

1 Install USB Drivers

Before connecting Apeiros Robot via USB you must install the USB drivers. Unzip the Apeiros USB driver files, "[apeiros_windows_drivers.zip](#)". Right-click "[apeiros.inf](#)" file and select "**Install**" from the popup menu as shown in Figure 1.

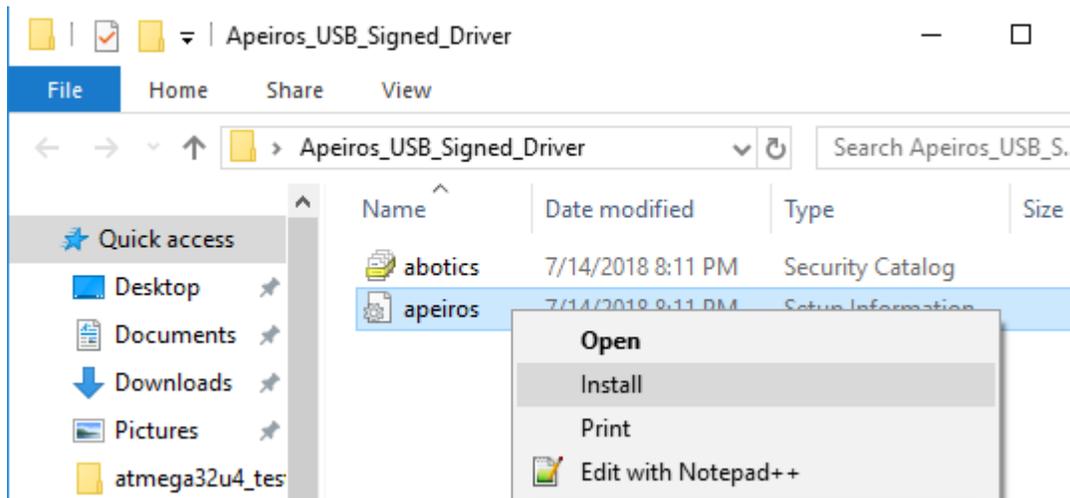


FIGURE 1. Install "apeiros.inf" USB driver file.

If you are unable to use the right-click install method, then run a command line session as administrator. Type the following command: "[RUNDLL32.EXE SETUPAPI.DLL,InstallHinfSection DefaultInstall 132 C:\Apeiros_Signed_Driver_Test\apeiros.inf](#)" as shown in Figure 2. Be sure to replace "[C:\Apeiros_Signed_Driver_Test\apeiros.inf](#)" with the directory location of the "[apeiros.inf](#)" file on your machine.

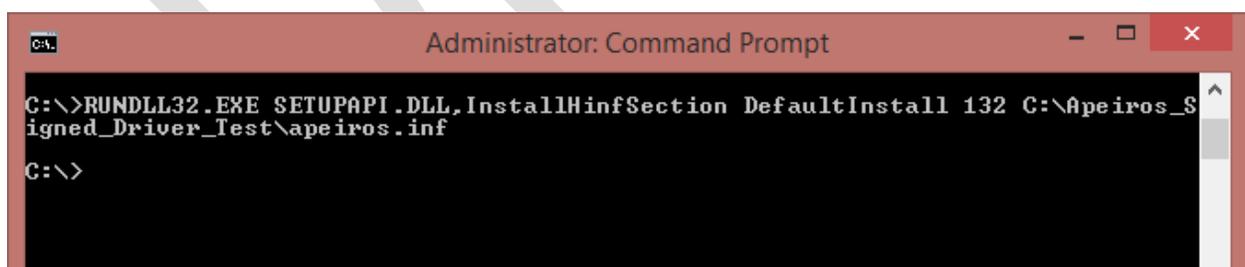


FIGURE 2. Command line install of "apeiros.inf" USB driver file.

You will be presented with a message box asking if you would like to install the device software. Be sure to click the "**Install**" button as shown in Figure 3.



FIGURE 3. Install message box.

Connect a USB cable to your Apeiros Robot and notice that a USB driver has been installed for "Apeiros Robot" as shown in Figure 4. Be sure to take note of the assigned communication port. In this case, Apeiros Robot has been assigned "COM5".

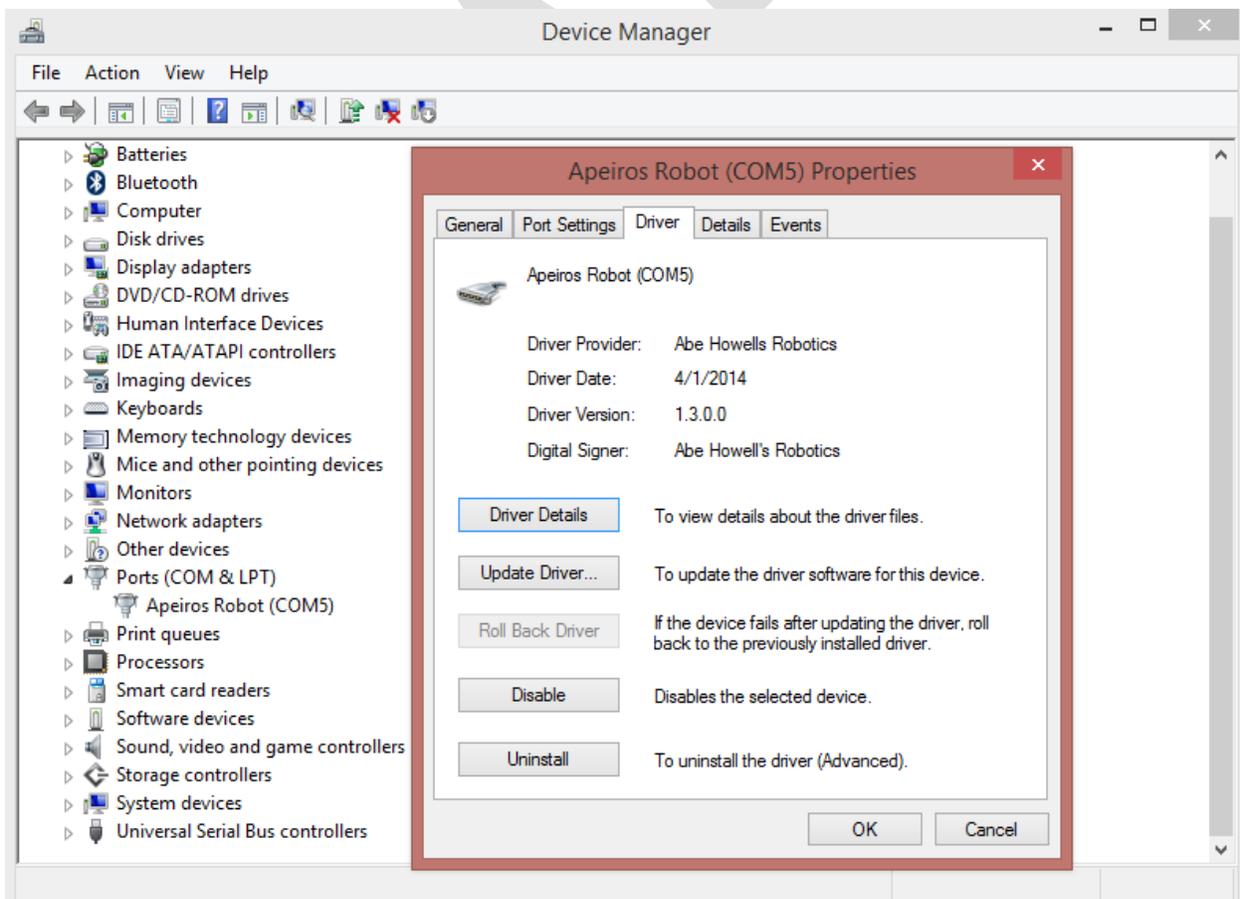


FIGURE 4. Apeiros Robot USB driver assigned communication port.

Additionally, a USB driver will be installed for the "**Apeiros Bootloader**" as shown in Figure 5. You can only observe this after pressing the "**Reset**" button on your Apeiros Robot.

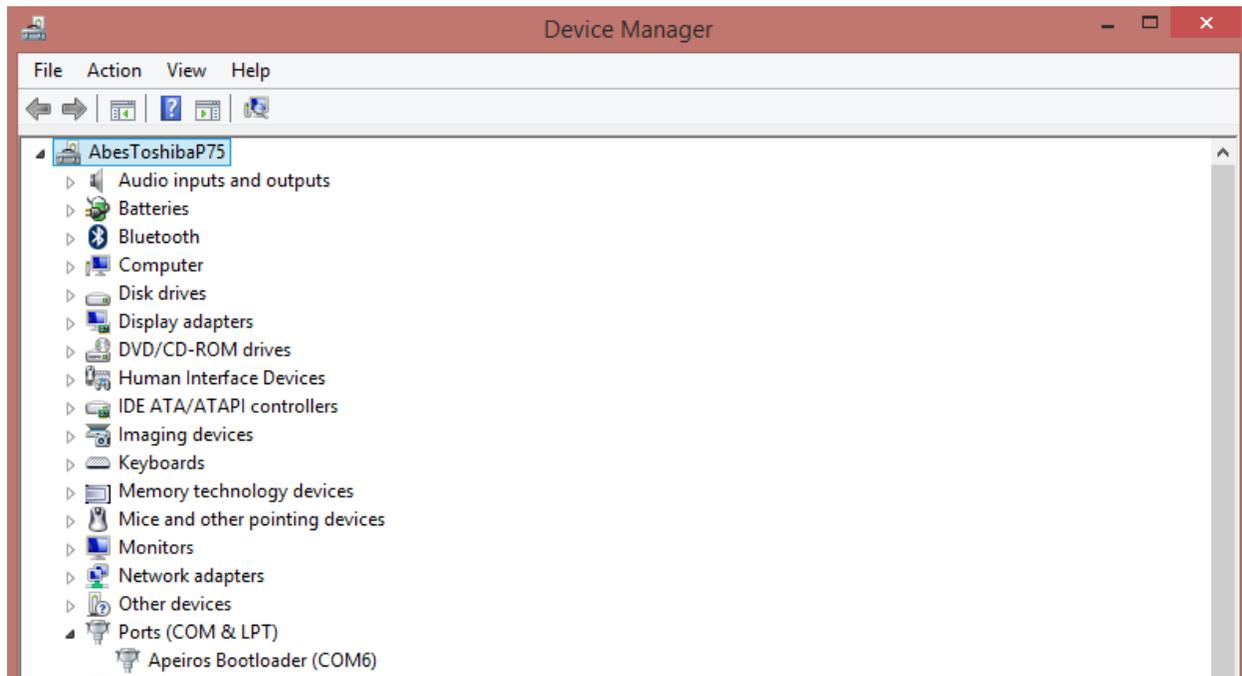


FIGURE 5. Apeiros Bootloader USB driver assigned communication port.

2 Install & Setup Arduino IDE

Download Arduino IDE 1.8.5: <https://www.arduino.cc/en/Main/Software>. All of the Apeiros Robot libraries have been tested on Arduino IDE 1.8.5 and 1.6.1. However, it is strongly recommended that you install Arduino IDE 1.8.5. Before using the Arduino IDE with Apeiros you must update the "**boards.txt**" file to include specific information about Apeiros Robot. In this example we will be updating the "**boards.txt**" file for an Arduino IDE 1.6.1 installation. The "**boards.txt**" file is located in the following folder for this example: "**C:\arduino-1.6.1\hardware\arduino\avr**" as shown in Figure 6. Please be sure to look in the correct folder based upon your specific Arduino IDE installation.

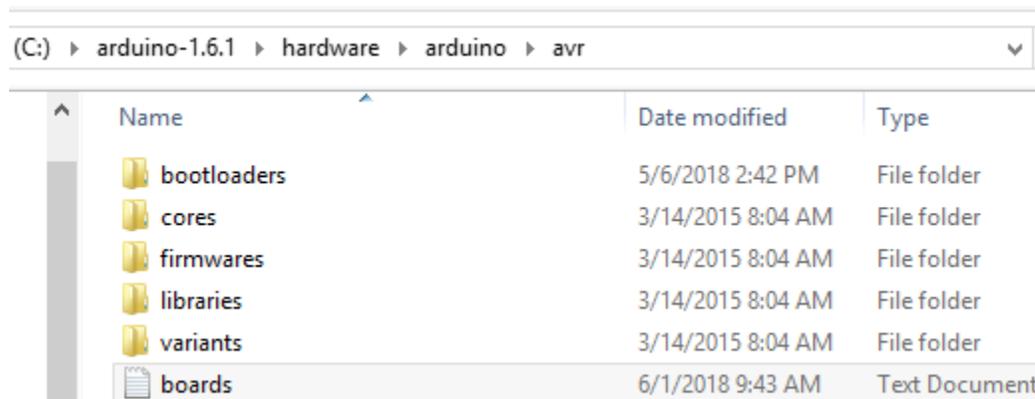


FIGURE 6. Arduino IDE "boards.txt" file location.

Now go ahead and copy and paste the new "**boards.txt**" file that was supplied within the Apeiros Robot ZIP file download. If you want to open the new file and scroll down to the bottom, you will find the added Apeiros Robot information as shown in Figure 7.

```
#####
apeiros.name=Apeiros Robot
apeiros.vid.0=0x04D8
apeiros.pid.0=0xEECE
apeiros.vid.1=0x04D8
apeiros.pid.1=0xEEC1

apeiros.vid.0x2A03.warning=Uncertified

apeiros.upload.tool=avrdude
apeiros.upload.protocol=avr109
apeiros.upload.maximum_size=28672
apeiros.upload.maximum_data_size=2560
apeiros.upload.speed=57600
apeiros.upload.disable_flushing=true
apeiros.upload.use_1200bps_touch=true
apeiros.upload.wait_for_upload_port=true

apeiros.bootloader.tool=avrdude
apeiros.bootloader.low_fuses=0xff
apeiros.bootloader.high_fuses=0xd8
apeiros.bootloader.extended_fuses=0xcb
apeiros.bootloader.file=caterina/Caterina-Apeiros.hex
apeiros.bootloader.unlock_bits=0x3F
apeiros.bootloader.lock_bits=0x2F

apeiros.build.mcu=atmega32u4
apeiros.build.f_cpu=16000000L
apeiros.build.vid=0x04D8
apeiros.build.pid=0xEEC1
apeiros.build.usb_product="Apeiros Robot"
apeiros.build.board=AVR_LEONARDO
apeiros.build.core=arduino
apeiros.build.variant=leonardo
apeiros.build.extra_flags={build.usb_flags}
#####
```

FIGURE 7. Apeiros Robot information in "boards.txt" file.

Now you can go ahead and launch the Arduino IDE. You will notice that "Apeiros Robot" has been added to the list when "Board" is selected from the "Tools" menu as shown in Figure 8.

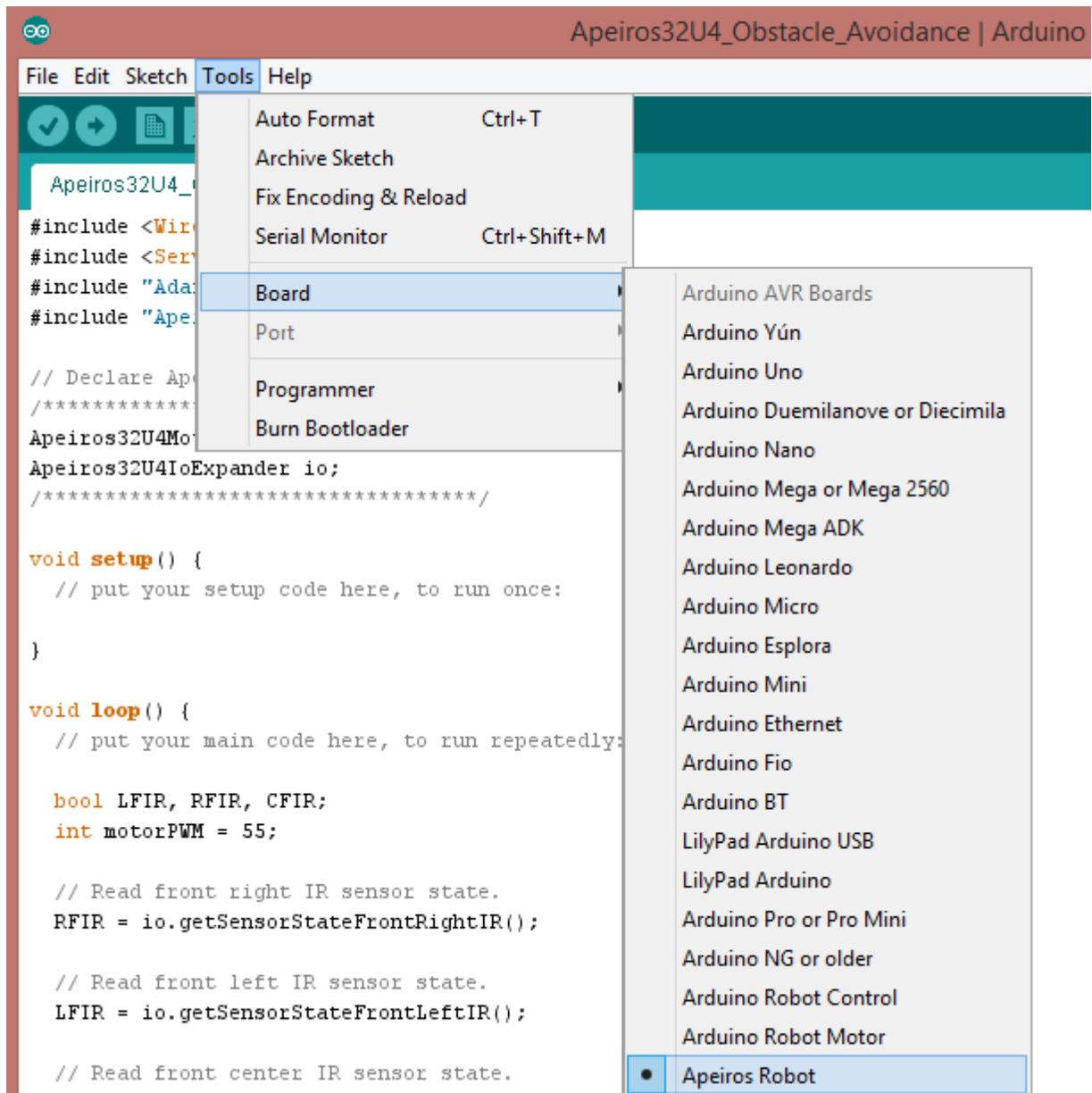


FIGURE 8. Arduino IDE "Boards" menu.

3 Install Apeiros Robot Arduino Class Libraries

You can follow the library installation instructions on the Arduino website:

<https://www.arduino.cc/en/Guide/Libraries>

First try to install using the Library Manager from within the Arduino IDE. If that doesn't work, then follow the "[Manual installation](#)" process. To perform a manual install, simply unzip the "[Apeiros-Robot-arduino-library-master.zip](#)" file, locate the "[Apeiros32U4-Arduino](#)" folder and copy it to the Arduino "[libraries](#)" folder as shown in Figure 9.

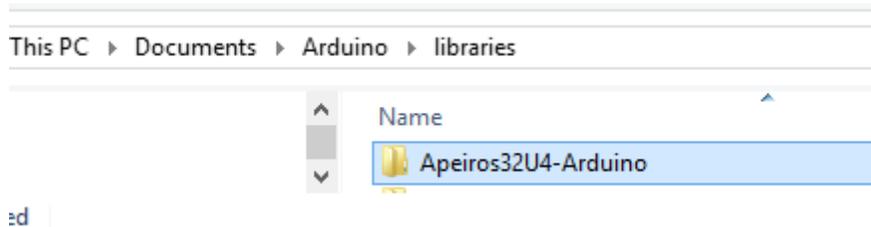
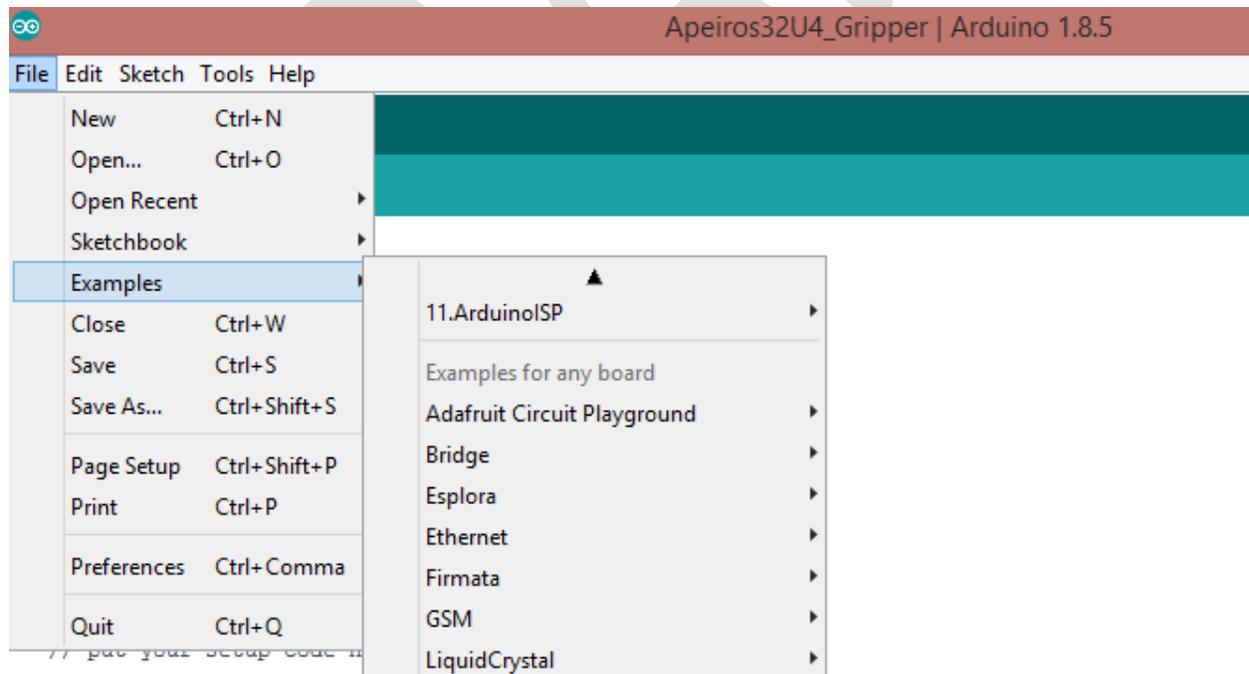


FIGURE 9. Add "Apeiros32U4-Arduino" library to Arduino "libraries" folder.

4 Run Example Programs

You can run example Apeiros Robot programs by simply selecting "[File](#)" -> "[Examples](#)" -> "[Apeiros32U4-Arduino](#)" from within the Arduino IDE as shown in Figure 10.



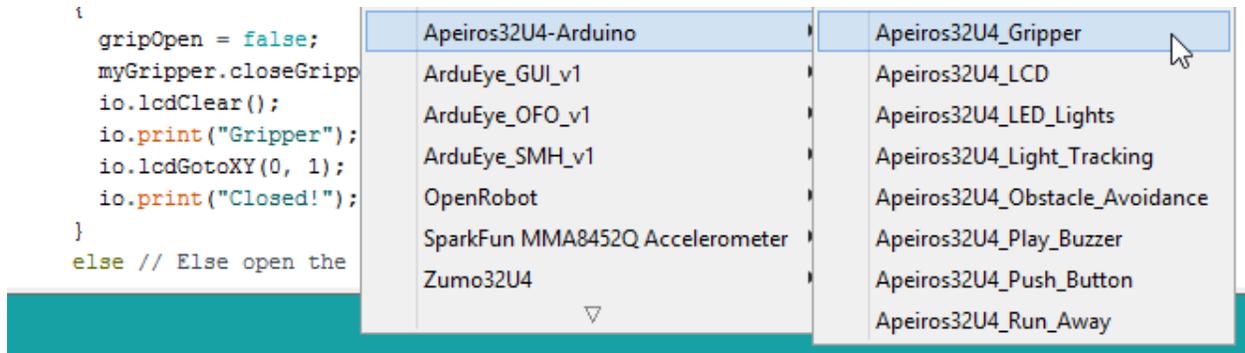


FIGURE 10. Run example Apeiros Robot programs.

Be sure to connect a USB cable and switch on Apeiros Robot. Then select the communication port before uploading a program.

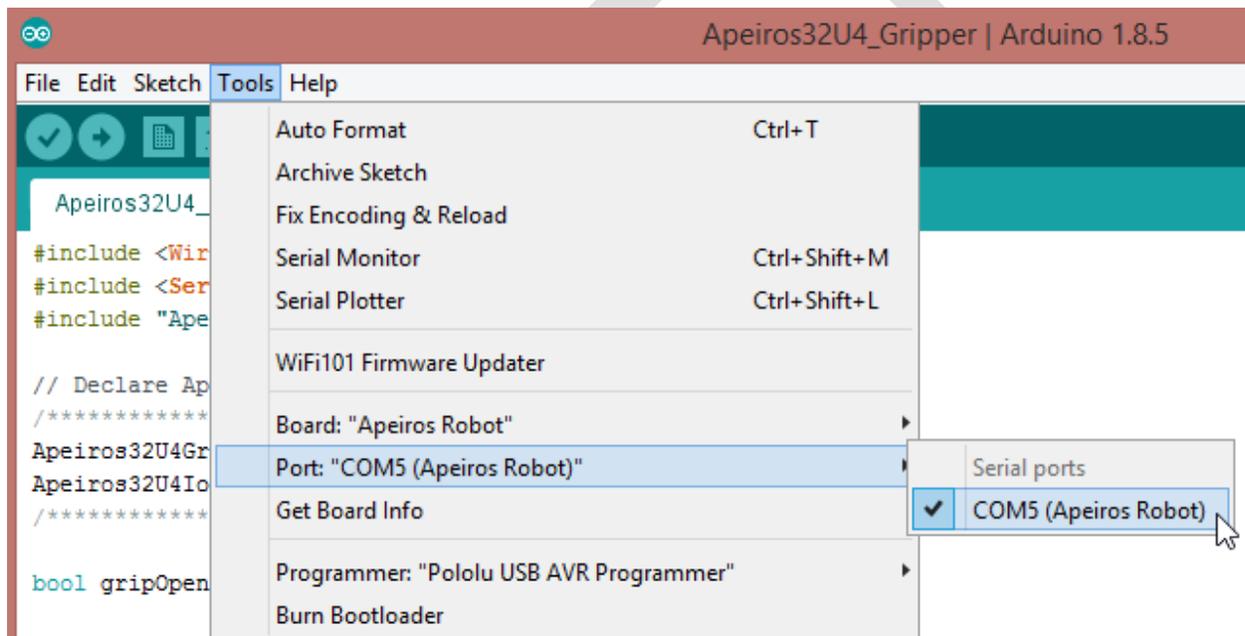


FIGURE 11. Select Apeiros Robot communication port.

Finally, click the "Upload" button as shown in Figure 12. Your program will be compiled and then uploaded to the connected Apeiros Robot.

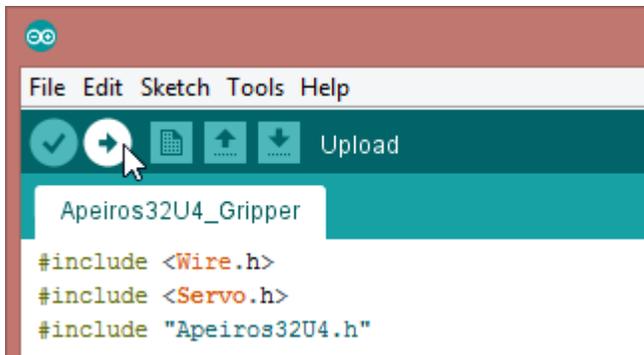


FIGURE 12. Upload program.

While your program is being compiled you will notice "Compiling sketch" in lower left-hand corner of Arduino IDE as shown in Figure 13.

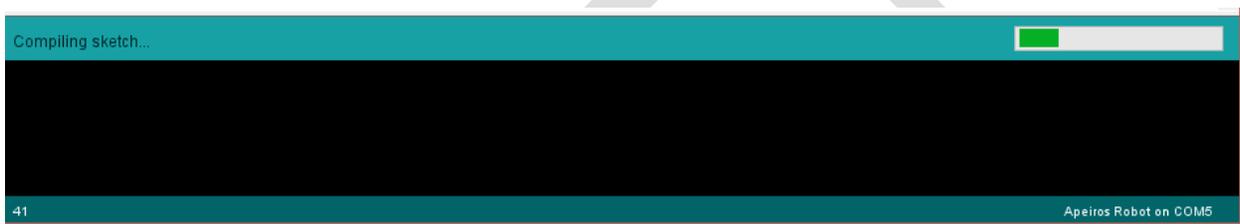


FIGURE 13. Compiling sketch.

You will observe "Uploading" when your program is being uploaded to the connected Apeiros Robot as shown in Figure 14.

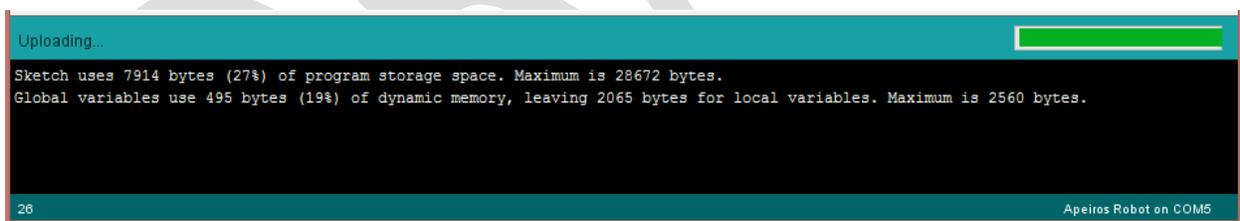


FIGURE 14. Uploading program.

Once the uploading is complete the connected Apeiros Robot will begin to execute the uploaded program. Be sure to disconnect the USB cable if your program activates one or both motors!

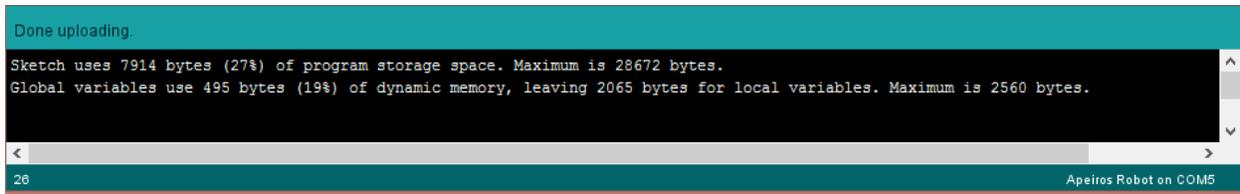


FIGURE 15. Upload complete.

5 Copy Apeiros Robot Bootloader Hex File

This step is not necessary unless you need to "burn" the Apeiros Robot bootloader. The Apeiros Robot bootloader comes factory installed. However, advanced users may need to reload the Apeiros bootloader at some point. Reloading the bootloader requires using a suitable USB AVR Programmer or an Arduino board. This topic will not be covered in this setup guide. Copy the "[Caterina-Apeiros.hex](#)" file to the "[caterina](#)" folder as shown in Figure 16. Please note that your Arduino installation may have a slightly different path.

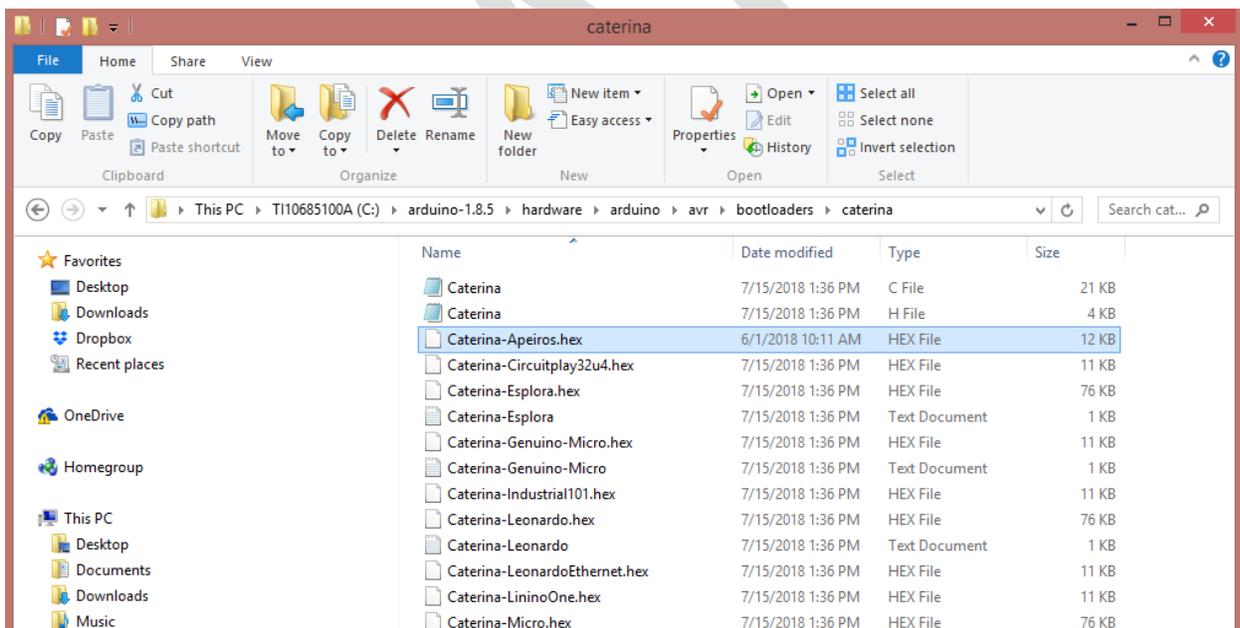


FIGURE 16. Copy "Caterina-Apeiros.hex" bootloader file to Arduino "bootloaders" folder.