Getting to Know the ZR IDE
In this tutorial you will learn about various features of the ZR IDE (Integrated Development Environment) to:

– Create a project
– Compile a code (check it for errors)
– Simulate (run the code in a simulation)
Log In

- Go to the Zero Robotics website:
  www.zerorobotics.mit.edu

- Log into your account with your email and password
Create a New Project

- Select light blue “ZR IDE” SPHERES icon on top ribbon

- Select “New Project”

- Enter
  - Project Name
    - Type: Project 1
    - Select “Text Editor”
    - Select “FreeMode”

- Click “New Project”
Text Editor IDE

- The Text Editor version of the ZR IDE is shown here

- On the next pages, you will:
  - Learn where to declare variables, compile and simulate without entering any code
Declaring a variable

Variables are always declared right above “void init”.

Once a variable is declared you need to assign a value to the variable. This is done right below “void init”, by typing the variable name followed by an equal sign and then the desired value.

Another way to assign a value to the variable is at the start of the “void loop” (we will get to this in a later tutorial).

Examples of declaring and assigning variables are provided in later tutorials.
Quick Compile

- Compile (Test this feature without entering code):
  - Click on “Simulate” (top menu, third from the left)
  - On the pull down menu, click on ”Compile”

- A “Running” window will pop up while the program is being compiled

- After compiling:
  - The log will open with a compilation succeeded or failed message.
  - If compilation failed check your code and try again
Simulate

- Click on “Simulate” (top menu, 3rd item from left)
- The Simulation window will open
- Change “Maximum Time” setting to 60
- Click “Simulate”
- a “Running” window pop up while the simulation is being constructed
Simulate (cont.)

• When complete:
  – The log will open with a simulation succeeded or failed message.
  – Click on “View Results”
  – A new browser window should pop up with background picture.
• The initial view shows y and z axis
  • horizontal line (the y-axis)
  • vertical line (the z-axis)

• To see the x axis:
  • Click and hold the left mouse button anywhere on the background and move the mouse until x, y and z axis are visible

• Click the “Play” arrow at the bottom left of the screen and wait a few seconds.
  • Two SPHERES satellites will appear
    • Satellites start from y=0.5 and y=-0.5
    • Hash marks are 0.25 units apart
  • The blue satellite will not move at this point unless you have entered a code.
• Replay the simulation by clicking the red stop button and then the green play button.

• Experiment with your views by clicking on and moving the screen

• Watch the scoring box (top-left corner of the screen with blue label) which provides information about the blue SPHERES satellite:
  – where the satellite is (X, Y and Z)
  – how fast it’s moving (Vx, Vy, Vz)
  – We’ll explain the other labels later (they tell you which way the satellite is pointing and how fast it’s rotating).
• Experiment with the simulation buttons and views at the bottom to:
  – Experiment with the simulation buttons and views at the bottom to:
    – change simulation speeds (see the “1x, 2x, 3x, 4x, 10x” buttons)
    – Zoom buttons
    – reset view
    – change background
    – show/hide the console
    – Full screen

• On the bottom menu select “Back to Project” to return to the Graphical Editor page
• Congratulations!
• You have learned about various features in the ZR IDE
• You learned how to compile code and check for errors
• You learned how to run the code in simulation