

# EV3 Lego Mindstorms mit Python programmieren

Präsentiert vom InfoLab Saar



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Veranstaltungen  
für Studierende



Teilnahme an  
Wettbewerben



Kurse für Kinder  
und Jugendliche



Neigungsgruppen  
an Grundschulen



Präsenz an  
Messen und  
Festen



Besuche von  
Schüler\*innen



Lehrkräfte  
Fortbildungen

# Vorbereitung



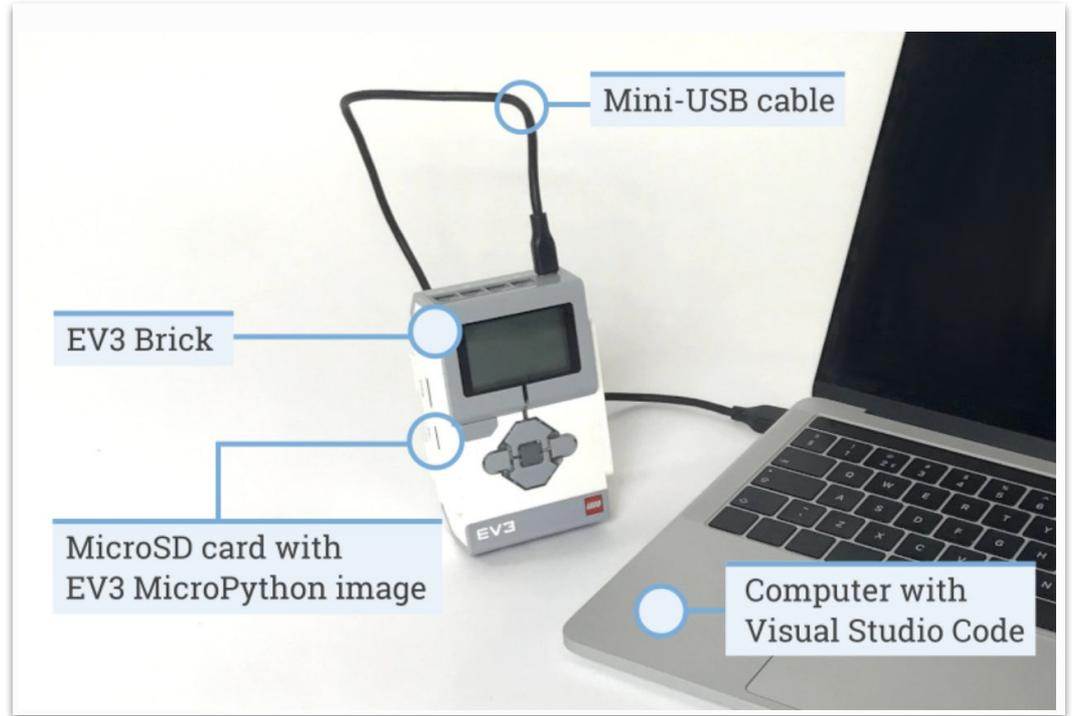
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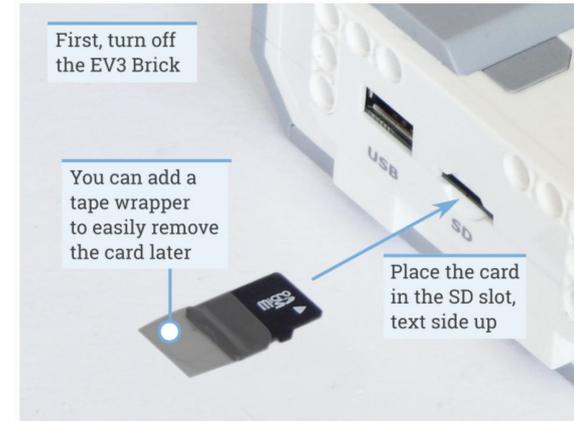
## Was benötigen wir?

- **Einen Computer mit Visual Studio Code**
- **EV3 Brick**
- **Mini USB cable**
- **MicroSD card mit EV3 MicroPython image**



# Was muss vorbereitet werden?

1. Visual Studio Code installieren
2. Die Erweiterung "EV3 MicroPython" in VS Code installieren
3. Eine SD Karte mit dem MicroPython Image erstellen
4. Den EV3 Brick mit der eingelegten Karte starten
5. Micropython installiert sich dann von selbst





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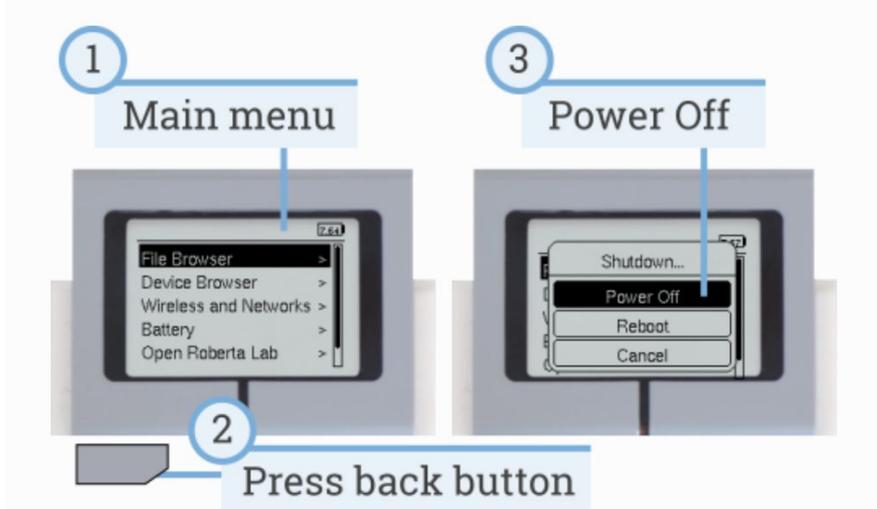
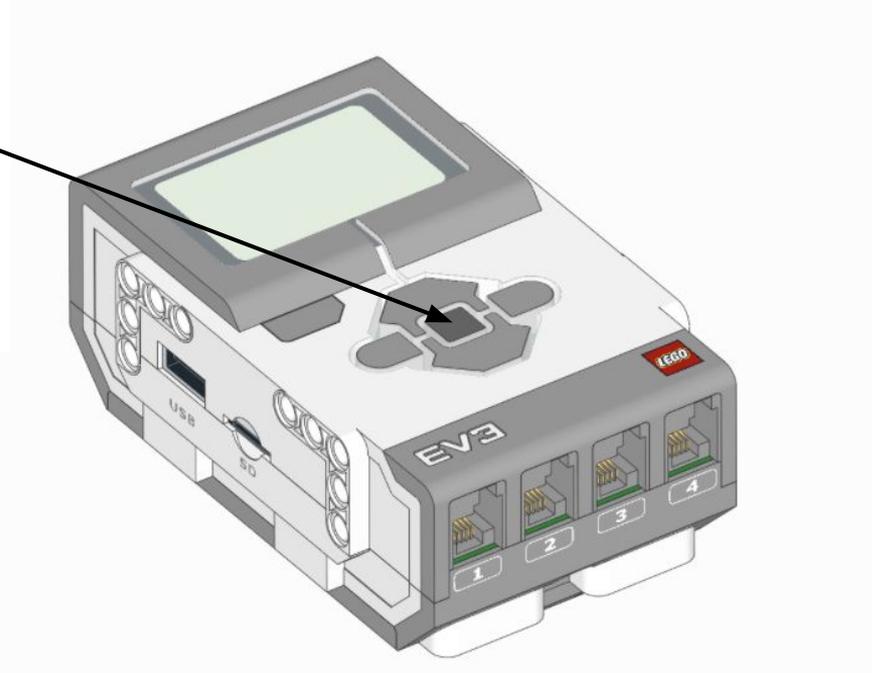
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# Unser erstes Programm

# Den EV3 einschalten / auschalten

Einschalten

*Der EV3 braucht dann einen moment um zu starten...*



# Ein neues Projekt anlegen

The screenshot shows the LEGO MINDSTORMS EV3 MicroPython interface. The menu bar at the top includes File, Edit, Selection, View, Go, Run, Terminal, and Help. The main window displays the 'ACTIVITIES' section with three options: 'Create a new project', 'Explore example projects', and 'Open user guide'. A callout box labeled '1' points to the EV3 icon in the left sidebar, with the instruction 'Open EV3 MicroPython tab'. A callout box labeled '2' points to the 'Create a new project' option, with the instruction 'Create new project'. A callout box labeled '3' points to the 'getting\_started' text in the terminal window, with the instruction 'Choose a project name and press enter'. A callout box labeled '4' points to the terminal window, with the instruction 'Choose a location for your project in the pop-up window'. The terminal window shows the prompt 'Enter project name (Press 'Enter' to confirm or 'Escape' to cancel)' and the text 'getting\_started|'.

File Edit Selection View Go Run Terminal Help

LEGO® MINDSTORMS® EV3 MICROPYTHON: ACTIVITIES

Create a new project

Explore example projects

Open user guide

1 Open EV3 MicroPython tab

2 Create new project

3 Choose a project name and press enter

4 Choose a location for your project in the pop-up window

getting\_started|

Enter project name (Press 'Enter' to confirm or 'Escape' to cancel)

# Ein neues Projekt anlegen

The image shows the Visual Studio Code interface. On the left, the Explorer view shows a project structure with a folder named 'GETTING\_STARTED' containing files '.vscode', '.gitignore', and 'main.py'. The 'main.py' file is selected and highlighted. A callout box with the number '1' and the text 'Open main.py' points to this file. On the right, the main editor window shows the contents of 'main.py'. The code includes imports for various PyBricks modules and a comment indicating where to write the program. A callout box with the number '2' and the text 'Write your program' points to the area where the program code should be written.

```
File Edit Selection View Go Run Terminal Help

EXPLORER
  GETTING_STARTED
    .vscode
    .gitignore
    main.py

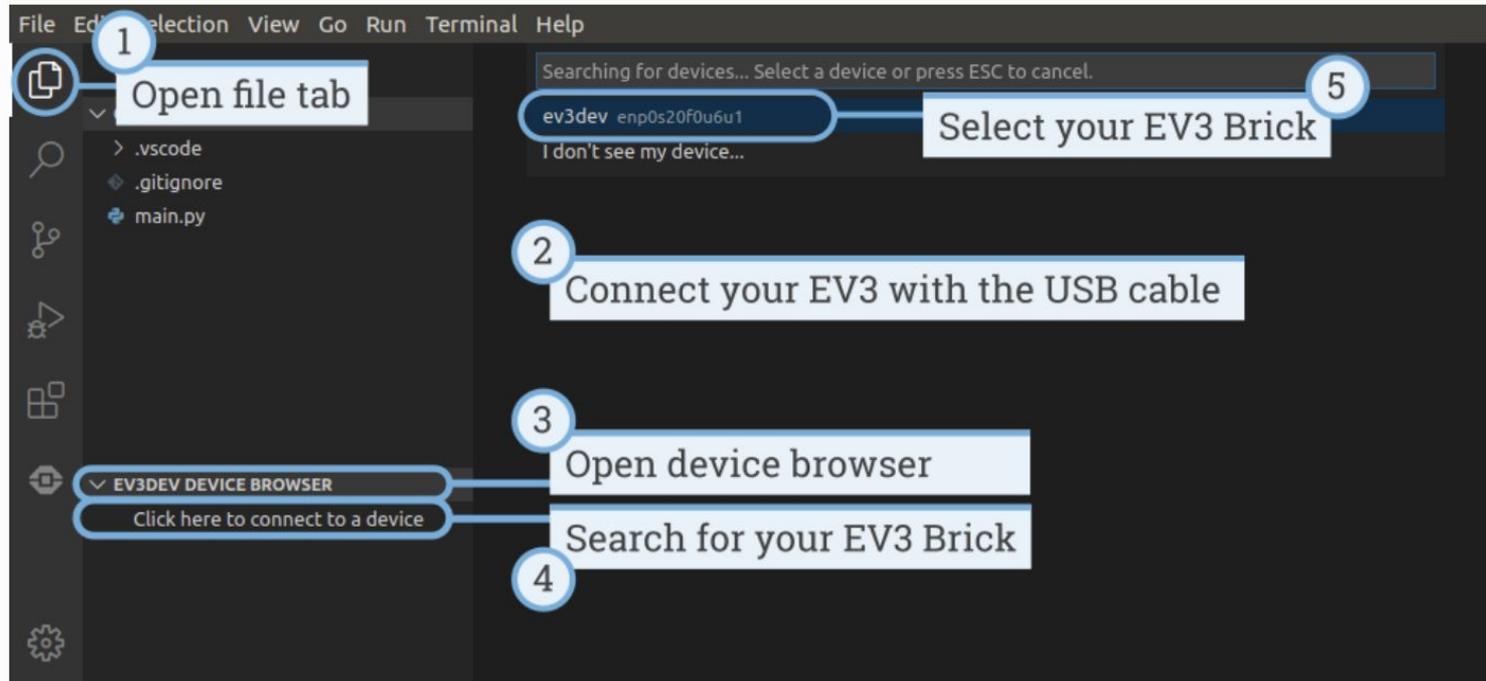
main.py
1  #!/usr/bin/env pybricks-micropython
2  from pybricks.hubs import EV3Brick
3  from pybricks.ev3devices import (Motor, TouchSensor, ColorSensor,
4  | | | | | InfraredSensor, UltrasonicSensor, Gyro
5  from pybricks.parameters import Port, Stop, Direction, Button, Color
6  from pybricks.tools import wait, StopWatch, DataLog
7  from pybricks.robotics import DriveBase
8  from pybricks.media.ev3dev import SoundFile, ImageFile
9
10
11 # Create your objects here
12 ev3 = EV3Brick()
13
14
15 # Write your program here
16 ev3.speaker.beep()
17
```

1 Open main.py

2 Write your program

# Den EV3 verbinden

1. EV3 einschalten und ihn mit einem USB Kabel mit dem Compute verbinden, dann....



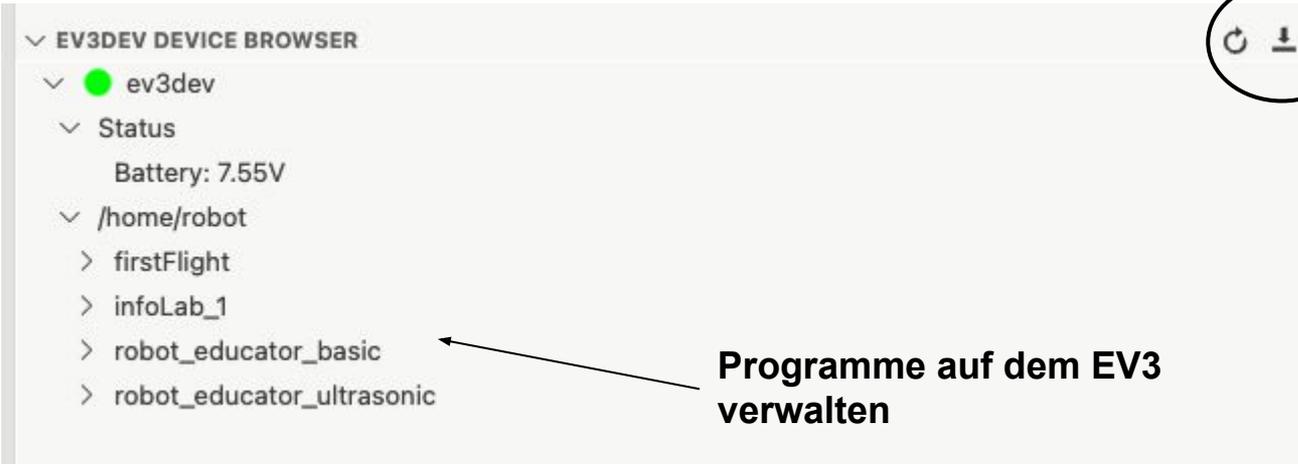


Ein eigenes Programm schreiben...

**Das erste Programm erstellen wir mit euch zusammen.**

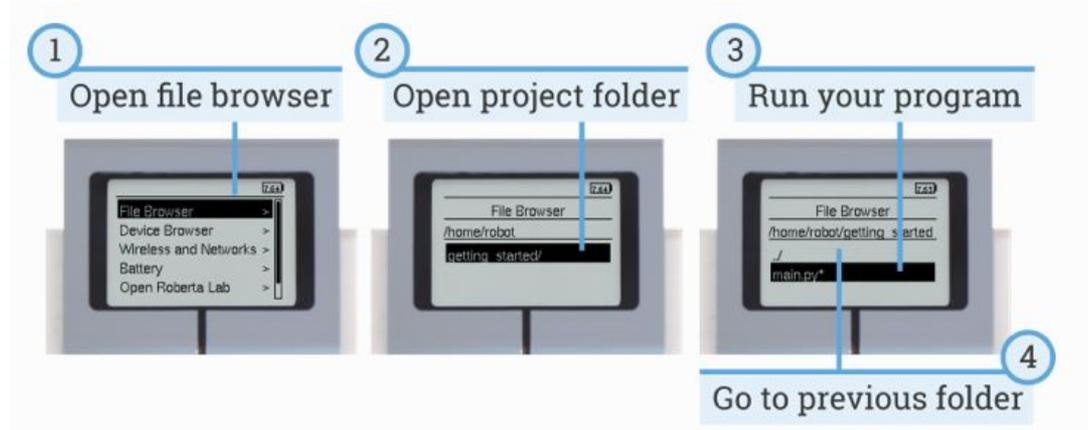
# Tipps zum Ausführen eures Programmes...

Runterladen ohne ausführen



Programme auf dem EV3 verwalten

Euer Programm ohne Computer ausführen

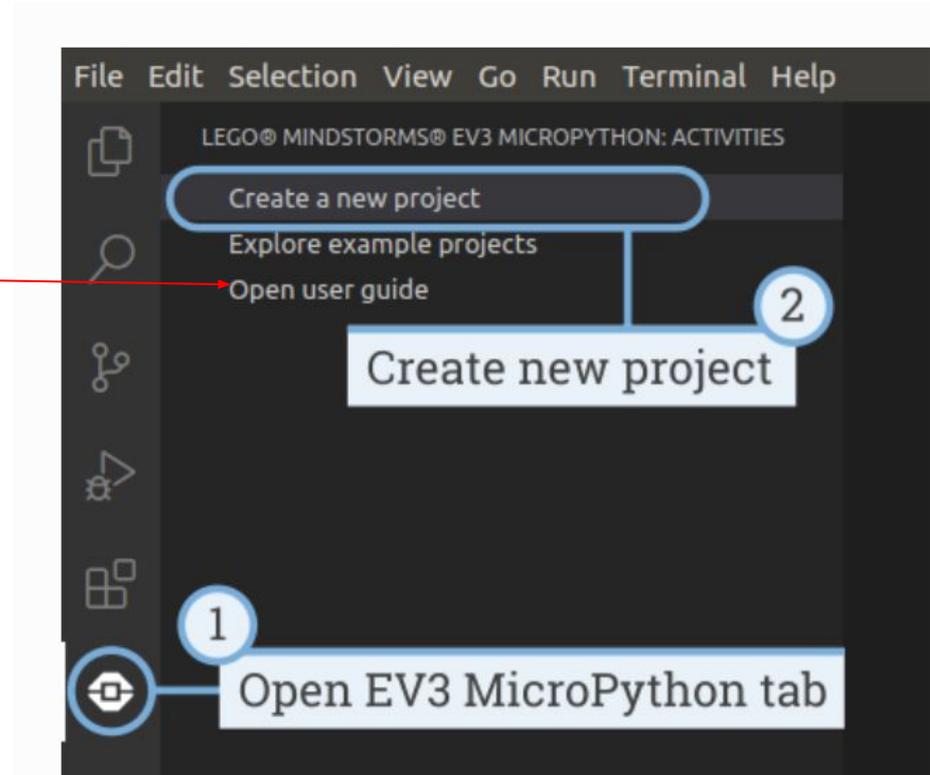


## Das Programm weiterentwickeln...

Ihr könnt nun euer Programm selbst weiterentwickeln

In der Benutzeranleitung findet ihr alle möglichen Methoden und Befehle, welche euer EV3 versteht

**Viel Spass!!**



## Ein Programm zum fahren und drehen (mit Schleife)...

```
# Create your objects here.
```

```
ev3 = EV3Brick()
```

---

```
left_motor = Motor(Port.B)
```

```
right_motor = Motor(Port.C)
```

```
robot = DriveBase(left_motor, right_motor, wheel_diameter=55.5, axle_track=104)
```

```
# Write your program here.
```

```
ev3.speaker.beep()
```

```
# JUST MOVING:
```

```
for x in range(3):
```

```
    robot.straight(300)
```

```
    robot.turn(90)
```

```
robot.straight(300)
```

```
ev3.speaker.beep()
```

## Ein Programm mit Sensor...

```
# Create your objects here.
ev3 = EV3Brick()

left_motor = Motor(Port.B)
right_motor = Motor(Port.C)

robot = DriveBase(left_motor, right_motor, wheel_diameter=55.5, axle_track=104)

obstacle_sensor = UltrasonicSensor(Port.S1)

while True:
    # Begin driving forward at 200 millimeters per second.
    robot.drive(200, 0)

    # Wait until an obstacle is detected. This is done by repeatedly
    # doing nothing (waiting for 10 milliseconds) while the measured
    # distance is still greater than 300 mm.
    if obstacle_sensor.distance() < 200:
        robot.stop()
        wait(1000)
        robot.straight(-200)
        robot.turn(120)
```

Präsentation:  
[infolab.cs.uni-saarland.de](http://infolab.cs.uni-saarland.de)



Fragen?