



Edison and EdPy

Teacher's guide to getting started

```
5
6 Ed.EdisonVersion = Ed.V2
7
8 Ed.DistanceUnits = Ed.TIME
9 Ed.Tempo = Ed.TEMPO_MEDIUM
10
11 #-----Your code below-----
12
13 if remoteValue == 1:
14     Ed.Drive(Ed.FORWARD_LEFT, 2, Ed.DISTANCE_UNLIMITED)
15     Ed.TimeWait(50, Ed.TIME_MILLISECONDS)
16 elif remoteValue == 2:
17     Ed.Drive(Ed.BACKWARD_LEFT, 2, Ed.DISTANCE_UNLIMITED)
18     Ed.TimeWait(50, Ed.TIME_MILLISECONDS)
19 elif remoteValue == 3:
20     Ed.Drive(Ed.FORWARD_RIGHT, 3, Ed.DISTANCE_UNLIMITED)
21     Ed.TimeWait(50, Ed.TIME_MILLISECONDS)
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```



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Contents

About this guide	3
Creative Commons licence attribution details	3
Before you start.....	4
Get Edison ready	4
Set up your programming devices for EdPy	5
Troubleshooting	6
Troubleshooting 1: Check for a firewall	6
Troubleshooting 2: Try low.edpyapp	6
Windows computers – troubleshooting	7
Mac computers – troubleshooting	7
Chromebooks – troubleshooting	8
Tablets – troubleshooting.....	8
Using the ‘getting started’ student sheets.....	10
Supplies you will need	10
Question 1: What is an Edison robot?	11
Overview.....	11
Delivery recommendations	11
Tips and tricks	11
Question 2: How do you use EdPy with Edison?	11
Overview.....	11
Delivery recommendations	11
Tips and tricks	13
What’s next?	14

About this guide

This 'getting started' guide and the matched student activity sheets set is designed for new users of Edison and EdPy. This guide offers teachers and instructors a quick-start overview for using Edison robots with the EdPy programming language, available at <https://www.edpyapp.com/>

The information contained here will help you set up your Edison robots and the programming devices (such as computers, laptops or Chromebooks) that you will be using with EdPy. Once you have the robots and programming devices set up, you will be ready to run a wide range of EdPy activities using Edison, including the *Edison and EdPy: Get started* student activity sheets that go along with this guide, the [EdPy Hour of Code activities](#)¹ and the full [EdPy Lesson Plans Set](#)².

Don't forget! You don't need to be an expert on Edison or EdPy to use the robots successfully!

Once the robots and programming devices are set up, you can start learning along with your students, using any of the Edison lesson plans or activities to guide you. The student sheets for all EdPy activities have been designed to allow students to work through the different parts of each lesson independently, discovering key computer science learning objectives and practicing new skills along the way. Complementary teaching guides offer further information about each activity to help make using the lessons easy and fun. Check out meetedison.com³ for the complete range of EdPy lessons, stand-alone activities and teaching guides.

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The *Getting started with Edison and EdPy* set is comprised of the student sheets and this guide. This set was developed using resources from the [EdPy Lesson Plans Set](#)⁴ and the [EdScratch Lesson Plans Set](#)⁵ and is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](#)⁶.

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¹ <https://meetedison.com/hour-of-code-edison-robot-activities/>

² <https://meetedison.com/robot-programming-software/edpy/#edpy-resources>

³ <https://meetedison.com/>

⁴ <https://meetedison.com/robot-programming-software/edpy/#edpy-resources>

⁵ <https://meetedison.com/robot-programming-software/edscratch/#EdScratch-resources>

⁶ <http://creativecommons.org/licenses/by-sa/4.0/>

Before you start

Before using Edison with your students, you will need to set up the programming devices, (i.e. the computers, laptops or Chromebooks⁷) you will be using with the EdPy app and get the Edison robots ready.

This guide shows the basics and troubleshooting help for getting set up to use Edison with EdPy. Additional details, including information about Edison's other programming languages, can be found in the free *Getting started with Edison guide* available at <https://meetiedison.com/content/Get-started-with-Edison-guide-English.pdf>

Get Edison ready

To get Edison ready for use, you need to:

1. Open the battery compartment at the back of Edison and remove the EdComm programming cable.
2. Insert 4 'AAA' batteries. Please refer to the picture to ensure that the batteries are inserted correctly. Be sure to reclose the battery case by clipping the battery cover back on.



Ensure the batteries are in the right way.

Please note: Low or flat batteries can cause a range of issues with Edison. For this reason, always use fresh, fully charged batteries in your robots.

Choosing batteries: If using disposable batteries with Edison, only ever use alkaline batteries. (These are the most common standard AAA batteries you will find in just about any shop.) If you are using rechargeable batteries with Edison, only use nickel metal hydride (NiMH) rechargeable batteries. Never use lithium rechargeable, heavy-duty disposable, super heavy-duty disposable or carbon zinc batteries.

3. To turn Edison on, flip the robot over. Slide the power switch to the 'on' position, as shown in the picture. This will turn Edison on, and the red LED lights will start flashing.



Push the switch towards the 'on' symbol.

Please note: While Edison will turn off automatically if not used after five minutes, we recommend you turn the robots off manually when not in use.

⁷EdPy can be run on tablets, however, text-based programming is not suited to tablet devices and can be quite difficult to do. We do not recommend using tablets to program in EdPy.

Set up your programming devices for EdPy

The best way to set up your programming devices is to run a test program in EdPy. Follow these seven steps to test EdPy on your device:

1. Load the EdPy app by opening www.edpyapp.com in a browser (we strongly recommend Google Chrome⁸). Launch the programming app by pushing the orange 'Launch EdPy' button. Make sure you allow pop-ups for www.edpyapp.com.
2. When the app opens, you will see a prompt to select your Edison version. Choose the version of Edison that matches your robot. Once selected, the programming environment will load set-up for your version of the robot.
3. On the left-hand side of the programming environment is the list of programs, including the 'Examples' demo programs. Select the program called 'Test_program' which will load in the programming environment⁹.
4. Adjust your device's volume to maximum or 100%. Plug the EdComm programming cable into the audio jack of your device.
NOTE: many devices have built-in safety settings that reduce the volume when an audio device is connected to the headphone jack. Always double-check the volume settings after plugging in the EdComm cable to your device.
5. Turn your Edison robot on. Connect the EdComm cable to the bottom of the robot, near the power switch. Press the round (record) button one time.
6. In the EdPy app, press the 'Program Edison' button. Follow the instructions on the pop-up and then press the 'Program Edison' button on the pop-up to download the program into Edison.
7. While the program is downloading, you will hear a whirring sound, a bit like a dial-up modem. When the download is done, you will hear one of two sounds: the 'success' sound (the same chirping beep Edison makes when you first turn the robot on) or the 'fail' sound (a descending beeping sound)¹⁰.

SUCCESS: If the robot makes the 'success' sound, unplug it from the EdComm cable, then press the triangle (play) button on Edison one time to run the program. If the program runs successfully in the Edison robot, your programming device is ready to use! There's nothing further you need to do to set-up your device.

FAIL: If the robot fails to download the program, or the program does not play in the robot, work through the 'Troubleshooting' section that follows.

⁸ EdPy is compatible with Chrome, Safari, Microsoft Edge and Firefox. To ensure optimal performance, however, it is strongly recommended that you use EdPy with Chrome.

⁹ The Test_program is setup for Version 2.0 Edison robots. If you have Version 1 Edison robots, you will need to adjust the 'Ed.EdisonVersion' in the setup code to be '= Ed.V1' (rather than '= Ed.V2').

¹⁰ You can hear recordings of both the success and fail sounds at <https://meetiedison.com/edison-robot-support/trouble-shooting/#success-fail-sounds>

Troubleshooting

Depending on the type of programming devices you are using and your network, there are a few things you will need to do to troubleshoot your devices and get them working with the EdPy app.

Troubleshooting 1: Check for a firewall

If you cannot access the EdPy app at all, or if programs are failing to download, you may be behind a firewall which is common at schools. Ask the network administrator to white list <https://www.edpyapp.com>

SUCCESS: Once the address has been white listed, try downloading and running a test program. If the program downloads and runs successfully in the Edison robot, your programming device is ready to use! There's nothing further you need to do to set-up your device.

FAIL: If you can access the EdPy app, but you are not able to program Edison, move on to 'Troubleshooting 2: Try low.edpyapp'.

Troubleshooting 2: Try low.edpyapp

To be sent to the Edison robot, your program must be compiled by the EdPy compiler. The EdPy app creates a compiled file that is sent to the Edison robot as an audio file. The app at www.edpyapp.com creates an audio output type that works well for most devices, such as computers and laptops running Windows. This output does not work for some programming devices which have low output volume, however, including some Chromebooks and touch-screen laptops.

If your programs are not downloading successfully, go to <https://low.edpyapp.com/> and try downloading and running a test program there. This low.edpyapp version of the EdPy app functions exactly like the main app at www.edpyapp.com, except that it creates a different type of compiled output which works better on devices with low output volumes.

SUCCESS: If you can successfully download and run a test program on low.edpyapp but not the main EdPy app, your programming device has a low volume output. You will need to use low.edpyapp ongoing, but other than that, your programming device is ready to use! There's nothing further you need to do to set-up your device.

FAIL: If you are not able to program Edison using either the EdPy app or the low.edpyapp version, check the device-specific troubleshooting advice that follows.

Windows computers – troubleshooting

If you are running a laptop or desktop with a Windows operating system and are still unable to program Edison after running the set-up steps above, try these additional troubleshooting steps.

Disable sound enhancements

If you are using desktops, laptops or touch-screen laptops running Windows operating systems and are unable to program using either the EdPy app or the low.edpyapp version of the app, you will need to disable sound enhancements.

Please go to <https://meetedison.com/edison-robot-support/trouble-shooting/#soundenhancements> to find step-by-step video guides showing you how to disable sound enhancements for standard Windows sound enhancements software as well as the most common third-party software programs.

Once you have sound enhancements disabled, test a program download at both www.edpyapp.com and low.edpyapp.com. In general, devices that require this step will only work using the low.edpyapp.com version.

Check for a volume ‘hard lock’

Some devices, especially in Europe, have a hard lock on volume whenever an audio device is detected. This means that the device is ‘locked’ to only deliver a maximum volume of approximately 75% of the device max volume when an audio device is detected. To correct this, go into the device’s settings and disable the hard lock to enable the device to emit true full volume, even with an audio device plugged in.

Mac computers – troubleshooting

If you are running a Mac laptop or desktop and are still unable to program Edison after running the set-up steps above, try this additional troubleshooting step.

Check the volume settings

Some Macs experience audio clipping errors when attempting to program Edison. If you experience these issues, please try dropping your volume from 100% to between 50% and 90% instead.

Chromebooks – troubleshooting

If you are running a Chromebook and still unable to program Edison after running the set-up steps above, try this additional troubleshooting step.

Disable sound enhancements

Some Chromebooks, including some Dell Chromebooks, have low audio output but also have sound enhancements. If you are using a Chromebook and both the short pulse (recommended) and long pulse compiler output types are failing, you will need to disable sound enhancements.

Sound enhancements are common on Windows machines and we have step-by-step video guides at <https://meetedison.com/edison-robot-support/troubleshooting/#soundenhancements> showing you how to disable sound enhancements for standard Windows sound enhancements as well as the most common third-party software programs. Depending on the manufacturer, your Chromebook may have similar sound enhancement software.

Once you have sound enhancements disabled, test a program download at both www.edpyapp.com and low.edpyapp.com. In general, devices that require this step will only work using the low.edpyapp.com version.

Tablets – troubleshooting

If you are running an Apple, Android or Windows tablet and are still unable to program Edison using either the EdPy app or the low.edpyapp version of the app after running the set-up steps above, try this additional troubleshooting step.

Please note: EdPy can be run on most tablets, however, text-based programming is not suited to tablet devices and can be quite difficult to do. We do not recommend using tablets to program in EdPy.

Please note: most mobile phones do not have the audio output to program Edison using EdPy. We strongly advise against using mobile phones as programming devices with Edison.

Check the volume settings

Many devices have built-in safety settings that reduce the volume when an audio device is connected using the headphone jack. Please check that your volume is turned all the way up to 100% after plugging in the EdComm programming cable to your device.

Some devices, especially in Europe, have a hard lock on volume whenever an audio device is detected. This means that the device is 'locked' to only deliver a maximum volume of approximately 75% of the device max volume when an audio device is detected. To correct this, go into the device's settings and disable the hard lock, to enable the device to emit true full volume, even with an audio device plugged in.

Still not working?

You can find additional troubleshooting guidance on our website at <https://meetedison.com/edison-robot-support/trouble-shooting/> or you can contact us for support at <https://meetedison.com/edison-robot-support/contact-us/>

Our team of friendly Technical Support Officers will do their best to help you out!

Using the 'getting started' student sheets

If your students are new to Edison or EdPy it is a good idea to introduce them to the basics of the robot and programming language before jumping into a programming activity. The '*Edison and EdPy: Get started*' student activity sheets are a hands-on introduction to Edison and EdPy. You can use these student sheets to help guide a teacher-led introduction or allow students to work through the different parts of the lesson independently.

There are two parts of the *Edison and EdPy: Get started* lesson. Each section is arranged as a question for investigation. Both questions are included in this guide along with relevant supporting information for that part of the lesson. Supporting information is divided into the following sections:

Overview

General information about the section and key learning objectives covered.

Delivery recommendations

Suggestions for how you can cover the lesson section if you want to run the lesson in a more facilitator-led capacity.

Tips and tricks

Helpful hints and ways to overcome common issues students may encounter.

Supplies you will need

- Full set of Edison robots¹¹ and EdComm programming cables
- Full set of prepared programming devices
- 4x AAA batteries per robot
- Print-outs or digital copies of the student sheets

¹¹This activity assumes Version 2.0 Edison robots. If you have Version 1 Edison robots, you will need to adjust the 'Ed.EdisonVersion' in the setup code to be '= Ed.V1' (rather than '= Ed.V2') in the 'Test_Program'.

Question 1: What is an Edison robot?

Overview

New to Edison robots? Time to 'meet Edison' and learn about the robot's key features.

Delivery recommendations

- Recommended time: 5 minutes

Tips and tricks

- A great way to see Edison robots in action straight away is to run some of Edison's pre-set programs using the special [Edison robot barcodes](#)¹². Using barcodes with Edison robots is one of the most unique and fun ways to kick-start your Edison adventure no matter your coding experience!

Question 2: How do you use EdPy with Edison?

Overview

This part of the lesson draws attention to the hardware-software connection that exists in all computer systems, then introduces the online application EdPy to students, including the names of the main areas inside the programming environment. Students try using some of the built-in features of EdPy, including the documentation window, line help and the code checker. They then practice downloading and running a program from EdPy in their Edison robot.

Delivery recommendations

- Recommended time: 10 minutes
- If you are using Version 1 Edison robots with EdPy, you need to make sure that students always have the correct setup code¹³. Have students select Version 1 when they launch the EdPy app to automatically change the setup code in all new programs. Pre-made programs, including some of the

¹² <https://meet Edison.com/barcodes/>

¹³ Edison V1 robot can only use time, not CM or inches, as the input parameter for distance units. That's why the setup code must always be Ed.DistanceUnits = Ed.TIME. The time distance unit is milliseconds, which means that to drive for 2 seconds, you need to set the distance input parameter to 2000 (since 2000 milliseconds = 2 seconds).

example programs, will need to have the following changes made to the setup code¹⁴:

1. Ensure that the `Ed.EdisonVersion = Ed.V1`
 2. Ensure that the `Ed.DistanceUnits = Ed.TIME`
- All Edison programs must contain the setup code that you see every time you open the EdPy app. There's a lot of information in this little bit of code! We can also learn a lot about EdPy by looking at the setup code and understanding how it works. If you will be running multiple EdPy lessons, consider spending an extra 10 minutes with your students to examine the setup code further. You can use the following *About the 'Setup code'* section as a guide for running this mini lesson.

About the 'Setup code' mini lesson

Every program you write for Edison in EdPy must contain the setup code. That's why the 'setup' section appears automatically in every new program in EdPy.

This image is the setup code that will generate by default when you select a V2.0 Edison robot in EdPy:

```
1
2 #-----Setup-----
3
4 import Ed
5
6 Ed.EdisonVersion = Ed.V2
7
8 Ed.DistanceUnits = Ed.CM
9 Ed.Tempo = Ed.TEMPO_MEDIUM
10
11 #-----Your code below-----
12
13
```

There are a few things to note about the setup code:

- Line 2 of the setup code starts with a '#' (hash) character. When a line starts with this character, it is called a 'comment line.' Any characters that come after the '#' are ignored by the compiler and are not sent to the robot. Comments are a way to document code so that other people can understand the program. Line 11 is another comment line. Because of the '#' at the start, the compiler will ignore everything in this line and not send any of it to the

¹⁴ If a program was made using `Ed.CM` as the distance units constant and you change it to `Ed.TIME`, you may also need to change the input parameter's values inside the program to adjust for this change. Why? If the original program said to drive for '5' where '5' was CM and it is now milliseconds, the result will be very different!

robot, but people can read this line and get a message from the programmer who wrote the code!

- Line 4 contains the 'import' command. This tells Python to 'import' another library of pre-written Python code. In line 4 of the setup code, we are importing all the built-in Edison Python commands. In other words, all the EdPy commands, which start with the prefix 'Ed.', are being imported. These built-in commands allow us to program the Edison robot in Python.
- Line 6 defines the built-in Edison variable¹⁵ that relates to the version of Edison you are using.
 - If you are using V2.0 version of the Edison, this line should be:
`Ed.EdisonVersion = Ed.V2`
 - If you are using version 1 of the Edison, you should change this line to:
`Ed.EdisonVersion = Ed.V1`

Hint: selecting the correct version of Edison when you launch EdPy will automatically set these values in new programs.

- Line 8 defines the built-in Edison variable that relates to the distance units used by the robot: inches, cm or time (in milliseconds).
 - If you want to use inches, you should change this line to:
`Ed.DistanceUnits = Ed.INCH`
 - If you are using an Edison V1, then you **must** select Ed.TIME for the distance units:
`Ed.DistanceUnits = Ed.TIME`
- Line 9 defines the built-in Edison variable which relates to how fast or slow Edison plays a musical tune¹⁶.

What's with the ALL CAPS? Have you noticed that some of the character sets in the sample code that are written in all capitals, such as V1, V2, CM and INCH? In Python, the syntax convention is that any variable name written in all caps is a 'constant'. Constants are variables that maintain the same value everywhere in your program and are used as a reference point throughout the program.

Tips and tricks

- Remind students that some devices, especially tablets, automatically lower the volume when they detect a device has been connected to the audio jack. Make sure the volume on the computer or tablet is still turned all the way up after the EdComm cable is plugged in.

¹⁵ Variables are reserved memory locations for storing values. Variables are explained in detail in the *EdPy Lesson Plans Set* available at <https://meetedison.com/robot-programming-software/edpy/#edpy-resources>

¹⁶ This will only affect the code relating to musical notes, which are not used in this lesson.

- Introduce students to the sounds Edison makes during the download process:
 - While a program is downloading to Edison, Edison makes a whirring sound, similar to an old dial-up modem.
 - Once the program downloads successfully, Edison will make a chirping beep.
 - If the program fails while downloading, Edison will make a 'fail sound'.
 - You can hear what the success and fail noises sound like at <https://meet Edison.com/edison-robot-support/trouble-shooting>
- Make sure students do not unplug the EdComm cable until after they hear the 'success' sound.
- When many students are downloading programs at the same time, you may experience slower internet speeds, causing the program to take longer to create the 'Program Edison' button in the pop-up box and for the program to download to Edison. Remind students to listen for the success sound before unplugging the EdComm cable to ensure they wait until the program fully downloads.

What's next?

Once you and your students are set up with Edison and EdPy, you are ready to try all sorts of EdPy activities using Edison. Here are some options to get you started:

- Consisting of the Student Set and accompanying Teacher's Guide, [The EdPy Lesson Plans Set](#)¹⁷ includes a complete curriculum for progressing through EdPy using the Edison robot.
- Make your Hour of Code a tangible, hands-on experience with [Hour of Code Edison robot activities](#)¹⁸.
- Try out some cross-curricular STEAM [stand-alone educational activities](#)¹⁹.

¹⁷ <https://meet Edison.com/robot-programming-software/edpy/#edpy-resources>

¹⁸ <https://meet Edison.com/hour-of-code-edison-robot-activities/>

¹⁹ <https://meet Edison.com/educational-activities/>