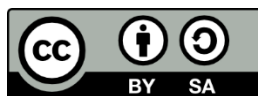




Getting started with Edison V3



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Welcome!

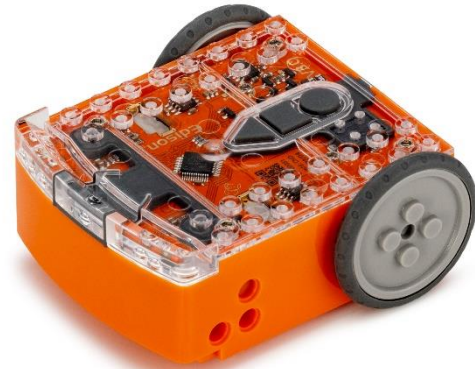
Thank you! We're thrilled that you've selected Edison V3 for your class—an excellent choice, if we do say so ourselves!

This guide is a swift introduction to get you up and running with programming your Edison V3 robot.

Let's get started

Each Edison robot is packaged in a small orange box. Unroll the cardboard inside to take out Edison.

Edison V3 is designed to work with LEGO bricks on four sides. It features removable wheels and a skid, enabling projects involving multiple Edison robots or using the robot's motors for other creations.



To power up Edison V3, press the triangle button. This action triggers a chirping sound, and the red LED lights will begin flashing.

Look at the Edison V3 box for instructions and a barcode to kickstart your first adventure.

Getting to know Edison

Edison V3's buttons

Edison V3's top has a key pad which includes three buttons. The shape of the buttons and the number of presses will determine Edison's behavior.

Play button (triangle button)

- 1 press = turn on (when off)
- 1 press = run program

Record button (round button)

- 1 press = download program via screen flasher
- 3 presses = scan barcode

Stop button (square button)

- 1 press = stop program
- press 3 seconds = turn off



Edison V3's sensors and outputs

Sensors

Obstacle Detection: Edison V3 utilizes two infrared (IR) LEDs placed at its front left and right, along with an IR receiver module. This receiver not only detects obstacles but also functions as the core for IR data communications and remote-control reception.

Remote Control: Thanks to the IR receiver module, Edison V3 can learn and interpret IR codes from the EdRemote remote control and most standard TV remote controls.

Infrared Data Communications: Through the IR receiver module, Edison can communicate with other Edison robots.

Line Tracker: This system involves a red LED and a phototransistor, which together act as the line tracking sensor. They not only follow lines but also decode special barcodes, triggering pre-installed programs.

Light Sensors: Positioned at the front left and right sides, two phototransistors help Edison sense changes in light.

Sound Sensor: Edison is equipped with a cool sound sensor called a piezo transducer. It not only acts as a speaker to play sounds but can also pick up sounds like claps.

Outputs:

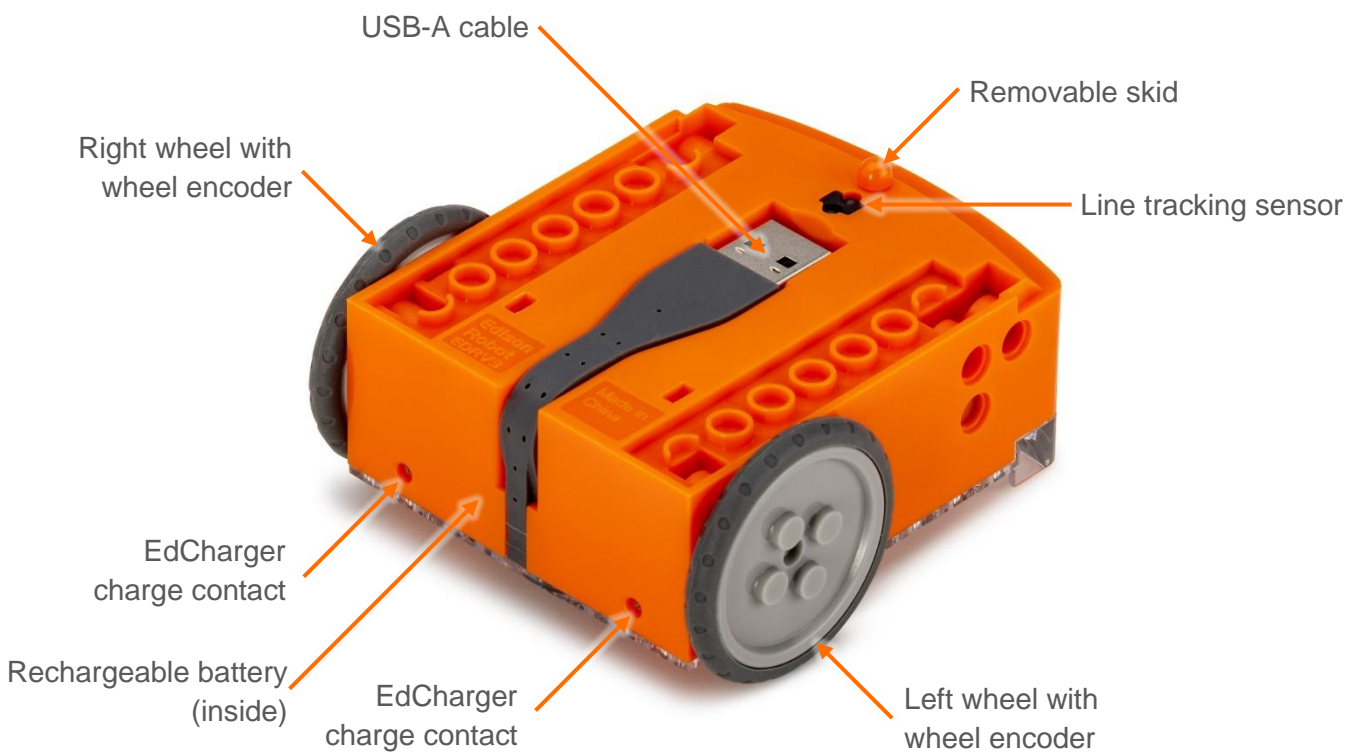
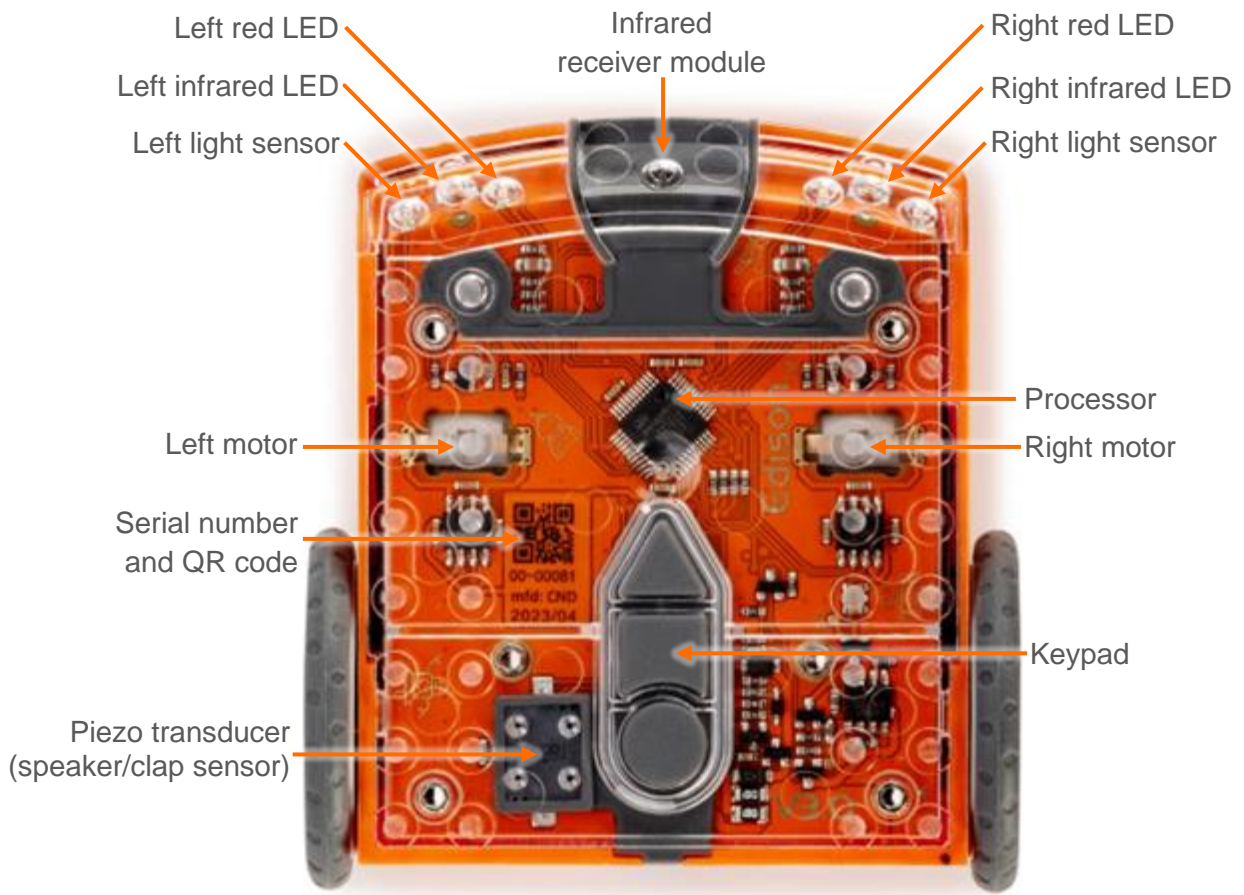
Drive: Edison moves using a differential two-wheel drive system powered by its 3-volt motors on the right and left sides. These motors come with wheel encoders, providing precise movement resolution.

Infrared Data Communications: Two IR LEDs, used for obstacle detection, also serve as components for Edison's IR data communications.

Sound: The same piezo transducer that functions as a speaker and detects claps also manages Edison's sound outputs.

You can find more information about the Edison robot's inputs, outputs, and sensors at <https://meet Edison.com/edison-robots-sensors/>





Charging Edison V3

Using a USB-A power source

To power up Edison V3, you can use a USB-A power source like a computer's USB-A port, a USB-A wall adapter, or a USB-A power bank.

Once you have selected your power source, connect Edison's USB cable to the USB-A port on that source.



Image above shows the underside of Edison V3.0.

During charging, both LED lights on Edison V3 will flash simultaneously. When Edison is fully charged, the lights will stop flashing and remain on steadily.

It takes approximately 4 to 5 hours to charge Edison's battery to full capacity.

Once charging is finished, unplug Edison's USB cable from the device or power source. Neatly fold the USB cable and tuck it into the USB cable compartment.

Using EdCharger

To use EdCharger:

1. Connect the EdCharger's USB cable to a USB-A power source, such as a computer's USB-A port, a USB wall adapter (minimum 1 amp/5 watts), or a power bank.
2. Position Edison V3 inside the charger, ensuring the clear top faces the EdCharger markings on its front.
3. While charging, both LED lights on Edison V3 will flash simultaneously. Once the battery is fully charged, the lights will cease flashing and remain lit.
4. Additionally, the EdCharger can serve as a storage unit for your Edison robots. It automatically oversees the charging process, ensuring Edison V3 is always prepared for action.



Programming Edison V3 using barcodes

Edison comes with several pre-set programs already loaded into the robot's memory. These programs are activated when Edison scans one of the pre-set barcodes. The barcodes tell Edison to run the correct program when the triangle button is pressed.

The information about barcodes and barcodes is available at <https://meet Edison.com/barcodes/>. There is also a free-to-download activity book called Barcodes and Edison available at <https://meet Edison.com/activity-books/barcodes-and-edison/>

Tips for using barcodes:

- Make sure the removable skid is in Edison. When the skid is out, Edison sits with the line sensor right on the ground, and cannot properly detect the barcodes.
- Never use shiny paper or glossy laminate on pages with Edison's barcodes. Only use low-shine paper and matte-finish laminate.
- Avoid running Edison over barcodes in very bright light, such as sunlight, as this can interfere with the robot's ability to scan the barcodes correctly.

There are six pre-set barcode programs that you can use with Edison:

- **Clap controlled driving** – Make Edison turn or drive by clapping your hands.
- **Avoid obstacles** – Activate Edison's obstacle detection beam, enabling Edison to detect and avoid certain obstacles.
- **Follow a torch** – Activate Edison's visible light sensors and use them to control Edison's driving behaviour towards the brightest light source.
- **Line tracking** – Activate Edison's reflected light line-tracking sensor and use it to control Edison's driving behaviour to follow the edge of a black line.
- **Bounce in borders** – Activate Edison's reflected light line-tracking sensor and use it to control Edison's driving behaviour to stay within a black border.
- **Sumo wrestle** – Activate this barcode in two or more Edison robots and put them into a black border. Watch them wrestle it out by detecting each other and charging forward at full speed!

There are two other types of barcodes used for specific purposes with Edison:

- EdRemote and TV/DVD remote control barcodes – Program Edison to respond to a range of commands using an EdRemote or your TV or DVD remote.
- Calibration barcodes – Used to perform specific maintenance on your Edison robot.

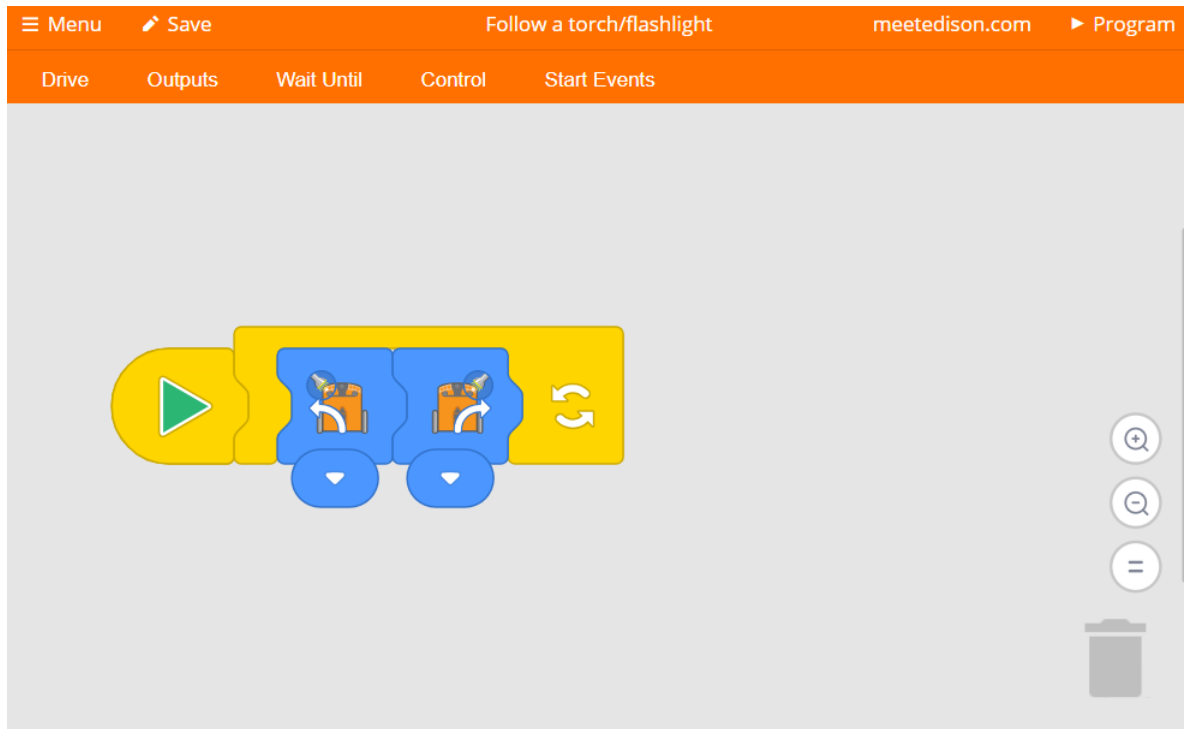
Programming Edison V3 in the EdBlocks language



EdBlocks is a super easy-to-use, fully graphical robot programming language. Using a drag-and-drop block-based system, EdBlocks is intuitive and fun, making it perfect for beginners, including younger users. You can dive in without any prior coding knowledge and start exploring programming effortlessly.

The EdBlocks programming language app is at this URL:

<https://www.edblocksapp.com/>



EdBlocks for Windows, Chromebook, Mac, Linux, and Android

Running a test program is a great way to get started using EdBlocks. Follow these steps to test EdBlocks on your computer:

1. Open the EdBlocks app at <https://www.edblocksapp.com/> using one of the following browsers Chrome, Edge, or Opera.
2. When EdBlocks opens click 'Menu' and select 'Load Demos.' Select the program called 'Test_Program' which will load in the programming environment.
3. Plug the Edison V3 robot's USB cable in to the computer's USB-A port.
4. From the Edblocks app, press the 'Program' button (top right corner).
5. A popup window will appear asking to connect to Edison V3. Select 'Edison V3 – Paired' and click 'connect'.
6. The program will download to Edison V3 and you will hear the 'success' sound (the same tune Edison plays when you turn Edison on).
7. Disconnect Edison from the USB port and press the triangle button on Edison to run the program.



EdBlocks for iPad

If you are using an iPad to program your Edison, follow these steps to test EdBlocks on your iPad:

1. Open the Edblocks app at [edblocksapp.com](https://www.edblocksapp.com) using one of the following browsers Chrome, Edge, or Opera.
2. When EdBlocks opens, you will see the programming environment. Click 'Menu' and select 'Load Demos.' Select the program called 'Test_Program' which will load in the programming environment.
3. Press the 'Program' button in the app (top right corner) and the screen flasher download box appears.
4. Place your Edison V3 over the outline and press Edison V3's round button one time, both LEDs will come on.
5. Press 'download program' in the download box, and the program will start downloading to Edison V3.
6. When the program has downloaded to Edison V3 you will hear the 'success' sound (the same tune Edison plays when you turn Edison on).
7. Press the triangle button on Edison to run the program.

EdBlocks Resources

- EdBlocks programming language app - <https://www.edblocksapp.com/>
- Getting started with EdBlocks video - <https://meetedison.com/robot-programming-software/edblocks/#edblocksvideo>
- Teacher's guide to EdBlocks lesson activities and student worksheets - <https://meetedison.com/content/EdBlocks-teachers-guide-complete.pdf>
- Student worksheet set: 23 lesson activity worksheets - <https://meetedison.com/content/EdBlocks-lesson-activities-complete-set.pdf>
- Block guide - <https://meetedison.com/content/EdBlocks-block-guide.pdf>

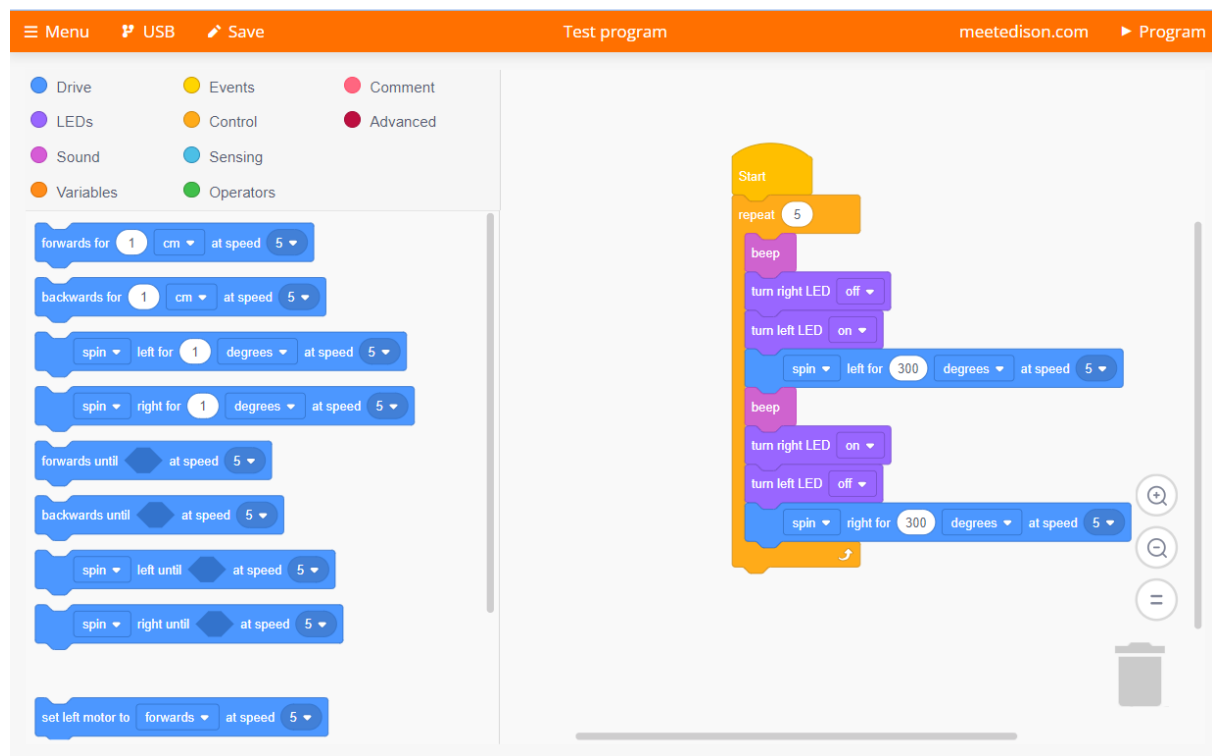


Programming Edison V3 in the EdScratch language

EdScratch is a vertical block-based programming language for the Edison robot based on Scratch. EdScratch combines the ease of drag-and-drop programming with powerful functionality and flexibility.

The EdScratch programming language app is at this URL:

<https://www.edscratchapp.com/>



EdScratch for Windows, Chromebook, Mac, Linux, and Android

Running a test program is a great way to get started using EdScratch. Follow these steps to test EdScratch on your computer:

1. Open the EdScratch app at [edscratchapp.com](https://www.edscratchapp.com) using one of the following browsers Chrome, Edge, or Opera.
2. When EdScratch opens click 'Menu' and select 'Load Demos.' Select the program called 'Test_Program' which will load in the programming environment.
3. Plug the Edison V3 robot's USB cable in to the computer's USB-A port.
4. From the EdScratch app, press the 'Program' button (top right corner).
5. A popup window will appear asking to connect to Edison V3. Select 'Edison V3 – Paired' and click 'connect'.
6. The program will download to Edison V3 and you will hear the 'success' sound (the same tune Edison plays when you turn Edison on).
7. Disconnect Edison from the USB port and press the triangle button on Edison to run the program.



EdScratch for iPad

If you are using an iPad to program your Edison, follow these steps to test EdScratch on your iPad:

1. Open the EdScratch app at edscratchapp.com using one of the following browsers Chrome, Edge, or Opera.
2. When EdScratch opens, you will see the programming environment. Click 'Menu' and select 'Load Demos.' Select the program called 'Test_Program' which will load in the programming environment.
3. Press the 'Program' button in the app (top right corner) and the screen flasher download box appears.
4. Place your Edison V3 over the outline and press Edison V3's round button one time, both LEDs will come on.
5. Press 'download program' in the download box, and the program will start downloading to Edison V3.
6. When the program has downloaded to Edison V3 you will hear the 'success' sound (the same tune Edison plays when you turn Edison on).
7. Press the triangle button on Edison to run the program.

EdScratch Resources

- Teacher's guide to EdScratch - <https://meetedison.com/content/EdScratch/EdScratch-teachers-guide.pdf>
- Student worksheet set: 98 activities with 25 test space activity sheets - <https://meetedison.com/content/EdScratch/EdScratch-student-lesson-activities.pdf>
- Let's explore EdScratch video - <https://meetedison.com/robot-programming-software/edscratch/#lets-explore-edscratch>
- EdScratch tutorial videos (set of 5) - <https://meetedison.com/robot-programming-software/edscratch/#edscratch-tutorial-videos>

EdScratch is developed by Microbric Pty Ltd using open source software created and maintained by the Scratch Foundation. The Scratch Foundation does not sponsor, endorse, or authorize this content. See scratch.mit.edu for more information.

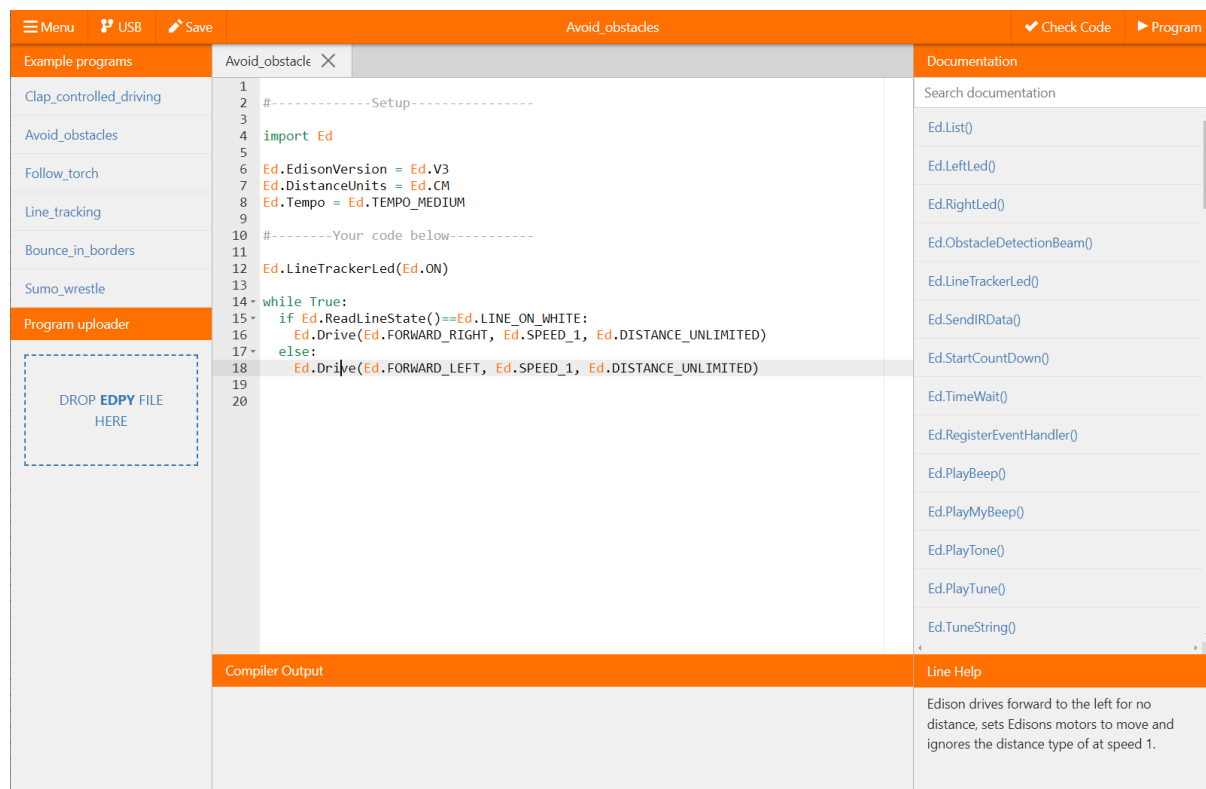


Programming Edison V3 in the EdPy language

EdPy is a highly adaptable text-based programming language inspired by Python, a widely popular and user-friendly programming language known for its readability.

With EdPy, students can have fun exploring text-based programming while seeing their code bring their Edison robot to life. It is an exciting way for students to learn the fundamentals of a real programming language and take their robotics and coding skills to the next level.

The Edpy programming language app is at this URL: <https://www.edpyapp.com/>



The screenshot displays the EdPy programming environment. At the top, there is a menu bar with options like 'Menu', 'USB', 'Save', and 'Program'. Below this is a header bar with the title 'Avoid_obstacles' and buttons for 'Check Code' and 'Program'. The main area is divided into three sections: a file explorer on the left, a code editor in the center, and a documentation panel on the right. The code editor shows Python code for an obstacle avoidance program. The documentation panel lists various methods available to the Edison robot. At the bottom, there is a 'Compiler Output' area and a 'Line Help' section.

```
1
2 #-----Setup-----
3
4 import Ed
5
6 Ed.EdisonVersion = Ed.V3
7 Ed.DistanceUnits = Ed.CM
8 Ed.Tempo = Ed.TEMPO_MEDIUM
9
10 #-----Your code below-----
11
12 Ed.LineTrackerLed(Ed.ON)
13
14 while True:
15     if Ed.ReadLineState()==Ed.LINE_ON_WHITE:
16         Ed.Drive(Ed.FORWARD_RIGHT, Ed.SPEED_1, Ed.DISTANCE_UNLIMITED)
17     else:
18         Ed.Drive(Ed.FORWARD_LEFT, Ed.SPEED_1, Ed.DISTANCE_UNLIMITED)
19
20
```

EdPy Resources

- EdPy programming language app - <http://www.edpyapp.com/>
- Teacher's guide to EdPy student worksheets and lesson plans - <https://meetedison.com/content/EdPy-teachers-guide-complete.pdf>
- Student worksheet set: 38 worksheets with 9 activity sheets - <https://meetedison.com/content/EdPy-student-worksheets-complete.pdf>
- EdPy documentation help text offline guide - <https://meetedison.com/content/EdPy-app-documentation-guide.pdf>
- EdPy tutorial videos (set of 10) - <https://meetedison.com/robot-programming-software/edpy/#edpyvideoall>



Troubleshooting

While Edison robots are designed to be user-friendly and intuitive straight out of the box, occasional issues, common to any computing device, may arise. Explore these troubleshooting tips to swiftly resolve any queries you might encounter.

Check the browser

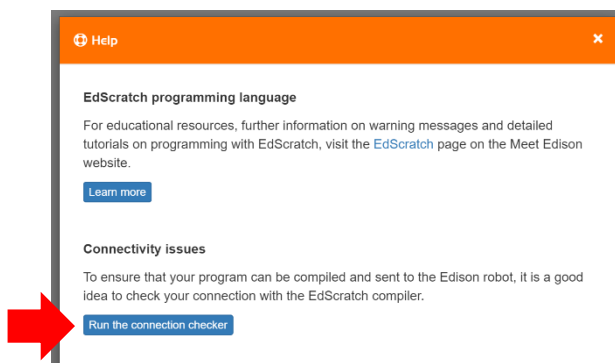
Checking that Edison's USB cable is pushed all the way into your device's USB-A port. Then, check that the browser you are using to program Edison is Use Google Chrome, Microsoft Edge or Opera.

Check the connectivity status

If this error is visible 'There seems to be a network issue accessing the compiler' message after pressing the 'Program' button in the app, or if the program failed to download successfully, you will need to check the app's connectivity status.

The app need to access the compiler. The compiler is what converts the programs you see on the screen into a format that can be sent to the Edison robot inside the app.

To check your connection and thus ensuring that the app can access the compiler, open 'Menu' in the upper left-hand corner and select 'Help'. This will open a pop-up which includes the option to 'Run the connection checker'. Click this button to check your connection.



If the connection test result shows 'NO SERVER FOUND' then you may be behind a firewall, which is blocking access to the compiler.

To fix the problem, contact your network administrator and ask that them to unblock ports 80, 8080, 443 and 8443 and white list these addresses:

- <https://www.edscratchapp.com>
- <https://www.edblocksapp.com>
- <https://www.edpyapp.com>
- <https://api.edisonrobotics.net>
- 13.210.175.93
- 52.8.213.196
- 52.52.166.106
- 52.79.71.19



iPad screen flasher not downloading

The iPad screen flasher download uses the iPad's screen to flash the program's code to the line tracking sensor. A few things can affect how well this works.

- Ambient Light – Move away from any bright direct and indirect sunlight.
- Screen brightness setting – experiment with different brightness levels between 50% and 100%
- Age of iPad – Older iPads have slower screens. Set the speed setting to 'reliable'

No USB-A port

If your computer only has USB-C ports you will need a USB-C to USB-A adaptor.

Drive troubleshooting

On occasion, you may need to straighten the drive of your Edison robot. If you are having trouble with how Edison is driving, such as the robot is not driving straight, you will need to perform a drive calibration on the robot.

Full instructions and the resources you need for your version robot can be found at <https://meetedison.com/edison-robot-support/drive-calibration/>

Line tracking troubleshooting

If you are having trouble with a line tracking program, check the following:

- Only use non-glossy paper and, if laminating the paper, only use a matte-finish laminate.
- Edison will be best able to follow a line if that line is a very dark colour (such as black), approximately 1.5cm (0.6 inches) wide and found on a white background.
- Always start the robot on the white background, never on the line itself.
- Avoid running line tracking programs in very bright light, such as sunlight, as this can negatively affect the program.
- Double-check your program to ensure you have the line tracking sensor turned on.

Obstacle detection troubleshooting

If you are having trouble with an obstacle detection program, check the following:

- Ensure that your Edison robot's obstacle detection is properly calibrated using the barcode and instructions available at <https://meetedison.com/obstacle-detection-calibration/>.
- Edison will be best able to detect obstacles which are opaque but not too dark (e.g. not black) and at least as tall as Edison.
- Avoid running obstacle detection programs in very bright light, such as sunlight, as this can negatively affect the program.



- All of the Edison programming languages except for EdBlocks and the barcodes require the obstacle detection sensor to be turned on to work. Double-check your program to ensure you have the obstacle detection sensor turned on.

Still not working?

You can find more troubleshooting ideas on our website at

<https://meet Edison.com/edison-robot-support/trouble-shooting/> or you can contact us for support at <https://meet Edison.com/edison-robot-support/contact-us/>

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



Checklist: setting up for success with your Edison robot

These critical steps and quick references will help you to set up your Edison robot for success every time!

Edison basics

- Paper:** Do not use glossy paper and only ever use matte-finish lamination. This is especially important for barcodes and line tracking.
- Avoid sunlight:** Sunlight confuses Edison's sensors. Avoid using the robot in bright, direct sunlight.

Sensors and programs

- Barcodes:** Print barcodes on non-glossy paper and only use a matte-finish lamination if laminating.
Make sure Edison's skid is in before reading barcodes.
- Line tracking programs:** Always start Edison on the white surface, never on the black surface.
- Detecting lines:** Use dark (e.g. black) lines approximately 1.5cm (0.6 inches) wide on a white background.
- Obstacle detection calibration:** Adjust Edison's obstacle detection with the obstacle detection barcode. See <https://meetedison.com/obstacle-detection-calibration/> for detailed instructions.
- Detecting obstacles:** Choose obstacles that are opaque but not too dark (e.g. not black) and at least as tall as Edison.
- Driving straight:** If Edison is not driving straight, try the drive calibration barcode here: <https://meetedison.com/edison-robot-support/drive-calibration/>

