Rescue Simulation

Minor Optimizations
Major Improvements

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Avoid Pickup When Full

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- Your Robot will waste 3s every time it tries to pick up one of the objects, when it is already full

- How can your Robot know when it is full?
- Is there some condition it can check to determine this?
- Remember how do knew when to deposit (or to stop depositing)?

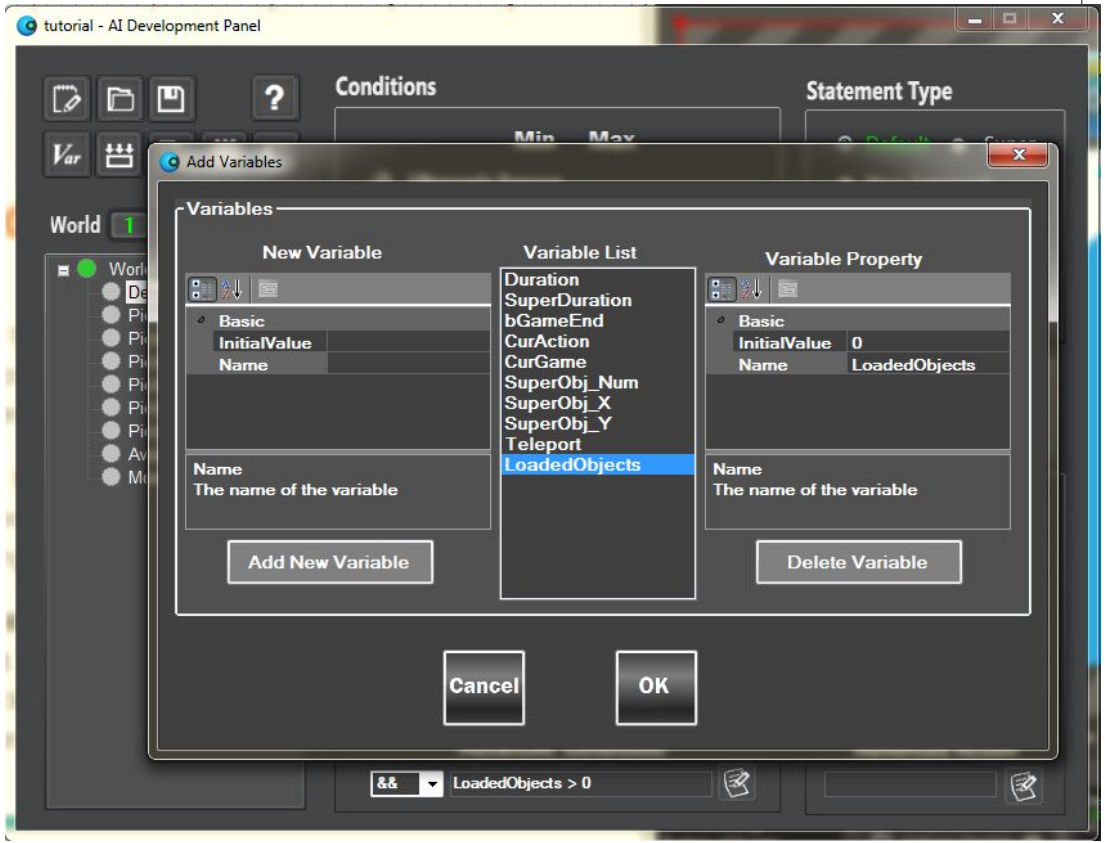
LoadedObjects

Yes! LoadedObjects!

It's that variable that keeps track of how many objects we picked up.

It starts out with 0.
Every time we FindObject, your program adds 1 to it.

When it gets to 6, you know you're full!



LoadedObjects > 0

In the case of Deposit, we only wanted to execute the action if we were not Empty.

So as long as:
LoadedObjects > 0

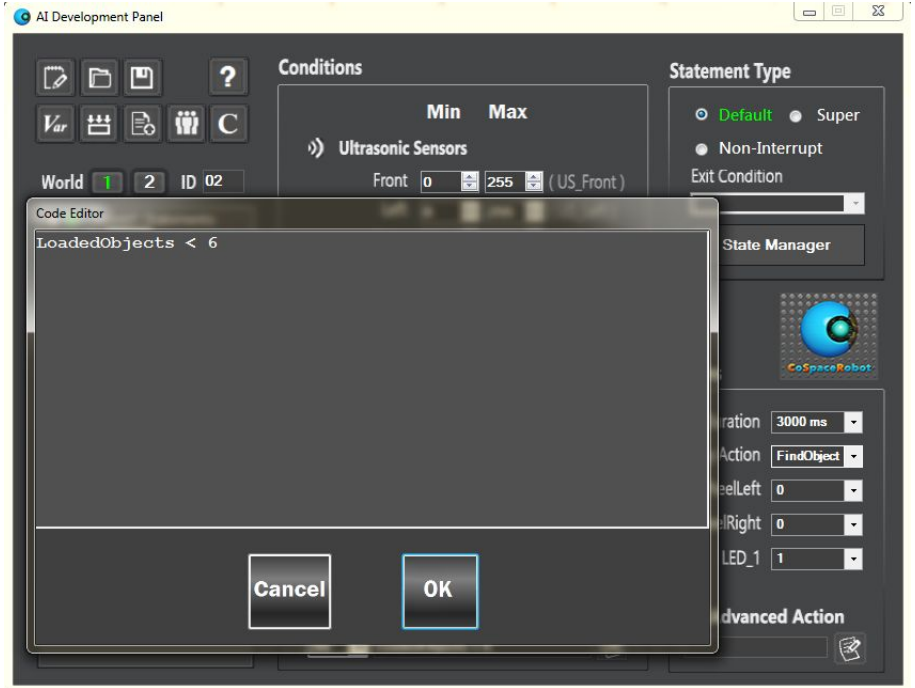
Feel free to deposit...
That was our Advanced Condition for Deposit.

LoadedObjects < 6

Now we can tell the Robot to only Pickup Objects if it is NOT full.

In Advanced Condition box, add the condition that will do the FindObject function **ONLY if LoadedObjects is not full yet, or Less than 6**.

< is Less Than
> is Greater Than
== is Equal (notice 2 '='s)
!= is Not Equal



Six FindObject Statements

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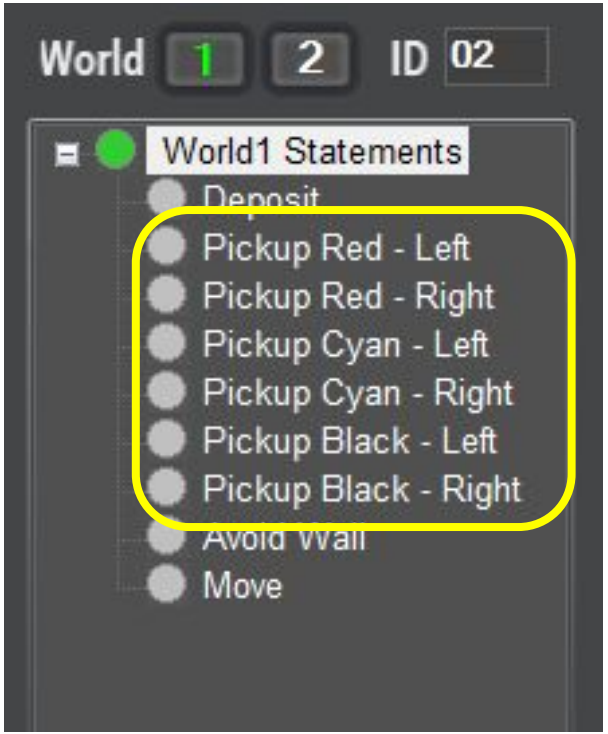
You need to do this LoadedObjects < 6 for every Pickup Statement:

1. Red on Left
2. Red on Right
3. Cyan on Left
4. Cyan on Right
5. Black on Left
6. Black on Right

Each color has 2 statements, one for each side sensor it can detect the object on.



Don’t Miss The Collection Box

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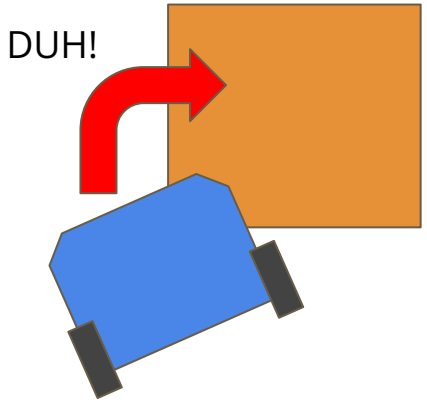
Another important optimization is that if your Robot sees the Collection Box on only one sensor, right now it probably misses it, even if it is FULL.

It just drives past, even though it already detected it on one side!

So you should tell the Robot to turn itself INTO the Collection Box if it only sees it on one side...



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So, how should you do it?

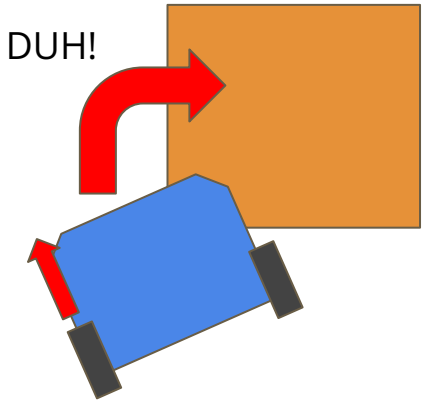
Imagine these 3 statements:

- **Turn Right** If You See Collection On Right
(and your LoadedObjects > 0)

- **Turn Left** If You See Collection On Left
(and your LoadedObjects > 0)

- **Stop and Pickup** if you See Collection Box on Both
(and your LoadedObjects > 0)

TRY IT!



WheelLeft = 3
WheelRight = 0
(turn right)

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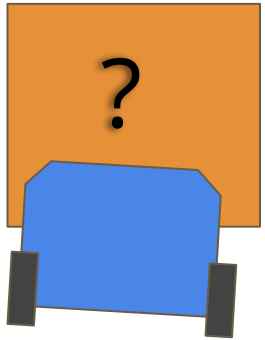
Does the ORDER matter?

- **Turn Right** If You See Collection On Right
(and your LoadedObjects > 0)

- **Turn Left** If You See Collection On Left
(and your LoadedObjects > 0)

- **Stop and Pickup** if you see Collection Box on Both
(and your LoadedObjects > 0)

If your robot is seeing Collection Box on Both and the program is in the order above, which of those bold actions will be picked?



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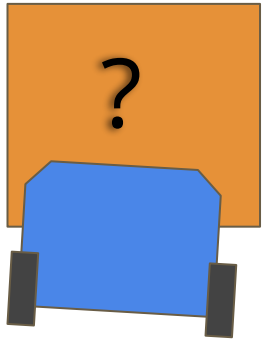
Remember the Robot asks the question which of these to do in order. As soon as a condition is met, it executes that statement’s action. It’s going to Turn Right, because it met the condition before reaching the 3rd statement…

- **Turn Right** If You See Collection On Right (and your LoadedObjects > 0)

- **Turn Left** If You See Collection On Left (and your LoadedObjects > 0)

- **Stop and Pickup** if you see Collection Box on Both (and your LoadedObjects > 0)



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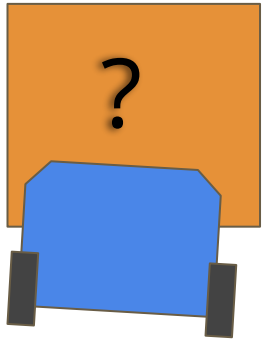
Change the order, so that the most restrictive condition comes first...

- **Stop and Pickup** if you see Collection Box on Both (and your LoadedObjects > 0)

- **Turn Right** If You See Collection On Right (and your LoadedObjects > 0)

- **Turn Left** If You See Collection On Left (and your LoadedObjects > 0)



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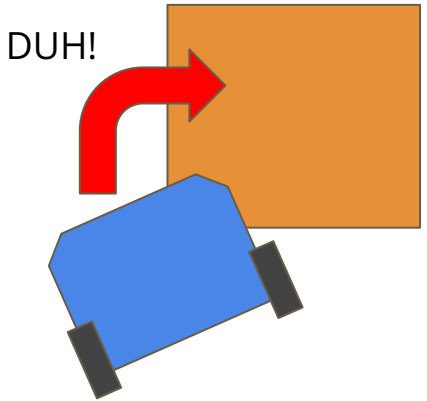
Will this scenario still work?

- **Stop and Pickup** if you see Collection Box on Both (and your LoadedObjects > 0) -- skip, because we don’t.

- **Turn Right** If You See Collection On Right (and your LoadedObjects > 0) -- YIPEE!

- **Turn Left** If You See Collection On Left (and your LoadedObjects > 0)



Ignore Trap

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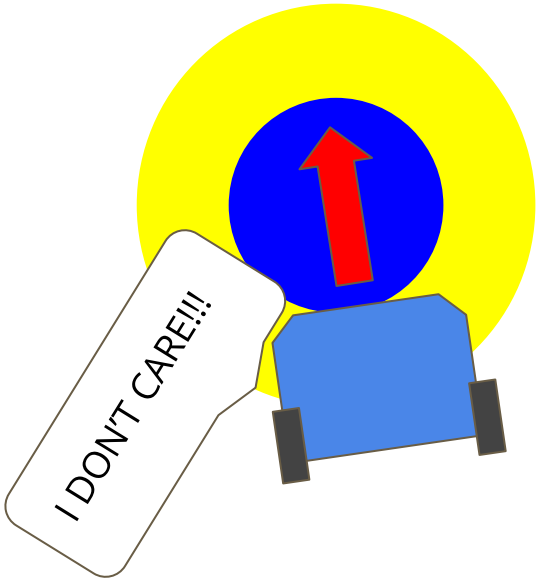
One other useful trick with LoadedObjects, is that you can ignore the Traps if you are completely empty!

It might just help you to make it to places that are hard to get to if you keep avoiding the Traps...

- Avoid Trap, only if **LoadedObjects > 0**



Keep Optimizing

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What other clever and easy optimizations can you think of?