

# ZERO ROBOTICS

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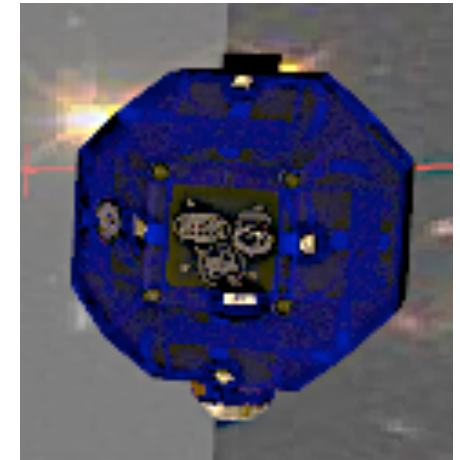
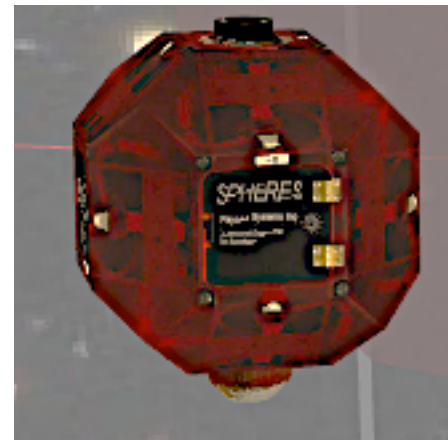
ISS PROGRAMING CHALLENGE

## Introduction to Game Mode





- In this tutorial you will learn:
  - How to use the Game Mode to start writing programs for this year's Middle School Game!
  - How to compete against a standard player



## Welcome to Game Mode



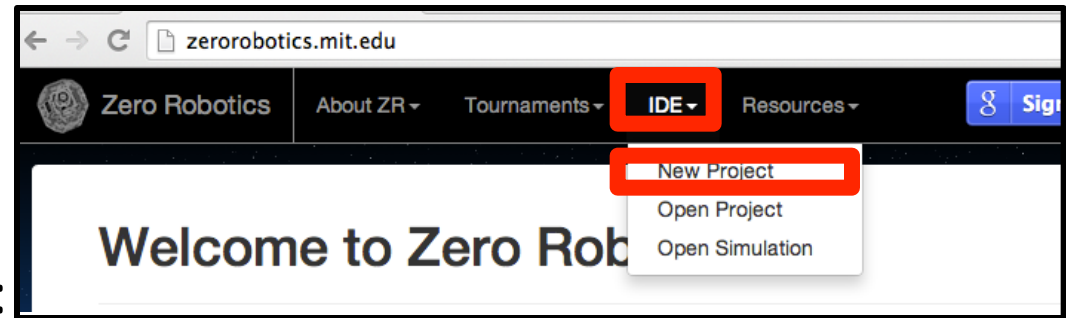
- So far, to complete tutorials, you have been writing your programs in “Free Mode”
- Now that you are ready to start writing programs for the Middle School Summer Program Game you will switch to the appropriate Game Mode
- All code for the game must be written in the appropriate Game Mode

Let's get started...!!

## Creating a Project in Game Mode



- Select the IDE drop down menu on top ribbon
- Select “New Project”:
- In the popup window enter:
  - Project Name
    - Enter an name. Example: Team ABC1
  - Select “Graphical Editor”
  - Game
    - **Select the name of this year’s game (ask your teacher!)**
- Click “Create Project”

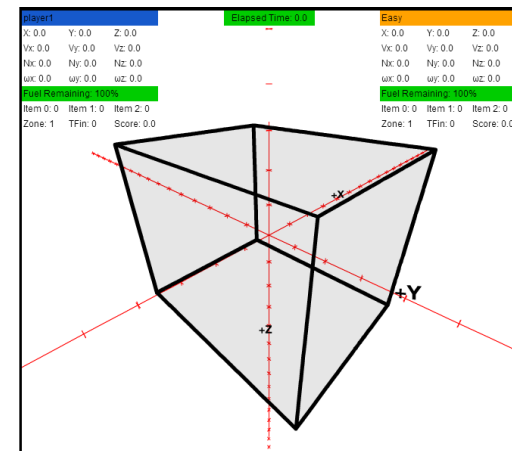
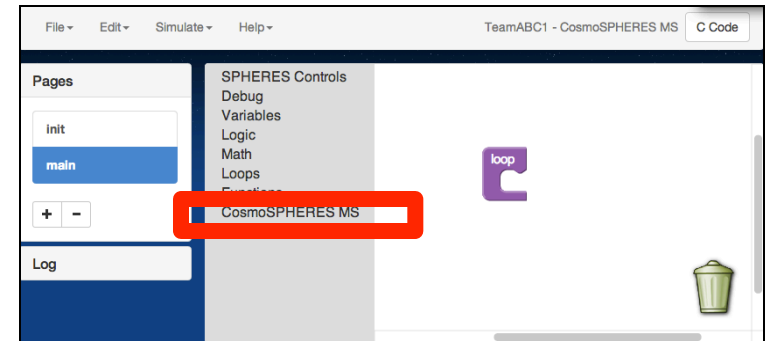


The screenshot shows the 'New Project' dialog box. It has a title bar 'New Project' with a close button. Inside, there is a 'Project Name' field with the text 'Team ABC1'. Below that are two radio buttons: 'Text Editor' (unselected) and 'Graphical Editor' (selected). Below the radio buttons is a 'Game' dropdown menu with 'CosmoSPHERES MS' selected. The 'Game' dropdown menu is highlighted with a red box. At the bottom right are 'Cancel' and 'Create Project' buttons.

# Introduction to Game Mode

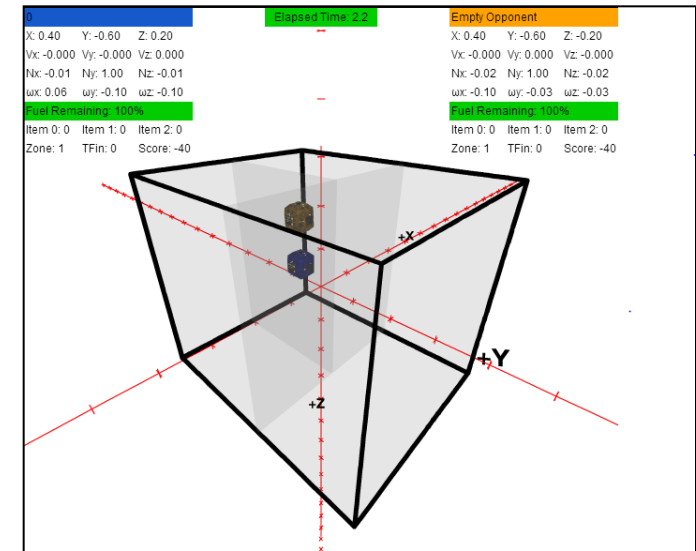


- The Graphical Editor environment for the selected “Game Mode” will look similar to what you have seen in “Free Mode”
- There will be extra accordions on the screen with commands specific to the game
- The simulation, however, **will** look different!
- Want to take a peak?
  - You don’t need to create any code
- Click “Simulate” from the menu on the top ribbon
- On the Simulation Settings Window:
  - Leave everything else “as-is”
  - Click “Simulate”
- Select “View Results”





- When you click the arrow to start the simulation you will see the initial positions for the two satellites.
- Nothing else will happen because you have not written any code yet.
- Take a look at the scoring boxes.
  - Some extra, game-specific information is included
    - Based on your understanding of the game, can you guess why the information is there?
- Close the simulation window



test4		
X: 0.0	Y: 0.0	Z: 0.0
Vx: 0.0	Vy: 0.0	Vz: 0.0
Nx: 0.0	Ny: 0.0	Nz: 0.0
ωx: 0.0	ωy: 0.0	ωz: 0.0
Fuel Remaining: 100%		
Material Remaining: 0.418879		
Item 0: 0	Item 1: 0	Item 2: 0
Phase: 1	TFin: 0.	Score: 0.

Note: These images are game specific and will vary from year to year

## Playing a Standard Player



- Another feature of “Game Mode” is that you sometimes have the option to test your code against “Standard Players”
- Even though you don’t have any code to test yet, you can try it right now
- From the Graphical Editor select “Simulate” from the top ribbon menu
  - Leave everything else “as-is” except opponent
  - Click “Select Opponent”
    - In the project window look for a shared project labeled “Standard Player” for your game
    - Click the check box
    - Click on Select

**Simulate**

Simulate As ☒ Satellite 1 (Blue) ☐ Satellite 2 (Red)

Opponent No Opponent Select

Maximum Time (s) 210

Initial Position

	X	Y	Z
Satellite 1	0	-0.65	0.2
Satellite 2	0	-0.65	-0.2

Reset All

TITLE		LAST MODIFIED <span>▼</span>
<input type="checkbox"/>	Standard Player 2 - CosmoSPHERES MS	7:01 PM
<input type="checkbox"/>	Standard Player 1 - CosmoSPHERES MS	6:57 PM

## Playing a Standard Player, continued



- The name of the opponent will appear on the Simulation settings window
- Simulate and View Results!

Simulate

Simulate As
☒ Satellite 1 (Blue)
☐ Satellite 2 (Red)

Opponent

Standard Player 2 - CosmoSPHERES MS

Select

Maximum Time (s)

210

Initial Position	X	Y	Z	AttX	AttY	AttZ
Satellite 1	0	-0.65	0.2	0	1	0
Satellite 2	0	-0.65	-0.2	0	1	0

Reset All

Cancel

Simulate



## Playing a Standard Player, continued



- You will see:
  - The “Opponent” move though the game course
  - Various elements of the game will appear
  - Your SPHERE will remain stationary since you have not created any code
- Check the scoring boxes at the end of the match to see how well the “Opponent” scored

Note: This image is game specific and will vary from year to year

HS ZR 2D Demo Player #6		
X: -0.03	Y: -0.80	Z: 0.00
Vx: -0.000	Vy: 0.007	Vz: -0.000
Nx: 0.63	Ny: 0.77	Nz: -0.00
$\omega x$ : 0.45	$\omega y$ : -0.52	$\omega z$ : -0.34
Fuel Remaining: 6%		
Charge: 0		
Item 0: 1	Item 1: 1	Item 2: 0
Phase: 3	TFin: 138	Score: 5

Elapsed Time: 174.0

HS ZR 2D Demo Player #2		
X: 0.26	Y: -0.67	Z: 0.00
Vx: 0.006	Vy: -0.018	Vz: 0.000
Nx: -1.00	Ny: 0.07	Nz: 0.01
$\omega x$ : 0.38	$\omega y$ : -1.07	$\omega z$ : 11.49
Fuel Remaining: 32%		
Charge: 1		
Item 0: 1	Item 1: 0	Item 2: 0
Phase: 3	TFin: 172	Score: 7

Blue sphere: 5 vs Red Sphere: 7



- Congratulations!
  - You have learned how to select the appropriate “Game Mode” to create a project for your game
  - You have learned how to test your code against a “Standard Player”
- Now it is time to get started! Have fun writing code!