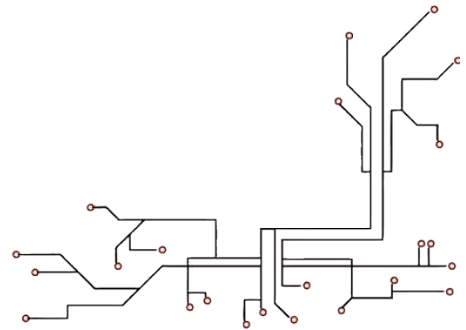
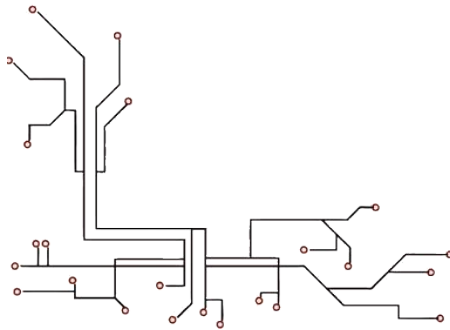


Rescue Simulation



Time, Teleporting & World 2



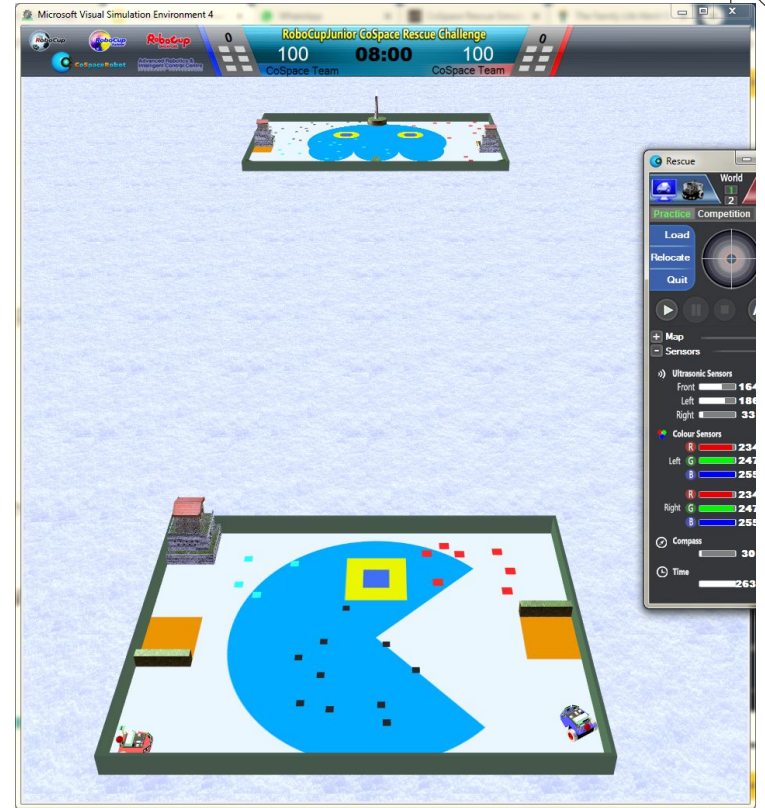
A POSTERIORI
Play · Experience · Learn

World 2

If you have tested your basic robot from **World 1**, you'd have noticed that after six minutes your robot teleports to a new arena.

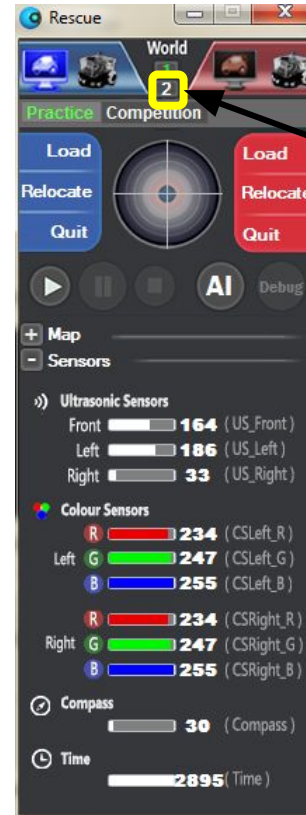
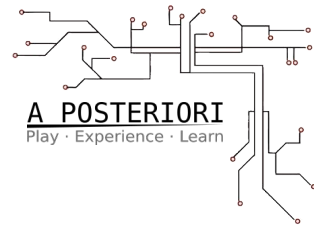
Rescue Simulations usually have two worlds.

If you zoom out of **World 1** you, can see **World 2** in the distance...



World 2

Rather than flying your camera over, you can change your Practice area home to World 2.



Click [2] to shift your Practice Area to World 2.

Now pressing "H" will take you to World 2 home view.

World 2

World 2 is very similar to World 1. The main difference in that it is BIGGER than World 1.

Finding objects and stumbling on Collection boxes can take a lot longer.



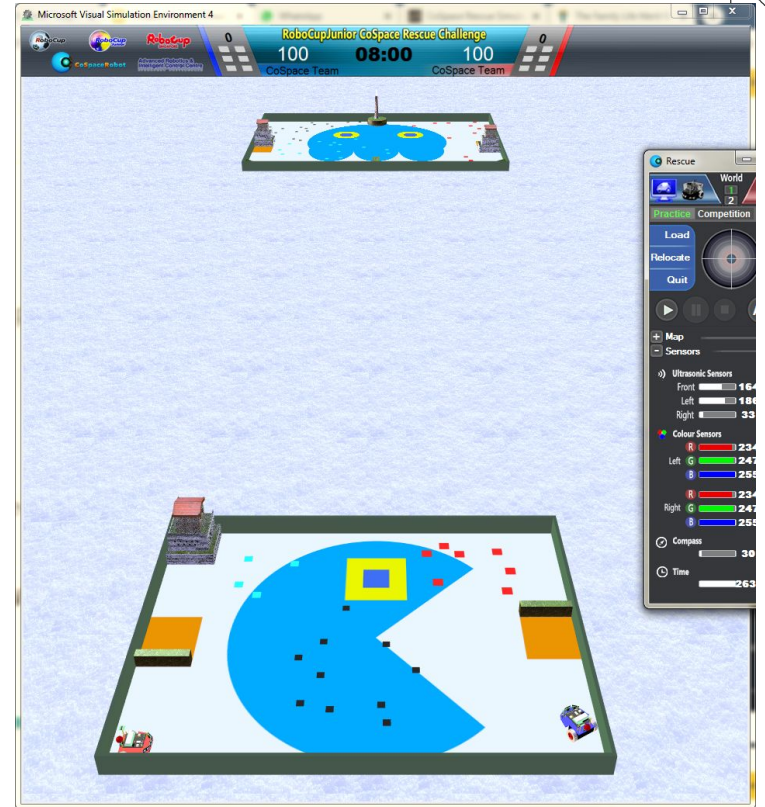
World 2



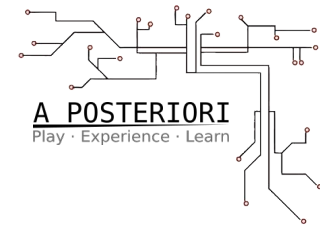
If you followed the lessons to this point, your basic robot:

- Drives around World 1
- Avoids obstacles and walls
- Picks up all 3 types of objects
- Deposits objects when in collection box
- Avoids Traps

Well, all of these are relevant to **World 2**.



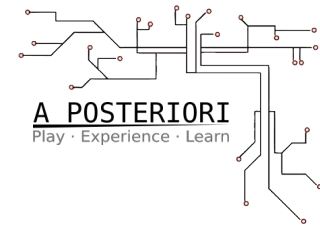
Basic World 2 Program



World 2 Basic Program is pretty much the same as World 1, so let's just copy what we have in World 1 over...

The screenshot shows the 'tutorial - AI Development Panel' window. On the left, a tree view shows 'World1 Statements' with a context menu open over it. The menu options are: Deposit, Pickup Red, Pickup Red, Pickup Cyar, Pickup Cyar, Pickup Blac, Pickup Blac, Avoid Wall, Move, Add New Statement, Add New Sub-Statement, Cut, Copy (highlighted), Paste, Delete, Move Up, Move Down, and Change Name. The main panel is divided into several sections: 'Conditions' with 'Ultrasonic Sensors' (Front, Left, Right) and 'Compass' (0-360), 'Time' (0-1000), and 'Advanced Conditions'; 'Statement Type' with 'Default' selected and 'Super', 'Non-Interrupt', and 'Exit Condition' options; and 'Actions' with 'Duration' (50 ms), 'Key Action' (None), 'WheelLeft' (-5), 'WheelRight' (5), and 'LED_1' (0). A 'State Manager' button is also visible.

Basic World 2 Program



Now choose World 2...

and Paste...

You will see the same World 1 program pasted into World 2.

Build, and test with Practice arena set as World 2

tutorial - AI Development Panel

World 1 2 ID 02

World2 St

Add New Statement
Add New Sub-Statement
Cut
Copy
Paste
Delete
Move Up
Move Down
Change Name

Conditions

	Min	Max		
Ultrasonic Sensors				
Front	0	255	(US_Front)	
Left	0	255	(US_Left)	
Right	0	255	(US_Right)	
Sensors				
Left	R	0	255	(CSLeft_R)
	G	0	255	(CSLeft_G)
	B	0	255	(CSLeft_B)
Right	R	0	255	(CSRight_R)
	G	0	255	(CSRight_G)
	B	0	255	(CSRight_B)
Compass	0	360	(Compass)	
Time	0	1000	(Time)	

Statement Type

Default Super
 Non-Interrupt

Exit Condition

State Manager

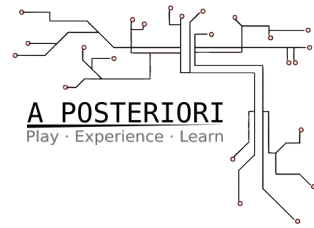
Actions

Duration: 60 ms
Key Action: None
WheelLeft: -5
WheelRight: -5
LED_1: 0

Advanced Conditions

Advanced Action

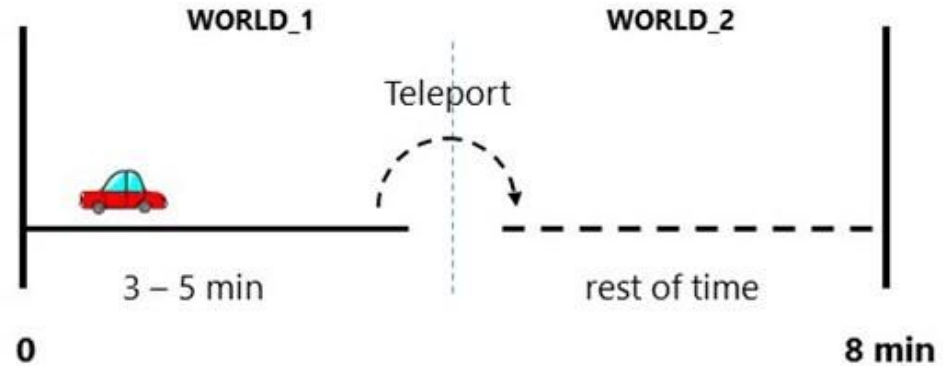
Time



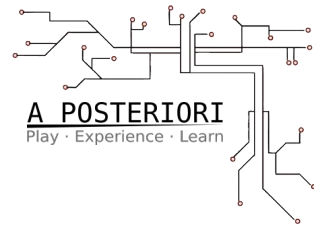
Rescue Simulation demands your Robot stay in World 1 for some duration - say **3 minutes**.

It also demands you have to Teleport away to World 2 within some duration - say **5 minutes**.

You **lose points if you don't teleport** on your own, forcing the game to teleport you when the full 6 minutes are up...



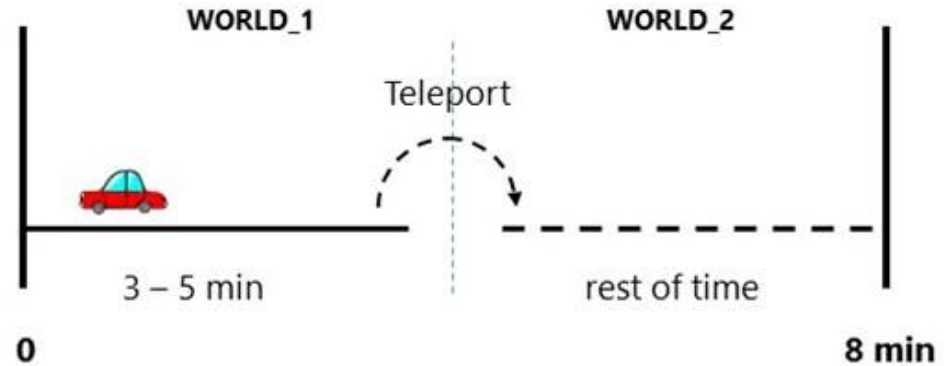
Time



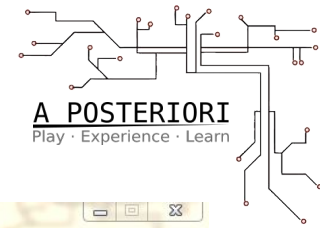
You have to decide whether you want your robot to:

- **Teleport as soon as possible** (after 3 minutes)
- **Stay in World 1 for as long as it can** (5 minutes).

This decision should depend on how good your robot is at getting points in one arena vs. the other.



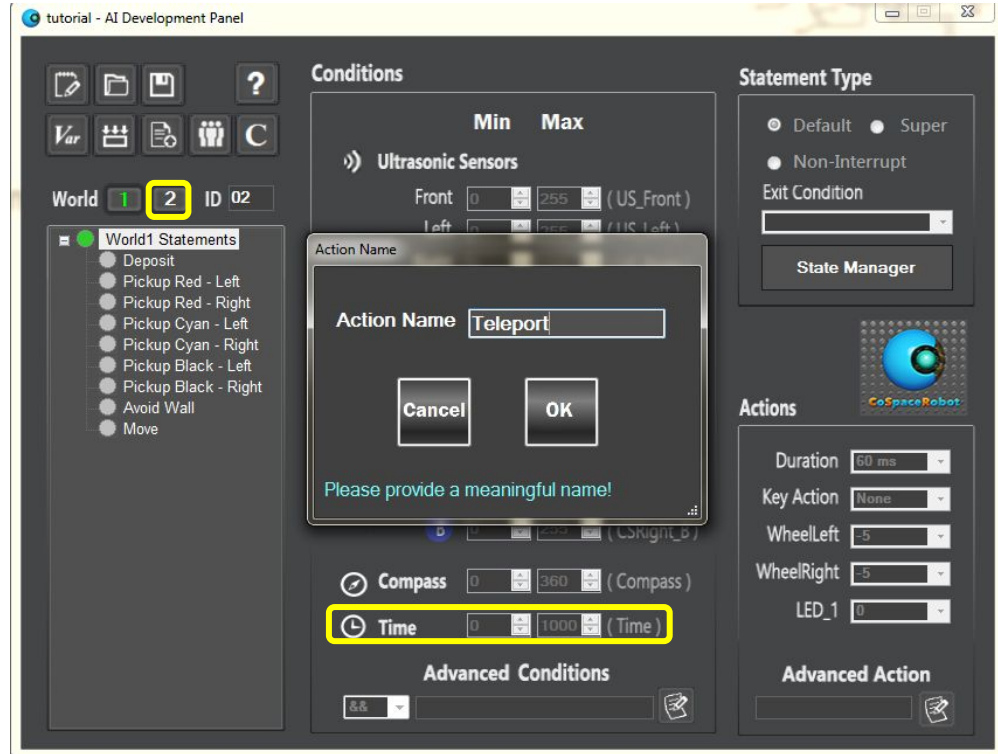
Teleporting



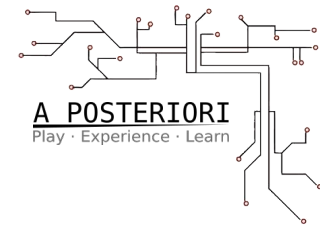
The basic Teleport program statement will have only 1 condition: **Time**

Before adding the new statement, make sure to focus AI panel back on World 1.

We only teleport from World 1 arena...



Teleporting



Depending on what you decided for your teleport strategy, you need to pick a Min Time condition when your Teleport will activate.

For instance, if you wish to Teleport as soon as possible, use 3 minutes (or **180 seconds**) as your minimum Time condition.

What should it be to wait as long as possible in World 1?

The screenshot shows the 'tutorial - AI Development Panel' interface. On the left, a list of 'World1 Statements' includes 'Teleport', 'Deposit', and various pickup actions. The 'World' is set to 1 and 'ID' to 02. The main panel is divided into 'Conditions' and 'Statement Type' sections.

Conditions:

- Ultrasonic Sensors:** Front (0 to 255), Left (0 to 255), Right (0 to 255).
- Colour Sensors:** Left (R: 0 to 255, G: 0 to 255, B: 0 to 255), Right (R: 0 to 255, G: 0 to 255, B: 0 to 255).
- Compass:** 0 to 360.
- Time:** 180 to 1000 (highlighted with a yellow box).

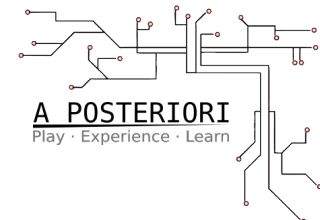
Statement Type:

- Default (selected), Super, Non-Interrupt.
- Exit Condition: [Dropdown menu]
- State Manager button.

Actions:

- Duration: 60 ms
- Key Action: None
- WheelLeft: -5
- WheelRight: -5
- LED_1: 0
- Advanced Action: [Dropdown menu]

Teleporting



The *Key Action* should be one of the **3 Teleport Types**.

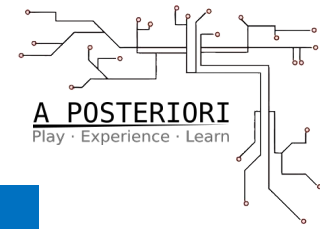
Each **Teleport Type** will cause your Robot to appear in a different area of World 2's map.

You can test to see where you'd start, and which of the spawn points is ideal.

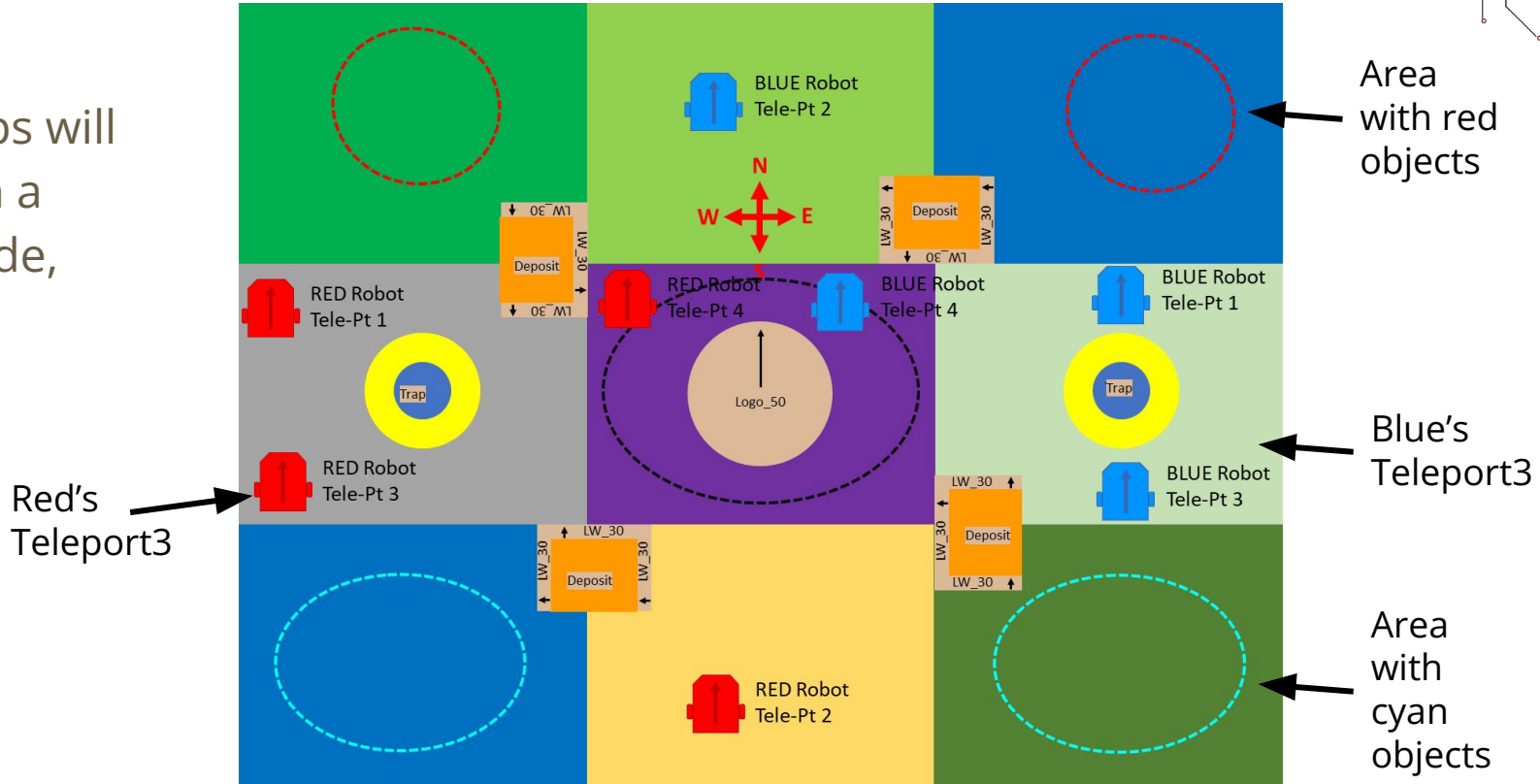
Red & Blue Robots will spawn at different, mirrored locations.

The screenshot shows the 'tutorial - AI Development Panel' interface. On the left, a 'World1 Statements' list includes 'Teleport' (selected), 'Deposit', and various pickup and avoid actions. The main panel is divided into 'Conditions' and 'Actions' sections. The 'Conditions' section includes Ultrasonic Sensors (Front, Left, Right) and Colour Sensors (Left and Right, each with Red, Green, and Blue channels). The 'Actions' section shows 'Duration' set to 60 ms, 'Key Action' set to 'None', and 'WheelLeft' set to 'FindObject'. The 'WheelRight' dropdown menu is highlighted with a yellow box, showing options: 'Deposit', 'Teleport1', 'Teleport2', and 'Teleport3'. The 'LED' action is currently set to 'None'.

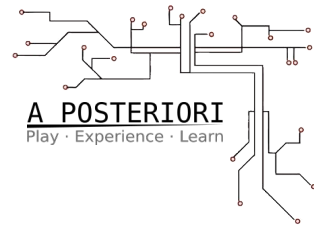
Map Layout Guide



Some Maps will come with a layout guide, like this.



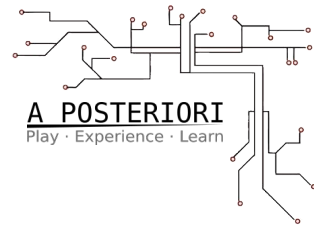
Time as 4th Dimension



Many students are confused by only 1 robot teleporting, and another staying behind, and the the reemergence of only 1 robot in World 2, joined a little later by the laggard companion... This timeline may help:

Time	Blue Robot	Red Robot	Simulation Shows
0 - 3 mins	World 1	World 1	World 1 - Both Robots
3-5 mins	World 2	World 1	World 1 - Red Robot Only
3-5 mins (rewind time!)	World 2	World 1	World 2 - Blue Robot Only
5-8 mins	World 2	World 2	World 2 - Both Robots

World 2 - Super Objects

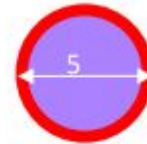


World 2 is also different from World 1 in that when you deposit sets of RGB objects (red, cyan, black) instead of getting a point bonus, a pink/purple Super Object only your robot can pick is deposited in the field, somewhere along the perimeter.

Deposit RGB, and you get:
Super Object worth 90 points



SUPER Object by Blue Team



SUPER Object by Red

Deposit RRGGBB, and you get:
Super+ Object worth 180 points

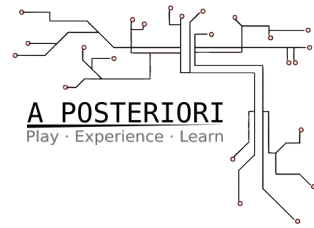


SUPER+ Object by Blue Team



SUPER+ Object by Red

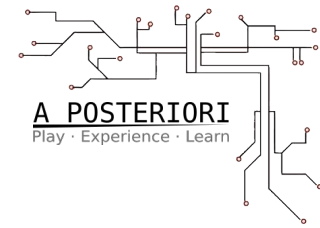
World 2 - Super Objects



Make sure to add pickup statements to your robot's World 2 program, specifically for Super Objects.

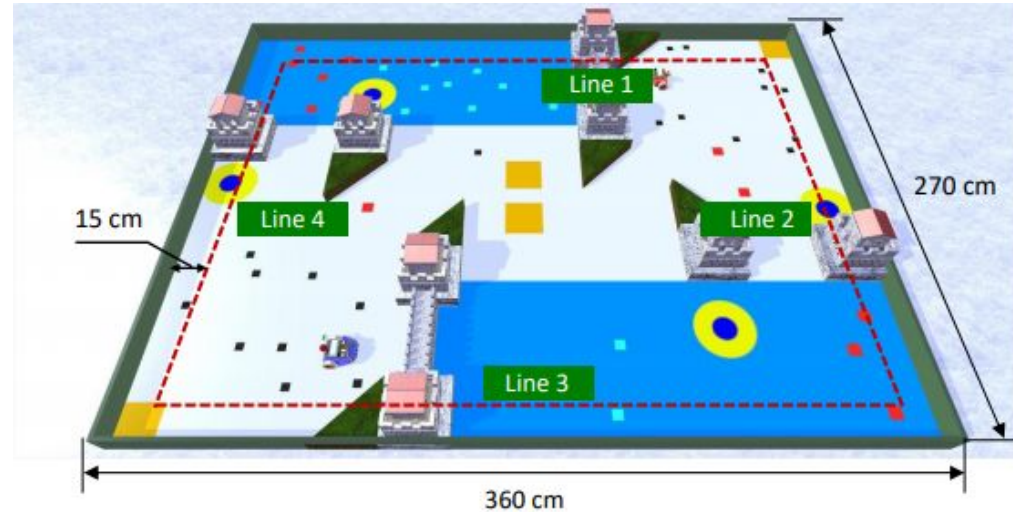
To test, and get color calibration measurements, you will need to make a RGB/RRGGBB deposit. You can make this happen quickly by manually forcing your robot to pickup the three color objects - using pause and manually placing the robot just behind objects.

World 2 - Super Objects (Advanced)



Variables containing the location of the Super Object are briefly populated for your robot's reference at the time you make your RGB/RRGGBB deposits.

It is possible to add a "Go To Super Object" strategic state (see advanced topics in the tutorial area where you found this deck.



Super Objects are placed 15cm from the boundary