



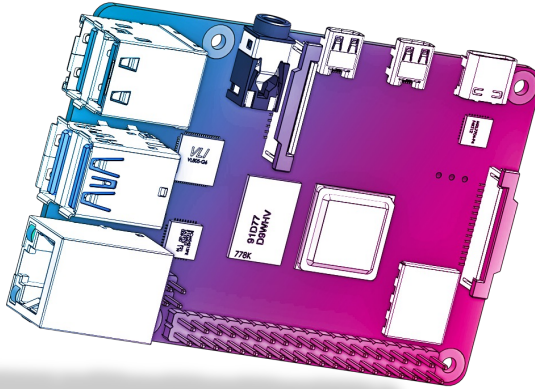
How to build your robot

www.pib.rocks/build

assembly instructions for:

PIB'S SOFTWARE ON RASPBERRY PI

v2024



PRINT

BUILD

DEVELOP

YOUR OWN ROBOT

Software installation

For pib to work, it is necessary to install pib.software on your Raspberry Pi.

This tutorial consists of 3 main steps:

1. Downloading and installing Raspberry pi OS on a Raspberry Pi
2. Setting up Raspberry pi OS
3. Installing pib.software

To follow this tutorial you will need:

- A device that can read a micro SD card (You may need an adapter for this to work)
- The (USB-C) power supply of the Raspberry Pi
- A keyboard and mouse
- A display and a matching micro HDMI adapter
(For example: to connect the Raspberry Pi to a HDMI display, you need a micro HMDI to HMDI adapter)

Step 1a

Put the **micro SD card into a device** that can read a SD card (a laptop or PC).
You may need an adapter for this to work.



A device that can read a
micro SD card

Step 1b

Download Raspberry Pi imager from <https://www.raspberrypi.com/software>

Install Raspberry Pi OS using Raspberry Pi Imager

Raspberry Pi Imager is the quick and easy way to install Raspberry Pi OS and other operating systems to a microSD card, ready to use with your Raspberry Pi.

Download and install Raspberry Pi Imager to a computer with an SD card reader. Put the SD card you'll use with your Raspberry Pi into the reader and run Raspberry Pi Imager.

[Download for Windows](#)

[Download for macOS](#)

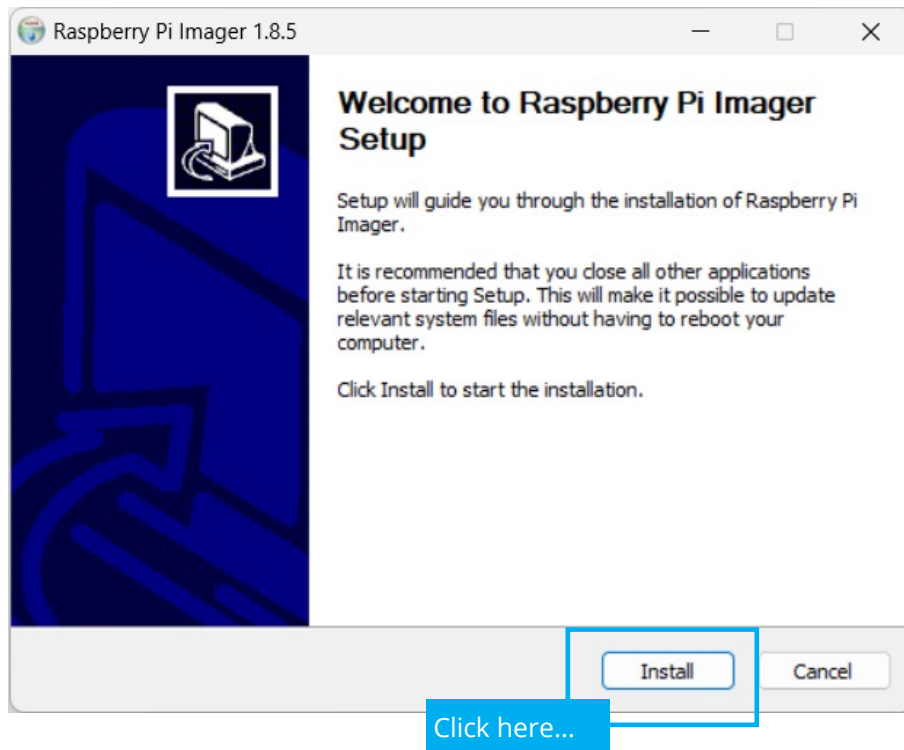
[Download for Ubuntu for x86](#)

To install on **Raspberry Pi OS**, type
`sudo apt install rpi-imager`
in a Terminal window.



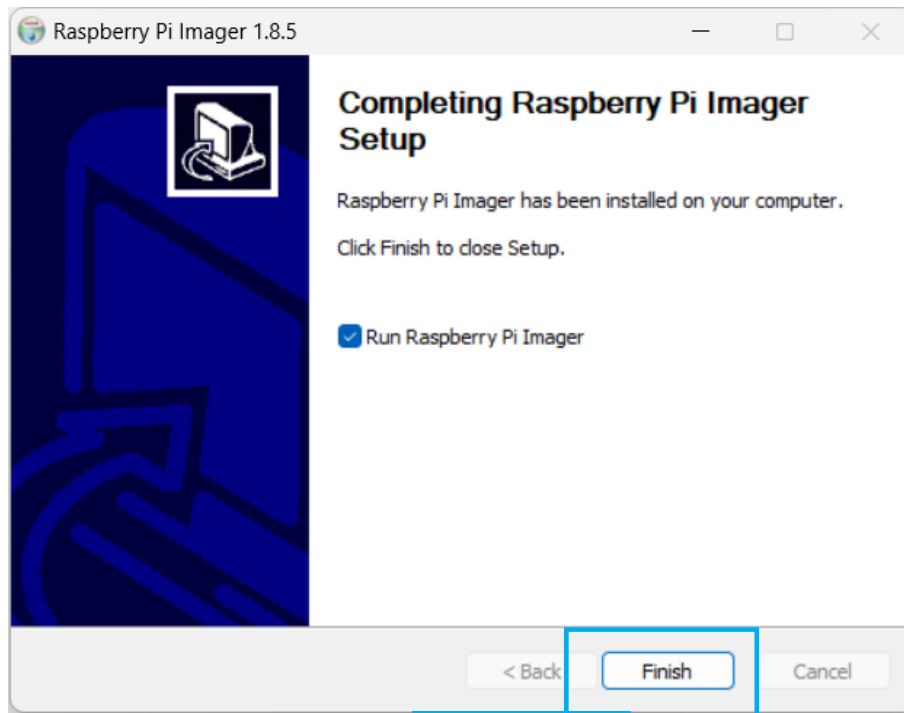
Step 1c

Install Raspberry Pi imager.



Step 1d

After installation click on „**Finish**“ and launch the application.



... and here

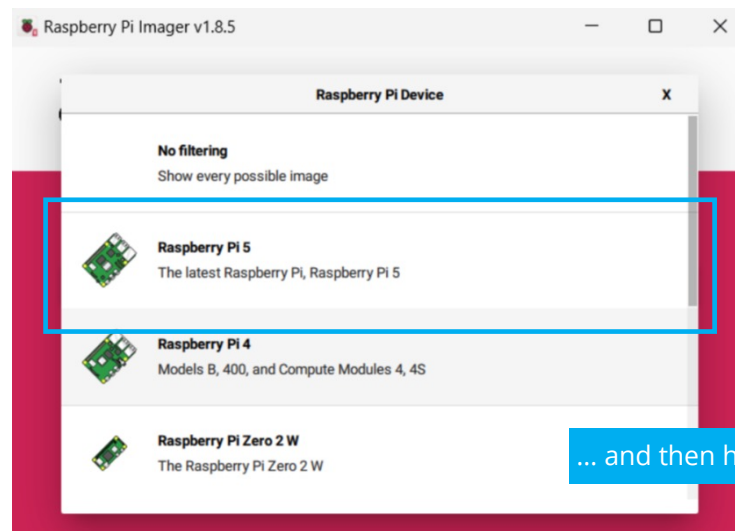
Step 1e

Launch imager and click on „**Choose Device**“.

Then click on „**Raspberry Pi 5**“.



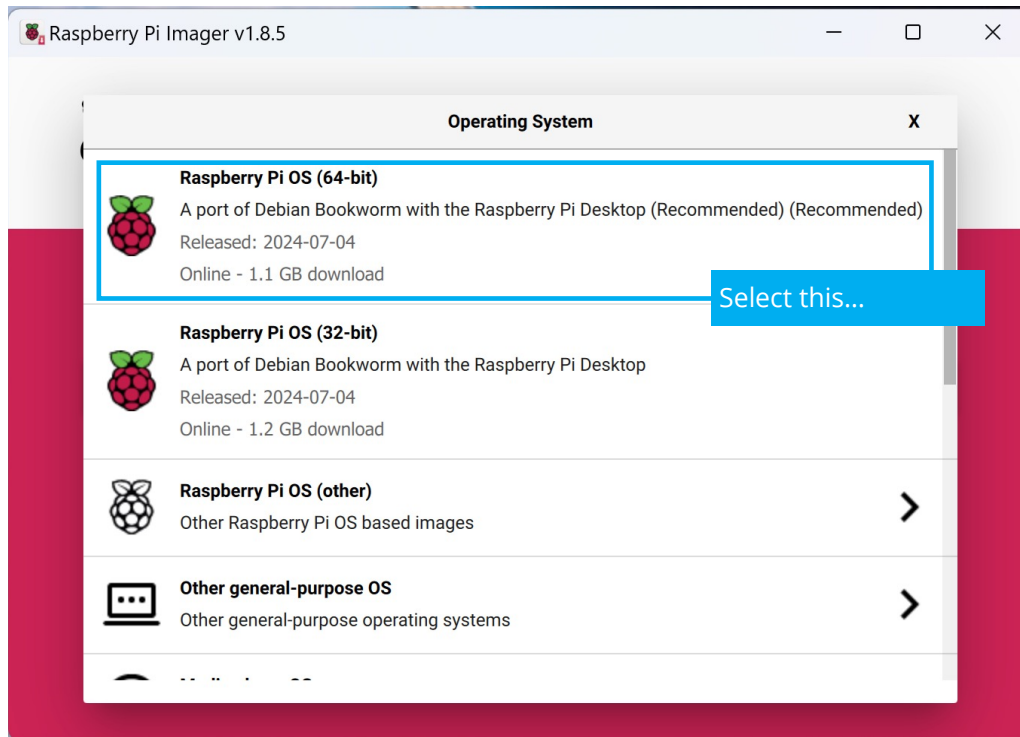
First, click here...



... and then here

Step 1f

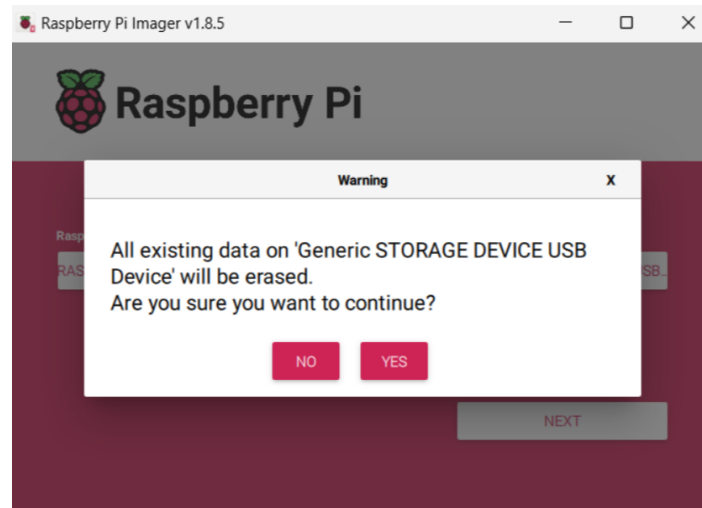
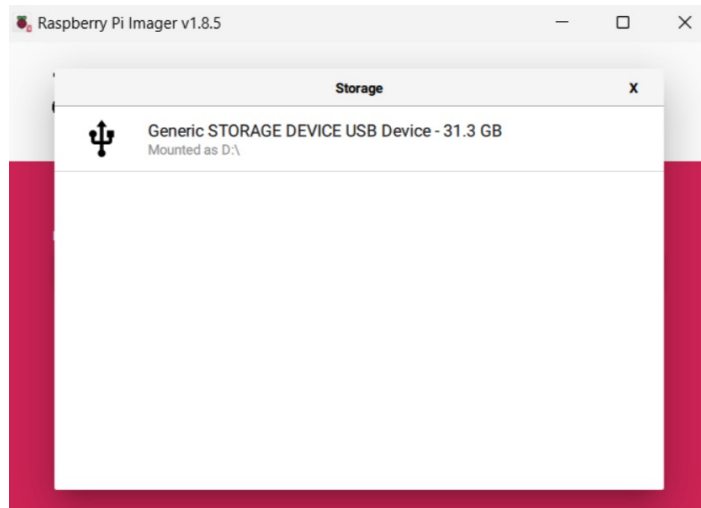
Select „Raspberry Pi OS“.



Step 1h

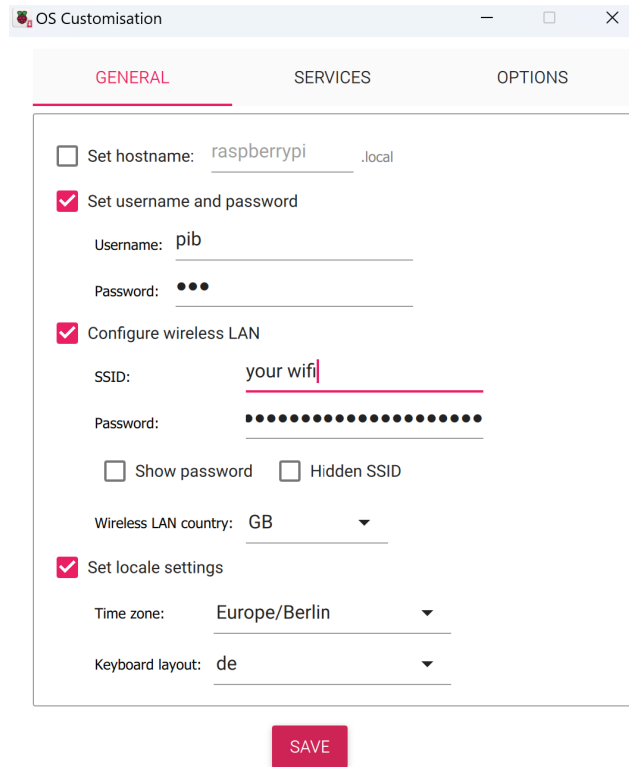
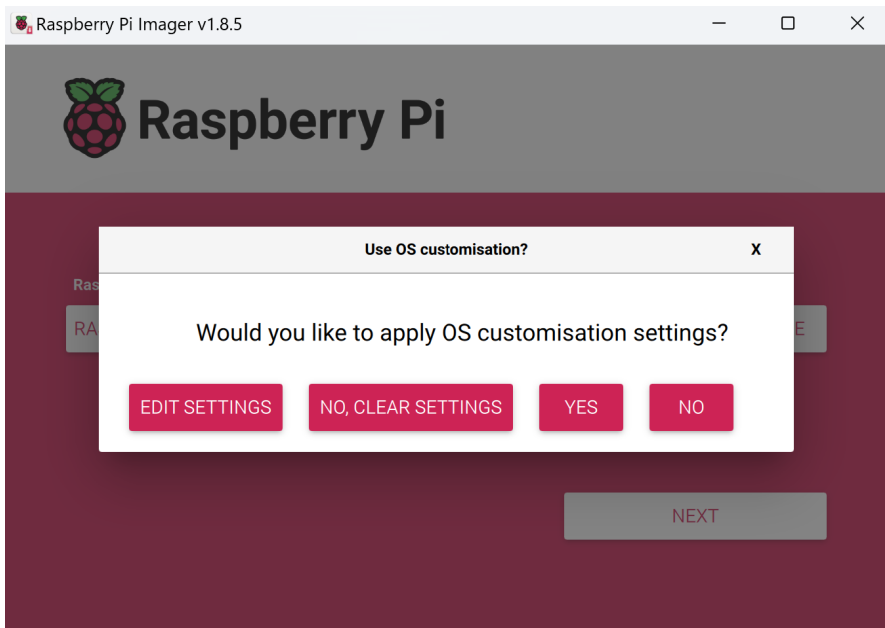
Choose your storage device – make sure to select the micro SD card.

Please note: all existing data on a pre-used card will be erased.



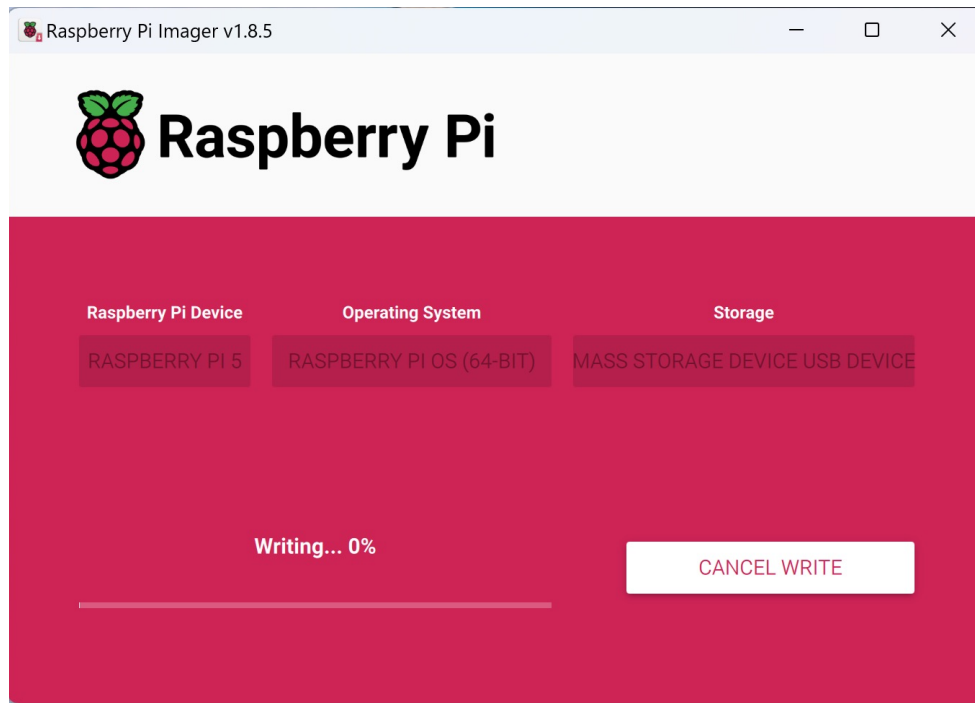
Step 1i

Select "edit settings", add wifi SSID and password, use "pib" for both username and password



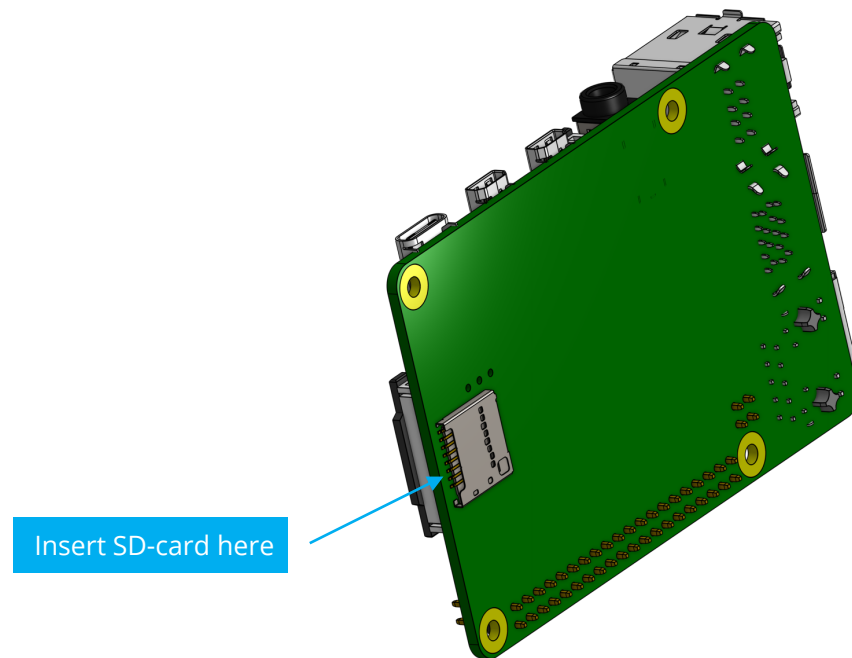
Step 1j

Click on „**Write**“ to start installing Raspberry pi OS on the storage medium and wait until the process is finished.
Then click on „**Continue**“ to end Step 1.



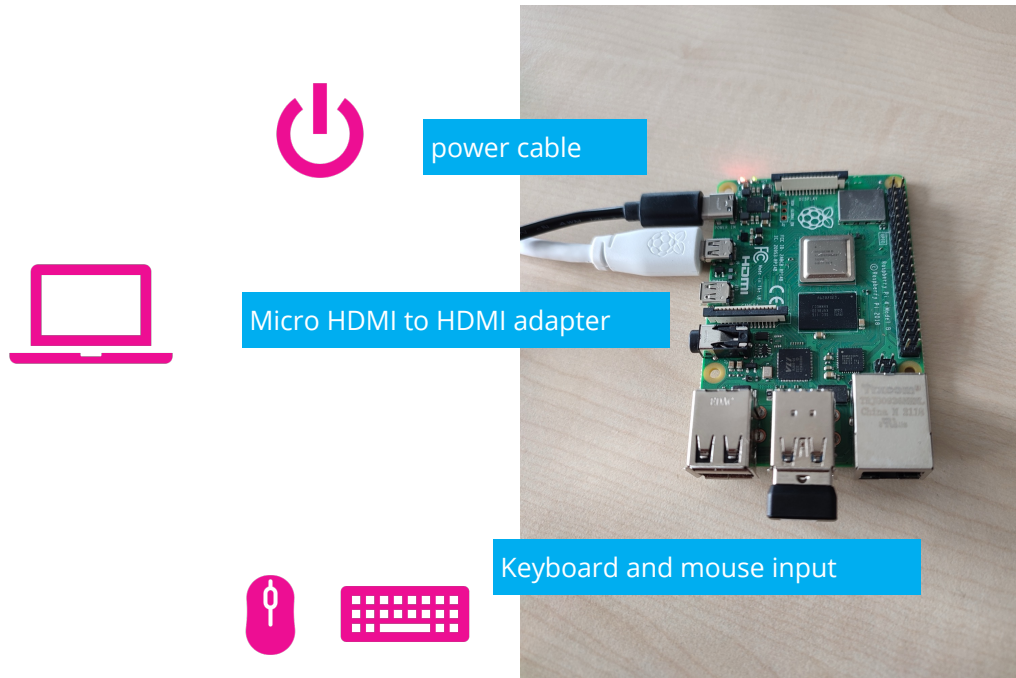
Step 2a

Remove the micro SD card from laptop/PC and insert it to the Raspberry Pi.



Step 2b

Connect the Raspberry Pi to your power supply, a HDMI capable screen/display and a keyboard and mouse for the next steps.
After connecting the raspberry pi to the display and power supply, it should show the Ubuntu Raspberry pi OS screen.



Step 3a

Open firefox and navigate to the pib.software setup page on Github using this link: <https://github.com/pib-rocks/pib-backend>

You will need these 2 commands to continue the pib.software setup.

Software setup

This script assumes:

- that the newest Raspberry Pi OS is installed
- the user running it is **pib**

Installing pibs software

All the software pib requires can be installed by running our setup script. Follow these steps to run it:

1. Open a terminal in Raspberry Pi OS
2. Insert the following command into the terminal to download the script:

```
wget https://raw.githubusercontent.com/pib-rocks/pib-backend/main/setup/setup-pib.sh
```

(or download it manually: <https://github.com/pib-rocks/pib-backend/blob/main/setup/setup-pib.sh>)

3. Insert this command to run the script:

```
bash setup-pib.sh
```

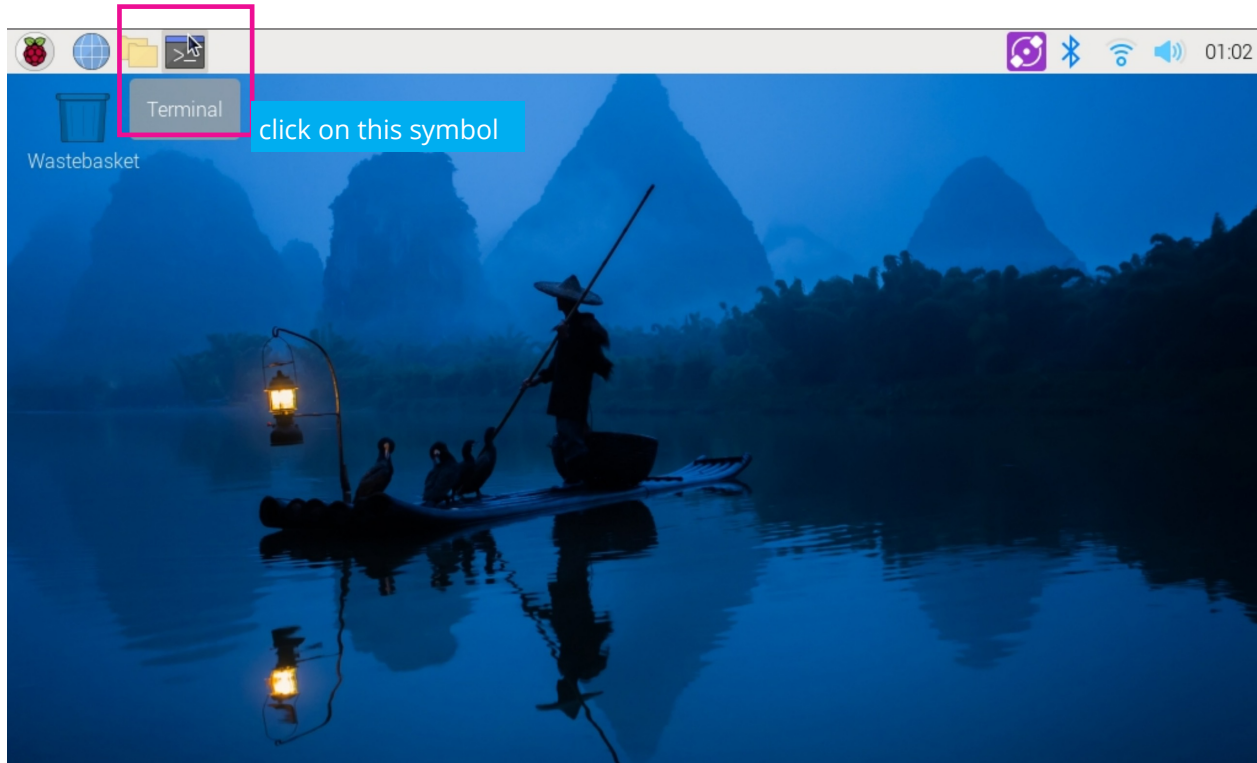
If you want to run the setup-script in legacy mode (for Raspberry Pi 4), insert:

```
bash setup-pib.sh -l
```

The setup then adds Cerebra and it's dependencies, including ROS2, Tinkerforge,... Once the installation is complete, please restart the system to apply all the changes.

Step 3b

At first, launch the terminal.



Step 3c

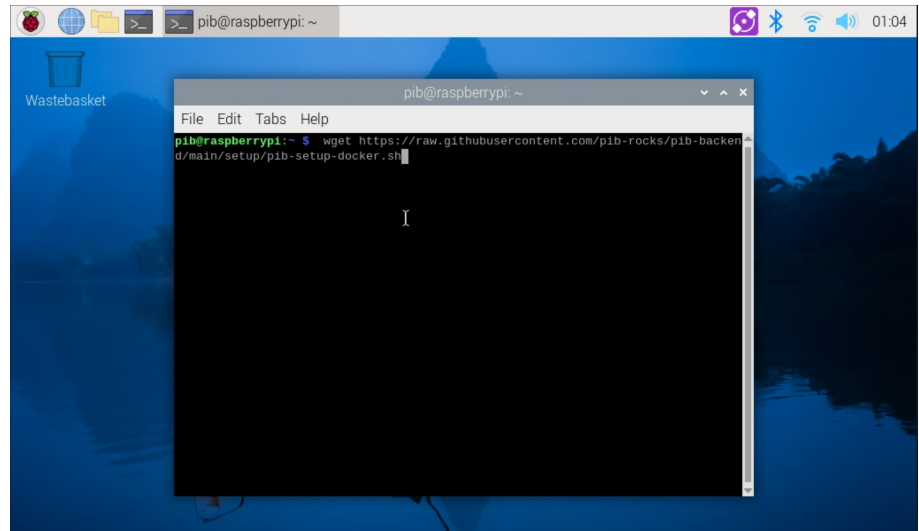
The first command will download the setup-script from our github website.

- Copy the command from github (wget <https://raw.githubusercontent.com/pib-rocks/pib-backend/main/setup/pib-setup-docker.sh>)
- Paste it into the terminal
- Press enter to execute the command

Info: If the download isn't working you can also download the file manually via github

... NOTE: you **cannot** use "CTRL + V" to paste it into the terminal.

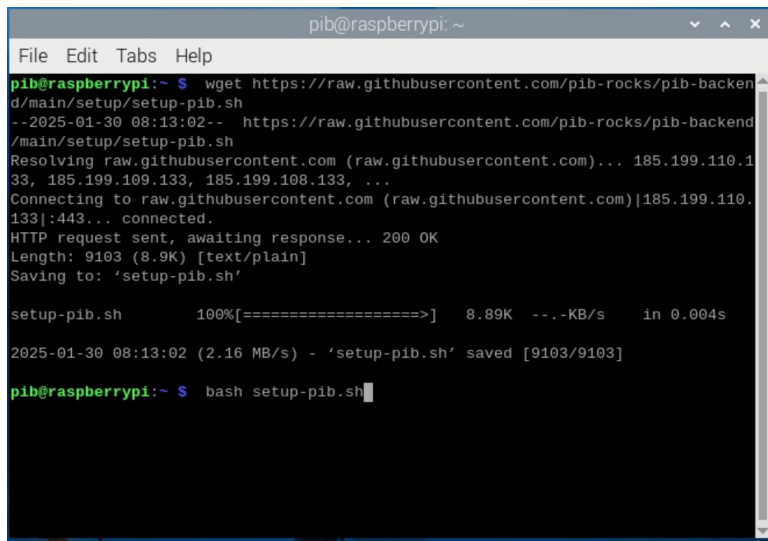
Instead use "CTRL + "SHIFT" + V" or right-click into the terminal and select "paste".



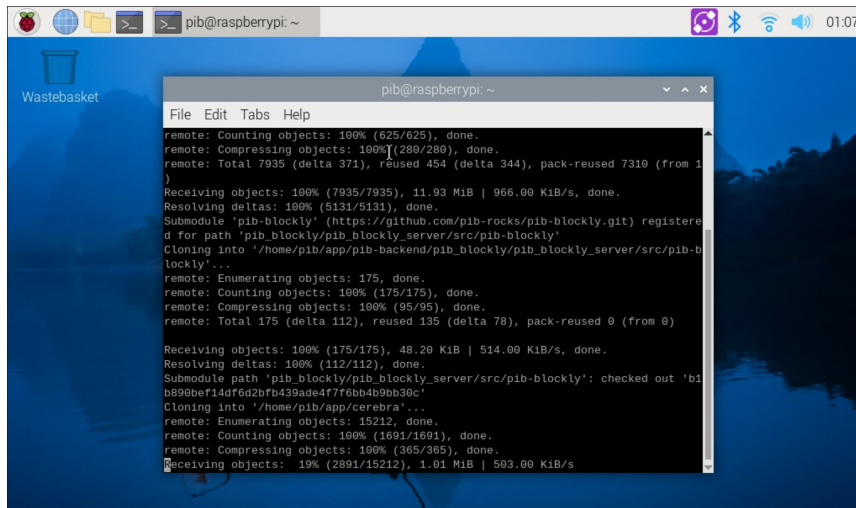
Step 3d

The second command starts the setup script. Therefore, enter the command in the terminal.

The setup process will take quite some time, depending on your internet connection (upwards of 40 minutes).



```
pi@raspberrypi: ~  
File Edit Tabs Help  
pi@raspberrypi:~$ wget https://raw.githubusercontent.com/pi-rock/pib-backend/main/setup/setup-pib.sh  
--2025-01-30 08:13:02-- https://raw.githubusercontent.com/pi-rock/pib-backend/main/setup/setup-pib.sh  
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 185.199.110.133, 185.199.109.133, 185.199.108.133, ...  
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|185.199.110.133|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 9103 (8.9K) [text/plain]  
Saving to: 'setup-pib.sh'  
  
setup-pib.sh      100%[=====] 8.89K  --.-KB/s   in 0.004s  
  
2025-01-30 08:13:02 (2.16 MB/s) - 'setup-pib.sh' saved [9103/9103]  
  
pi@raspberrypi:~$ bash setup-pib.sh
```



```
pi@raspberrypi: ~  
File Edit Tabs Help  
remote: Counting objects: 100% (625/625), done.  
remote: Compressing objects: 100% (280/280), done.  
remote: Total 7935 (delta 371), reused 454 (delta 344), pack-reused 7310 (from 1)  
Receiving objects: 100% (7935/7935), 11.93 MiB | 966.00 KiB/s, done.  
Resolving deltas: 100% (5131/5131), done.  
Submodule 'pib-blockly' (https://github.com/pi-rock/pib-blockly.git) registered for path 'pib_blockly/pib_blockly_server/src/pib-blockly'  
Cloning into '/home/pi/app/pib-backend/pib_blockly/pib_blockly_server/src/pib-blockly'...  
remote: Enumerating objects: 175, done.  
remote: Counting objects: 100% (175/175), done.  
remote: Compressing objects: 100% (95/95), done.  
remote: Total 175 (delta 112), reused 135 (delta 78), pack-reused 0 (from 0)  
Receiving objects: 100% (175/175), 48.20 KiB | 514.00 KiB/s, done.  
Resolving deltas: 100% (112/112), done.  
Submodule path 'pib_blockly/pib_blockly_server/src/pib-blockly': checked out 'bb890bef14df6d2bfb439ade4f7f6bb4b9bb30c'  
Cloning into '/home/pi/app/cerebra'...  
remote: Enumerating objects: 15212, done.  
remote: Counting objects: 100% (1591/1591), done.  
remote: Compressing objects: 100% (365/365), done.  
Receiving objects: 19% (2891/15212), 1.01 MiB | 503.00 KiB/s
```

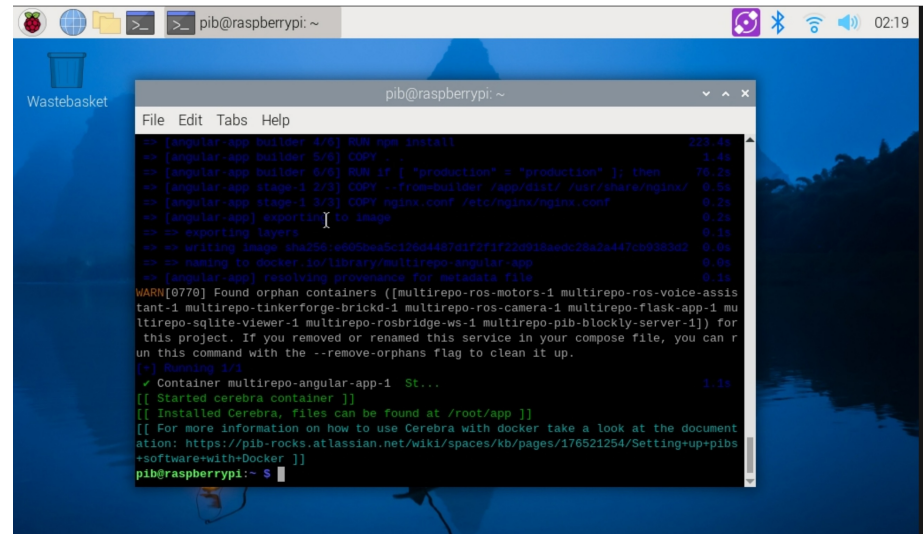
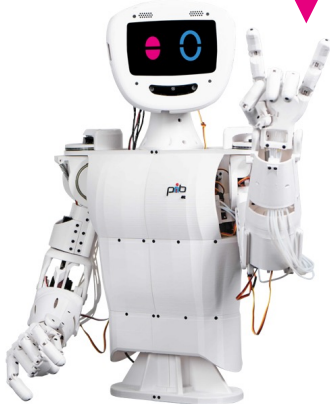
Congratulations

You did a great job, the pib's software is now installed on your Raspberry Pi.

Please **restart** the system to apply changes.

Then, you can remove your Raspberry from all devices. The SD card should stay inside your Raspberry.

Well done!



```
pib@raspberrypi: ~  
Wastebasket  
File Edit Tabs Help  
=> [angular-app builder 4/6] RUN npm install 223.4s  
=> [angular-app builder 5/6] COPY . 1.4s  
=> [angular-app builder 6/6] RUN if [ "production" = "production" ]; then 76.2s  
=> [angular-app stage-1 2/3] COPY --from=builder /app/dist/ /usr/share/nginx/ 0.5s  
=> [angular-app stage-1 3/3] COPY nginx.conf /etc/nginx/nginx.conf 0.2s  
=> [angular-app] exporting to image 0.2s  
=> exporting layers 0.1s  
=> writing image sha256:e605ba5c126d4457d1f2f1f22d918aedc28a2a447cb9383d2 0.0s  
=> naming to docker.io/library/multirepo-angular-app 0.0s  
=> [angular-app] resolving provenance for metadata file 0.1s  
WARN[0770] Found orphan containers ([multirepo-ros-motors-1 multirepo-ros-voice-assis  
tant-1 multirepo-tinkerforge-brickd-1 multirepo-ros-camera-1 multirepo-flask-app-1 mu  
ltirepo-sqlite-viewer-1 multirepo-rosbridge-ws-1 multirepo-pib-blockly-server-1]) for  
this project. If you removed or renamed this service in your compose file, you can r  
un this command with the --remove-orphans flag to clean it up.  
[+] Running 1/1  
✓ Container multirepo-angular-app-1 St... 1.1s  
[[ Started cerebra container ]]  
[[ Installed Cerebra, files can be found at /root/app ]]  
[[ For more information on how to use Cerebra with docker take a look at the document  
ation: https://pib-rocks.atlassian.net/wiki/spaces/kb/pages/176521254/Setting+up+pib  
s+software+with+Docker ]]  
pib@raspberrypi:~$
```

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