

Q1 lite 3

Simple Quadruped Robot

Q1 Robot @ Jason Workshop
q1.jasonworkshop.com

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Q1 lite 3

Simple Quadruped Robot

8 DOF Quadruped Robot

Mimic biological form

Easy to DIY

Compatible with Arduino IDE

3D Print parts x 11

Print all parts < 5 hrs

Size = 190x130x65mm

Weight < 200g

Compact all-in-one design control board

Control up to 12 servo motors simultaneously

Onboard Wi-Fi and Bluetooth LE

Lithium Ion Capacitor for power

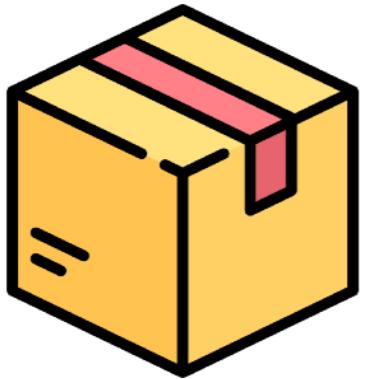
Fast charge 15 mins, battery life up to 28 mins

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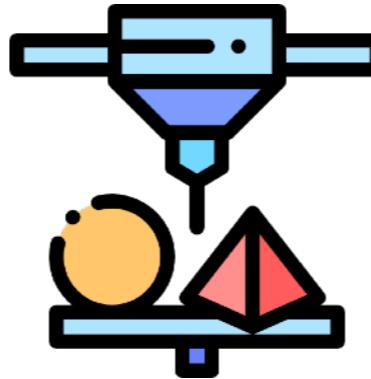
q1.jasonworkshop.com

Q1 lite 3

Simple Quadruped Robot



Prepare Parts



3D Print



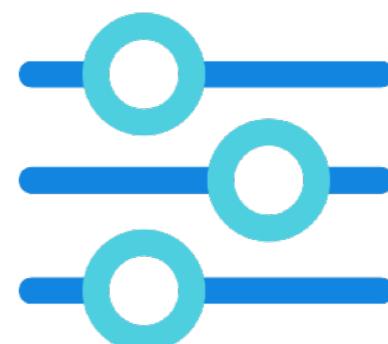
Software



Assemble



Play

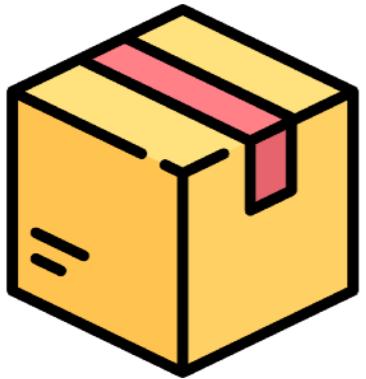


Adjust

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Q1 lite 3

Simple Quadruped Robot



Prepare Parts



3D Print



Software



Assemble



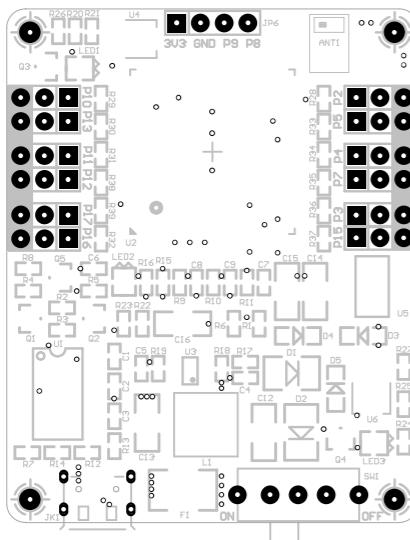
Play



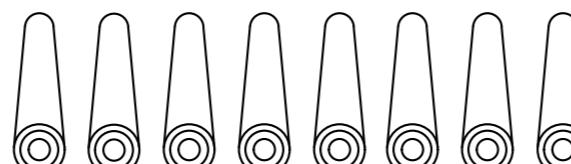
Adjust



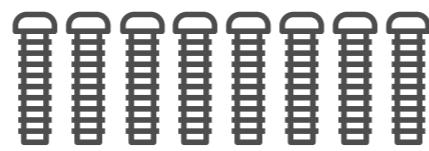
Prepare Parts \ Parts List



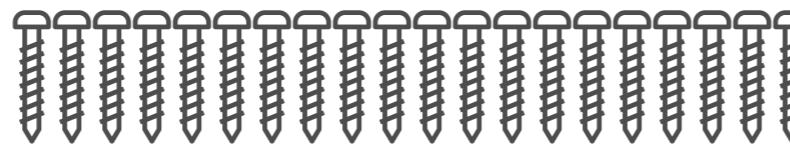
TinyPlan97
Development Board **x 1**



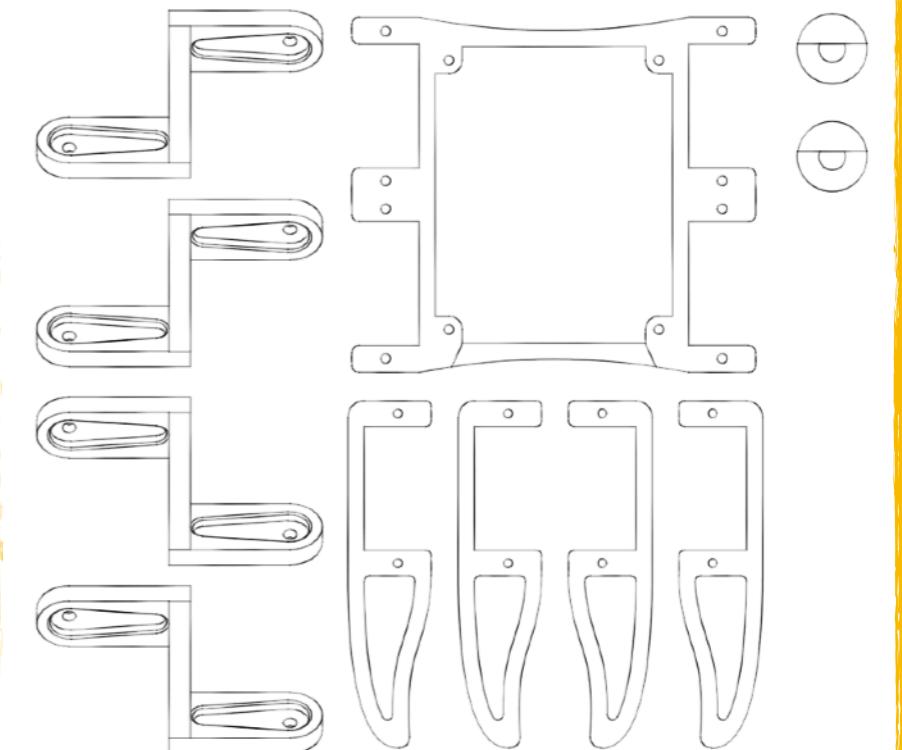
Servo Arm **x 8**



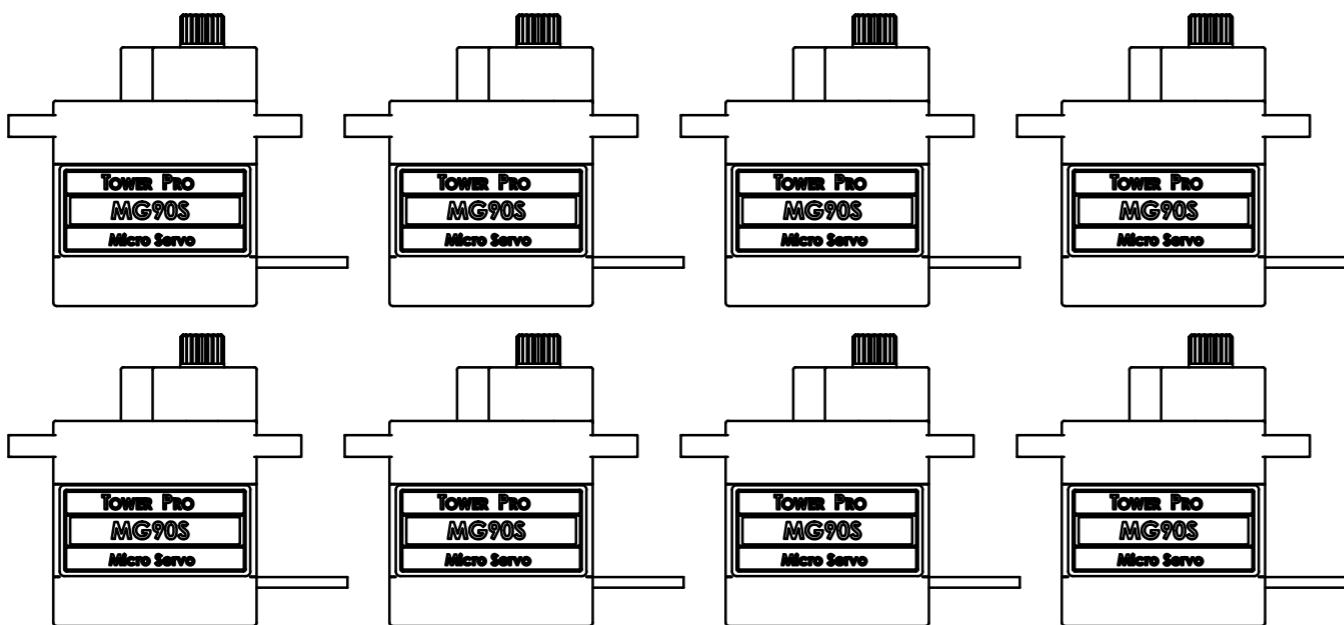
M2.5 x 8mm PM Screw **x 8**



M2 x 8mm PA Screw **x 20**



3D Print Parts



Tower Pro MG90s Servo **x 8**
(180 Degree)



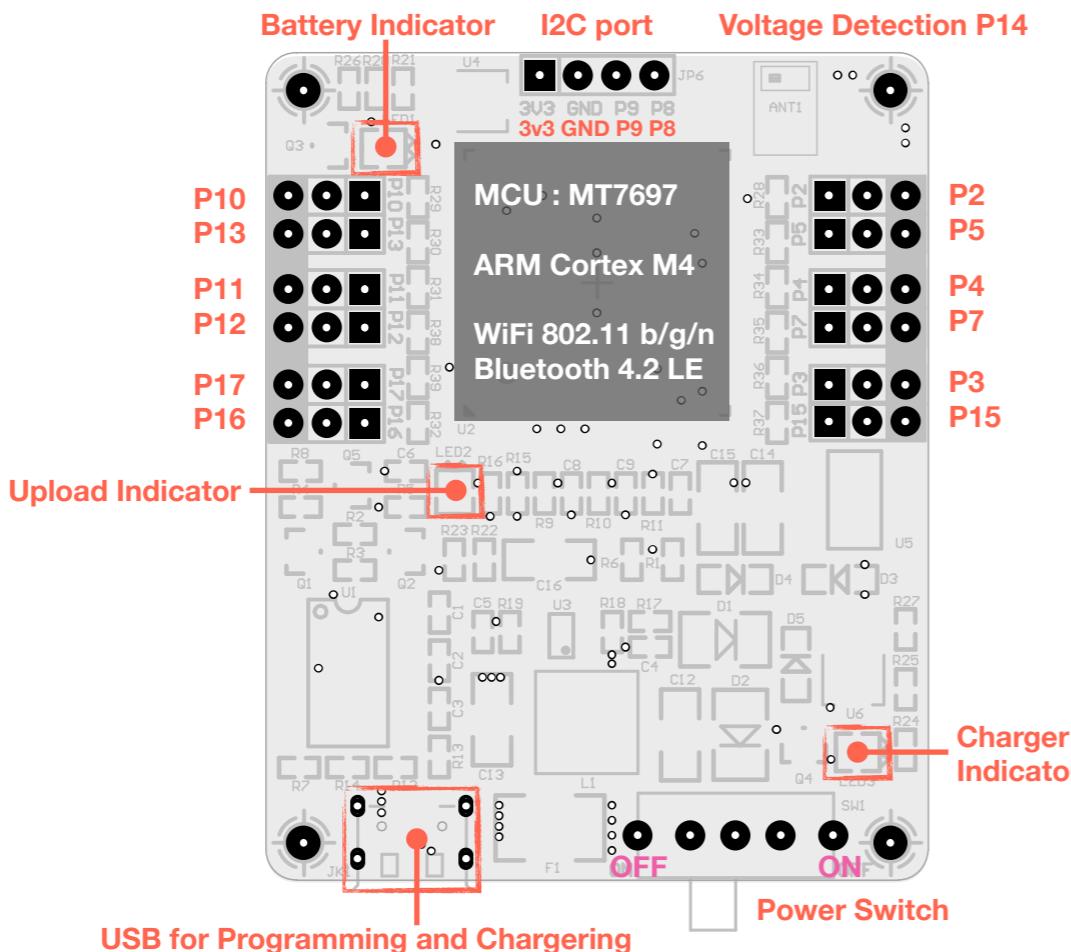
Buy everything from:
store.jasonworkshop.com

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q1.jasonworkshop.com

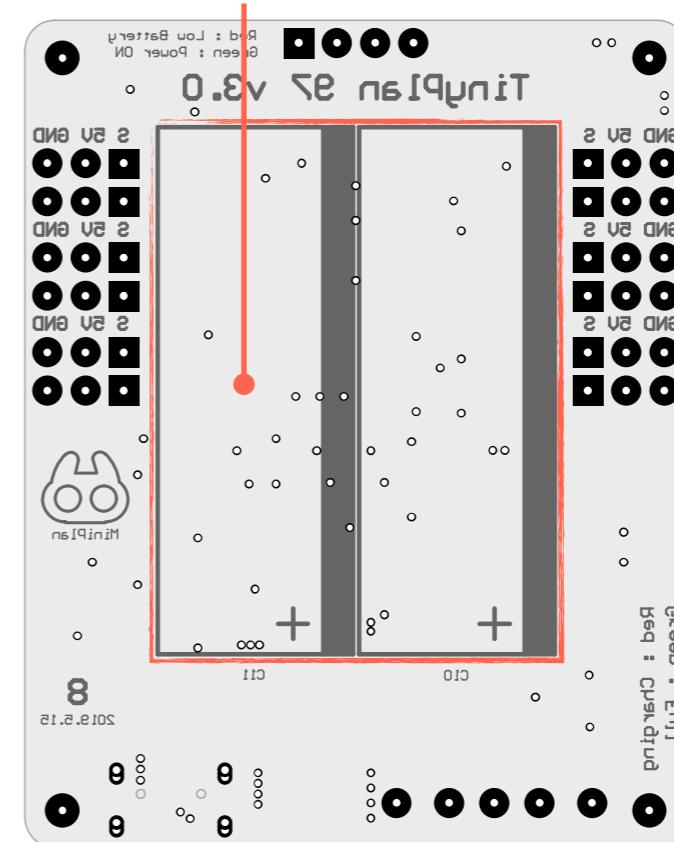


Prepare Parts \ TinyPlan 97 Development Board

14 GPIO ports to control up to 12 servo motors simultaneously



5V / 250mAh Lithium Ion Capacitor for power with nominal output of 10C



L55mm x W44mm x H23mm

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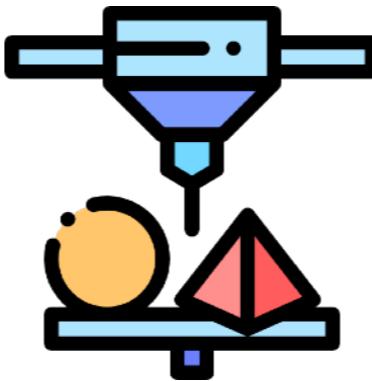
q1.jasonworkshop.com

Q1 lite 3

Simple Quadruped Robot



Prepare Parts



3D Print



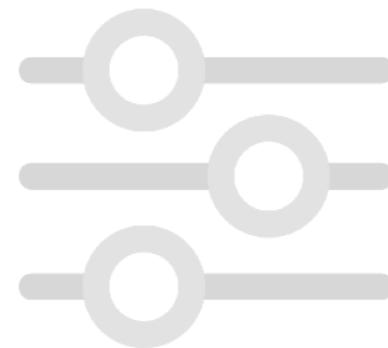
Software



Assemble



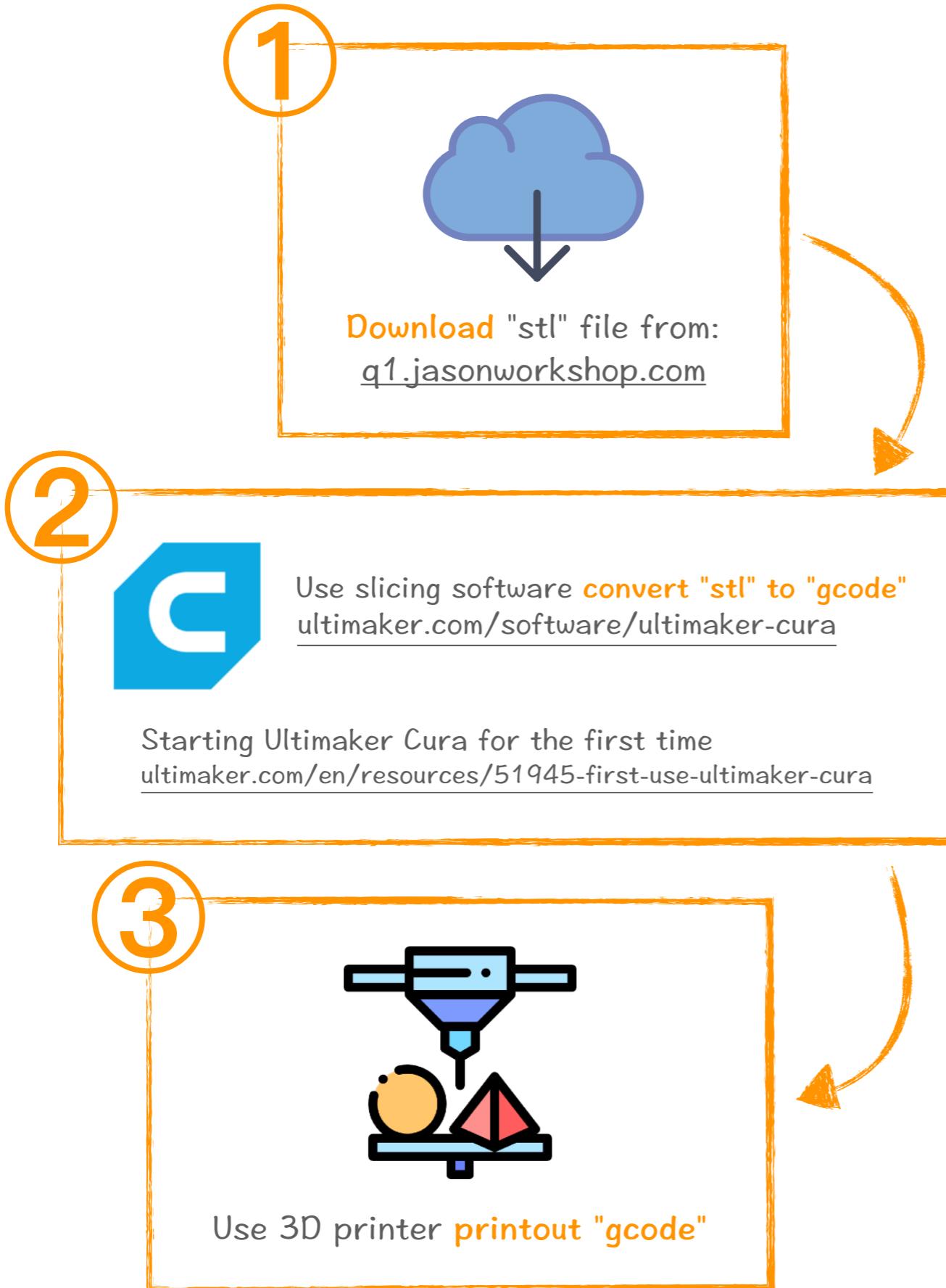
Play



Adjust



3D Print \ How to Print



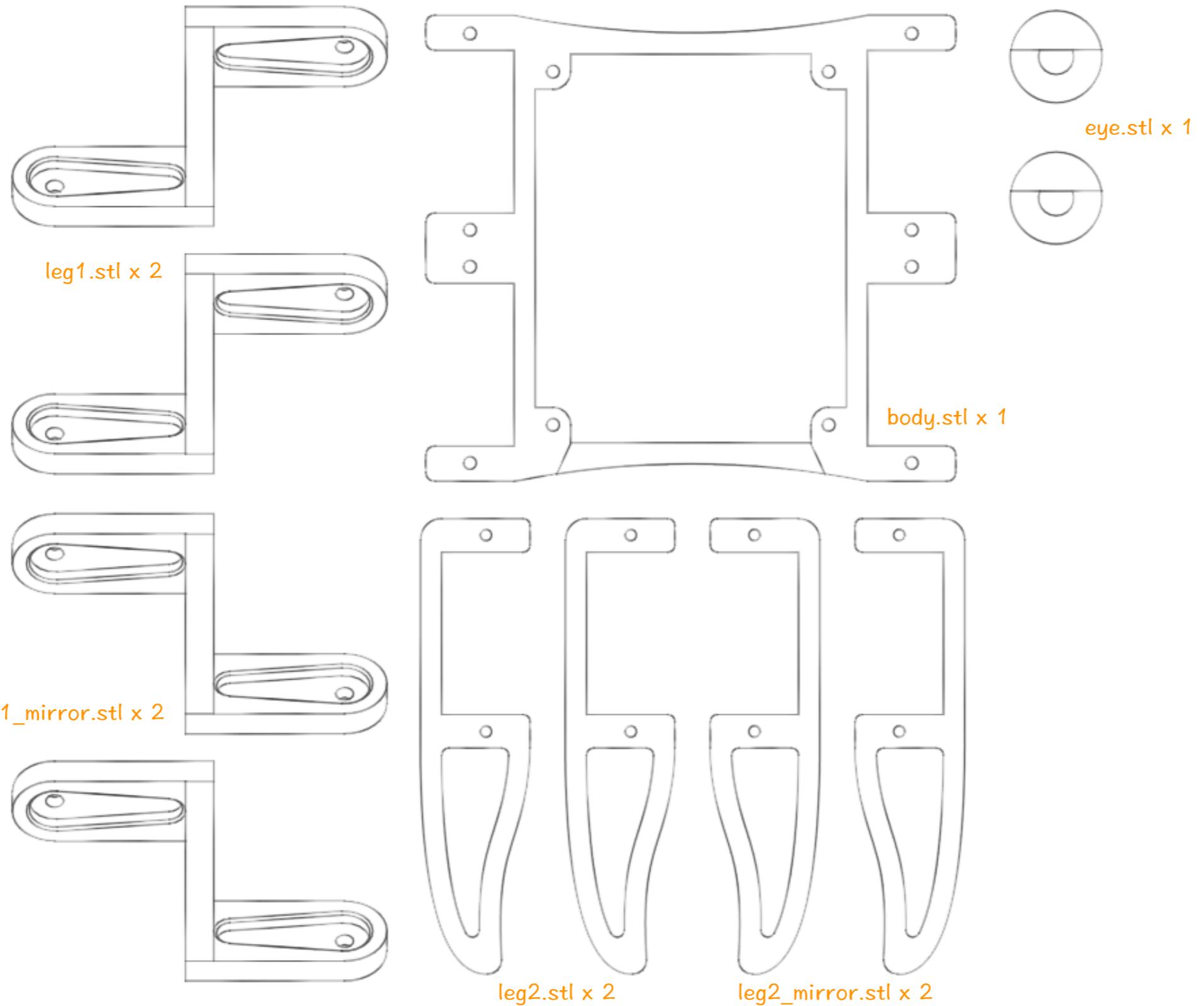
OR



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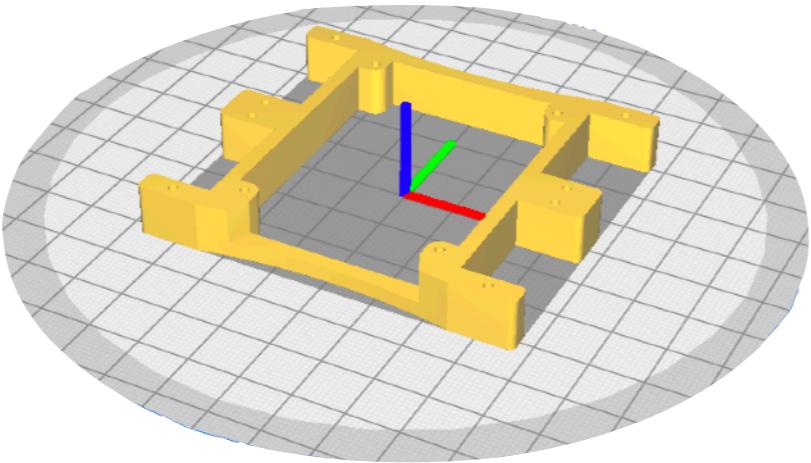


3D Print \ 3D Parts List

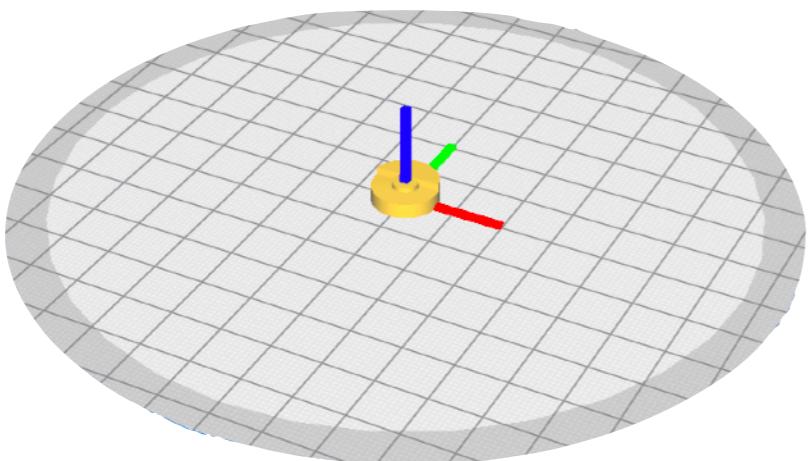




3D Print \ Print Suggestion (1/3)



body.stl x 1

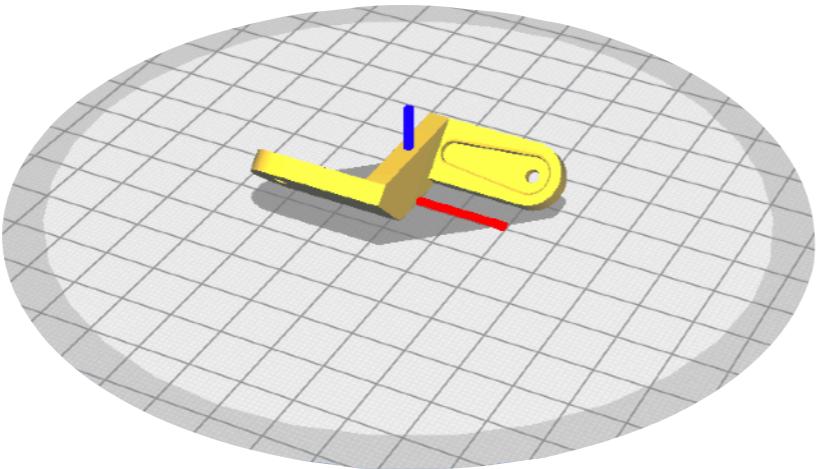


eye.stl x 1

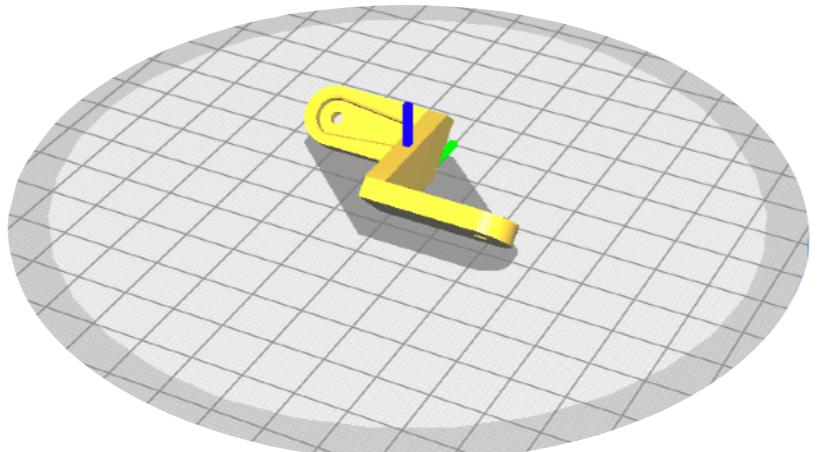
Nozzle size: 0.4mm
Layer Height: 0.2mm
Wall Thickness: 0.8mm
Infill Density: 20%
No Support



3D Print \ Print Suggestion (2/3)



leg1.stl x 2

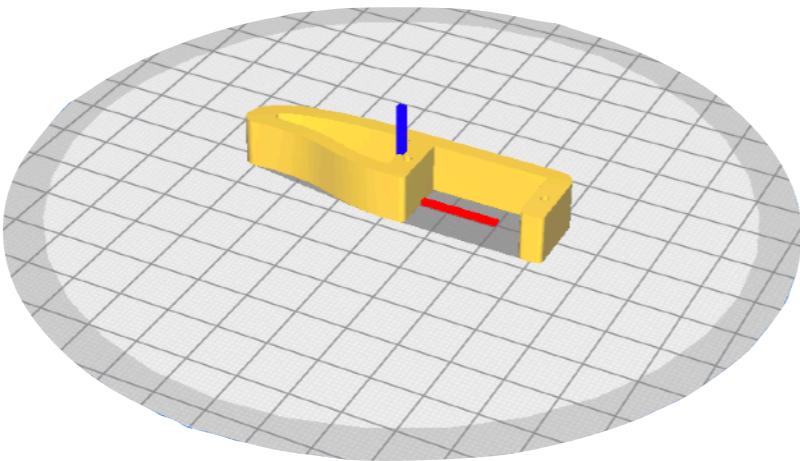


leg1_mirror.stl x 2

Nozzle size: 0.4mm
Layer Height: 0.2mm
Wall Thickness: 0.8 - 1.2mm
Infill Density: 20%
No Support

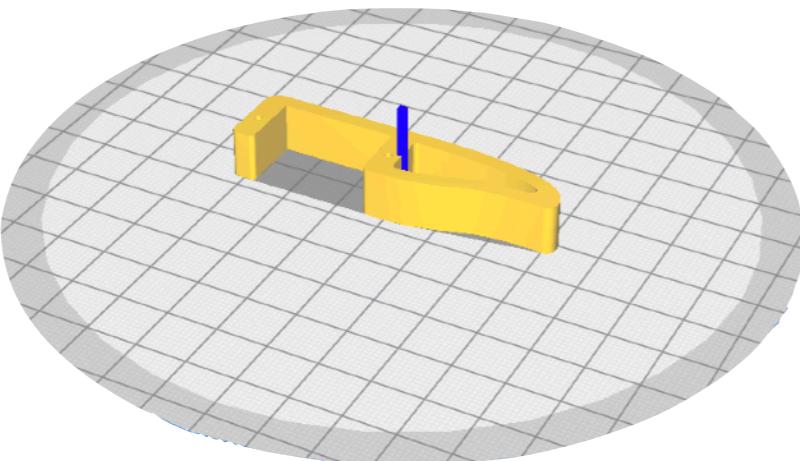


3D Print \ Print Suggestion (3/3)



leg2.stl x 2

Nozzle size: 0.4mm
Layer Height: 0.2mm
Wall Thickness: 0.8mm
Infill Density: 0 - 20%
No Support



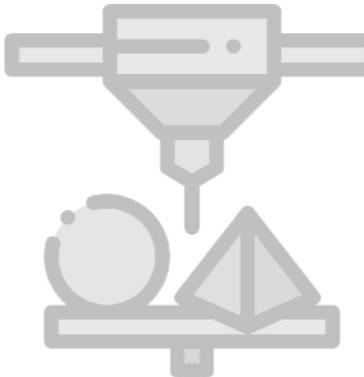
leg2_mirror.stl x 2

Q1 lite 3

Simple Quadruped Robot



Prepare Parts



3D Print



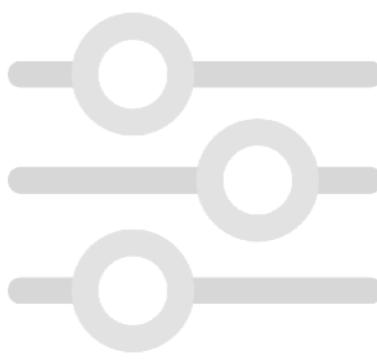
Software



Assemble



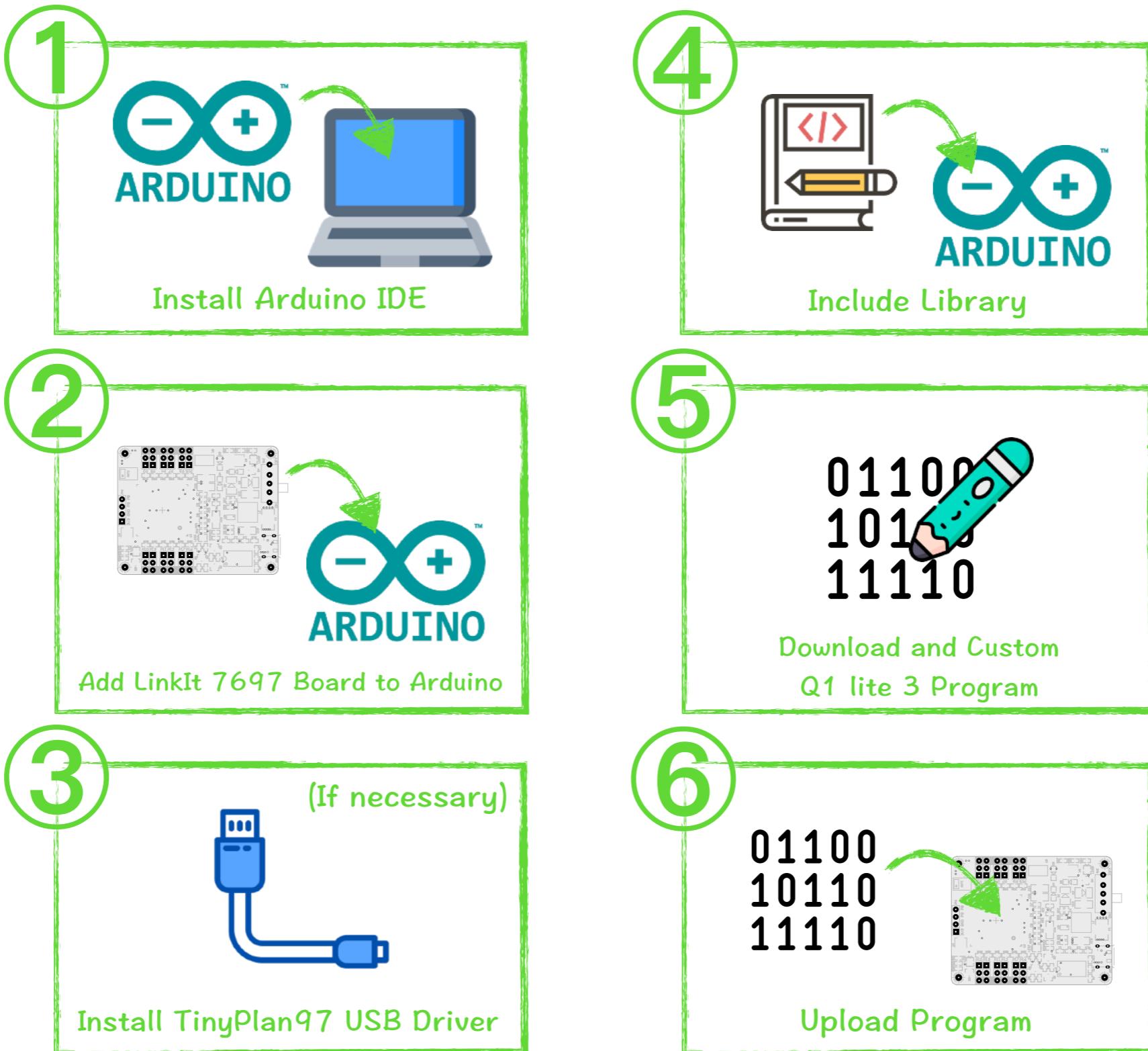
Play



Adjust



Software \ Workflow





Software \ Install Arduino IDE

Download and Install Arduino IDE to Computer
<https://www.arduino.cc/en/Main/Software>

Step-by-step Instructions for Install the Arduino IDE
<https://www.arduino.cc/en/Guide/HomePage>

ARDUINO 1.8.10

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.

This software can be used with any Arduino board. Refer to the [Getting Started](#) page for Installation instructions.

Windows Installer, for Windows XP and up
Windows ZIP file for non admin install

Windows app Requires Win 8.1 or 10
[Get](#)

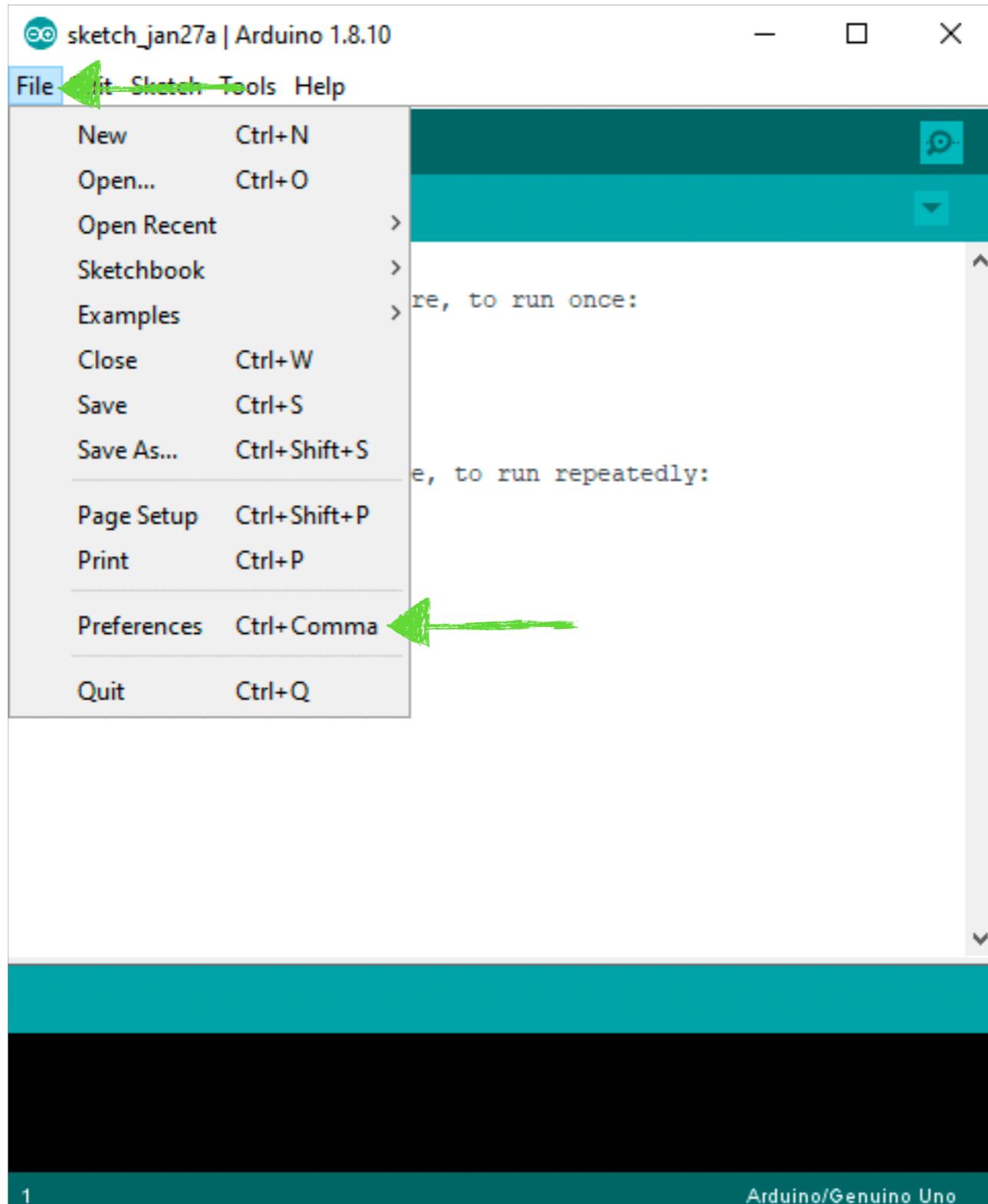
Mac OS X 10.8 Mountain Lion or newer

Linux 32 bits
Linux 64 bits
Linux ARM 32 bits
Linux ARM 64 bits

[Release Notes](#)
[Source Code](#)
[Checksums \(sha512\)](#)



Software \ Add LinkIt 7697 Board to Arduino (1/8)





Software \ Add LinkIt 7697 Board to Arduino (2/8)

Preferences X

Settings Network

Sketchbook location: Browse

Editor language: (requires restart of Arduino)

Editor font size:

Interface scale: Automatic % (requires restart of Arduino)

Theme: (requires restart of Arduino)

Show verbose output during: compilation upload

Compiler warnings:

Display line numbers Enable Code Folding
 Verify code after upload Use external editor
 Check for updates on startup Save when verifying or uploading
 Use accessibility features

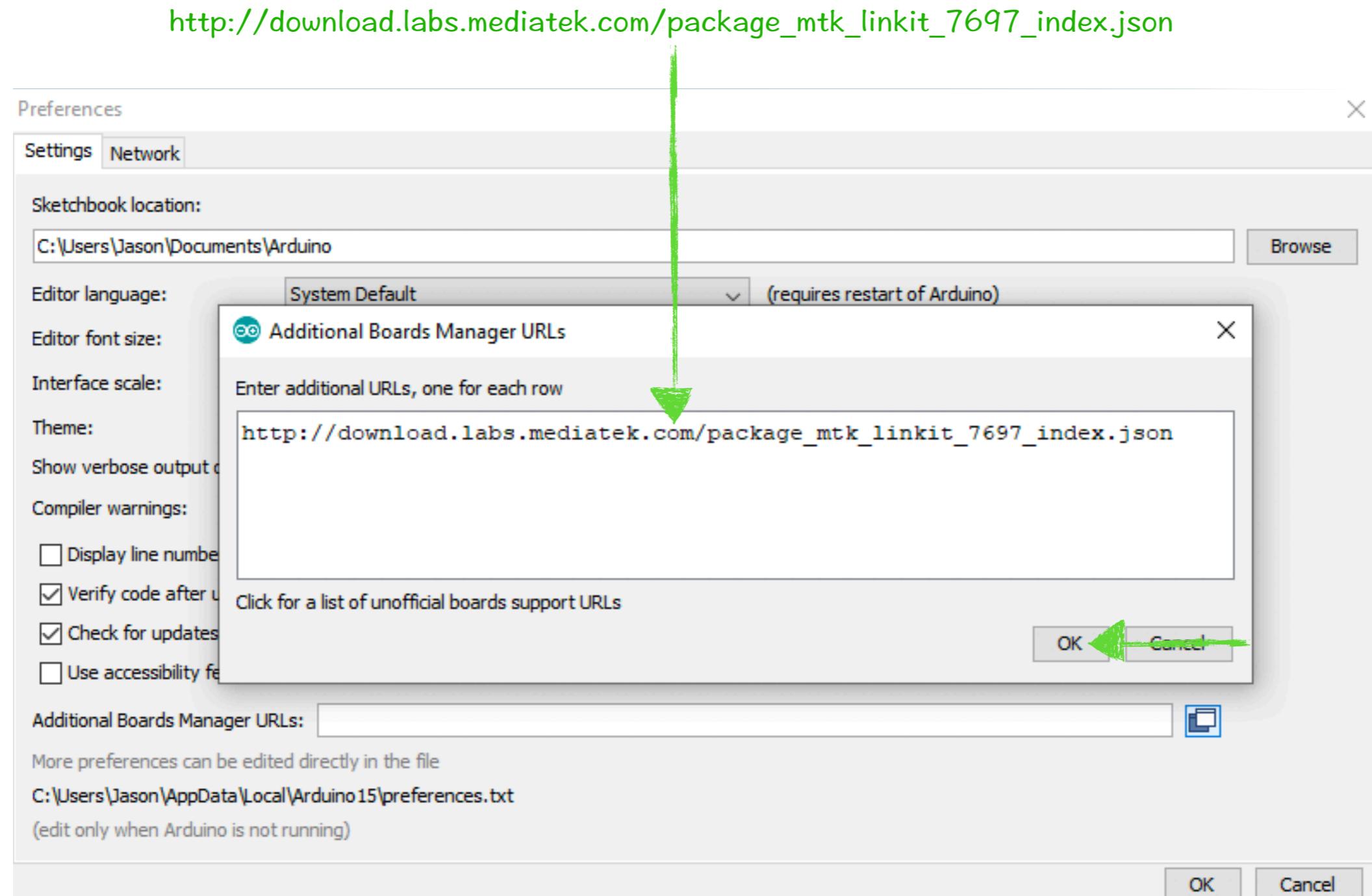
Additional Boards Manager URLs: Link

More preferences can be edited directly in the file
C:\Users\Jason\AppData\Local\Arduino15\preferences.txt
(edit only when Arduino is not running)

OK Cancel



Software \ Add LinkIt 7697 Board to Arduino (3/8)





Software \ Add LinkIt 7697 Board to Arduino (4/8)

Preferences X

Settings Network

Sketchbook location: C:\Users\Jason\Documents\Arduino Browse

Editor language: System Default (requires restart of Arduino)

Editor font size: 12

Interface scale: Automatic 100% (requires restart of Arduino)

Theme: Default theme (requires restart of Arduino)

Show verbose output during: compilation upload

Compiler warnings: None ▼

Display line numbers Enable Code Folding
 Verify code after upload Use external editor
 Check for updates on startup Save when verifying or uploading
 Use accessibility features

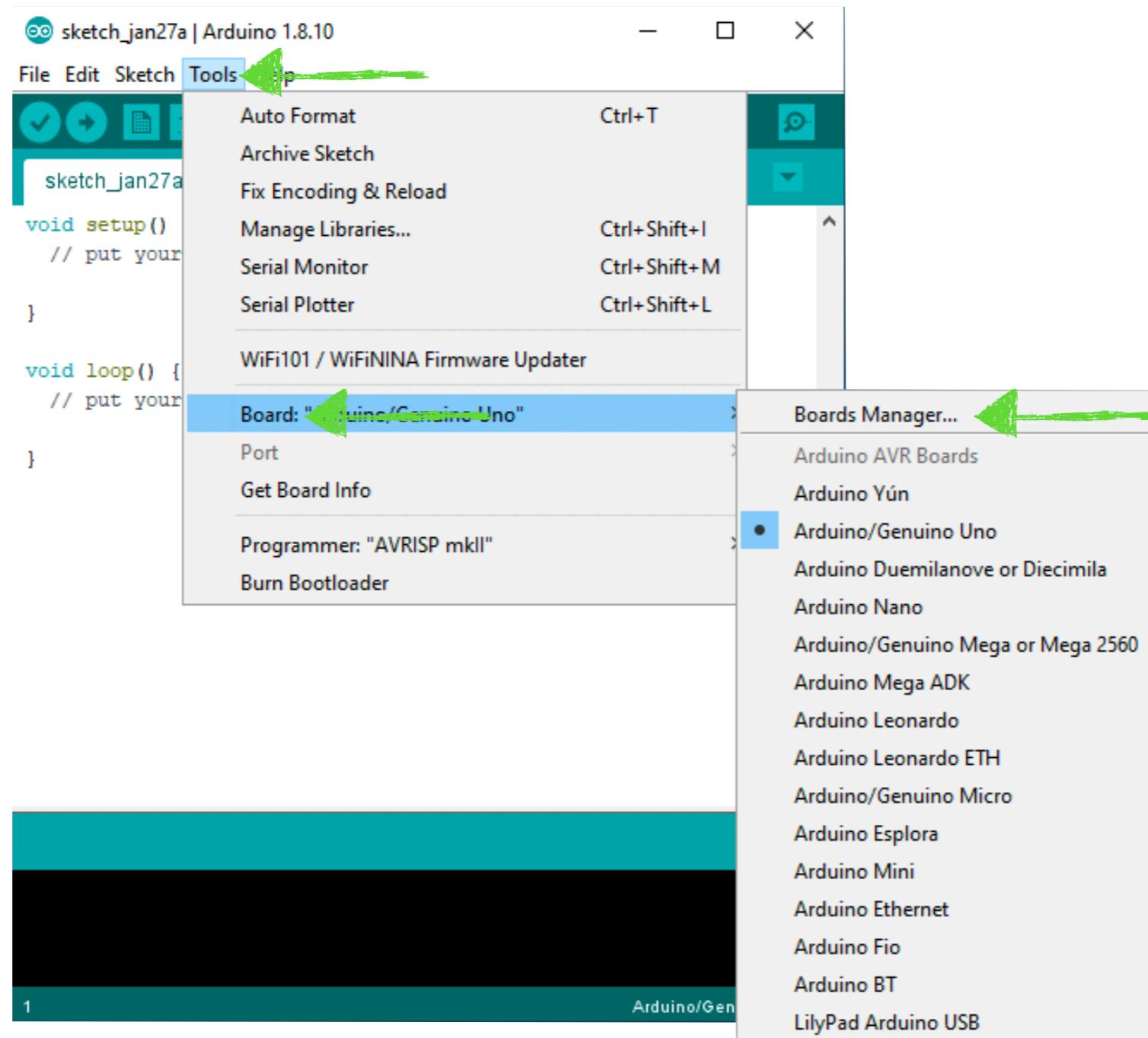
Additional Boards Manager URLs: http://download.labs.mediatek.com/package_mtk_linkit_7697_index.json

More preferences can be edited directly in the file
C:\Users\Jason\AppData\Local\Arduino15\preferences.txt
(edit only when Arduino is not running)

OK Cancel

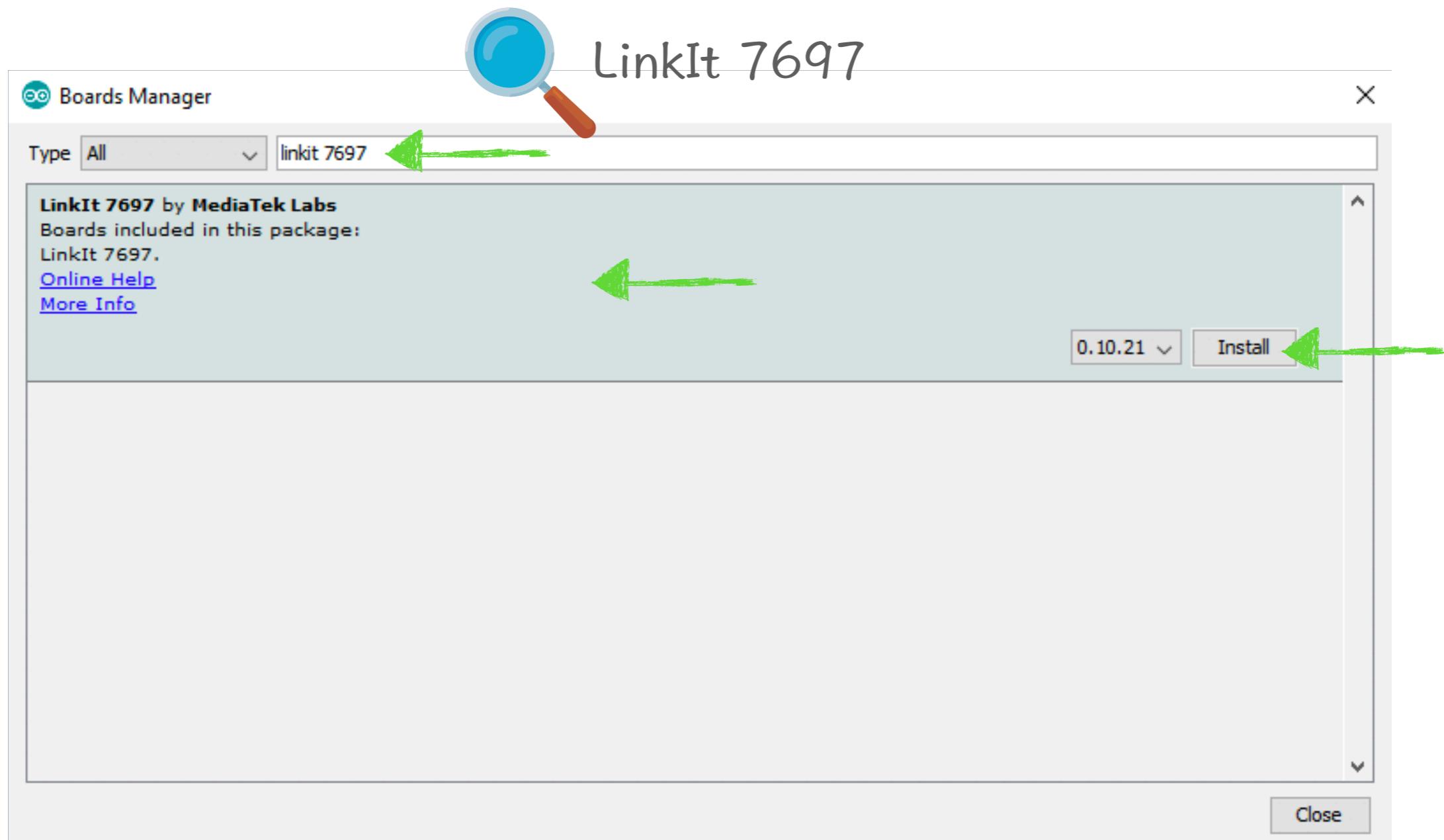


Software \ Add LinkIt 7697 Board to Arduino (5/8)



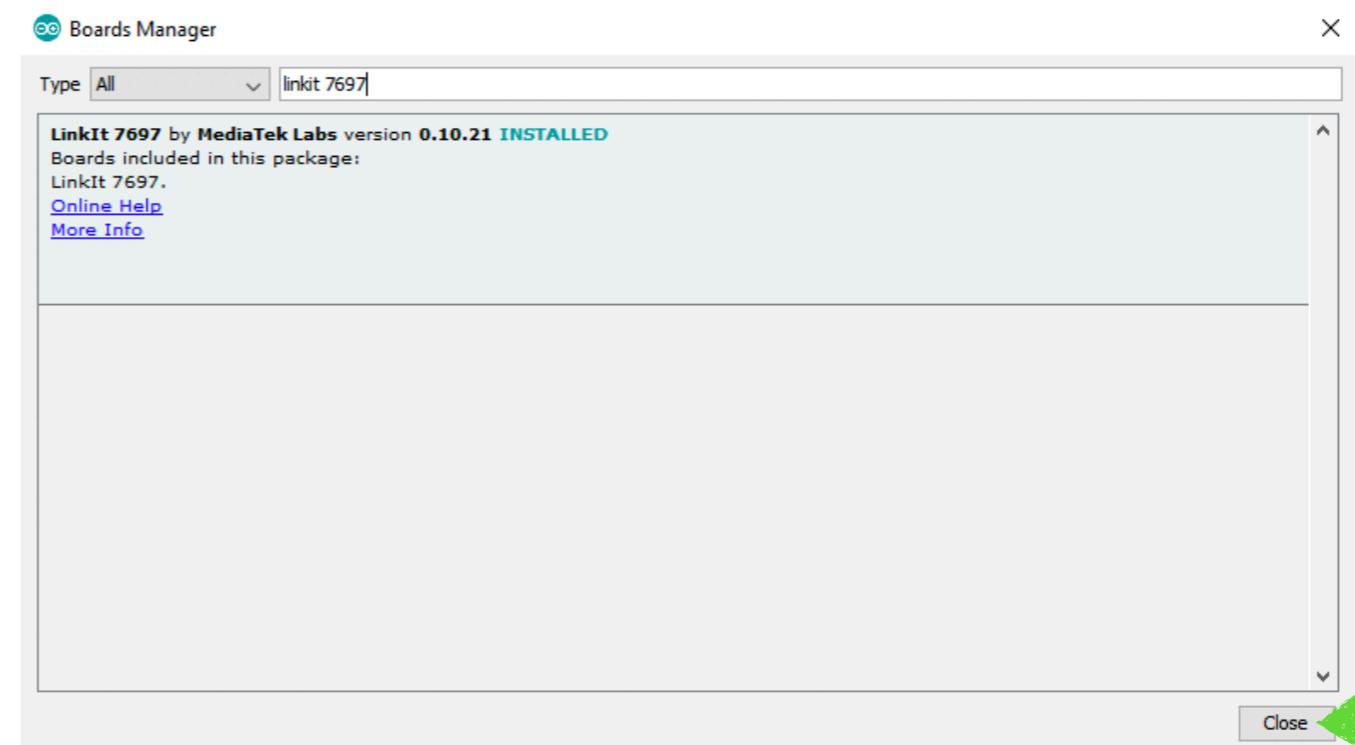
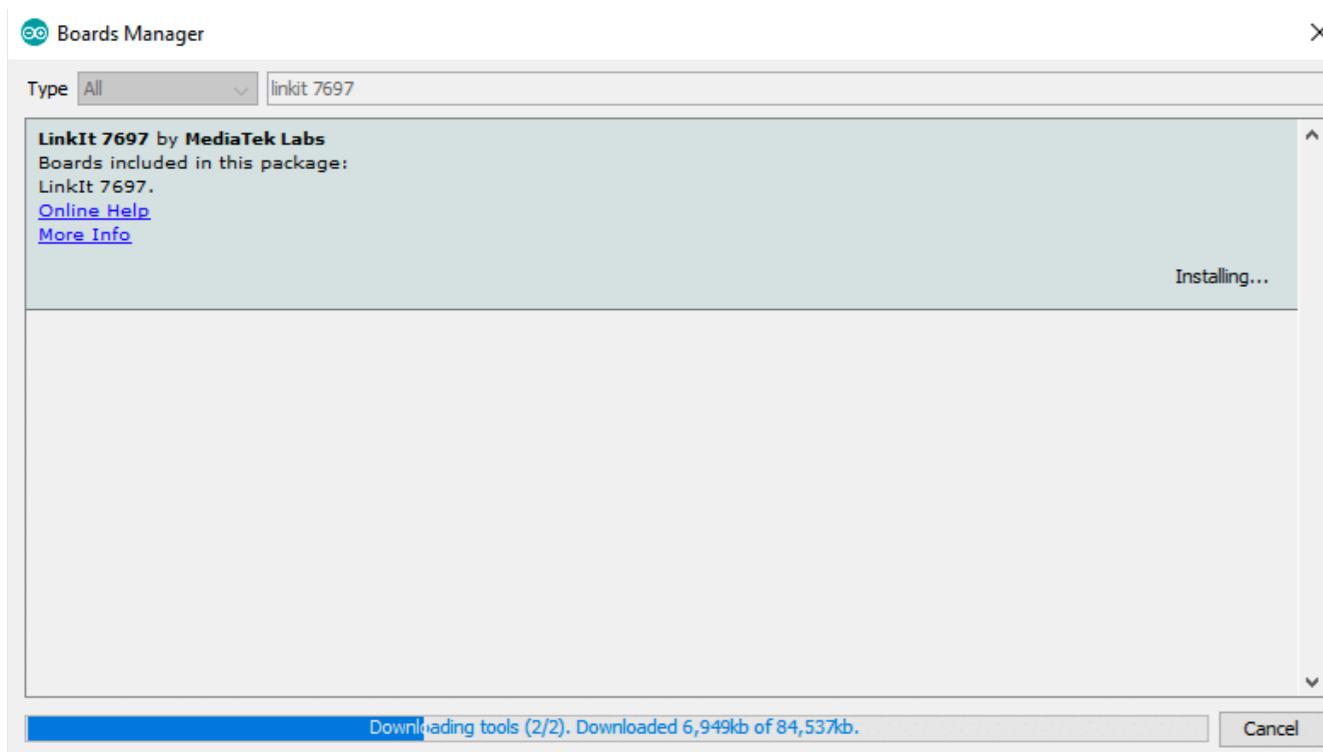


Software \ Add LinkIt 7697 Board to Arduino (6/8)



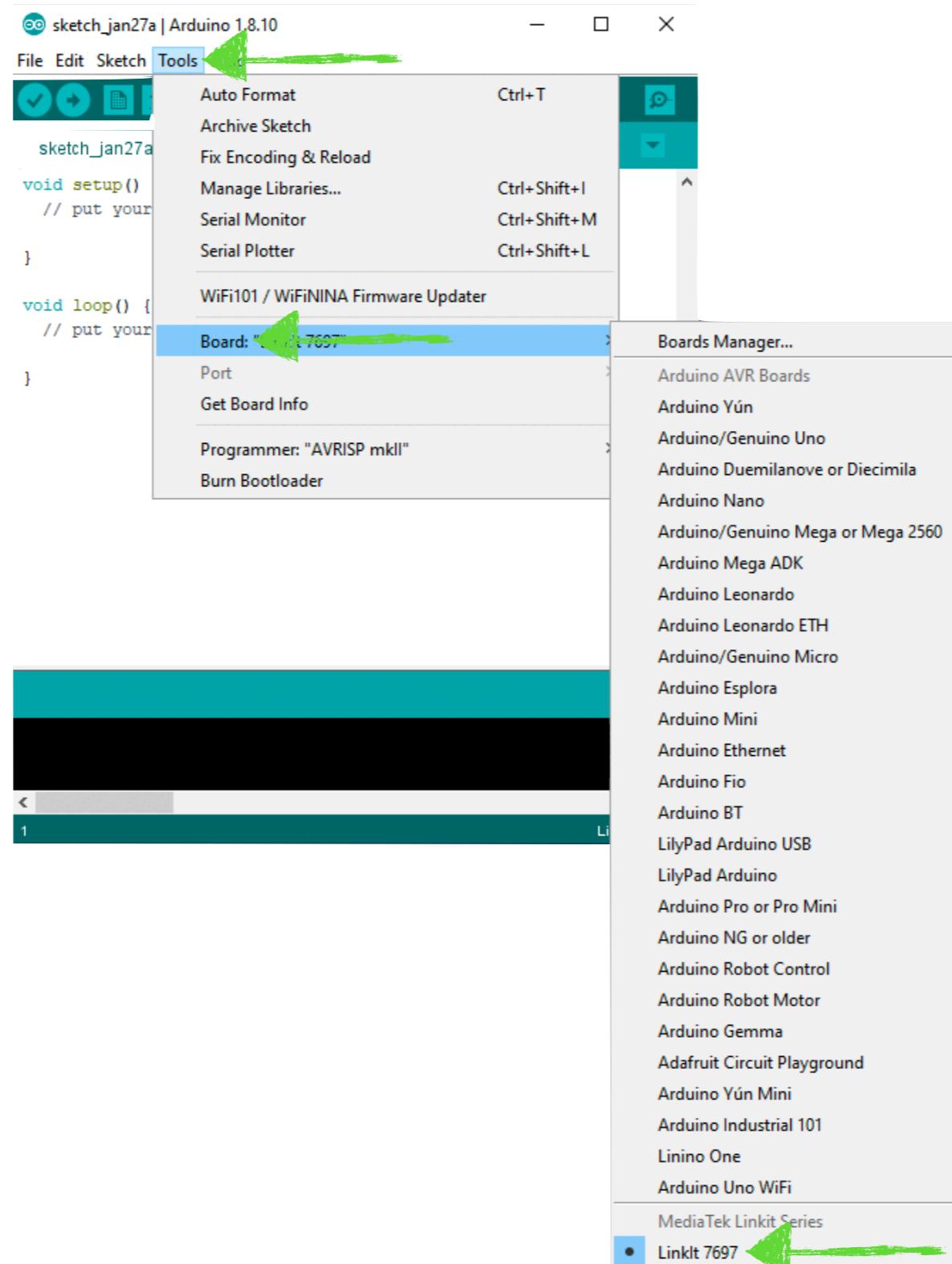


Software \ Add LinkIt 7697 Board to Arduino (7/8)





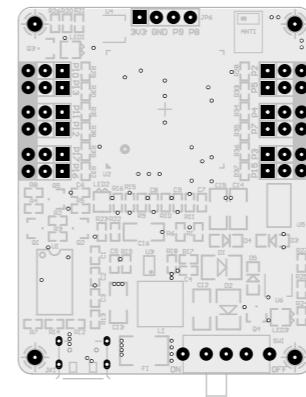
Software \ Add LinkIt 7697 Board to Arduino (8/8)





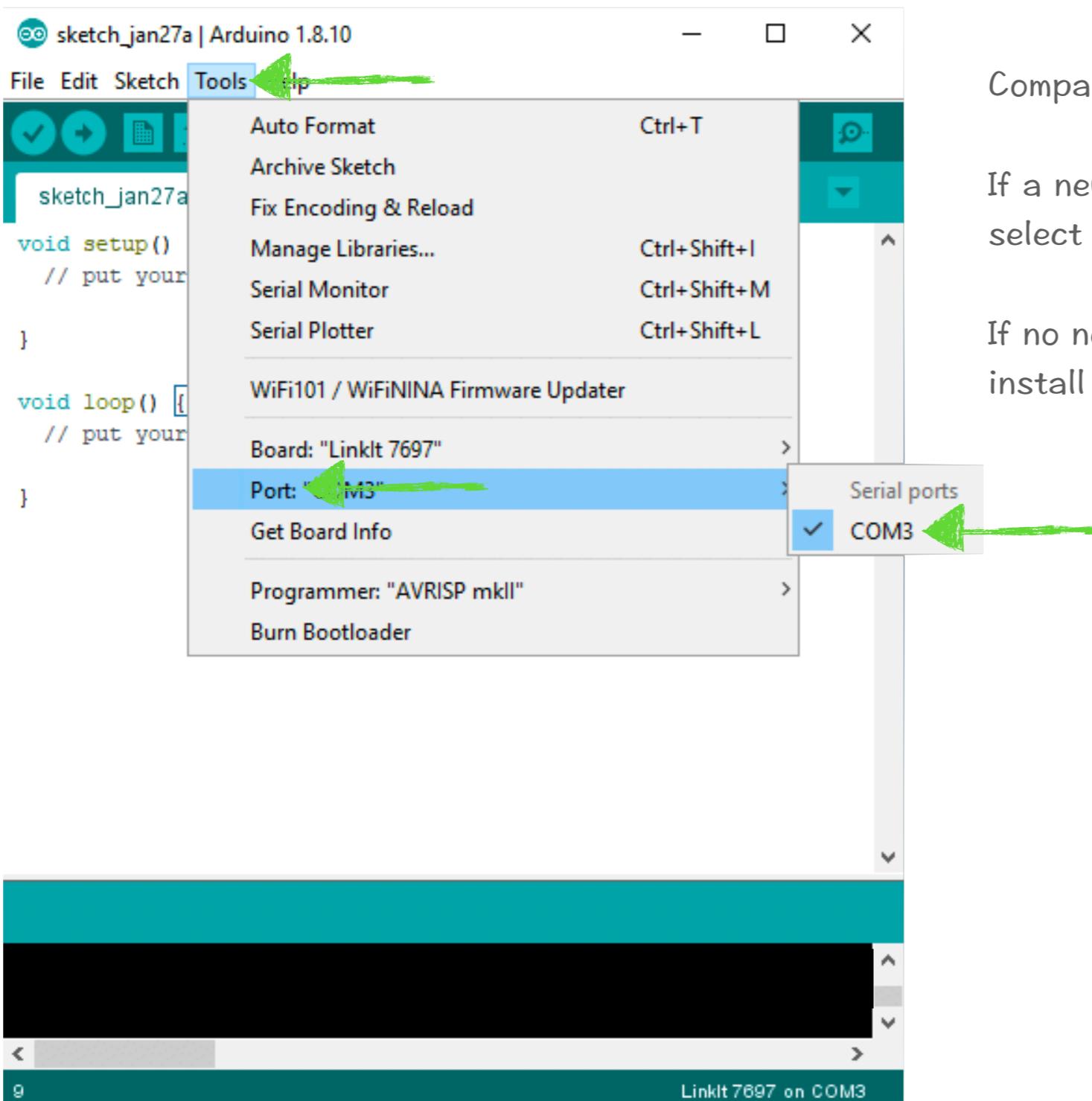
Software \ Install TinyPlan97 USB Driver (If necessary)

Connect TinyPlan97 to Computer





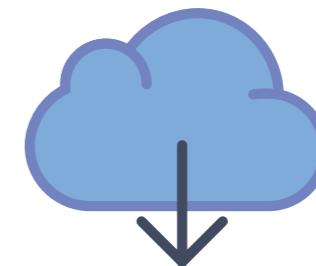
Software \ Install TinyPlan97 USB Driver (If necessary)



Compare before and after connect TinyPlan97

If a new port appears while connecting, please select that port.

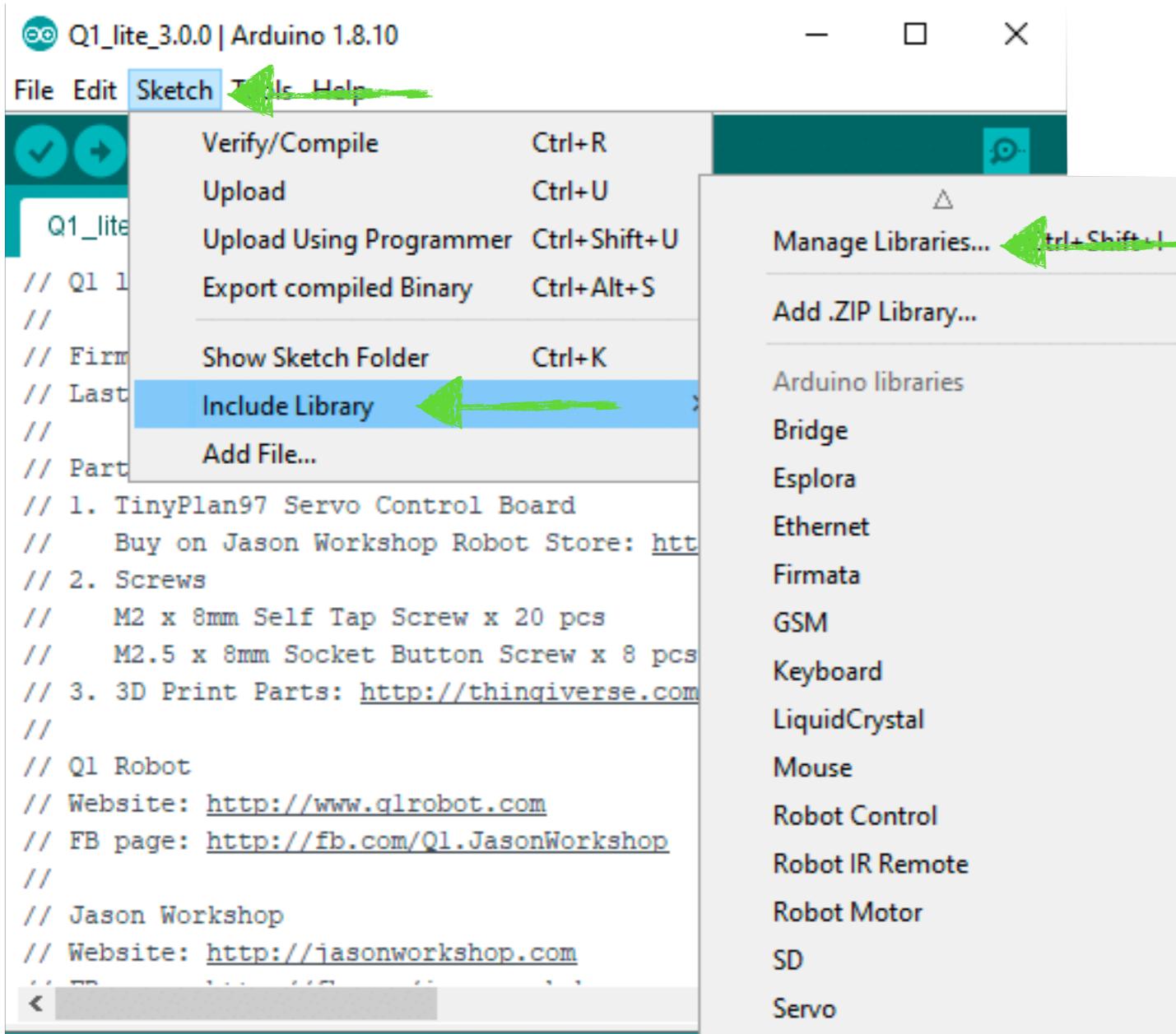
If no new port appears, please download and install **TinyPlan97 USB driver** first.



Please download **driver** from:
q1.jasonworkshop.com



Software \ Include Library



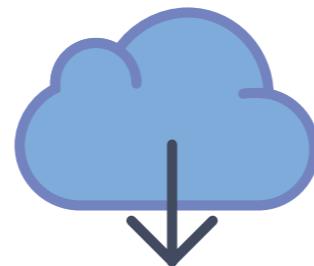
Fortunately, there is **no need to include any library** for Q1 lite.

If Q1 lite expands new functions in the future, it may be necessary to include other library.

If need to include library, please go to top menu of Arduino IDE and choose **Sketch > Include Library > Manage Libraries** and search library you want to install.



Software \ Download and Custom Q1 lite 3 Program



Please download **Q1 lite Program** from:
q1.jasonworkshop.com



Software \ Download and Custom Q1 lite 3 Program

The screenshot shows the Arduino IDE interface with the sketch `Q1_lite_3.0.0`. The code includes comments for customizing the robot name and enabling calibration mode.

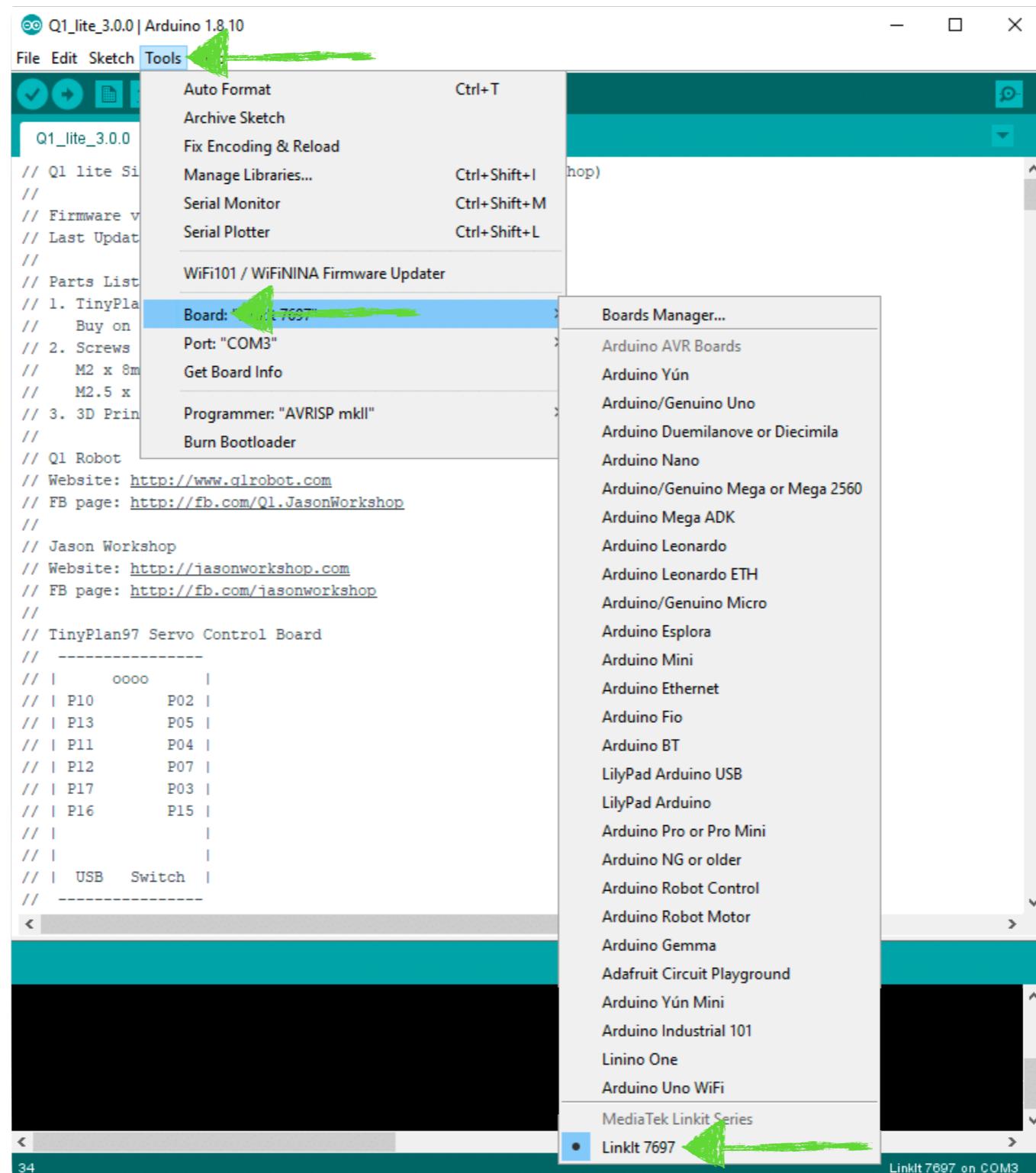
```
// -----  
#include <EEPROM.h>  
#include <Servo.h>  
#include <LRemote.h>  
  
// Custom value  
// -----  
  
String robotName = "Q1 lite 3"; // Robot name  
const int enableCalibration = true; // Enable calibration button  
  
// -----
```

A green annotation points to the line `String robotName = "Q1 lite 3";` with the text "Please change your Robot Name here". A green arrow points from the text to the line of code.

A green annotation points to the line `const int enableCalibration = true;` with the text "Toggle calibration mode". A green arrow points from the text to the line of code.



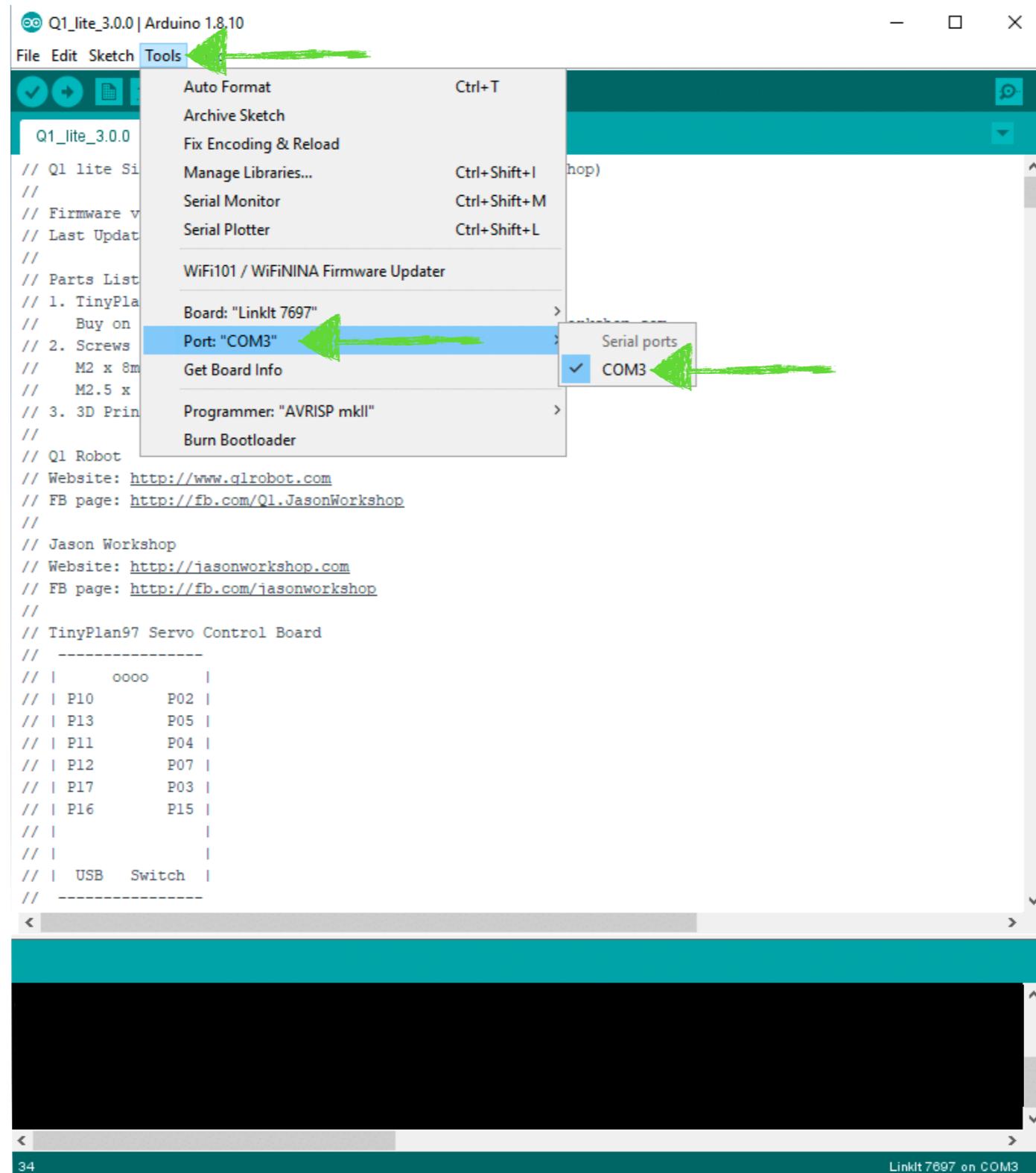
Software \ Upload Program (1/4)



34



Software \ Upload Program (2/4)





Software \ Upload Program (3/4)

The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** Q1_lite_3.0.0 | Arduino 1.8.10
- Menu Bar:** File Edit Sketch Tools Help
- Toolbar:** Includes icons for Save, Undo, Redo, Cut, Copy, Paste, Select All, Find, and Replace. A green arrow points to the Redo icon.
- Sketch Name:** Q1_lite_3.0.0
- Code Preview:** Displays the C++ code for the sketch, which includes comments about the robot's design and firmware version.
- Upload Status:** Shows "Uploading..." with a progress bar.
- Serial Monitor:** Displays memory usage statistics:
 - Sketch uses 578204 bytes (28%) of program storage space. Maximum is 2019328 bytes.
 - Global variables use 174432 bytes (48%) of dynamic memory, leaving 186016 bytes for local variables. Maximum is 3
- Bottom Status:** Shows the port "LinkIt 7697 on COM3" and the page number "34".



Software \ Upload Program (4/4)



```
Done uploading.  
  
Waiting for DA output...  
DA uploaded, start uploading user binary...  
  
Wi-Fi Firmware version check ok.  
  
The board reboots now.  
  
34
```

The board reboots now.

LinkIt 7697 on COM3

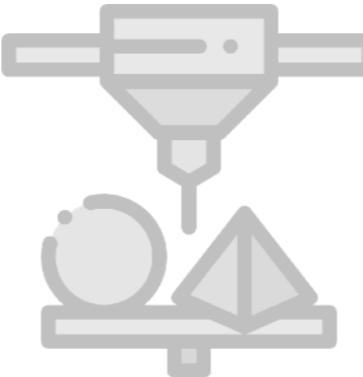
A terminal window showing the upload process for a LinkIt 7697 board. The text indicates the DA has been uploaded and the user binary is being uploaded. It also shows a Wi-Fi firmware version check and a message that the board will reboot.

Q1 lite 3

Simple Quadruped Robot



Prepare Parts



3D Print



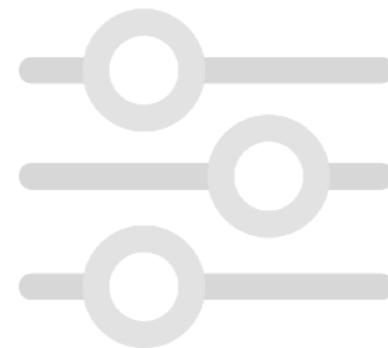
Software



Assemble



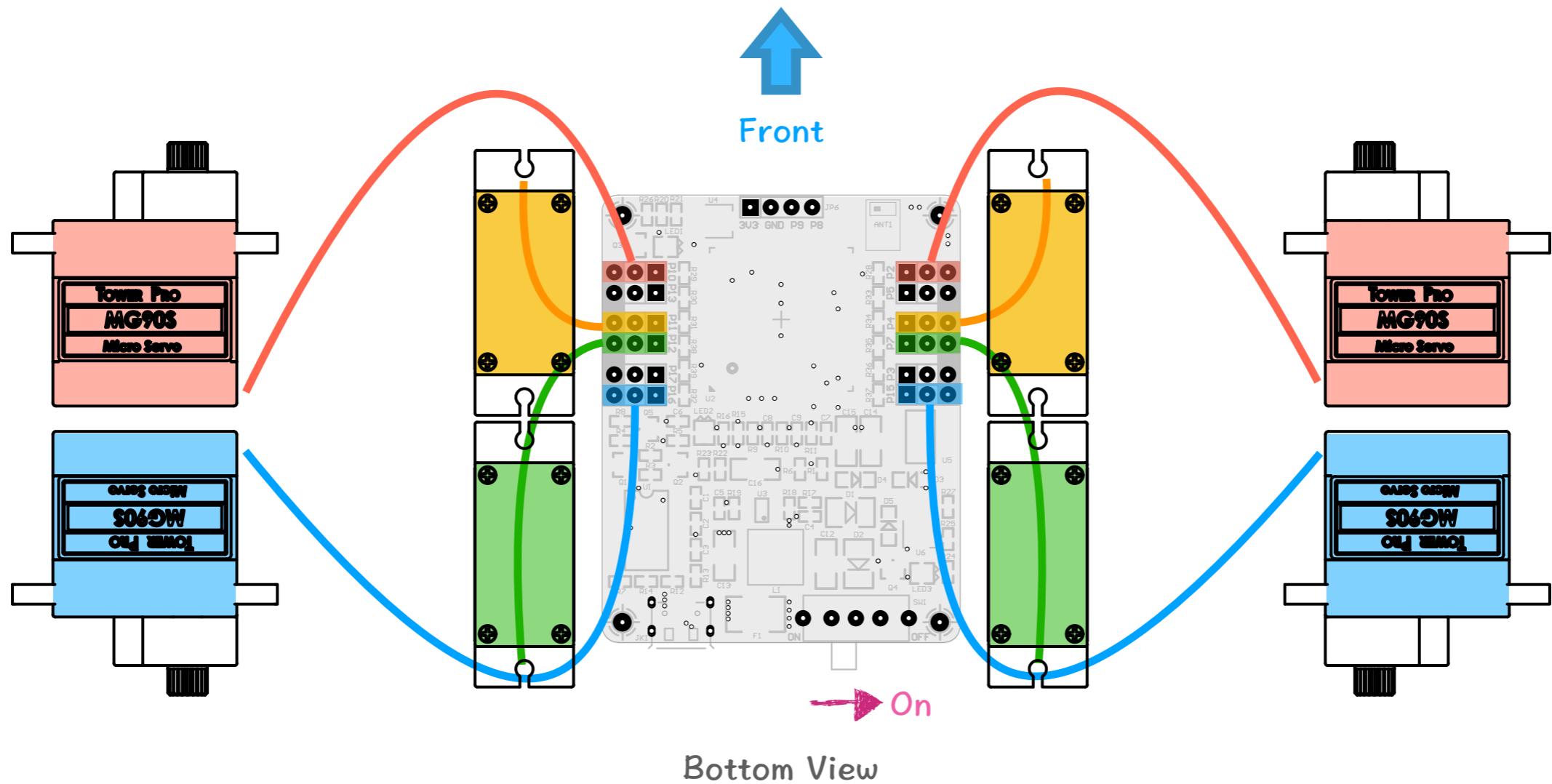
Play



Adjust

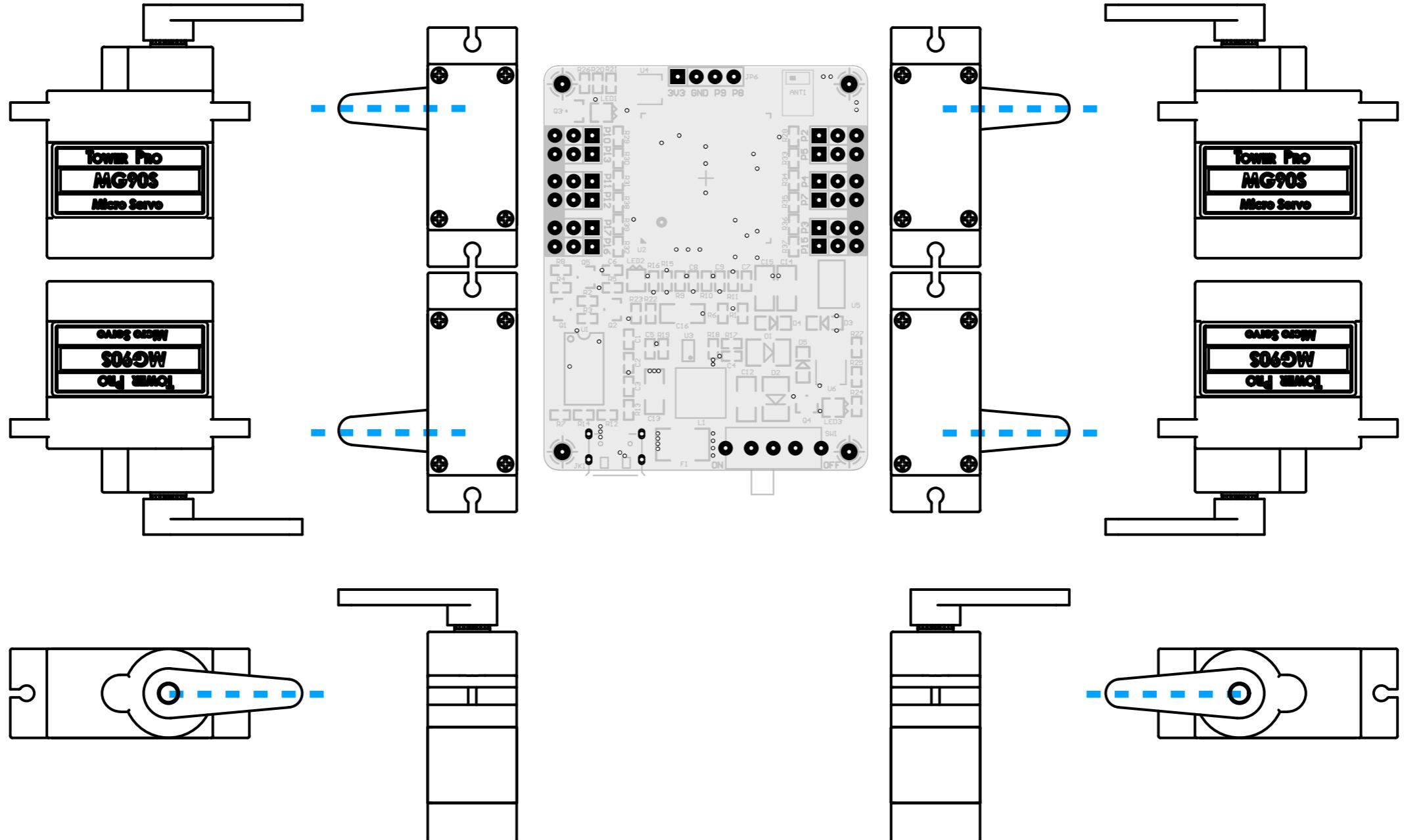


Assemble \ Connect Servo



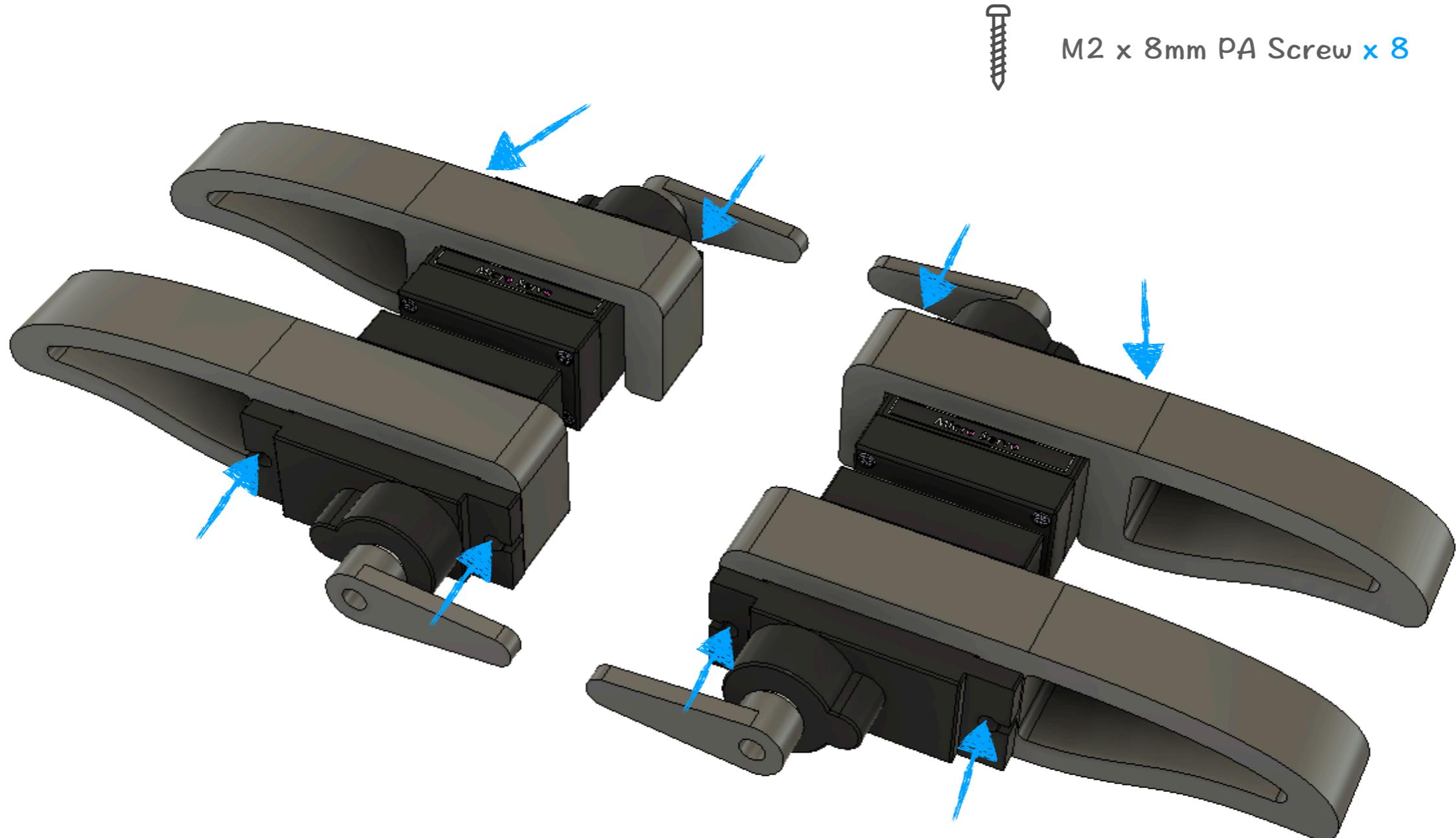


Assemble \ Install Servo Arm



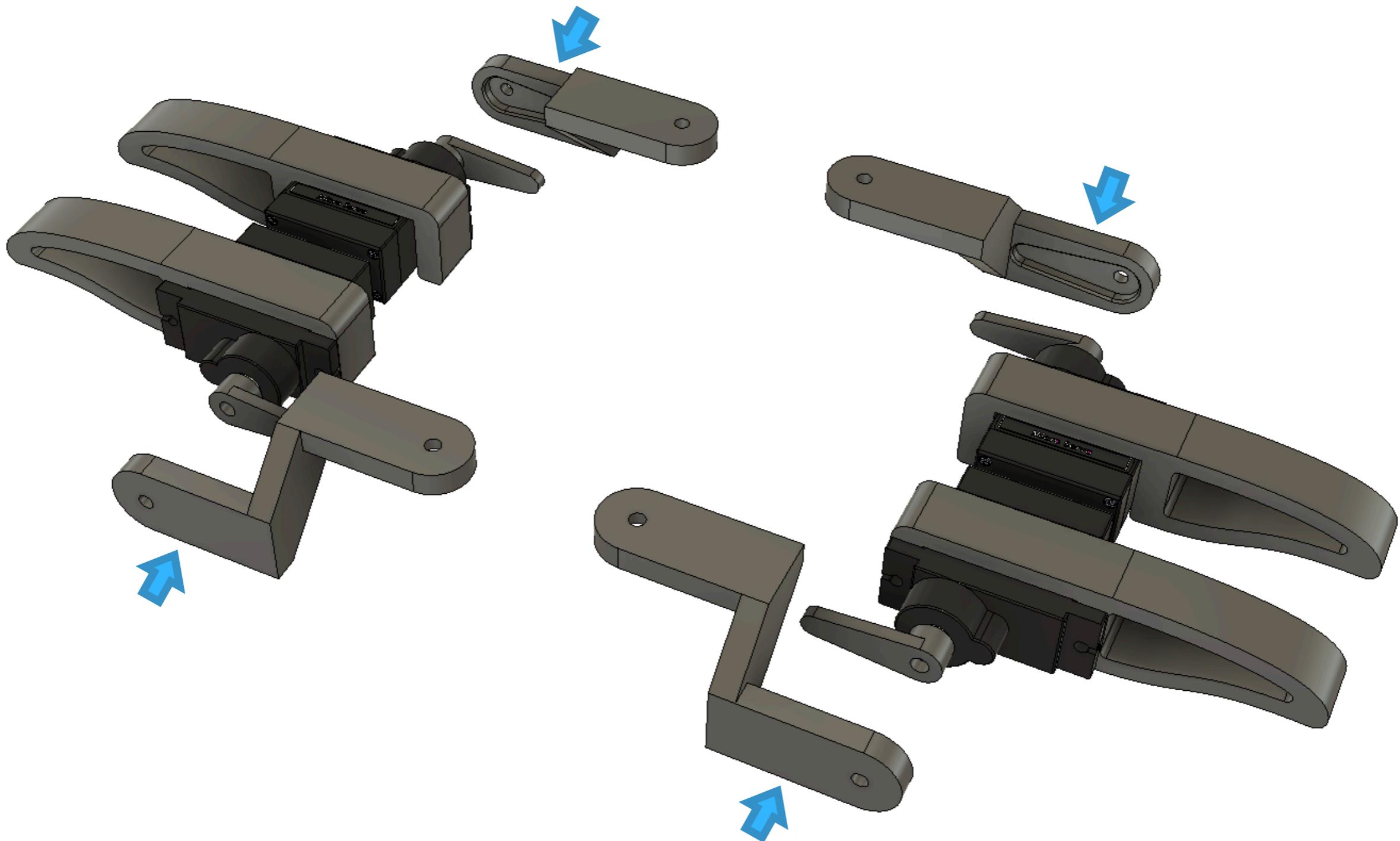


Assemble \ Leg (1/3)



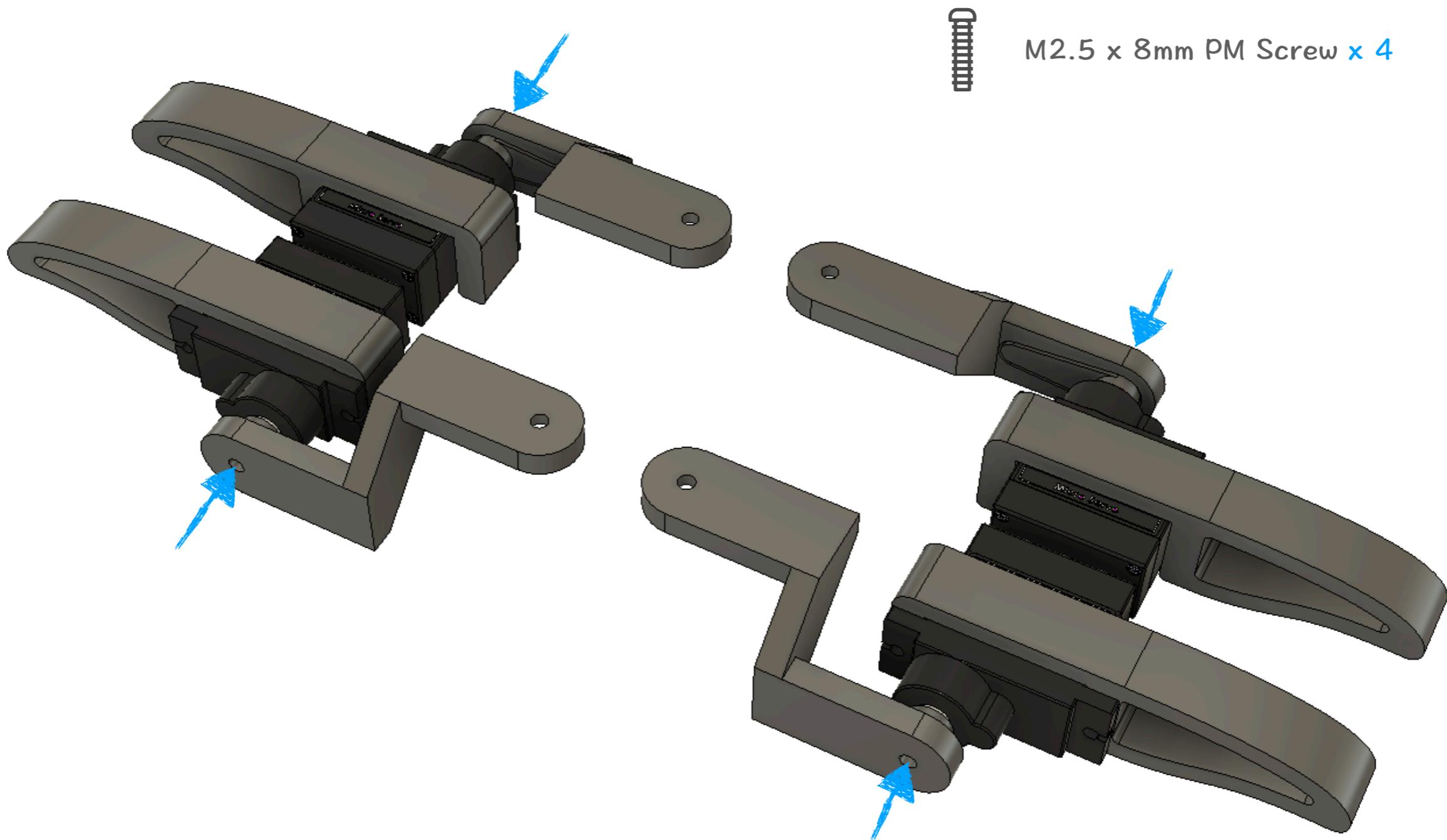


Assemble \ Leg (2/3)



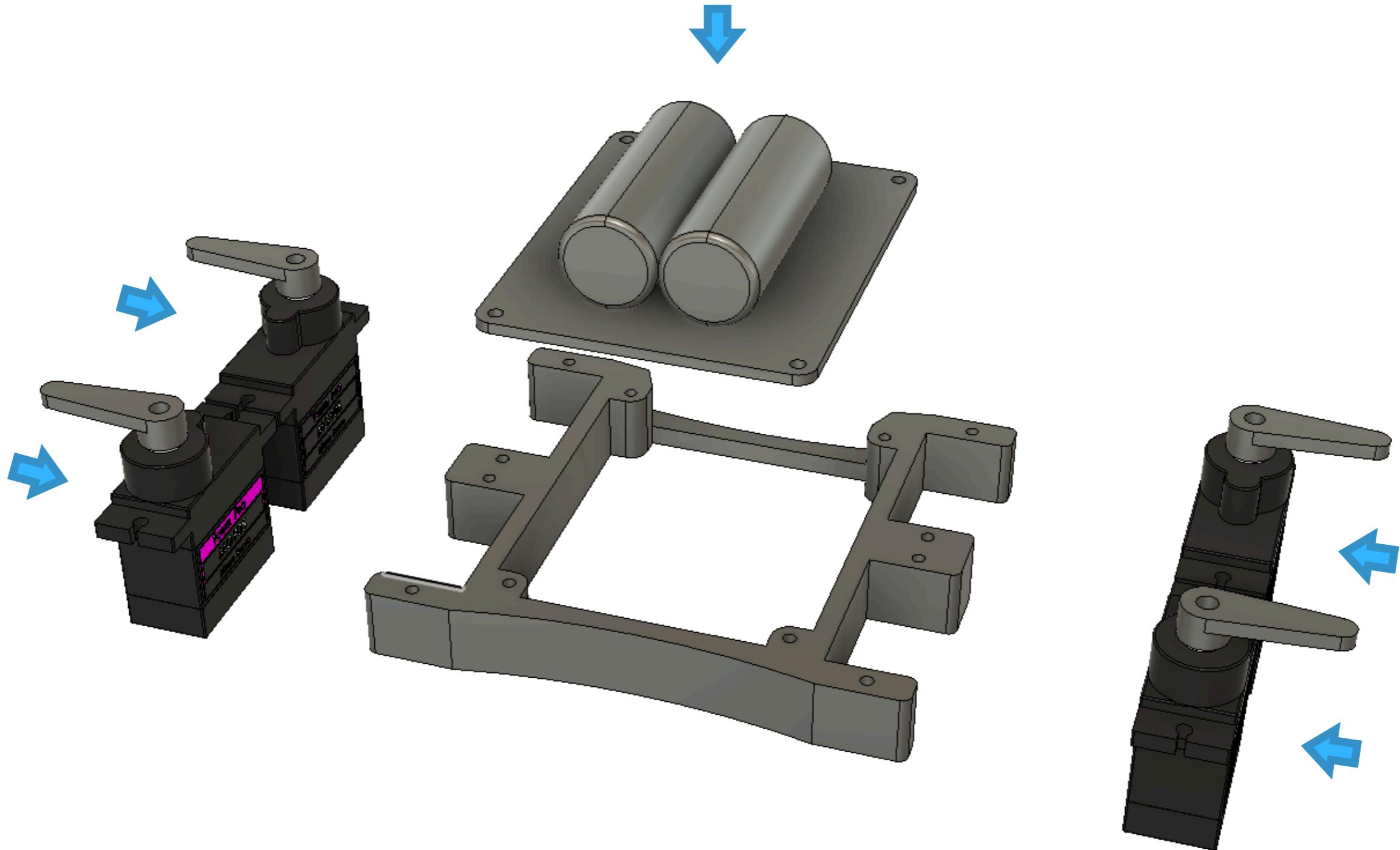


Assemble \ Leg (3/3)



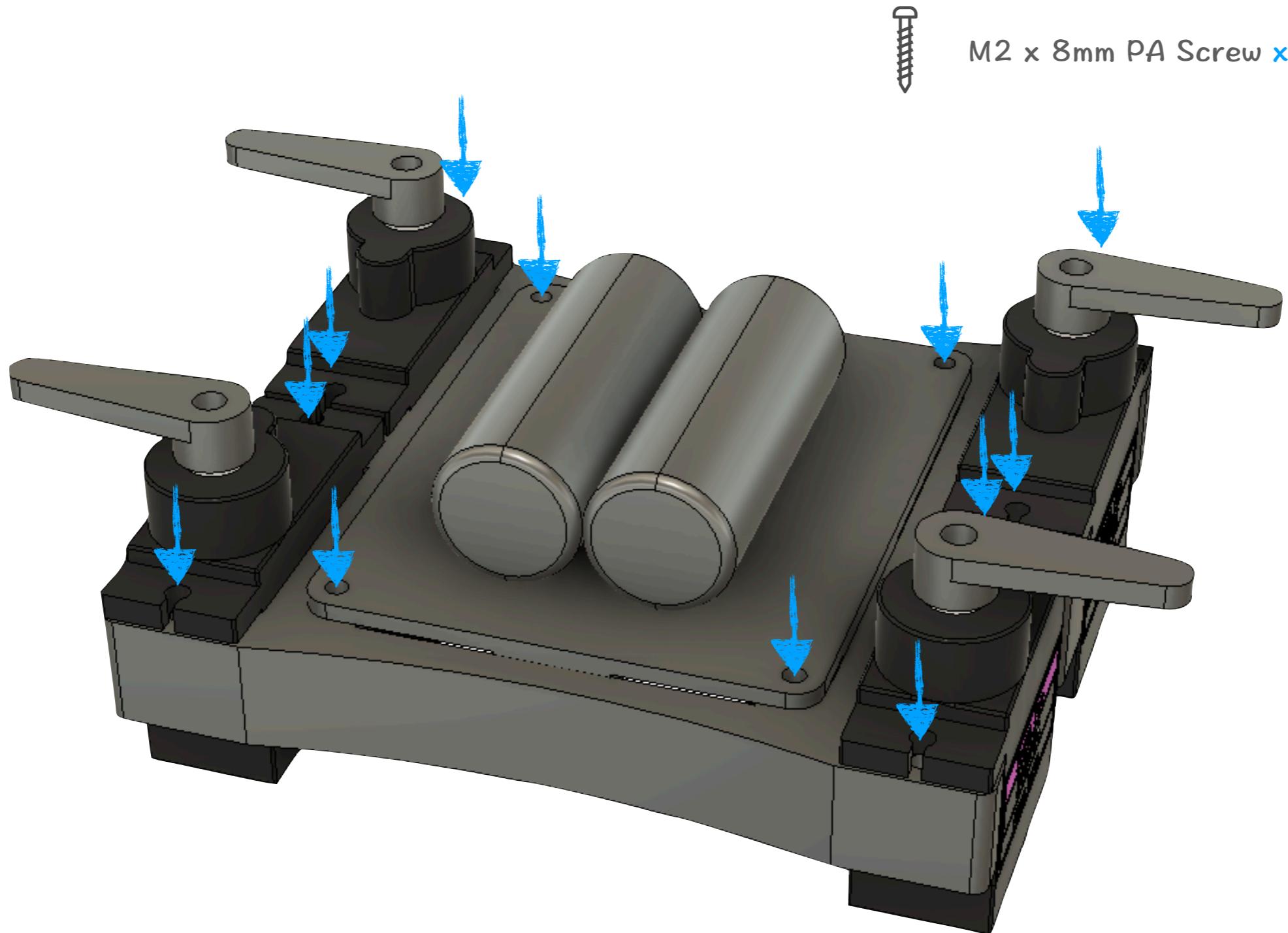


Assemble \ Body (1/2)



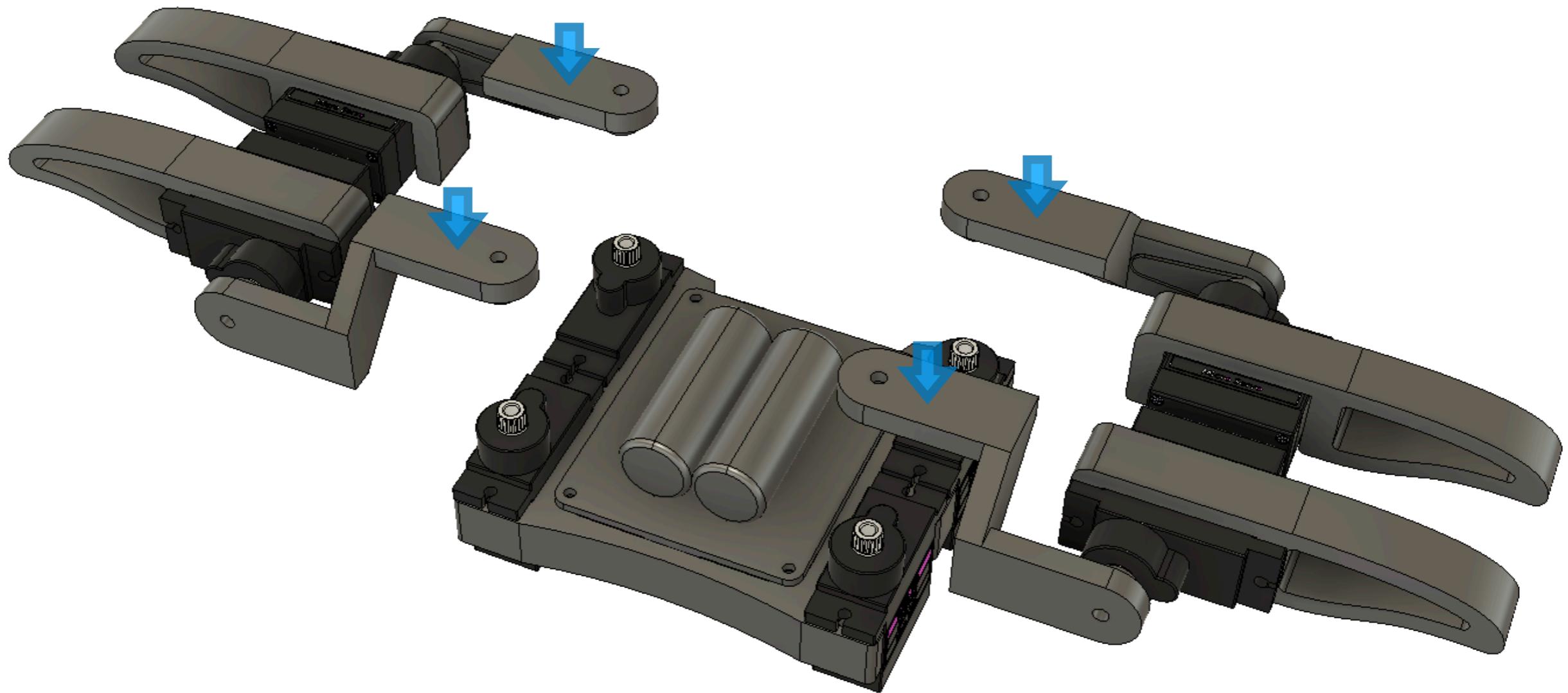


Assemble \ Body (2/2)



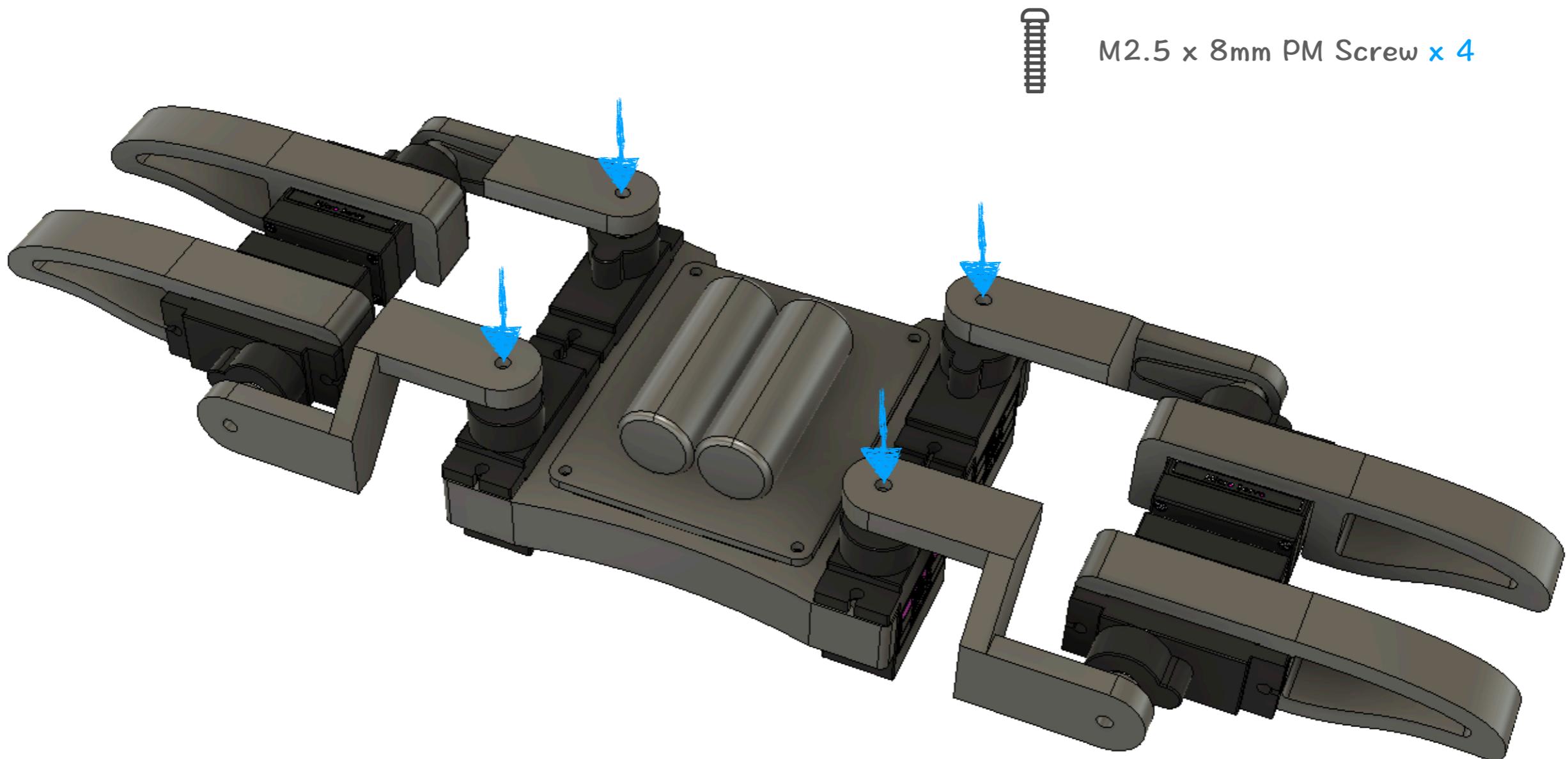


Assemble \ All together (1/3)



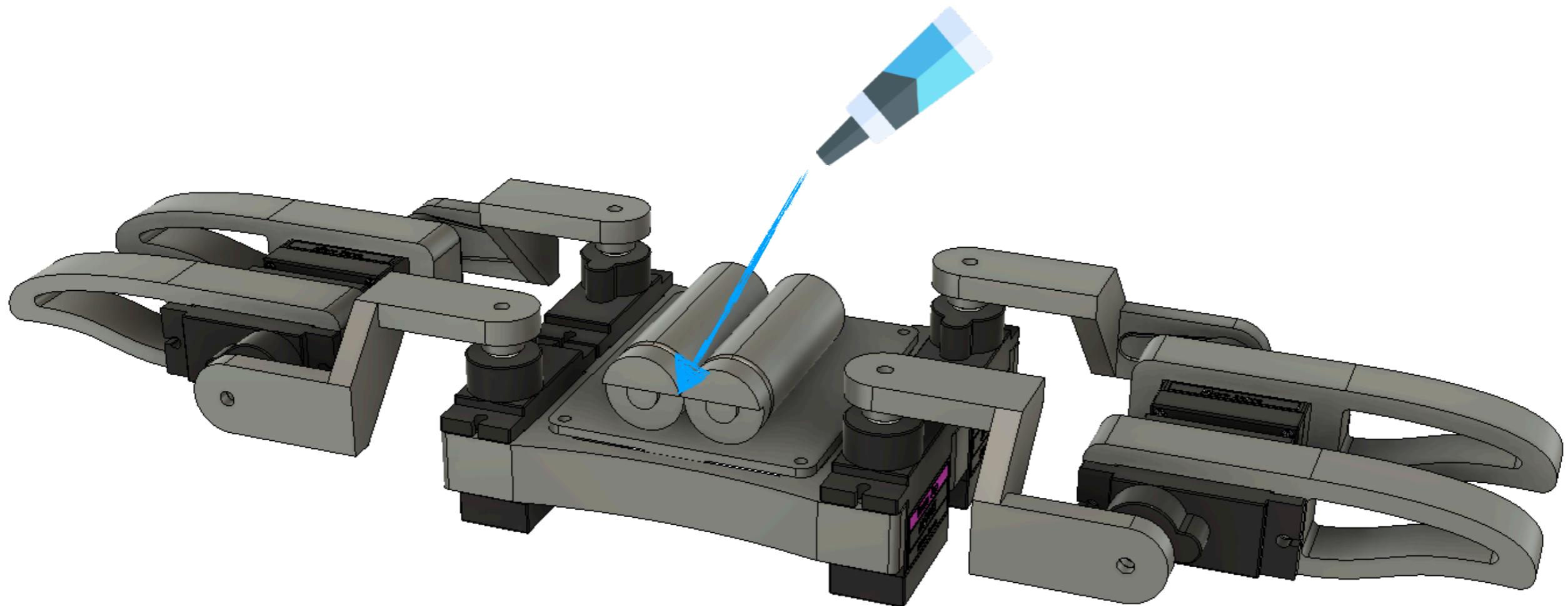


Assemble \ All together (2/3)





Assemble \ All together (3/3)

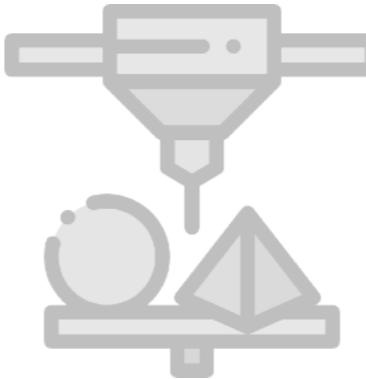


Q1 lite 3

Simple Quadruped Robot



Prepare Parts



3D Print



Software



Assemble



Play



Adjust



Play \ Download LinkIt Remote App



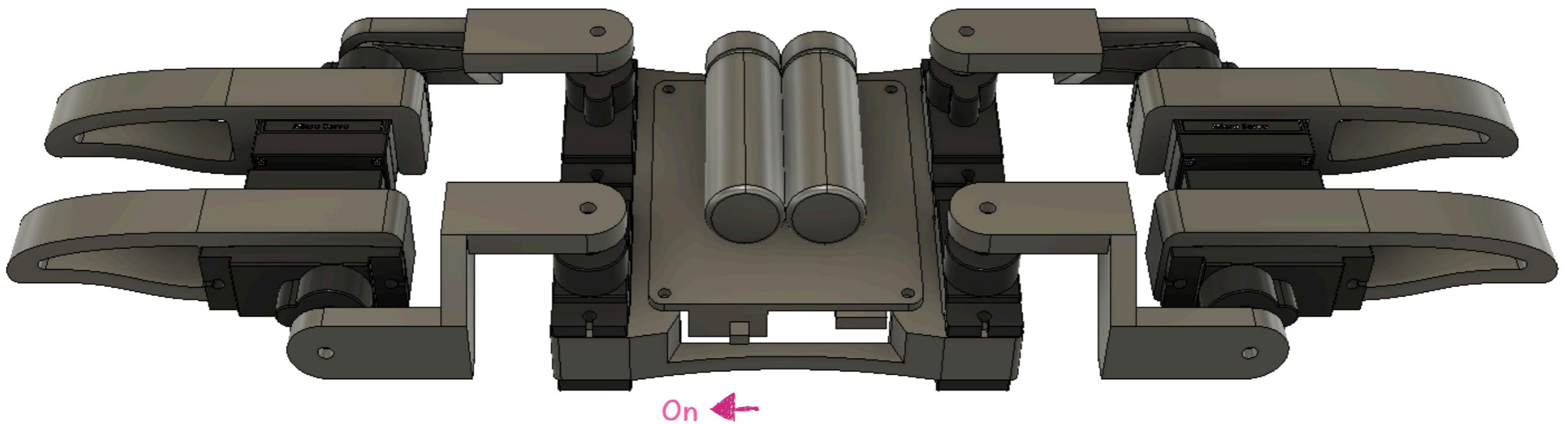
<https://itunes.apple.com/us/app/linkit-remote/id1276900625>

<https://play.google.com/store/apps/details?id=com.mediatek.labs.linkitremote>

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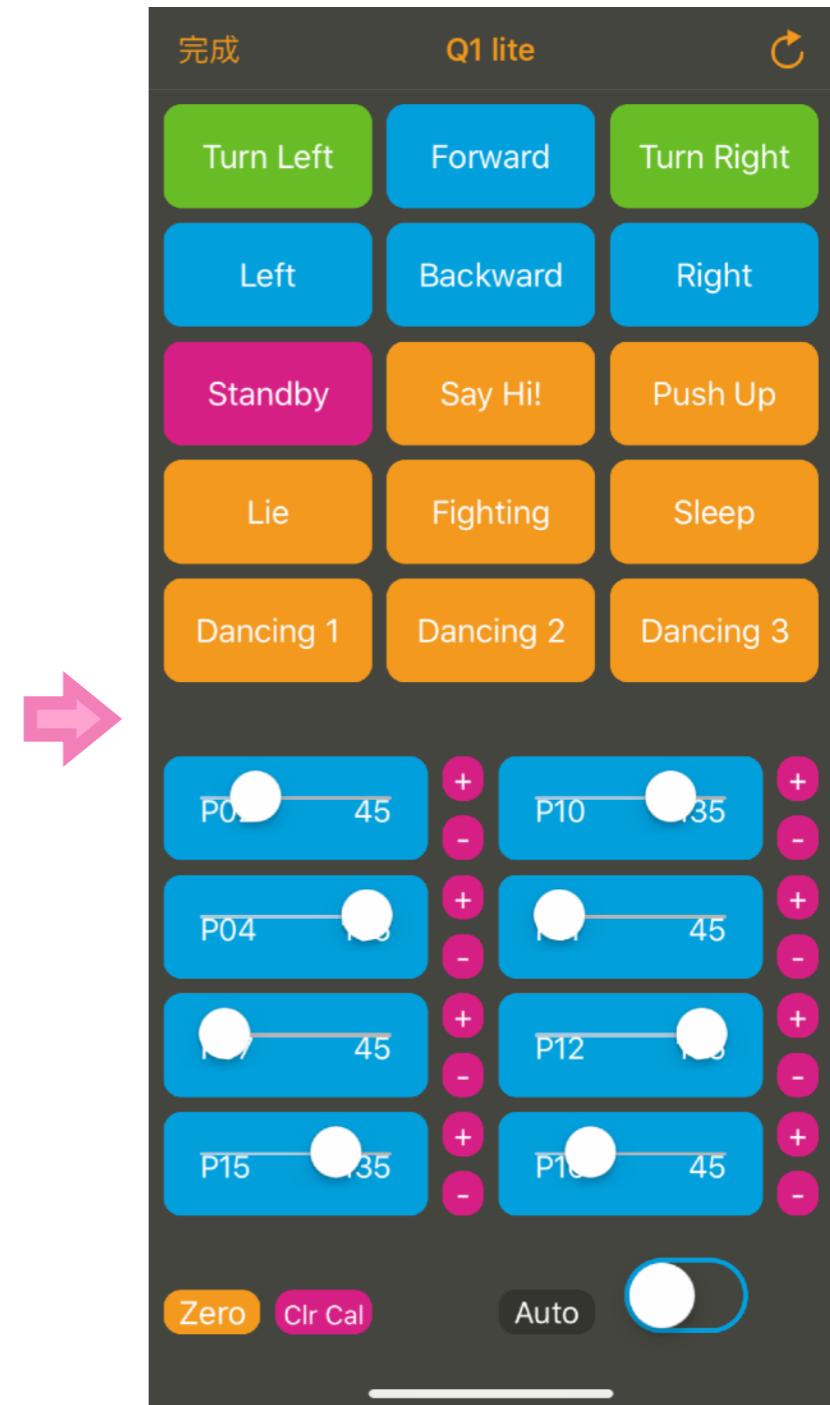
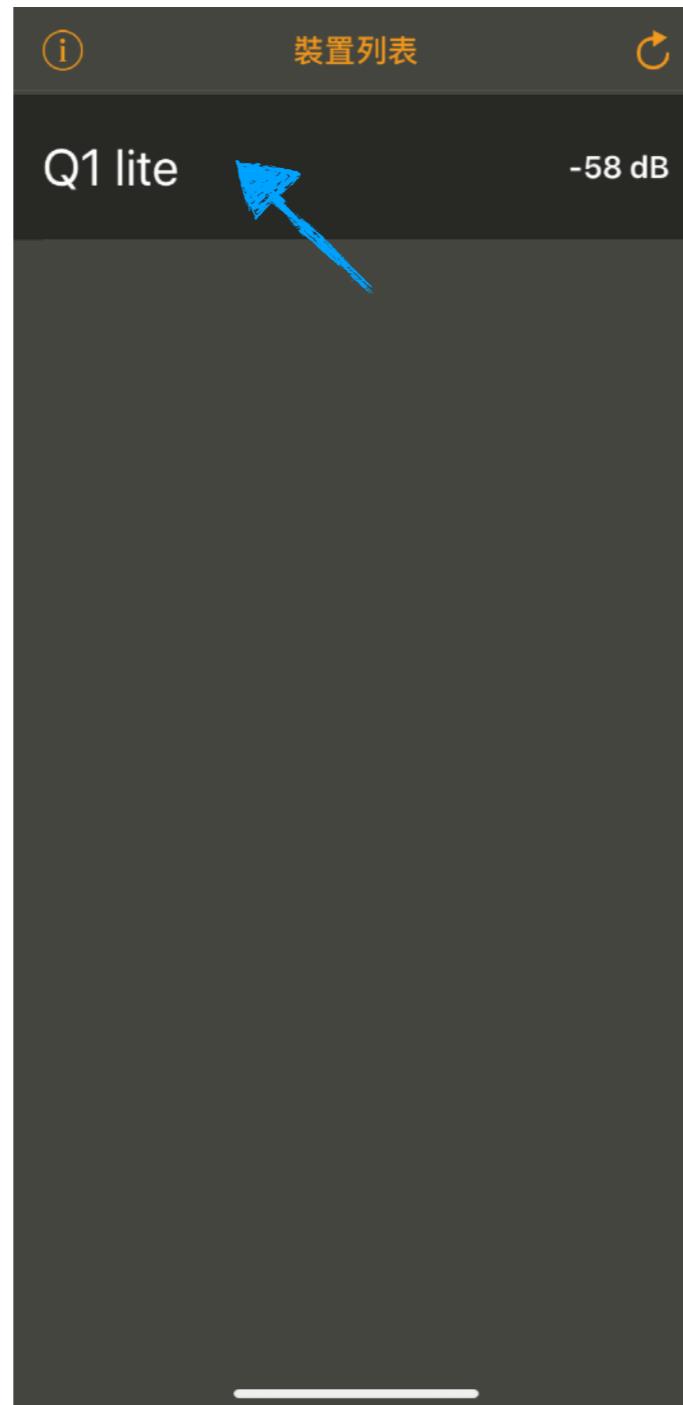
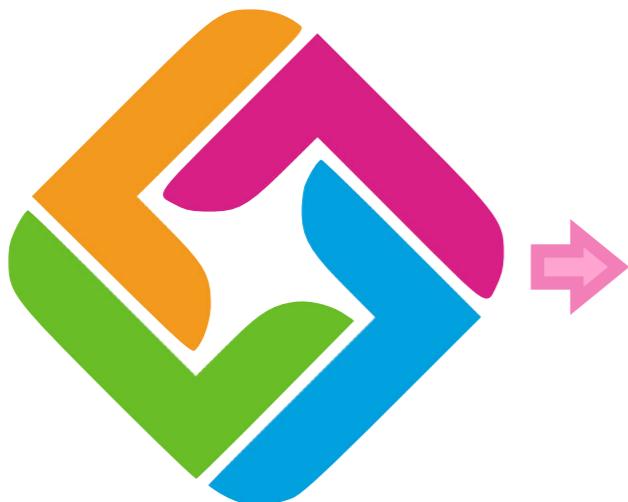
Play \ Turn On Q1 lite



Q1 Robot @ Jason Workshop
q1.jasonworkshop.com



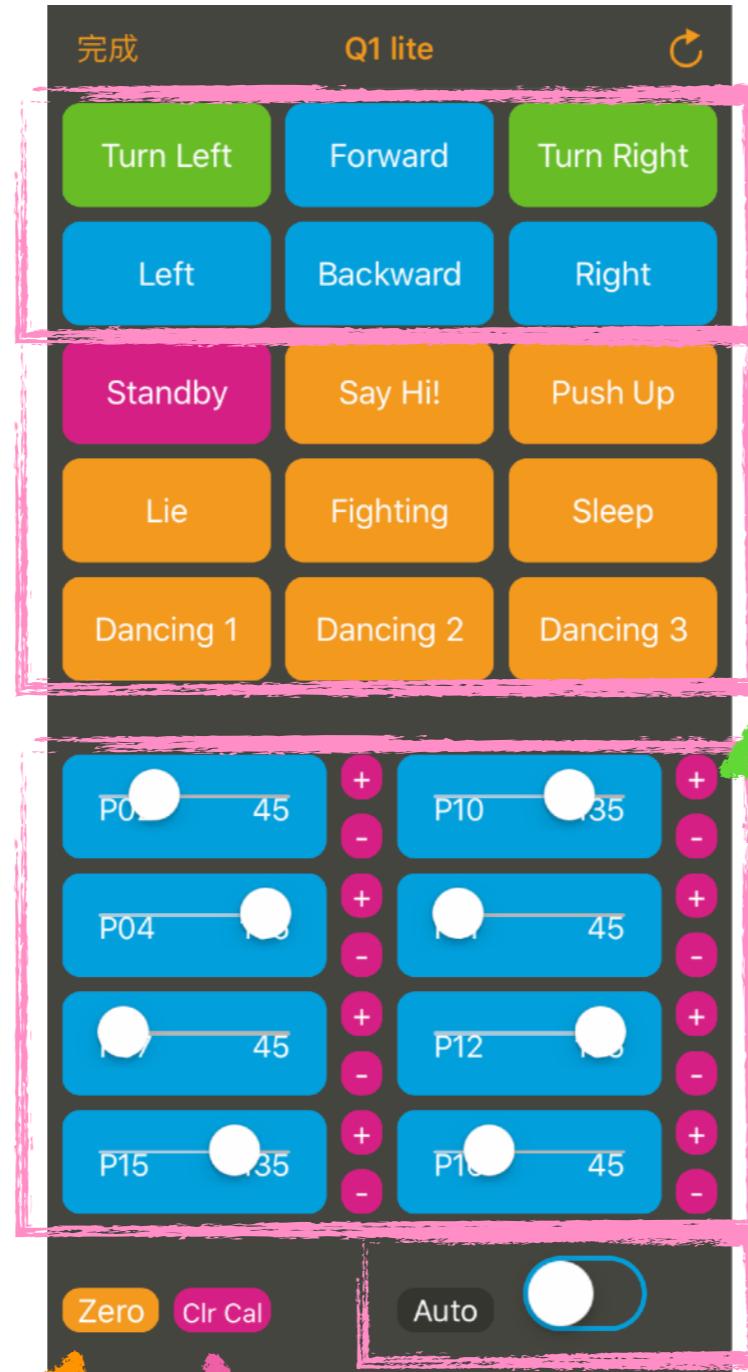
Play \ LinkIt Remote App Connect to Q1 lite



Q1 Robot @ Jason Workshop
q1.jasonworkshop.com



Play \ Enjoy Your Q1 lite!



Movement

Action

Servo Calibration

You can change program code
to hidden calibration button

Servo angle

Auto mode

Zero Position
(For Assembly)

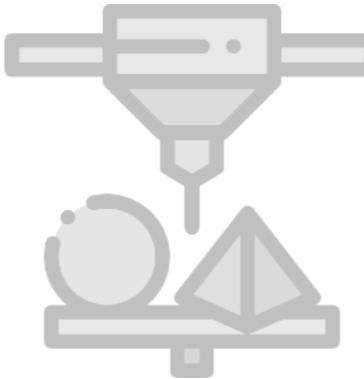
Clear Calibration
(Use with caution)

Q1 lite 3

Simple Quadruped Robot



Prepare Parts



3D Print



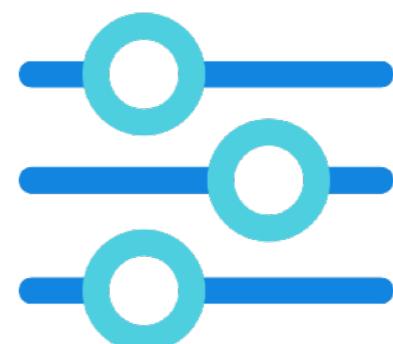
Software



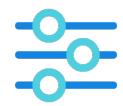
Assemble



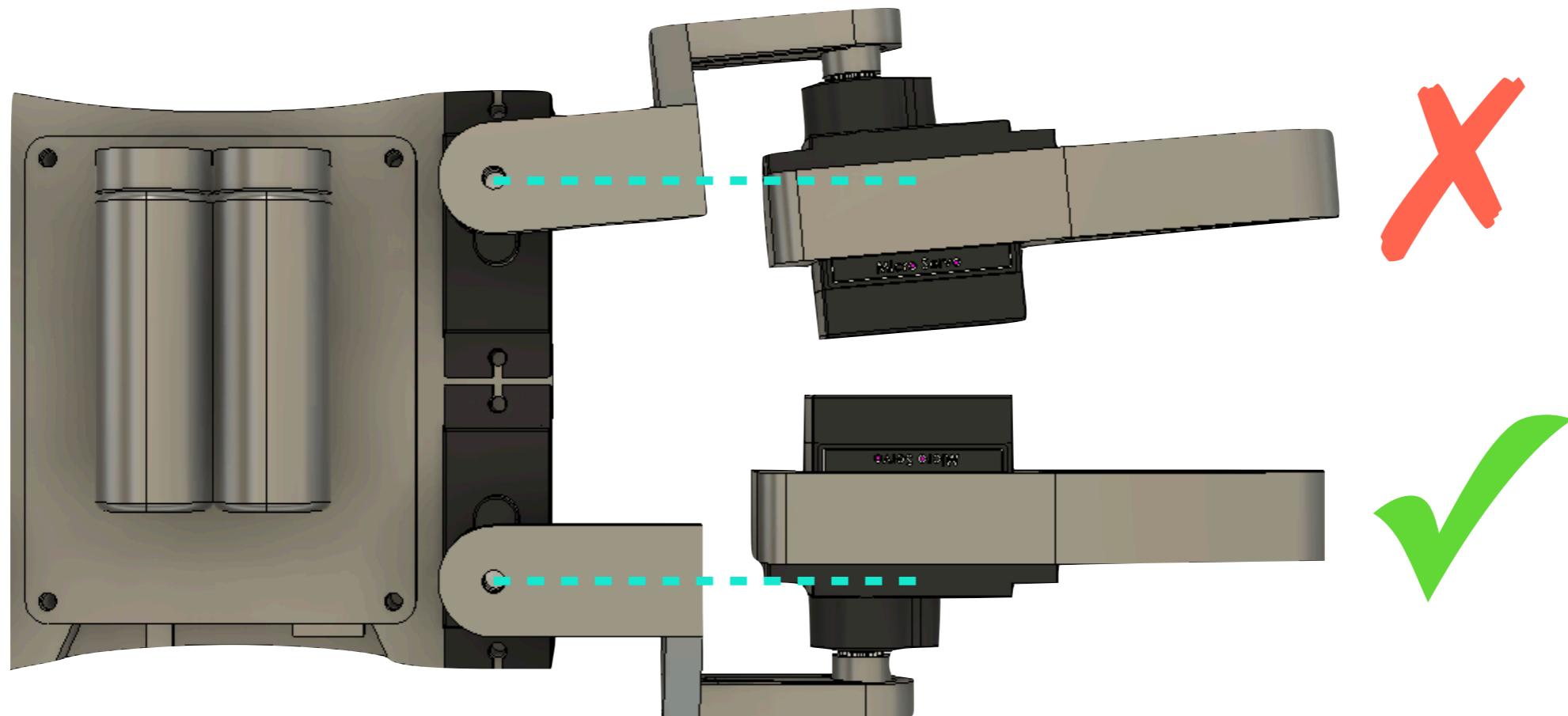
Play

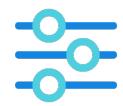


Adjust

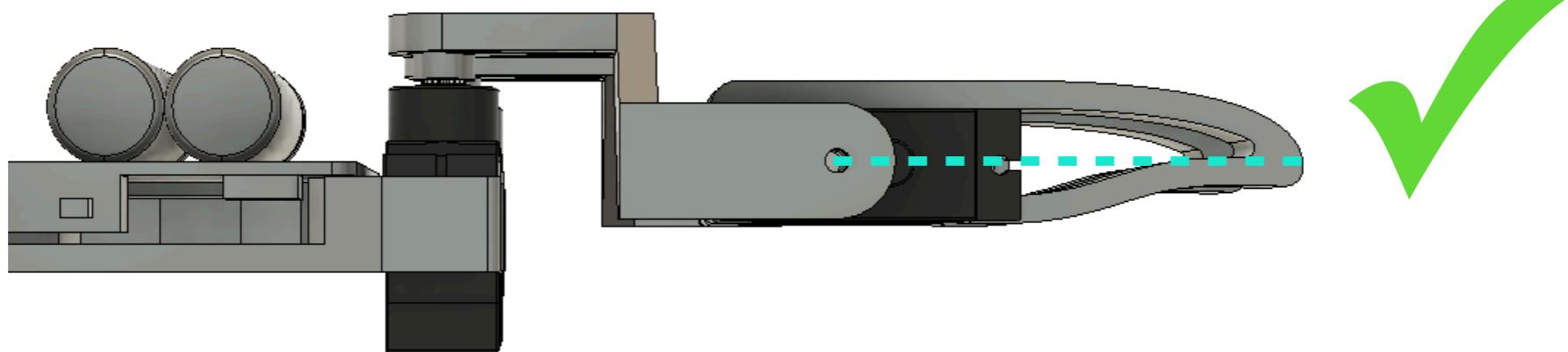
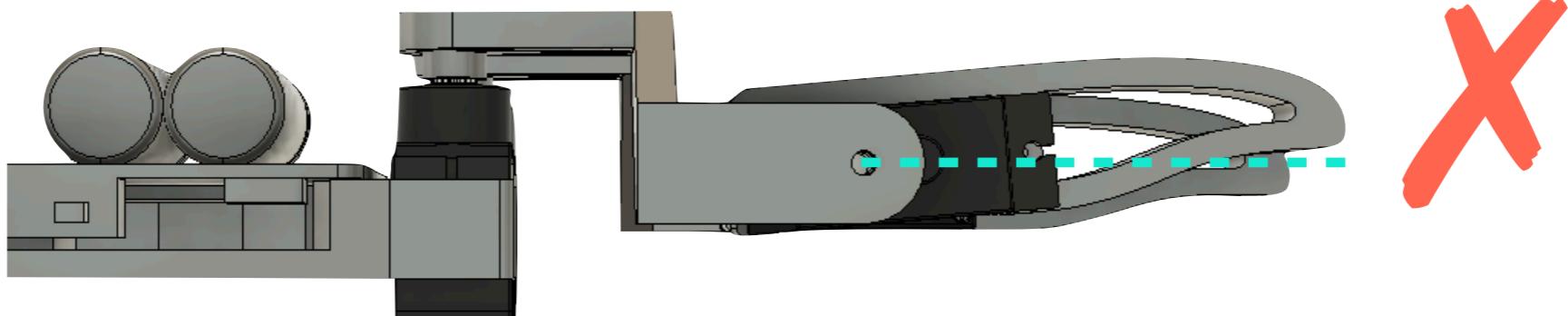


Adjust \ Power On and Check Servo Angle (1/2)

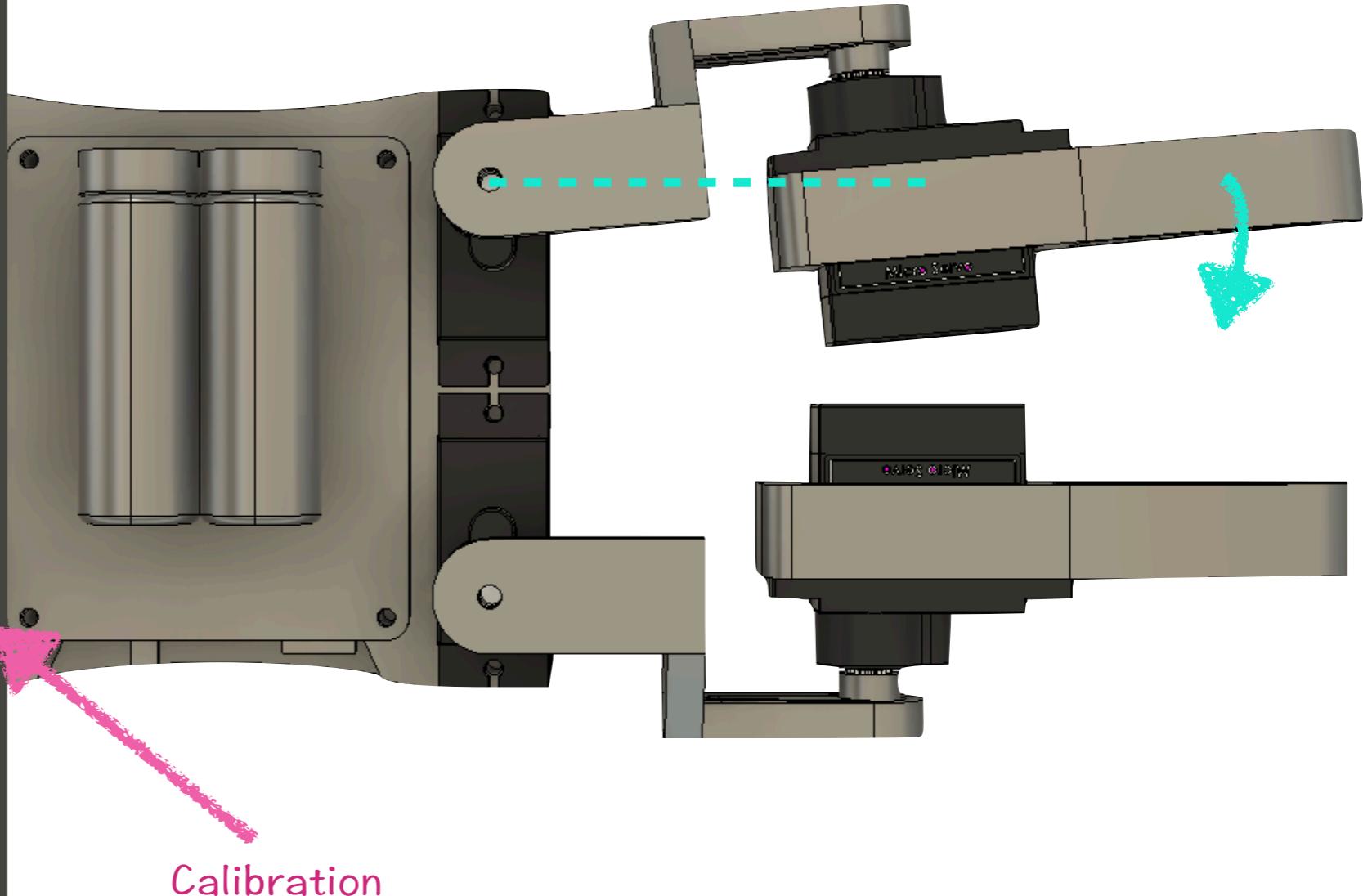
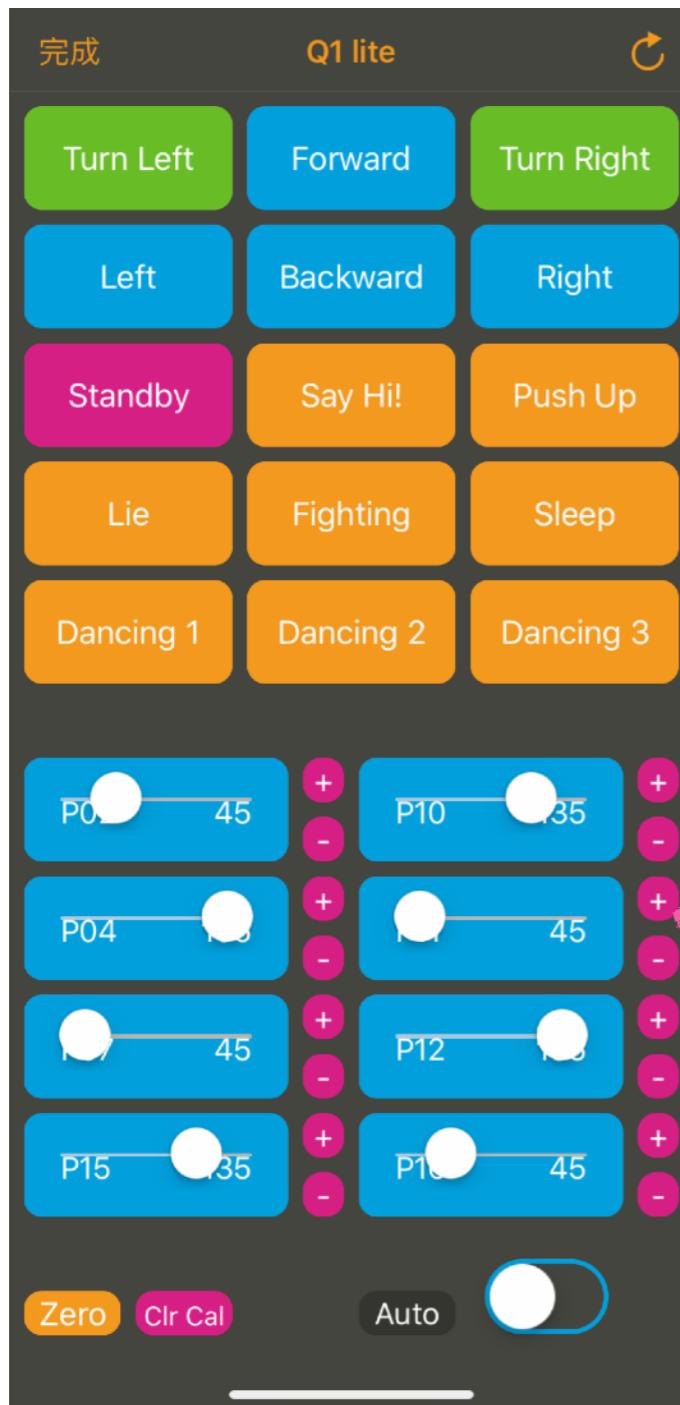




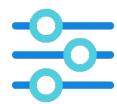
Adjust \ Power On and Check Servo Angle (2/2)



Adjust \ Calibration



Q1 Robot @ Jason Workshop
q1.jasonworkshop.com

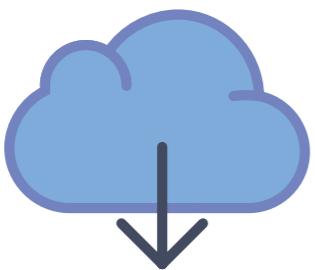


Adjust \ Enable or disable Calibration Button

```
// -----  
  
#include <EEPROM.h>  
#include <Servo.h>  
#include <LRemote.h>  
  
// Custom value  
// -----  
  
String robotName = "Q1 lite 3"; // Robot name  
  
const int enableCalibration = true; // Enable calibration button  
// -----
```

Toggle calibration mode

Q1 Robot @ Jason Workshop
q1.jasonworkshop.com



<http://q1.jasonworkshop.com>



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