

# Fun with LEGO MindStorms Robot Inventor 51515 set for Absolute Beginners using LEGO Python

*October 2021 (pre-Alpha) Edition*  
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## Introduction and Overview



Do you have a LEGO Robot Inventor 51515 set, and you want to quickly learn how to teach your robot to obey your commands?

Perhaps we can help.

Included with LEGO's Robot Inventor 51515 set are instructions for building five huge motorized robots. These are marvelous if you have the time to build them. However, we were contacted by some teachers who were considering buying these sets, but who wanted simpler robots that could be built and programmed using LEGO Scratch in less time than it takes to build these 5 wonderful, but slow-to-build robots.

Maybe we can help. Let us start. 😊

## Can your computer use the LEGO Robot Inventor set App?

Before buying a set, you will want to know if this set work with your computer?

LEGO says that the LEGO Robot Inventor Set App. works with many (but not all) of the versions of computers, smartphones and tablets from Apple, Google, Amazon Fire and Windows.

To see if this set works with your computer, LEGO suggests that you see if you can download, install and successfully start up the Robot Inventor 51515 App. on your equipment.

If you can, this set is very likely to be suitable for your computer equipment.



*We also need this App. later when setting up our Robot Inventor Set.*

*So, install it now by clicking on the image above, or by typing the link below into a browser!*

<https://youtu.be/cZmoBN6flaI>

# Unboxing the LEGO Robot Inventor 51515 set

In the video below we unbox our Robot Inventor kit.

LEGO does not provide compartments for storing the LEGO components in the Robot Inventor set. We demonstrate some boxes that we have found that are very convenient for sorting out and storing separately many of the small LEGO components. This will make finding components much easier when we are building new robots in the future.



*Run the video by clicking on the image above, or by typing the link below into a browser!*

<https://youtu.be/gZ-cd2ph2fE>

## Updating the LEGO Robot Inventor 51515 set Hub and Motors for the first time.

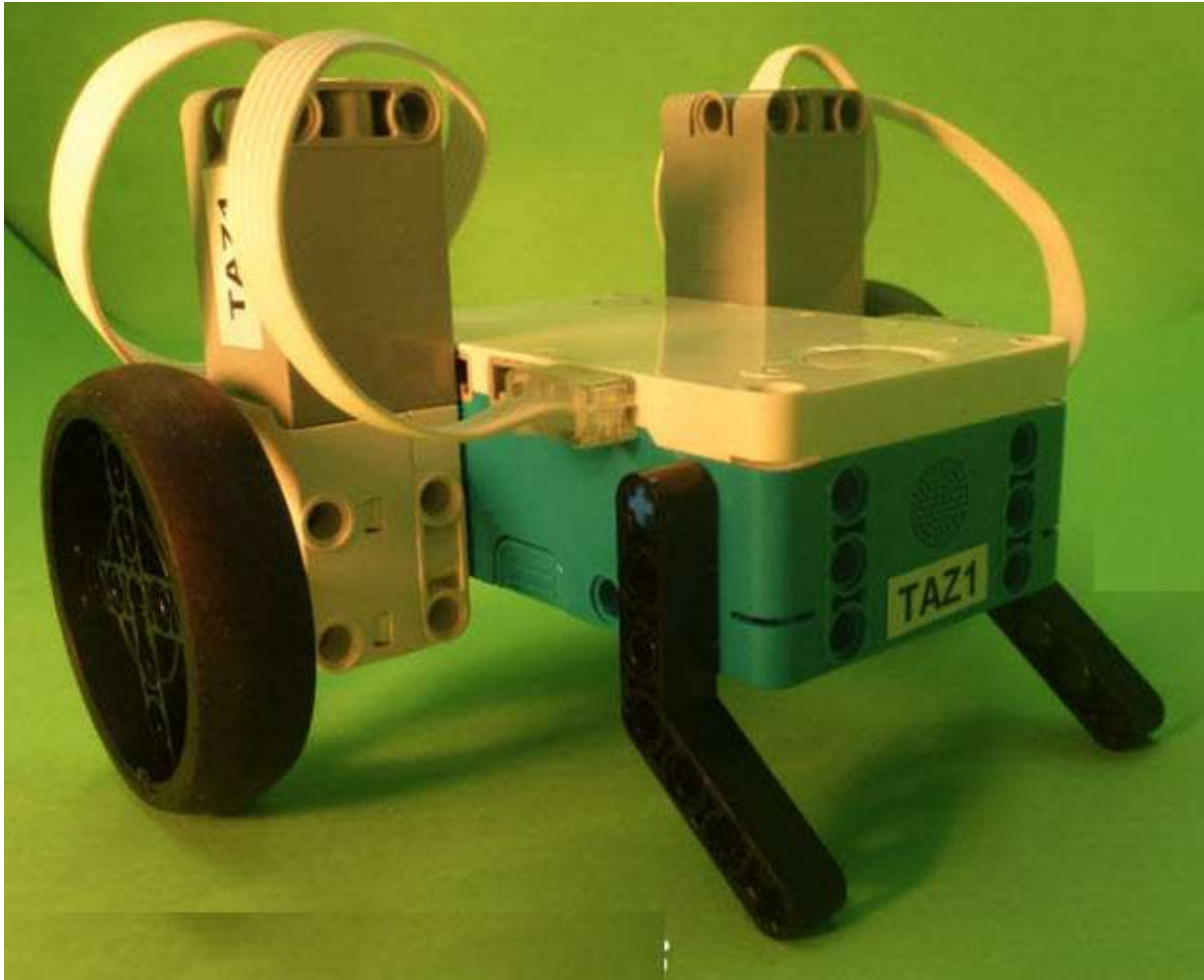
Before the Robot Inventor 51515 set can be used for the first time, the Hub and four Motors should be all updated. They are updated by downloading software from the Internet. The video below aims to show Absolute Beginners how to go through this process for the very first time.



*Run the video by clicking on the image above, or by typing the link below into a browser!*

<https://youtu.be/l7CchgtixXs>

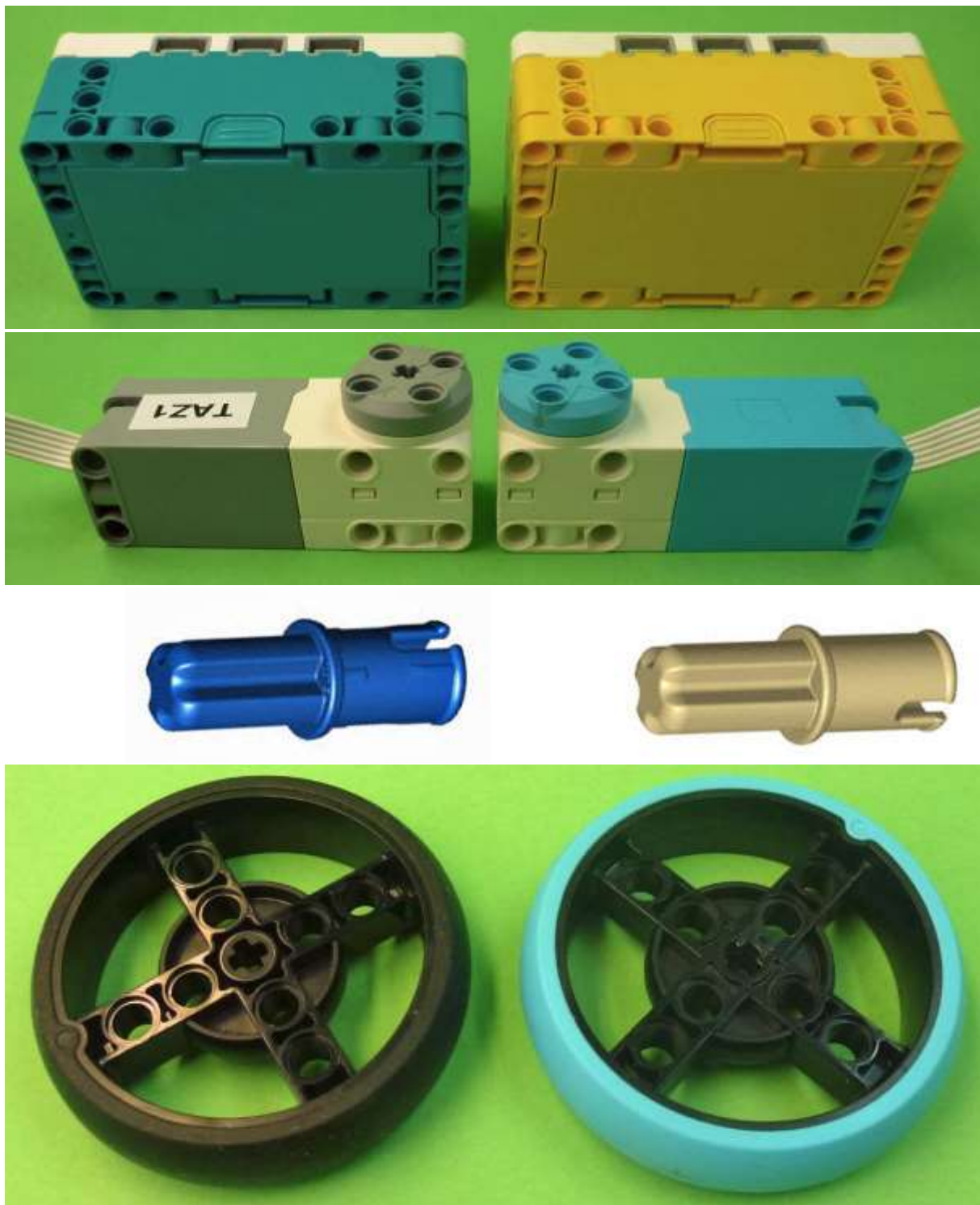
## Your First Robot.



This tutorial shows how to build a very small LEGO Robot that we can make quickly. A fast build means that we can have fun coding much sooner. Let's start!

In this build I use pieces from the LEGO Robot Inventor set. If you have a LEGO Spike set, you will have the same pieces, but they will have different colors, as shown on the next page. You can build the same robot from each set - it is just the colors that are different.

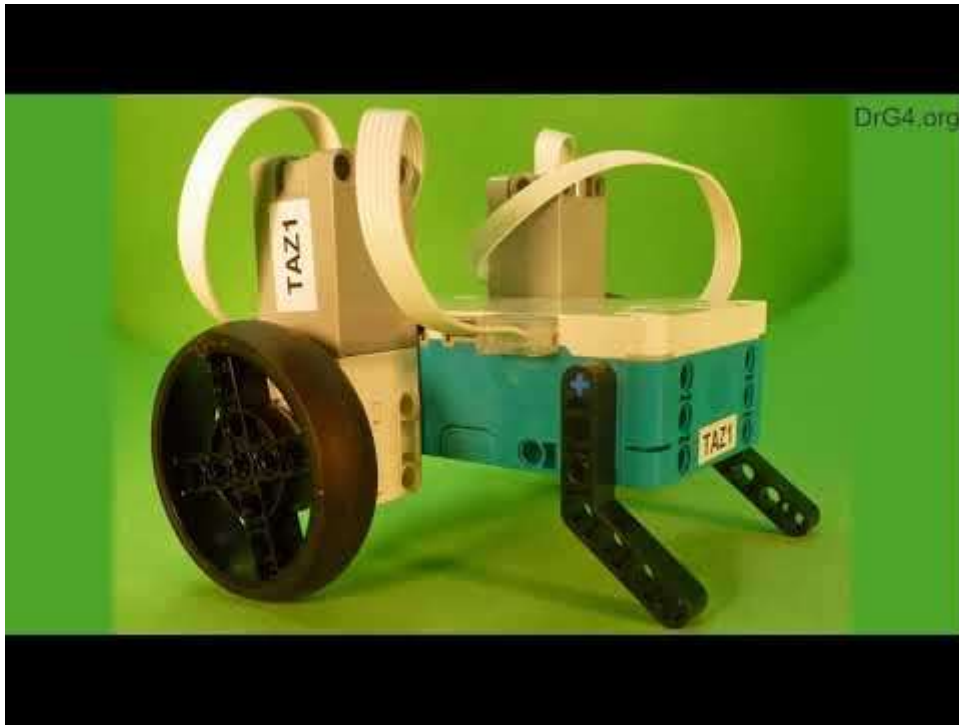
The "LEGO Robot Inventor 51515" pieces are on the left. The equivalent "LEGO Spike 45678" pieces are on the right.



## Building your first Robot (Video)

The video below shows you how to build your first Robot.

If you prefer to build using images, more detailed build pictures are available starting on the next page.



*Run the video by clicking on the image above, or by typing the link below into a browser!*

<https://youtu.be/yLIXOsQ8DZY>

If you have built your robot using the video, go to page 18 to find out how to start running code on your robot.



# Building your first Robot (Images)

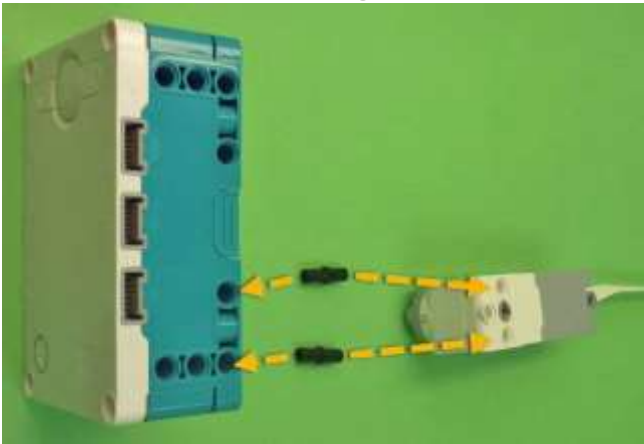
## ***Taz1 Build Step 1***

I have labeled my bigger LEGO pieces "TAZ1". Invent your own name!  
Names are a good idea because it saves confusion with other sets.

Next find these pieces:



Now connect them together:

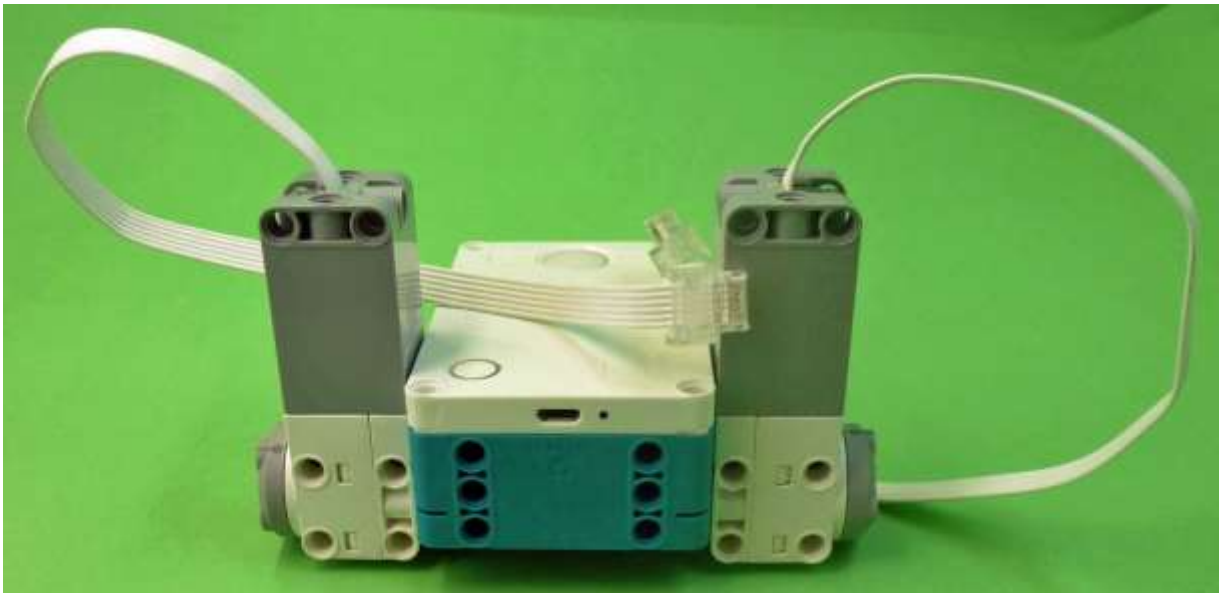


## ***Taz1 Build Step 2***

Find these LEGO pieces.



Join them together.



## ***Taz1 Build Step 3***

Find these LEGO pieces



Join them together.

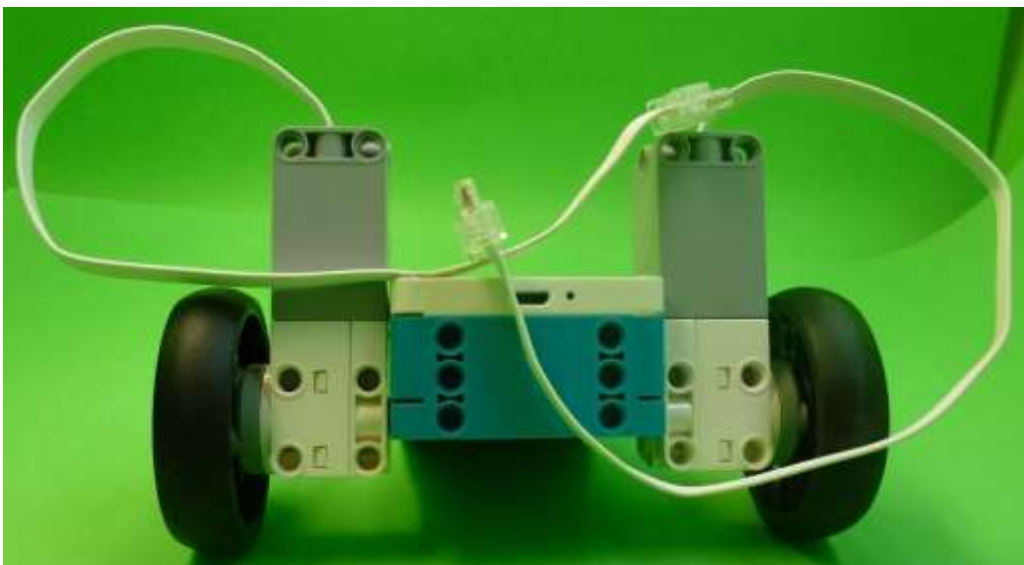
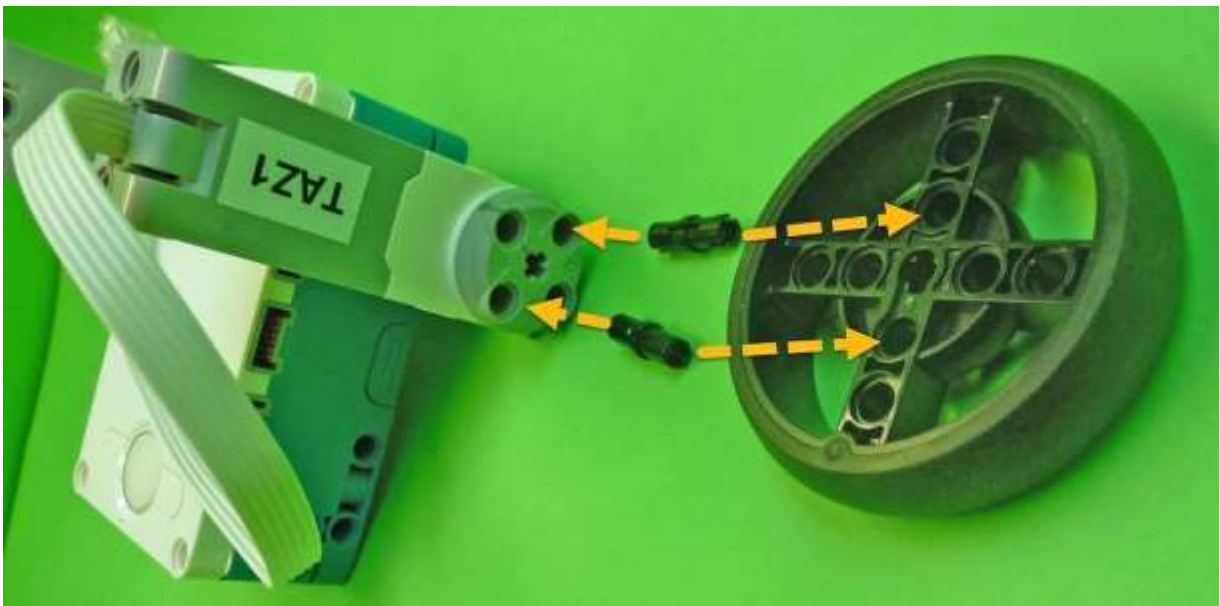


## Taz1 Build Step 4

Find these LEGO pieces.



Join them together.

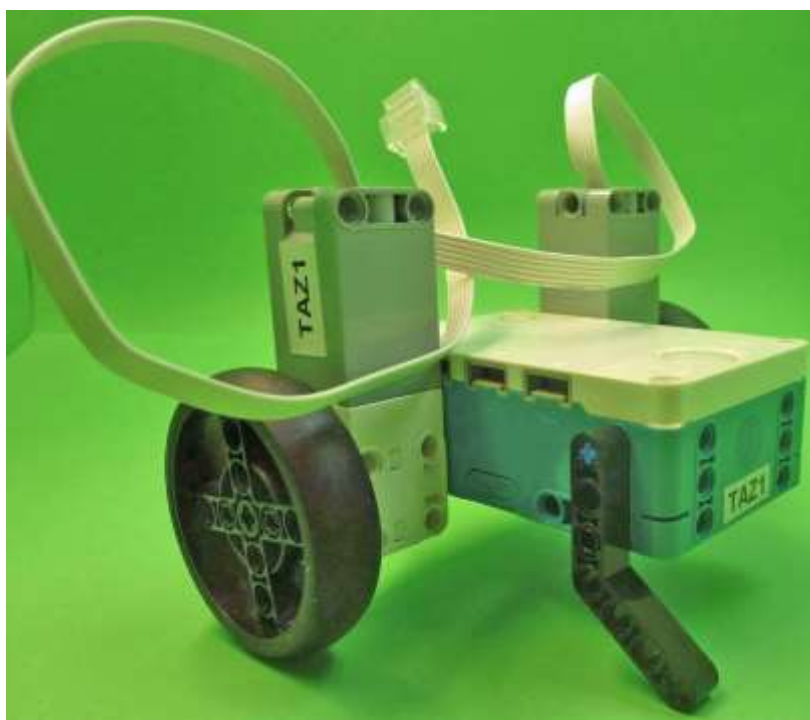
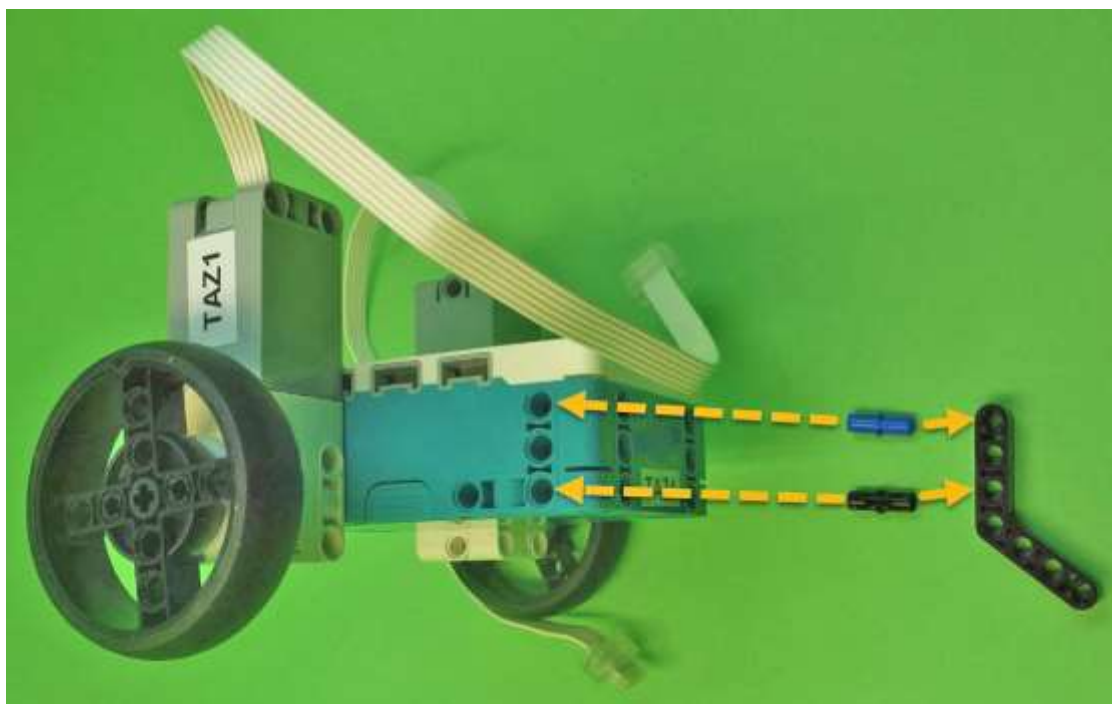


## Taz1 Build Step 5

Find these LEGO pieces.



Join them together.

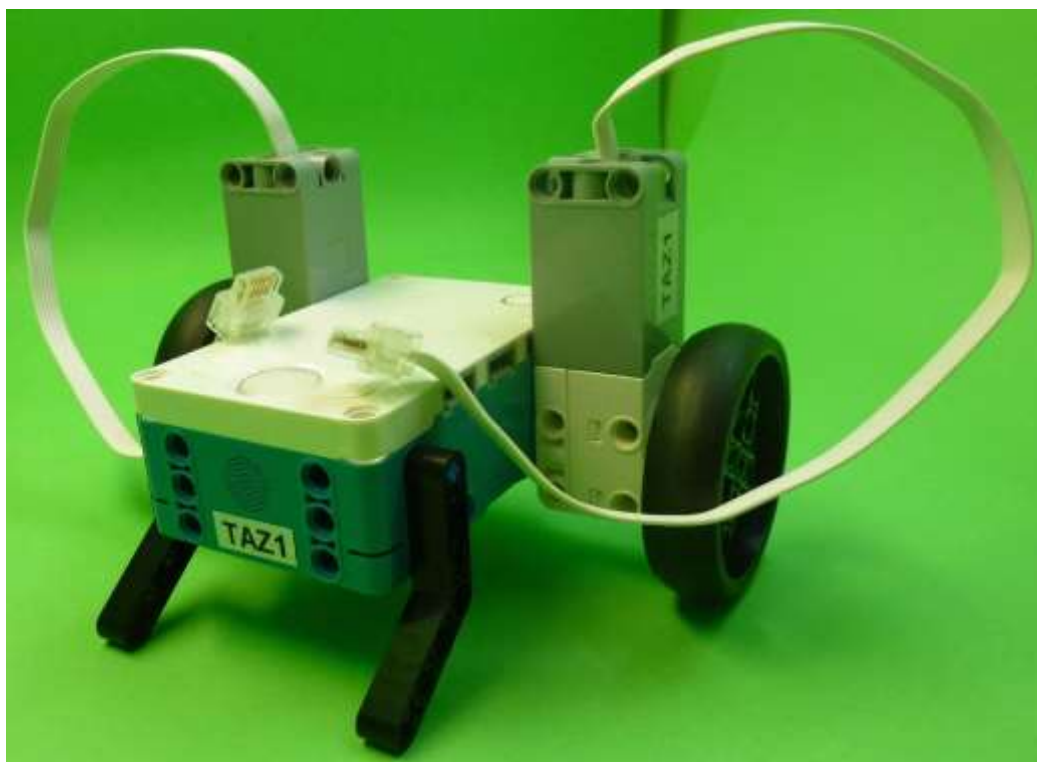
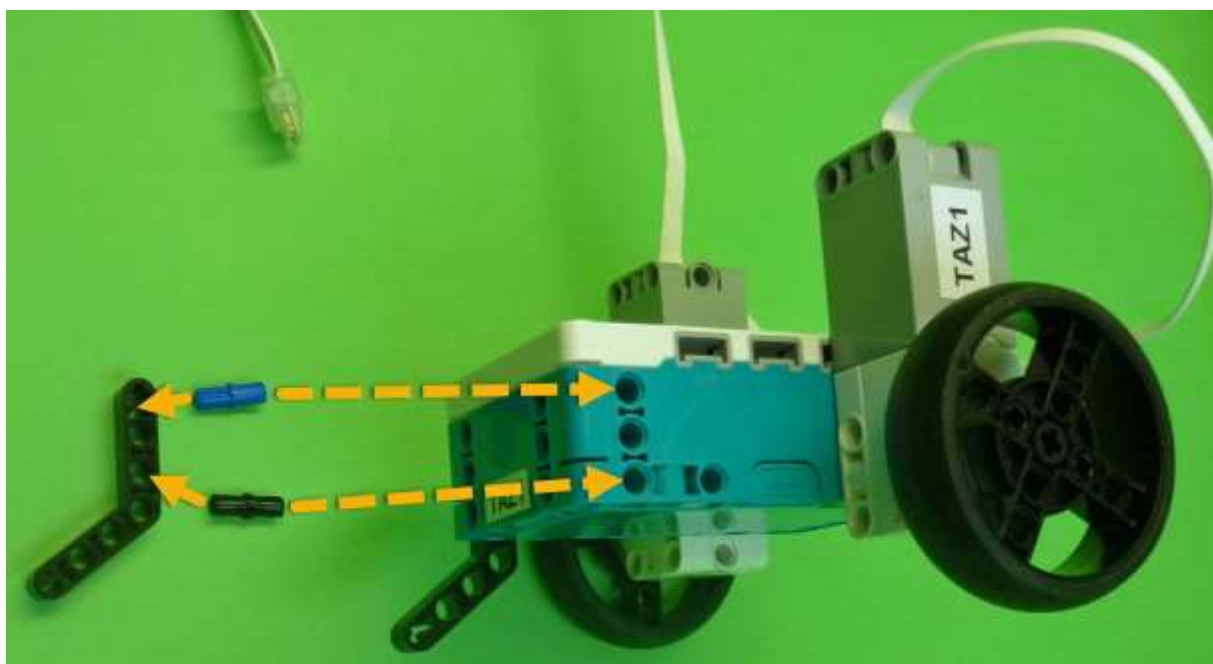


### **Taz1 Build Step 6**

Find these LEGO pieces.

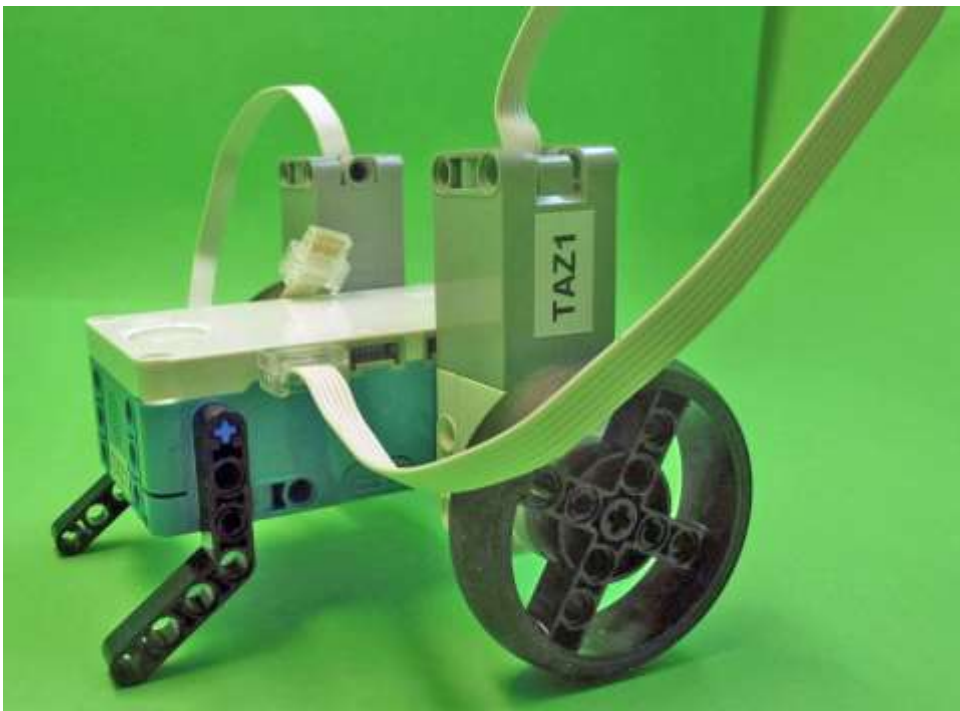


Join them together.



## ***Taz1 Build Step 7***

Compare the cable plug and the slot in the computer brick. The plug only goes in one way – DO NOT try to force it in upside down. When you have the plug the right way around, carefully put the plug in to the slot.



## ***Taz1 Build Step 8***

Compare the cable plug and the slot in the computer brick. The plug only goes in one way – DO NOT try to force it in upside down. When you have the plug the right way around, carefully put the plug in to the slot.





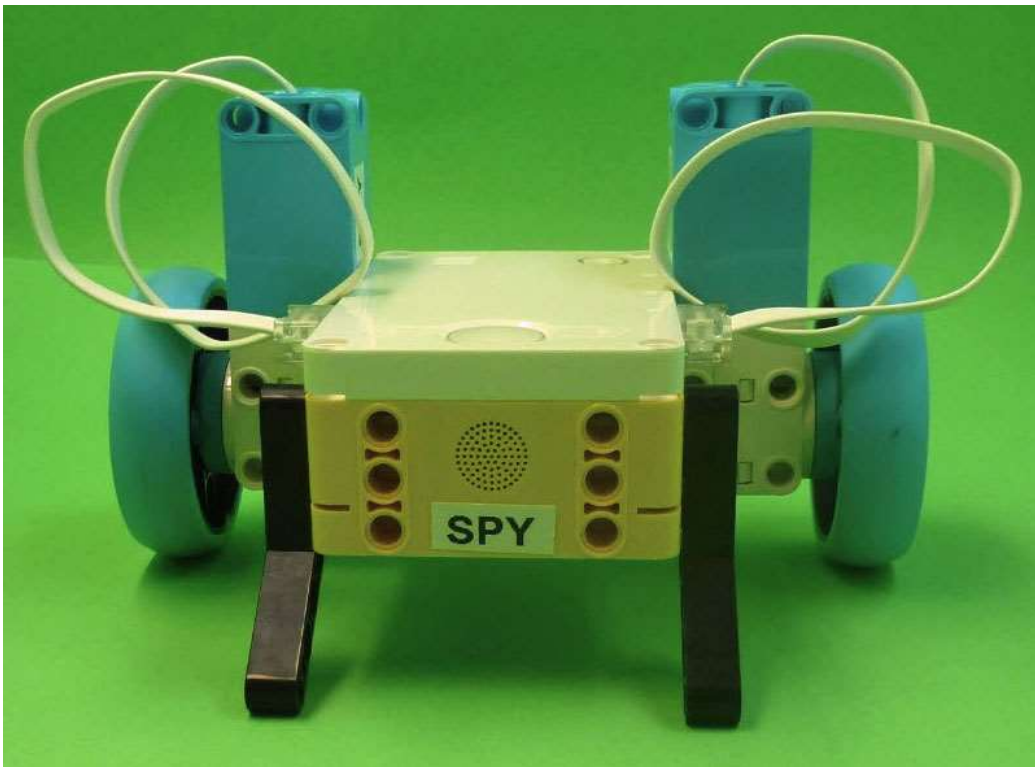
## ***Taz1 Build Step 9***

Congratulations – You have built your first LEGO robot!

TAZ1 looks like this:



If you have followed this build using a LEGO Spike Set, your first LEGO Robot (we called ours “SPY”), will look like this:



# First Scratch and Python Code using our LEGO Inventor 51515 set Robot

Before our Robot Inventor 51515 set can be used for our first big Challenge, we need to check that we can get tiny programs running using our computer equipment.

In this video we demonstrate how to run tiny Scratch code with our Taz1 Robot via USB, Scratch code with our Robot connected via Bluetooth, Python with our Robot connected via USB, and Python with our Robot connected via Bluetooth.

If these work, we can start on larger code projects with the confidence that our combined computer and Robot set-up is very likely to be correct.



*Run the video by clicking on the image above, or by typing the link below into a browser!*

<https://youtu.be/g9rLvGroIqQ>

# LEGO Python Challenge: Approaching An Alien

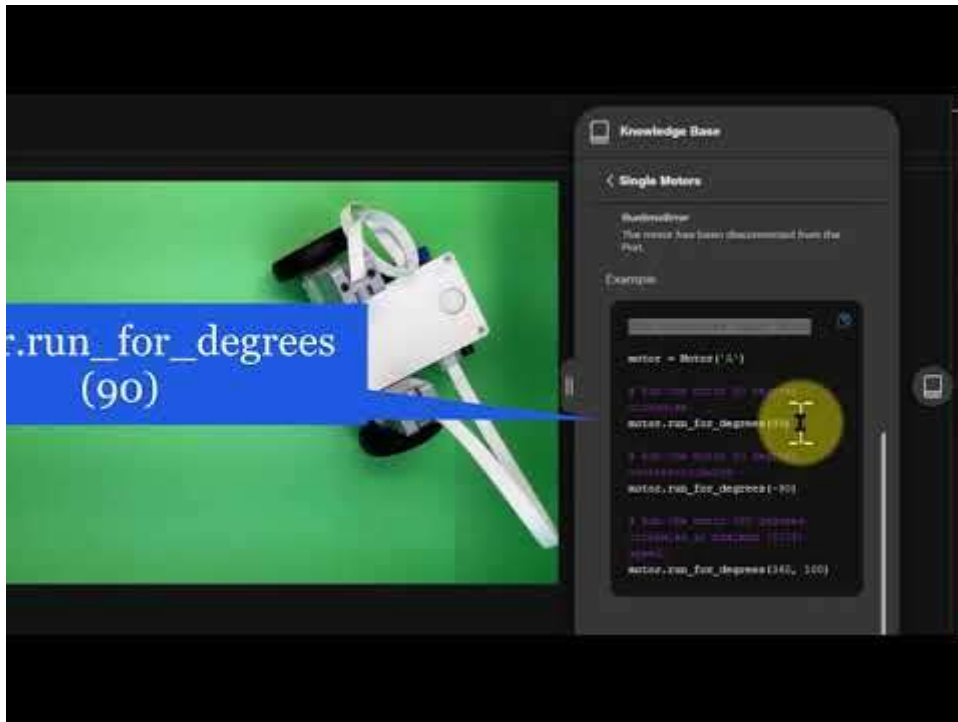
This is the first "Absolute Beginners" Challenge for our LEGO 51515 Robot. We imagine that an Alien Ambassador has arrived on Earth. Since we are uncertain if the Alien is warlike, we will send a robot to investigate.

But how to communicate with an Alien? We look at what is probably the most alien animal on Earth, and compare it to us. We then demonstrate how to approach the Alien (hopefully) safely. We then get a bit concerned and retreat in panic!

We have found that "creating our Alien" can be a good-fun class art project. However, if you are short of time, one of the three downloadable images [on this web page](#) could be used to wrap around a bottle to represent an Alien.



Since this is our first "Absolute Beginners Challenge", we will show more detail than we will use in our later video tutorials.



*Run the video by clicking on the image above, or by typing the link below into a browser!*

<https://youtu.be/hYPPfee16sk>

## More “Soon”.

We aim to gradually add tutorials to this downloadable document on a monthly basis. We wish we could go faster, but realistically our health 😞 currently limits the time we have available for this fun activity. 😊 Hopefully more soon.