

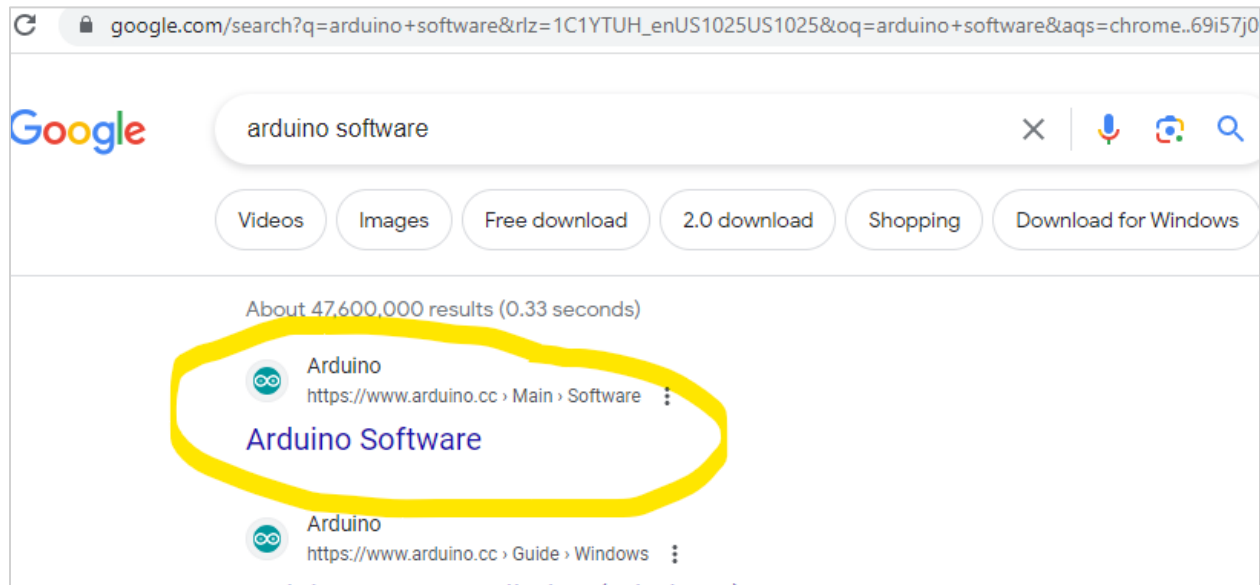
# Getting Started with the Space Trek ExoNaut & Arduino

The ExoNaut robot uses an ESP32 processor and can be programmed with the Arduino environment. To program the ExoNaut with Arduino you need to install the Arduino IDE, add the proper ESP32 board and add the SpaceTrek ExoNaut library.

## Installing the Arduino IDE

There are a few ways to use the Arduino IDE. There is an online version, but we do not recommend using it with the ExoNaut. You will need to install the Arduino IDE on the computer you are using. You can download and install it from the Arduino website for any operating system or you can use the Microsoft Store to install the windows app. If you are unable to install the downloaded version due to account restrictions, you can usually install the app from the Microsoft Store or your Company Portal without issue. To download the Arduino IDE either do a Google search for “Arduino software” or follow the link below.


<https://www.arduino.cc/en/software>





Once at the download page select the option for your operating system from the darker green area on the right. The next page will ask if you want to donate to Arduino, you can choose “Just Download” to skip donating. Installation is straight forward, follow the prompts and it will install.

## Downloads



### Arduino IDE 2.1.0

The new major release of the Arduino IDE is faster and even more powerful! In addition to a more modern editor and a more responsive interface it features autocompletion, code navigation, and even a live debugger.

For more details, please refer to the [Arduino IDE 2.0 documentation](#).

Nightly builds with the latest bugfixes are available through the section below.

SOURCE CODE

The Arduino IDE 2.0 is open source and its source code is hosted on [GitHub](#).

#### DOWNLOAD OPTIONS

**Windows** Win 10 and newer, 64 bits  
**Windows** MSI installer  
**Windows** ZIP file

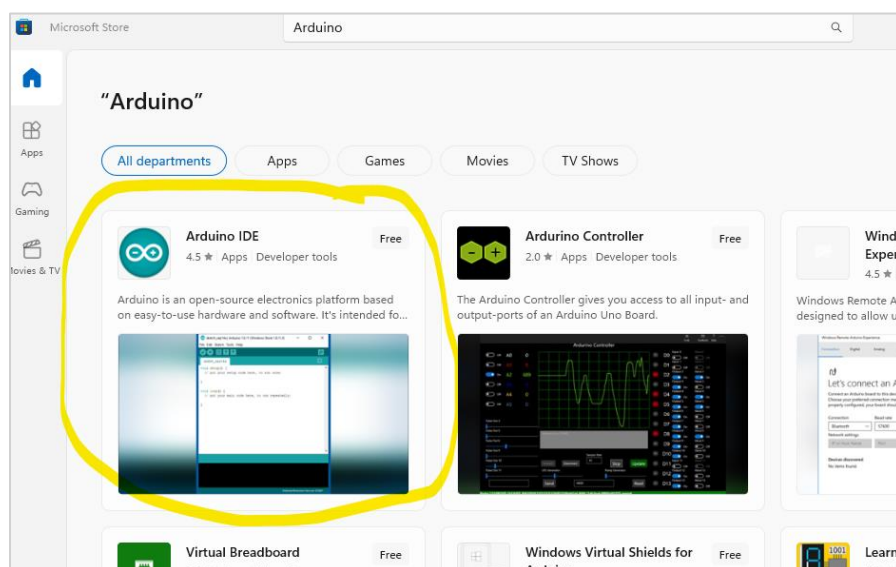
**Linux** AppImage 64 bits (X86-64)  
**Linux** ZIP file 64 bits (X86-64)

**macOS** Intel, 10.14: “Mojave” or newer, 64 bits  
**macOS** Apple Silicon, 11: “Big Sur” or newer, 64 bits

[Release Notes](#)

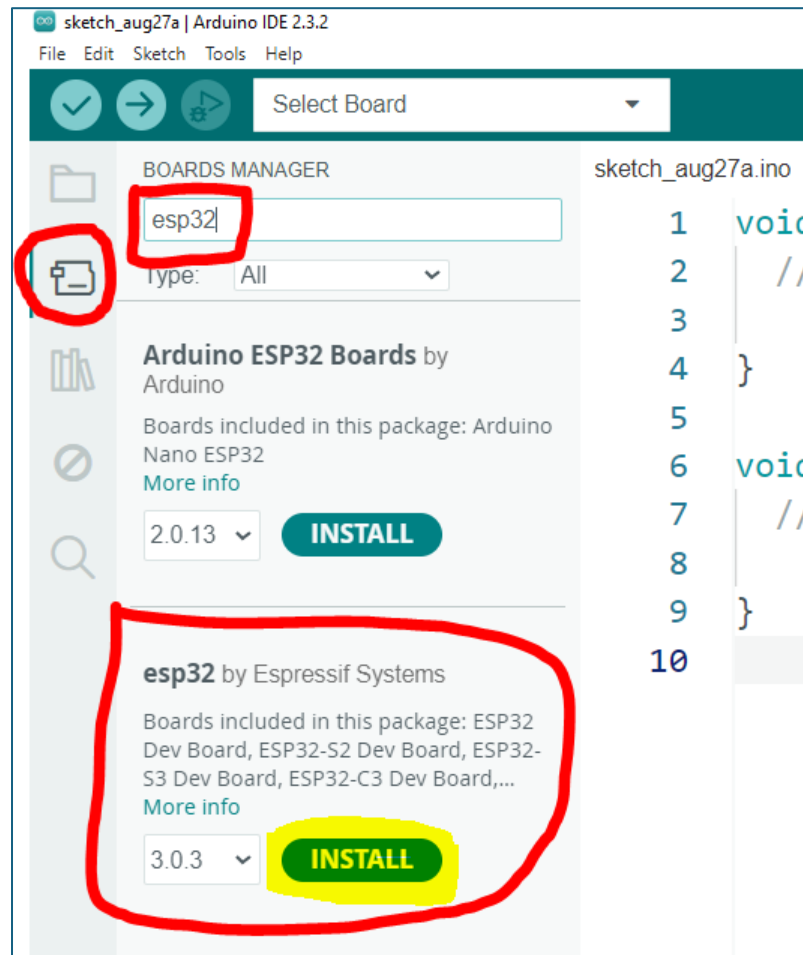
## Microsoft Store / Company Portal

You can also install the IDE from the Microsoft Store. Depending on your school district, you may have access to the Arduino IDE in your company portal. In the store or portal search for “Arduino” and install the Arduino IDE.



## Installing the ESP32 Board Files

To install the ESP32 board file click on the Boards Manager button on the left side menu, it is the second one from the top. Then search for “esp32” and you should see two results. Make sure you install the one from Espressif Systems.



Depending on your system and internet connection the installation might take a long time, upwards of 20 minutes in some situations. You will see a progress box pop up in the lower right-hand corner. Wait for the install to finish before you do anything else.

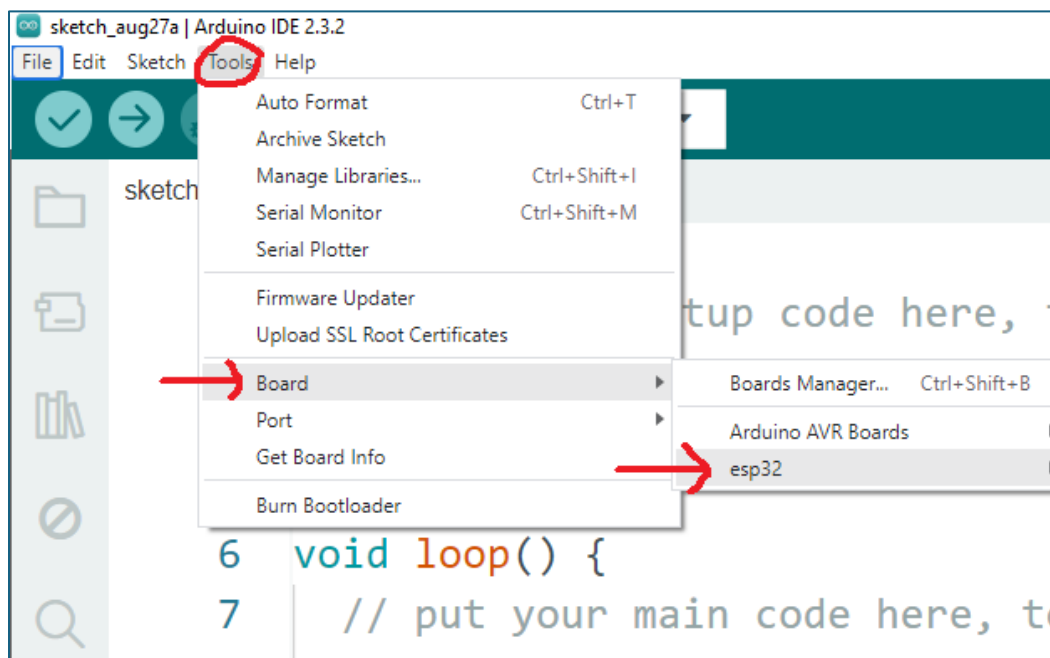
Processing esp32:3.0.3: esp32:esp-rv32@2302



While the install is going you will see some text in the output box at the bottom of the Arduino IDE. Eventually you will see “Platform esp32:esp32@#.## installed and the progress box will say that it finished before it closes.

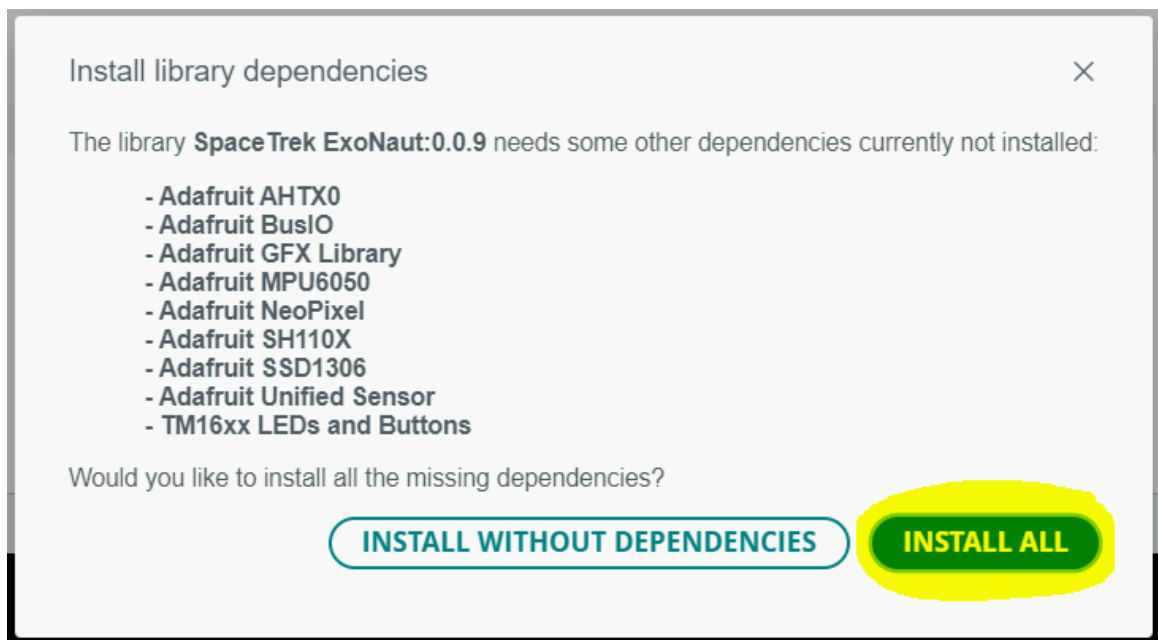
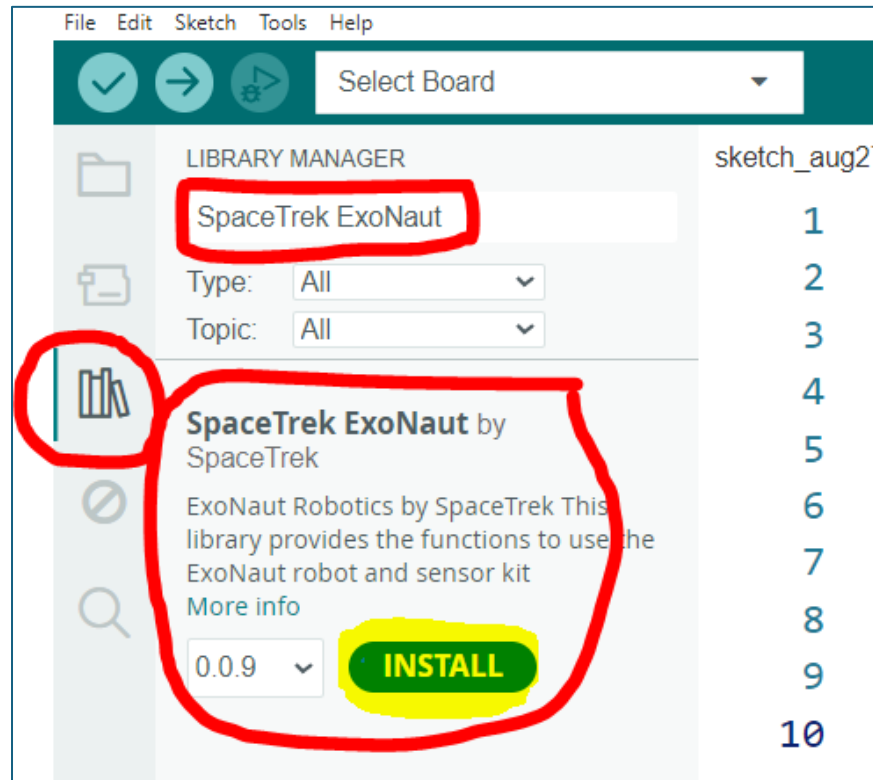
```
Output
esp32:openocd-esp32@v0.12.0-esp32-20240318 inst
Installing esp32:riscv32-esp-elf-gdb@12.1_20231
Configuring tool.
esp32:riscv32-esp-elf-gdb@12.1_20231023 install
Installing esp32:xtensa-esp-elf-gdb@12.1_202310
Configuring tool.
esp32:xtensa-esp-elf-gdb@12.1_20231023 installe
Installing platform esp32:esp32@3.0.3
Configuring platform.
Platform esp32:esp32@3.0.3 installed
```

Once successfully installed you will see a listing for esp32 under tools



## Installing Space Trek ExoNaut Library

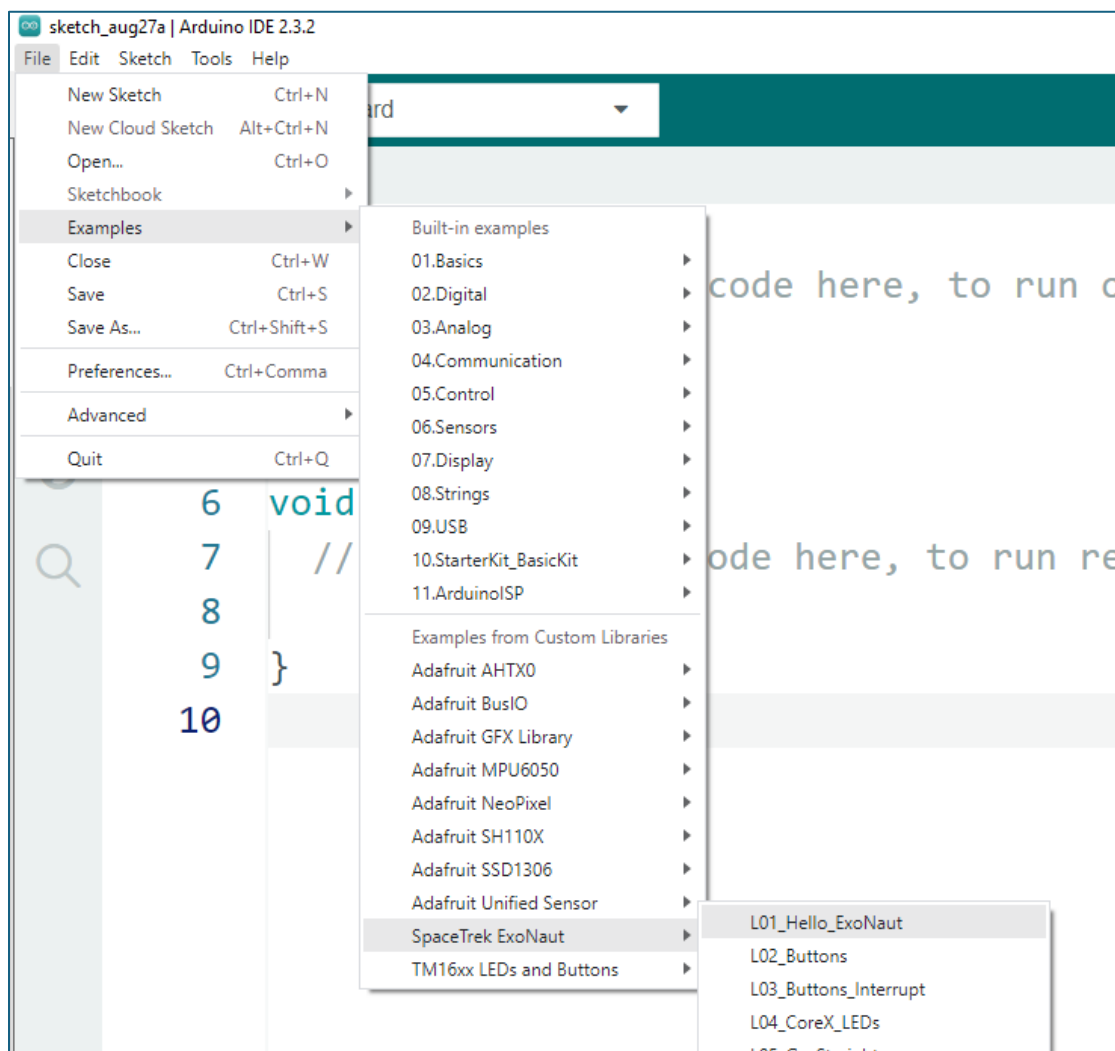
To install the Space Trek ExoNaut library, click on the Library Manager button on the left side menu, it is the third one from the top. Then search for “SpaceTrek ExoNaut” and install the library. When you install it you be asked to install additional libraries. Make sure you install all additional libraries or things will not work correctly.



Once you have the boards file and the library installed you can use Arduino to program your ExoNaut. The first time you plug your ExoNaut into your Windows computer it will take a few seconds for Windows to install the USB driver. So give it a bit before trying to use it.

## Opening an Example Program

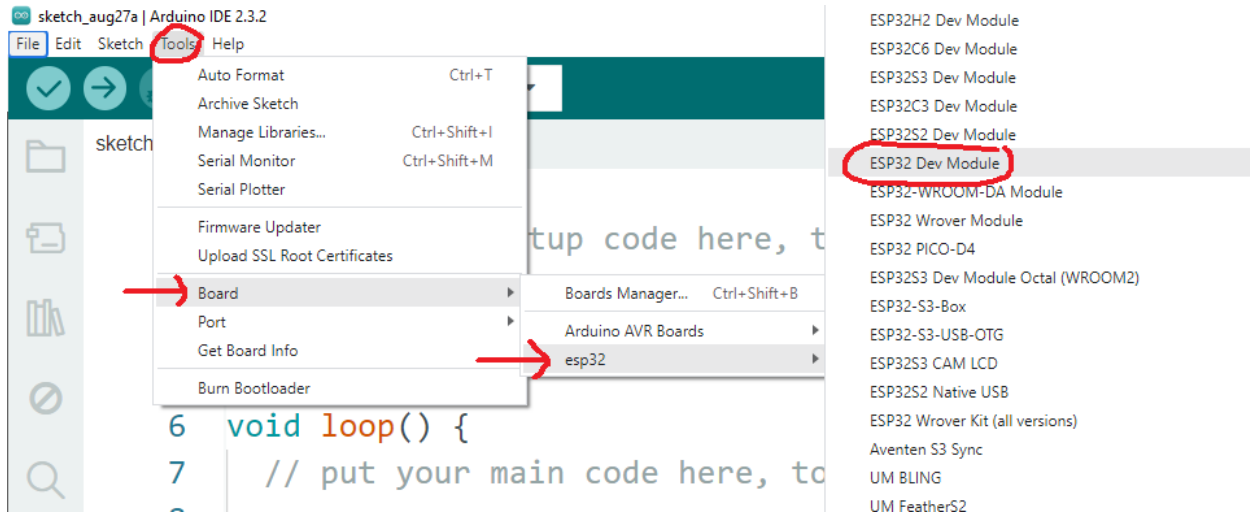
Click on File > Examples > SpaceTrek ExoNaut and then select the example you want to open.



## Selecting the Board and COM Port

Once you have an example file open you need to set the board and COM port so Arduino knows how to communicate with the ExoNaut.

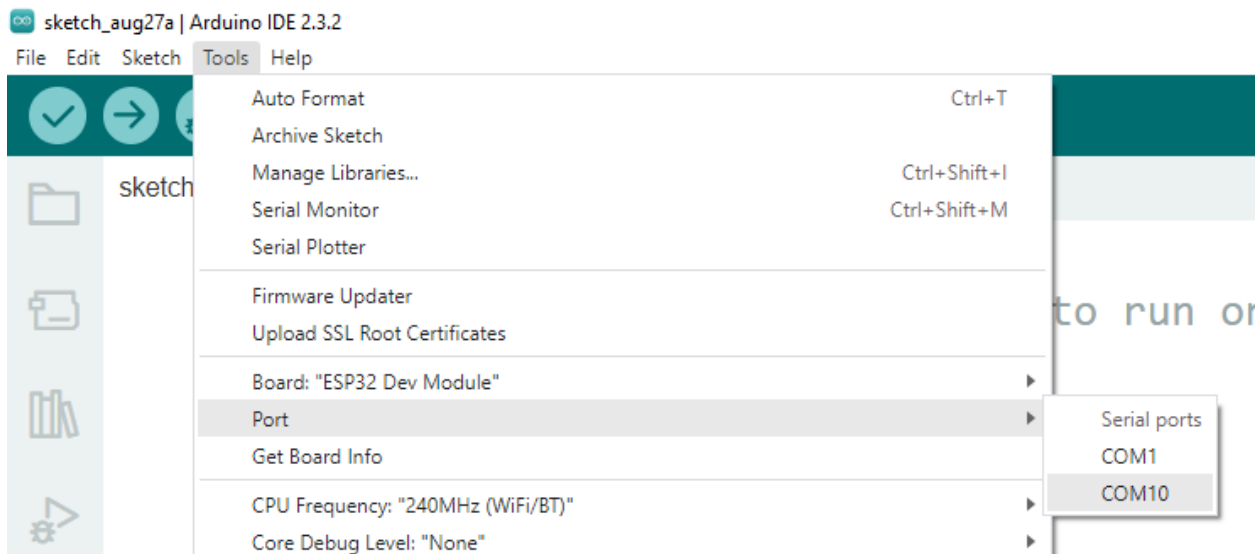
On the menu select **Tools > Board > esp32 > ESP32 Dev Module**.



Make sure you select the one that is just ESP32 Dev Module. There are several that are close but have an additional letter and number after ESP32.

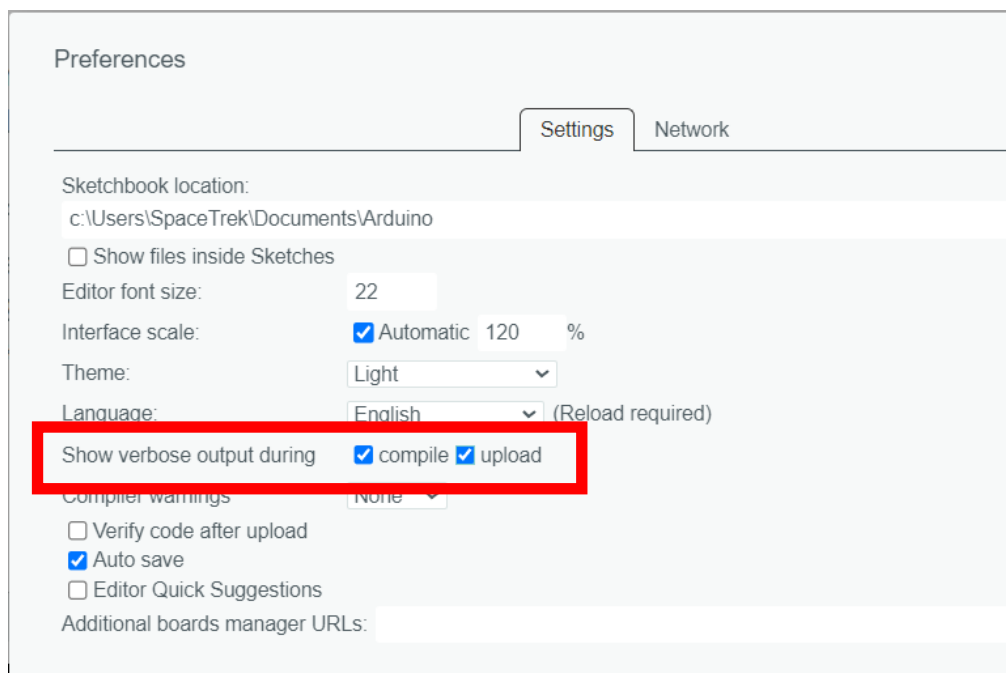
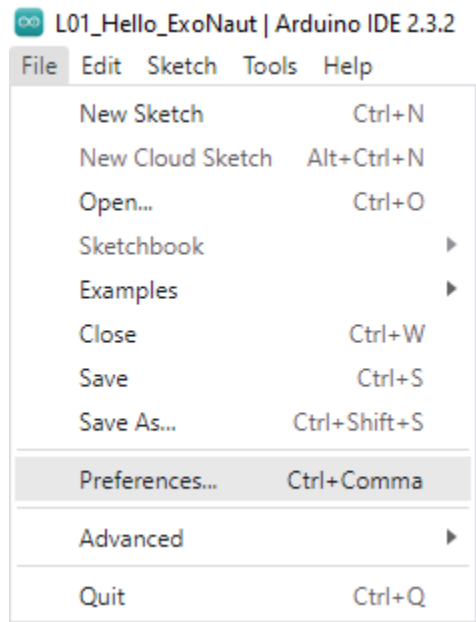
Once the board is set on the menu select **Tools > Port > COM#**

The COM number will vary, it is usually the one with the highest number. If you're unsure you can unplug the ExoNaut usb cable and see what COM ports are listed. Then plug it back in and see what the new one is.



## Uploading Your Program

Once you have an example file open and have selected the board and COM port you are ready to upload. Use the button in the upper left corner for uploading. It can take quite a while for the program to compile and upload, be patient. It is nice to turn on “Verbose Output” so that you can tell that something is happening. To turn on verbose output, on the menu select File > Preferences and then check the two boxes for verbose output.







Once you have verbose output turned on click the upload button in the upper left hand corner and your program will be compiled and then uploaded to the your ExoNaut. You will see a compile and eventually upload progress box in the lower right hand corner. You should also see text scrolling by in the output box.



Once it finishes uploading your program in on the ExoNaut. Remember, any time you make a change to your program you need to upload it again to push the changes to the ExoNaut.