Rescue Simulation

Testing, Debugging & Competitions

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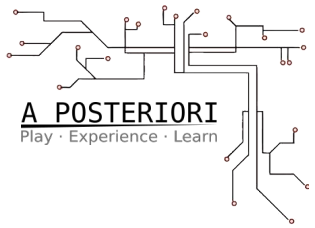
Test Early, Test Often



Try to test every time you add/change 1-2 statements.

Trying to write an entire program and **testing at the end is a recipe for disaster**.

Even though it feels like time wasted up front, it actually saves more time when all is said and done...

How To Test Effectively

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Make sure to test your changes immediately:

For instance, if you just added the Object Collection statement:
“Pick Up Red Left”

Then save/build, exit to simulator, load your AI, and only **test collecting Red using the Left color sensor…**

Manually Setting Up A Test

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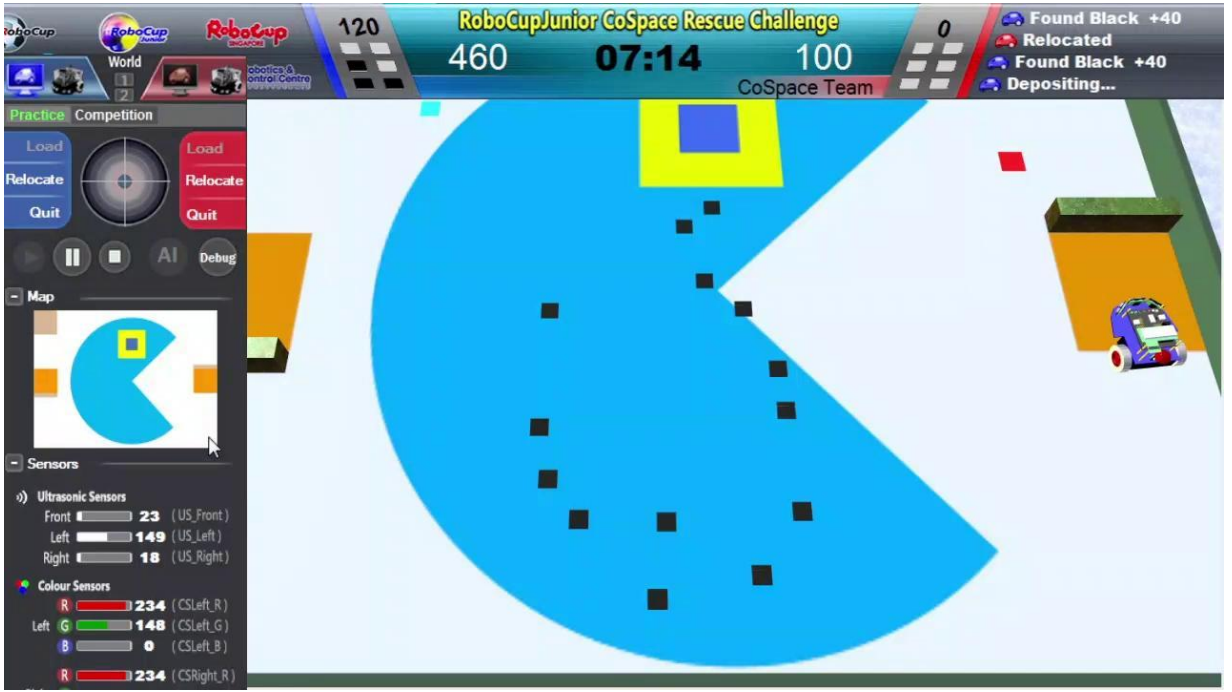
Targeted tests should be **quick and specific, so move robot manually** in order to save time.

For instance, if testing Deposit:

- Use the Map interface to situate your robot in front of Objects
- Get the Objects picked
- Then use Map interface again to position in front of Collection Box



Debugging Tips

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When your Robot doesn't behave as expected, it usually means you have a "Bug" in your program.

Debugging is the process of analyzing, testing, and removing the Bug from the code.

- **Pretend you are the robot.** Read through the instructions in your program and try to see how you'd behave...
- **Get a classmate to look over your code.** Sometimes we are blind to our own mistakes, but others can see them quickly...
- **Change code, test, repeat...**

Competitions

Sometimes, the best way to analyze your Robot for problems and improvements is to let it run through a full game.

- **You vs. Yourself** - load your AI for both the Blue & Red sides
- **You vs. Classmate** - load your AI for one side, and a classmate's for another
- **Class-Wide Competition** - Everyone competes in Round Robin or Elimination style competitions

Elimination Style Competitions

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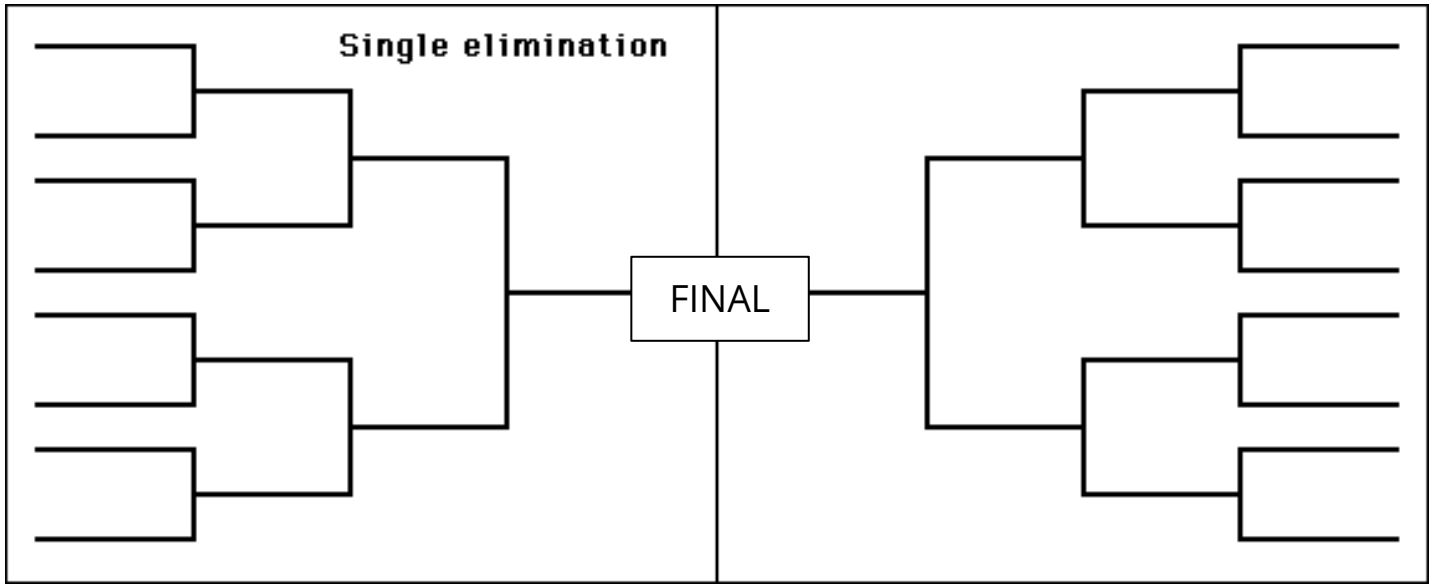
Every round, half the competition is eliminated



16-Robot Elimination Competition

Round-Robin

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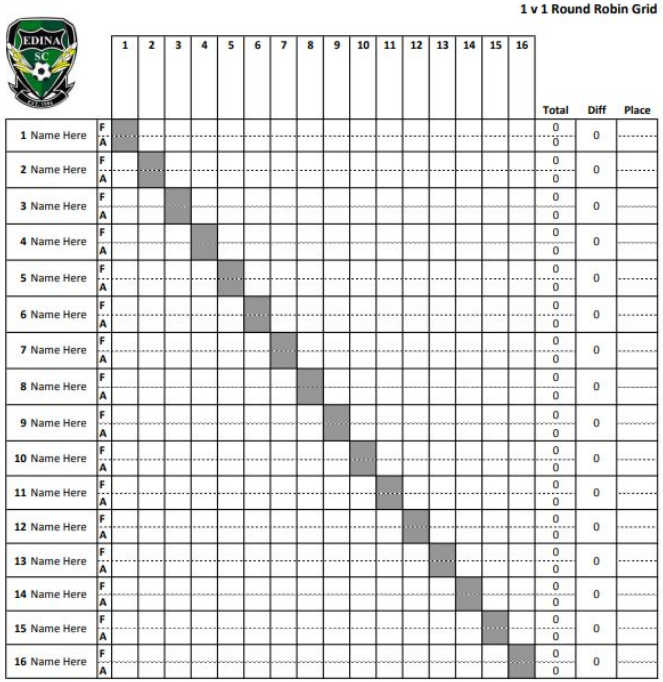
Teams compete in multiple games - wins, ties, and losses are recorded and points awarded. Best of N games moves to next round, or wins competition.



1 v 1 Round Robin Grid

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total	Diff	Place
1 Name Here	F																	0	0	
	A																	0		
2 Name Here	F																	0	0	
	A																	0		
3 Name Here	F																	0	0	
	A																	0		
4 Name Here	F																	0	0	
	A																	0		
5 Name Here	F																	0	0	
	A																	0		
6 Name Here	F																	0	0	
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7 Name Here	F																	0	0	
	A																	0		
8 Name Here	F																	0	0	
	A																	0		
9 Name Here	F																	0	0	
	A																	0		
10 Name Here	F																	0	0	
	A																	0		
11 Name Here	F																	0	0	
	A																	0		
12 Name Here	F																	0	0	
	A																	0		
13 Name Here	F																	0	0	
	A																	0		
14 Name Here	F																	0	0	
	A																	0		
15 Name Here	F																	0	0	
	A																	0		
16 Name Here	F																	0	0	
	A																	0		

In this example you have 16 teams, and each team plays every other team (15 games in total).

That's too much for most competitions! Usually you would have groups, say 4 groups of 4, and they would all play each other (3 games each), and the best of each would advance to a final group of 4.

Coopertition

Competitions are a great way to get ourselves motivated to do our best! But, winning isn't everything, and you can't lose your cool during events.

Here are some tips to remember:

- **Sportsmanship**: Lose with grace, Win with grace!
  No "AHAHAHAHA! I BEAT YOU!", or "WAHHHH NOT FAIR!!!!"

- **Debate**: If there is a judging error, do not be afraid of patiently and cooly asking the referee to review a play, ask for a 2nd opinion, etc.

- **All About Learning**: If you see a team struggling, and you have time to help, then be a good sport. You may learn from helping, and you will feel really good about yourself.

Analyze Your Robot Every Chance You Get

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Look to find ways to improve.

- Where is your robot wasting the most time?
  - Is it trying to pick stuff when it's already fully loaded?
  - Is it trying to deposit when empty?
- What other smarts can be added to improve other normal actions?
  - Is the robot turning away from walls in a sharp enough angle?
  - Too sharp?
- Any strategies that can help me win more points faster?