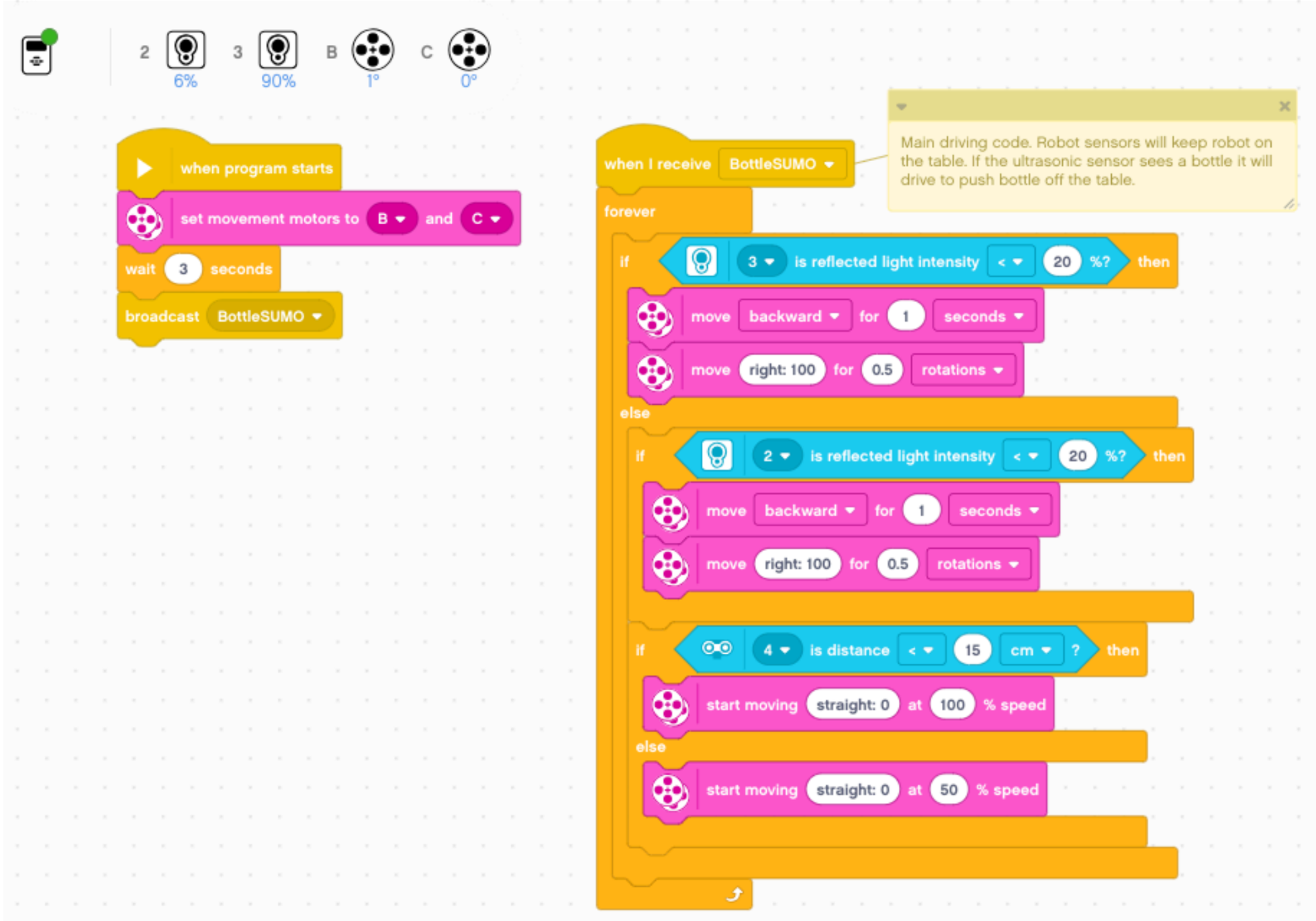
Broadcasts the specified message. All of the WHEN I RECEIVE MESSAGE BLOCKS that have been set to the specified message will activate.

This Broadcast Block sends the specified message and immediately proceeds to the next block.



Simple BottleSumo Code
Using Action Blocks

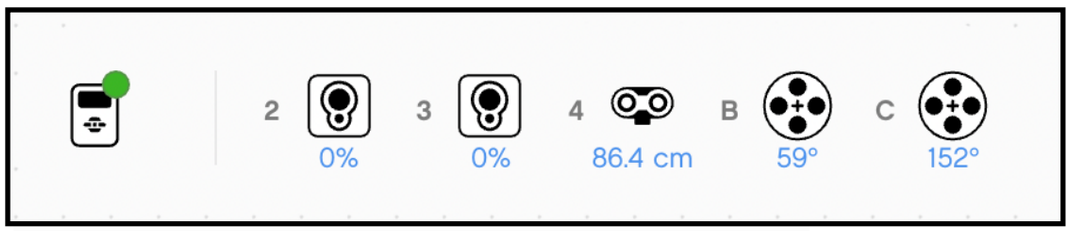
See if you can follow the coding blocks to understand how this simple BottleSumo program works.



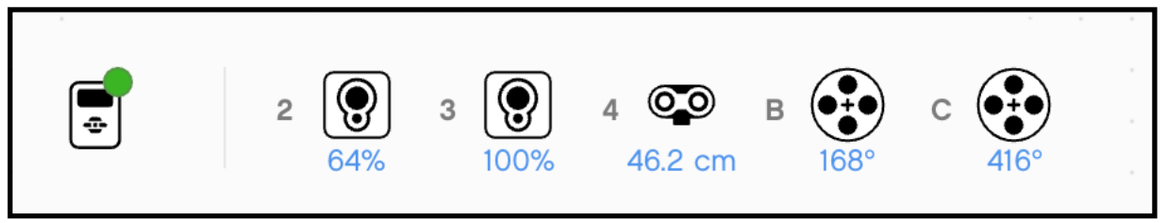
Simple BottleSUMO

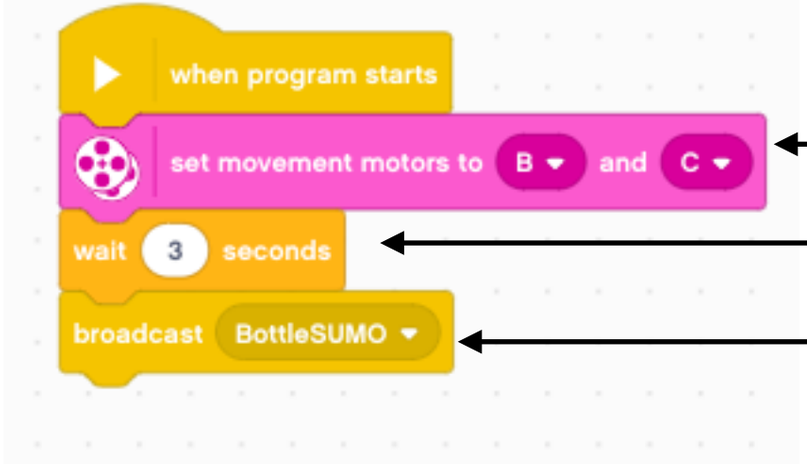
Using Event Blocks

Sensor reading with both colour sensors OFF the table.



Sensor reading with both colour sensors ON the table.



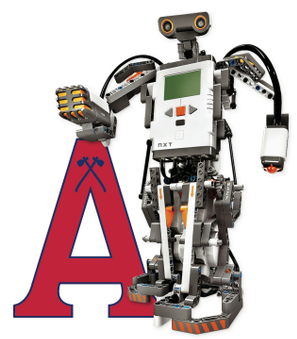


This program sets the motors to B & C

Waits 3 seconds.

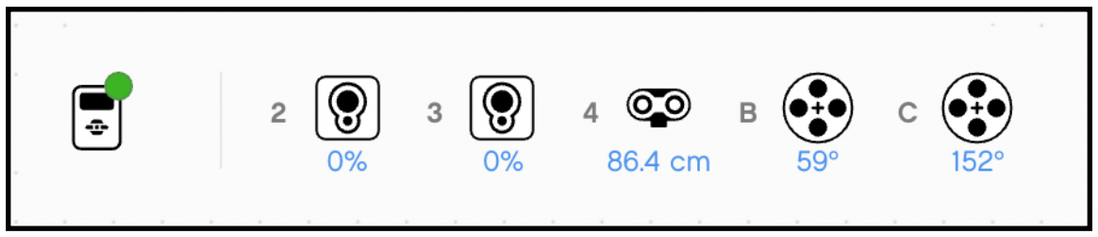
Then moved to the Broadcast Message block, which we defined as BottleSUMO.

The next slide will show how we DEFINED the broadcast message block to run the BottleSUMO program.

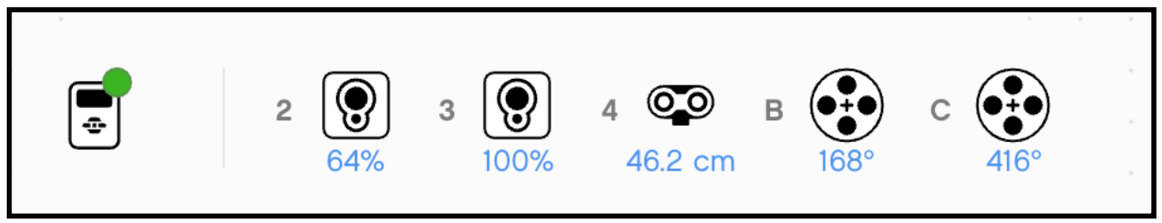


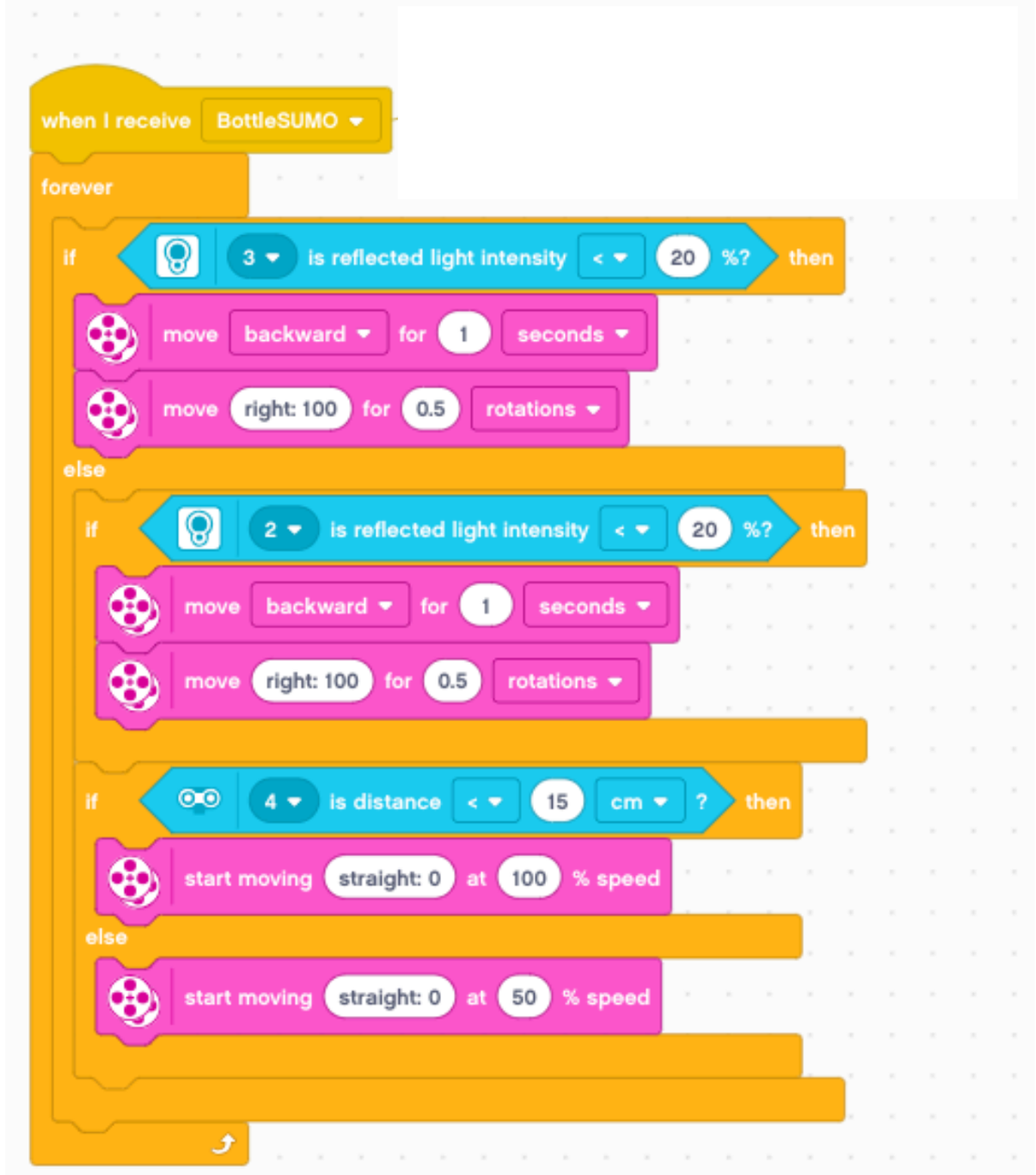
Simple BottleSUMO - Using Event Blocks

Sensor reading with both colour sensors OFF the table.



Sensor reading with both colour sensors ON the table.





Think about it.

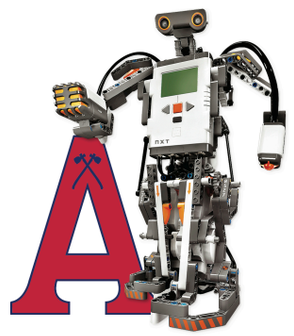
Your BottleSUMO robot needs to:

a. Stay on the table

b. Finding the bottle

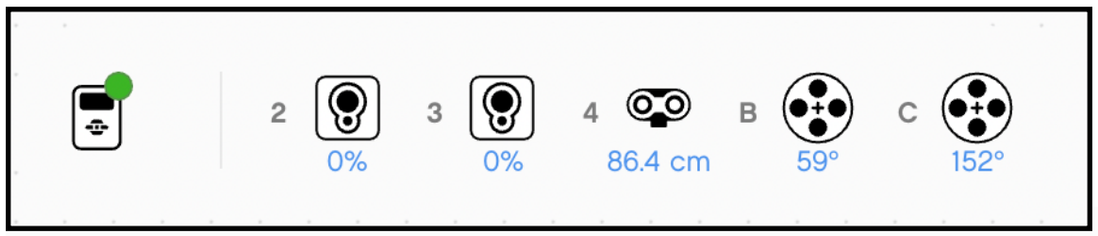
c. Push the bottle off table

d. Robot must stay on the table, after the bottle(s) are removed.

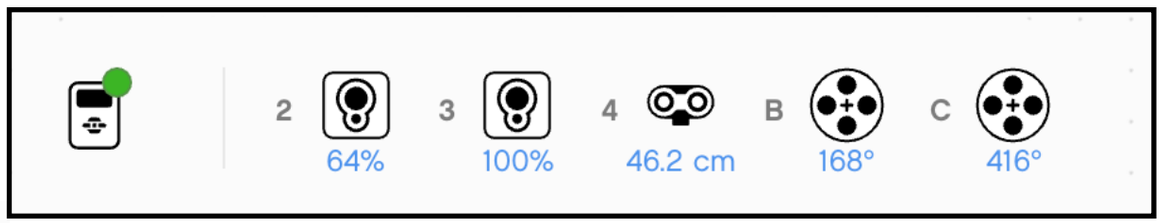


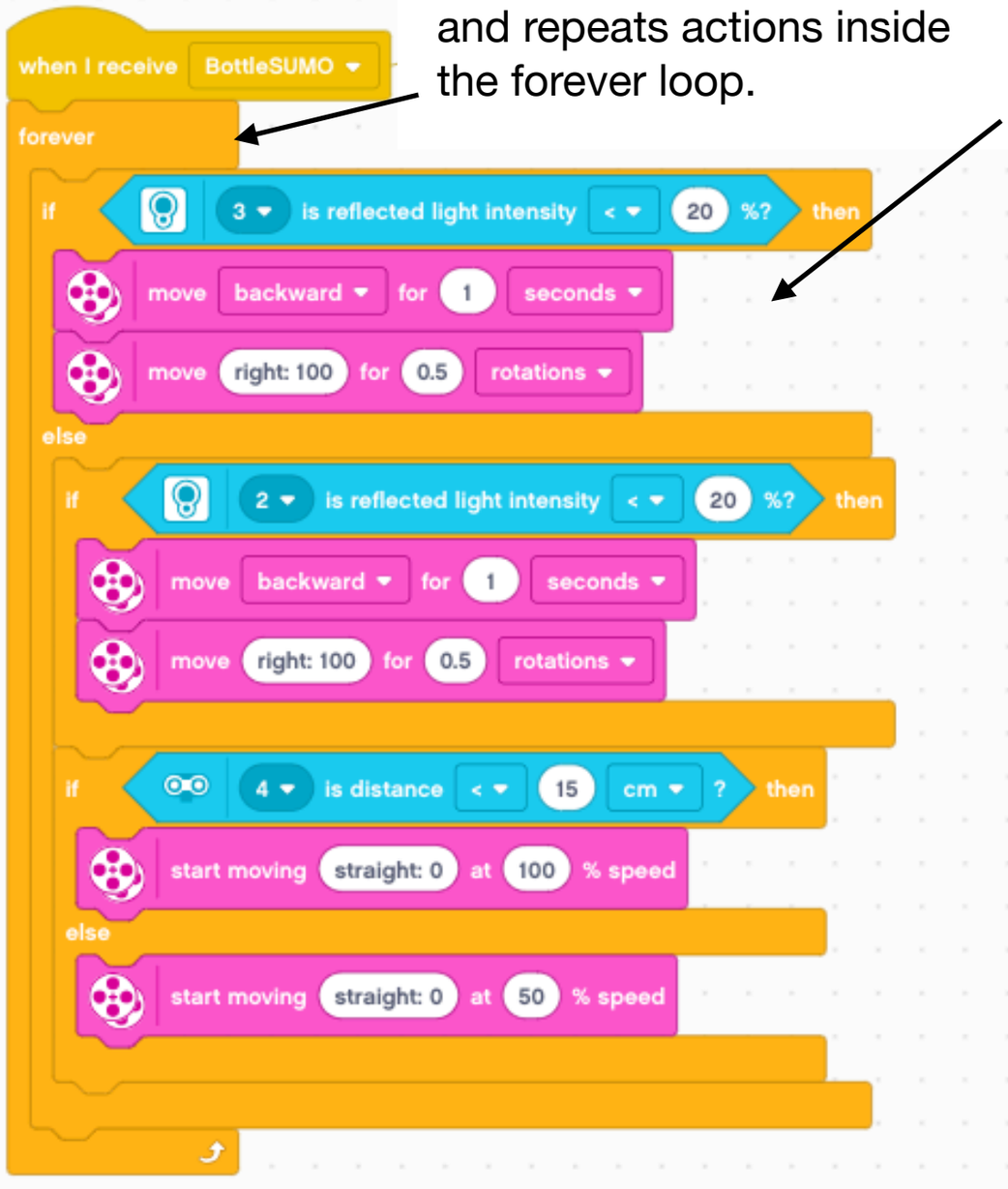
Simple BottleSUMO - Using Event Blocks

Sensor reading with both colour sensors OFF the table.



Sensor reading with both colour sensors ON the table.





Forever loop - program runs and repeats actions inside the forever loop.

The robot looks for the bottle with the Ultrasonic sensor WHILE checking to see if it's on or off the table using the colour sensors.

If:

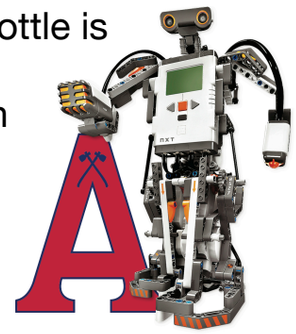
- FIRST program check colour sensor 2 (left side) to see if it's off the table.
- If it is we want the robot to move away from the edge of the table.
- Robot backs up for 1 second and then moves right for 0.5 rotations.

Else:
Another If statement is added under the Else portion of the first If/ Else statement.

- program check colour sensor 3 (right side) to see if it's off the table.
- If it is we want the robot to move away from the edge of the table.
- Robot backs up for 1 second and then moves right for 0.5 rotations.

Add an If/ELSE below the new If statement.

- program uses the ultrasonic sensor (port 4) to see if the bottle is within 15 cm of the robot's sensor.
- **IF -** we want the robot to move towards the bottle to push it off the table.
- **ELSE** - If their is NO bottle



Simple BottleSUMO

Finding a better solution

Think of all the programming lessons you learned in this workshop.

The simple BottleSUMO program you built ‘works’.

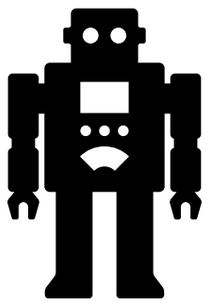
The current program is randomly moving around the table. Each action is based on how the sensors react.

Can you think of anyway to improve how your robot **searchers** for the bottle(s)?

Can you think of a way to ensure the bottle is pushed off the table?

We won’t give any more solutions to the BottleSUMO workshop.

There is more than one way to program your robot to find the bottles.



Good Luck