

Raspberry Pi

Raspberry

raspberry [ˈræzbəri] rz. malina

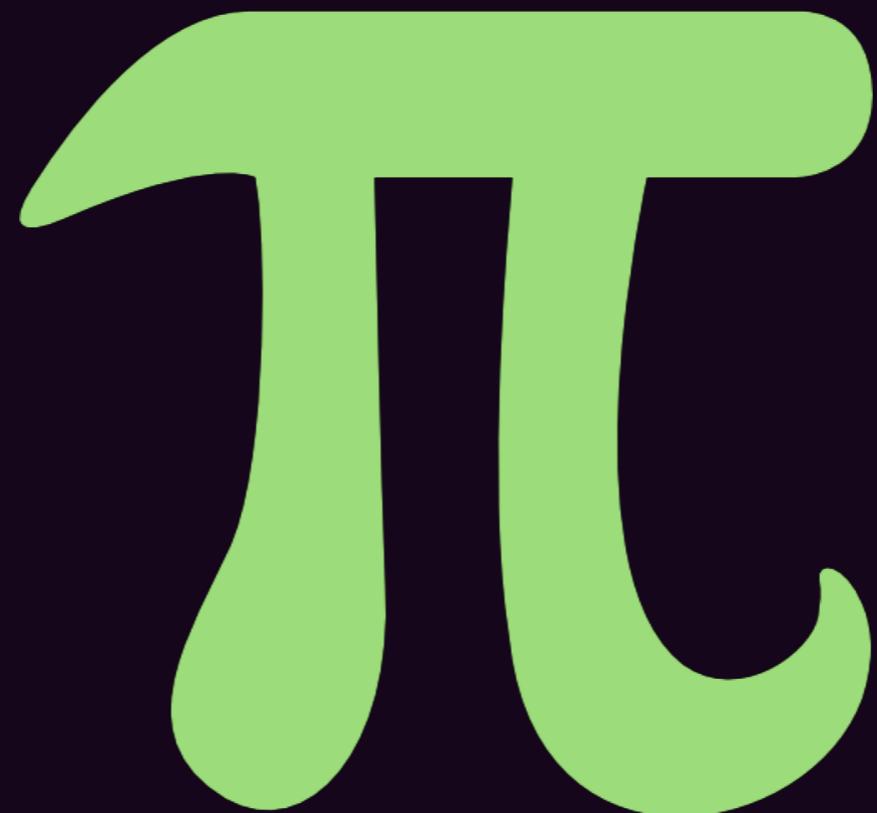


Pie

*pie [paɪ] rz. **placek z owocami**; pieróg; pasztecik*



Pi



„Pi is because originally we were going to produce a computer that could only really run Python. So the Pi in there is for Python. [...]”

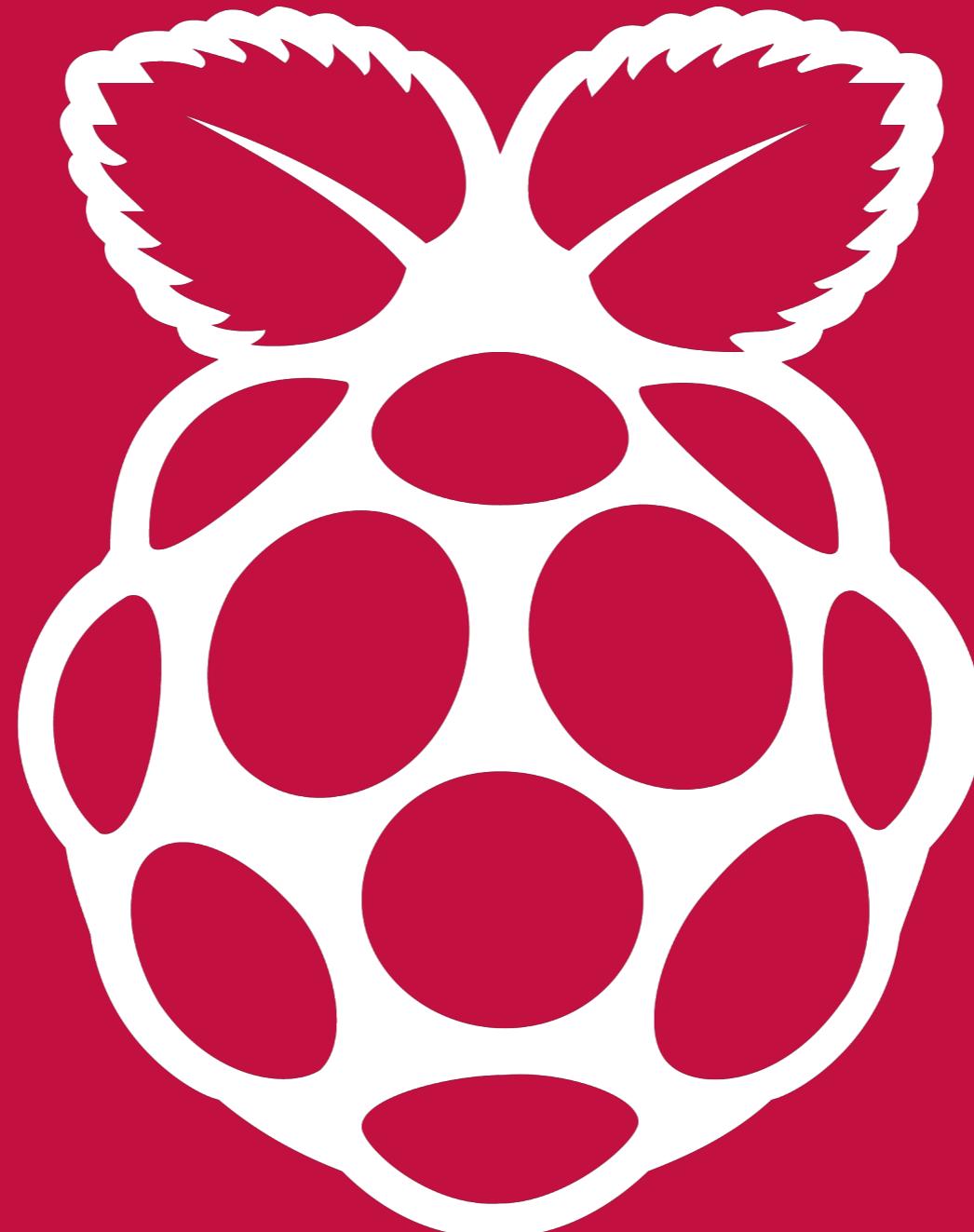
*– Eben Upton
(założyciel Raspberry Pi Foundation)*

Pi =  pythonTM

„Raspberry is a reference to a **fruit naming tradition** in the old days of microcomputers. A lot of computer companies were named after fruit. [...]”

– *Eben Upton*
(założyciel Raspberry Pi Foundation)



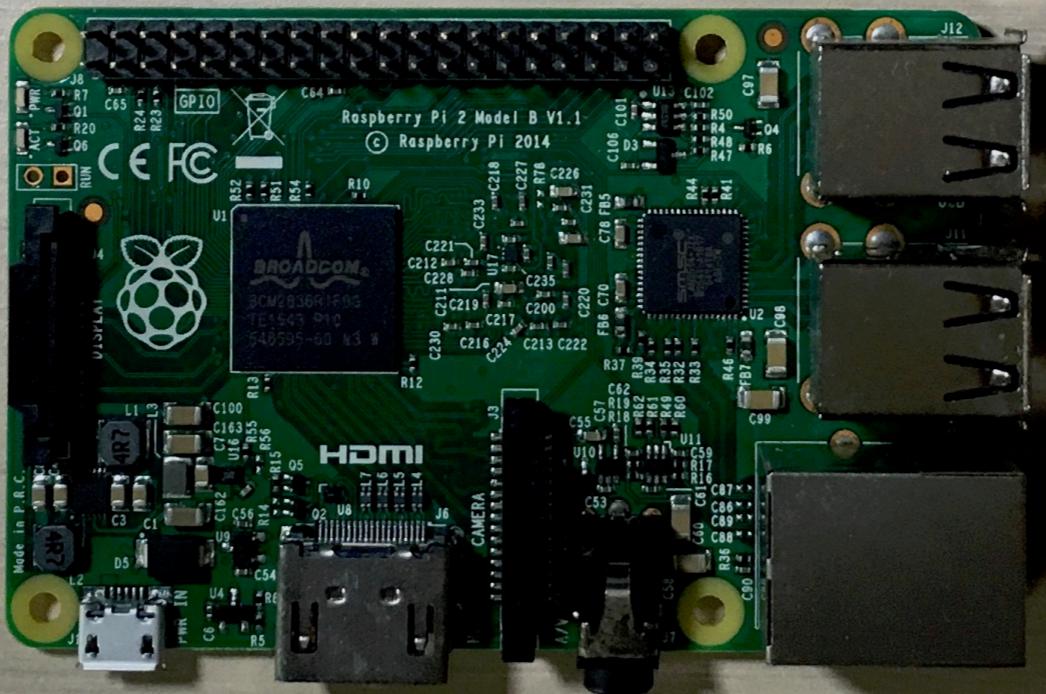


Raspberry Pi

Co to jest?

Co to jest?

Komputer wielkości
karty płatniczej



Komputer, więc...

Ma system operacyjny



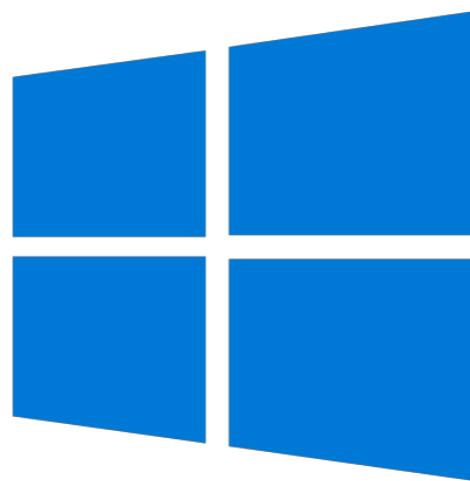
Raspbian
oparty na Debianie
czyt: najlepsza dystrybucja

Komputer, więc...

Ma systemy operacyjne



ubuntu MATE



Windows 10
IoT Core



snappy



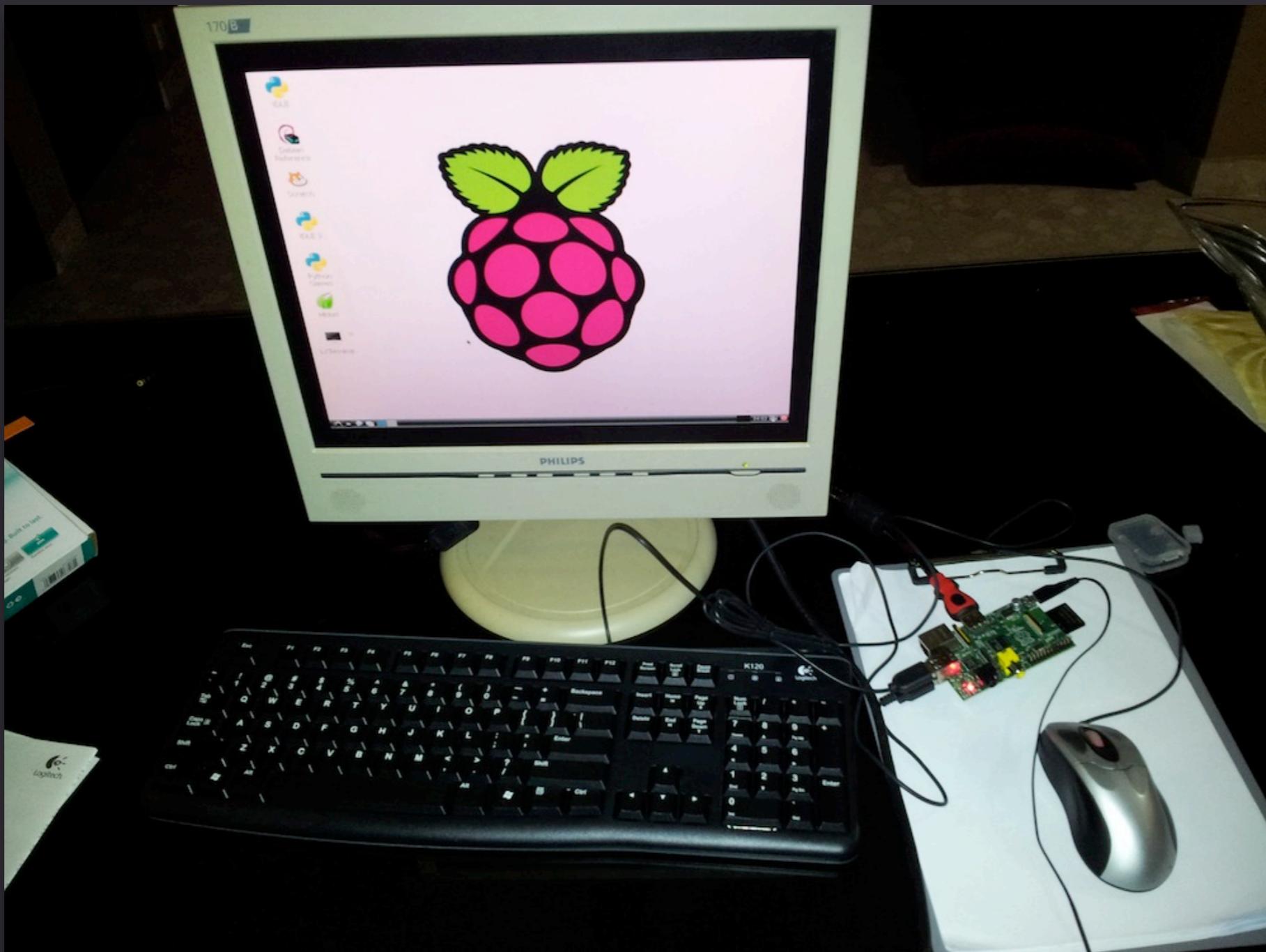
OSM



LibreELEC
Just enough OS for KODI

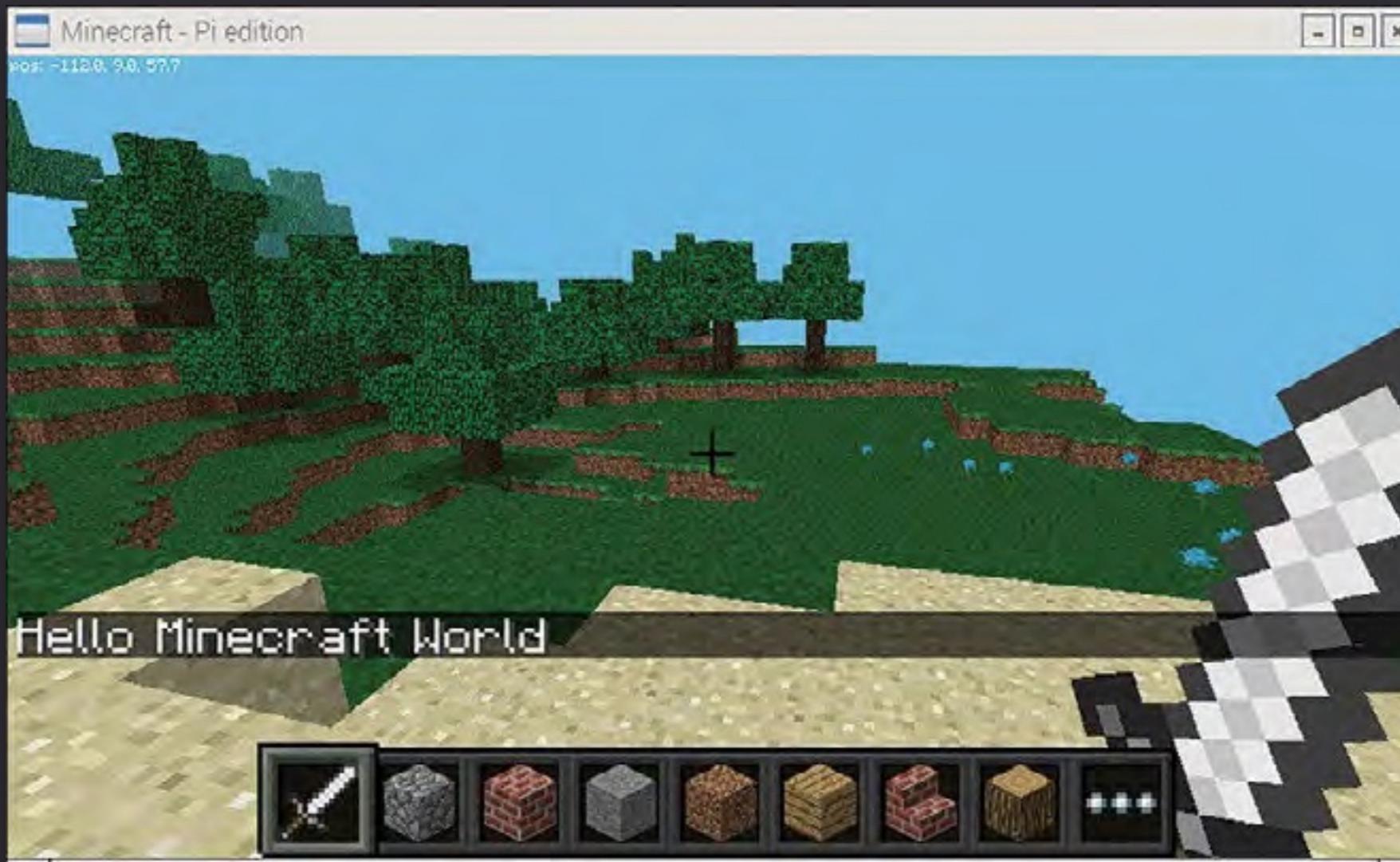
Komputer, więc...

Mozna go używać jak każdy inny komputer



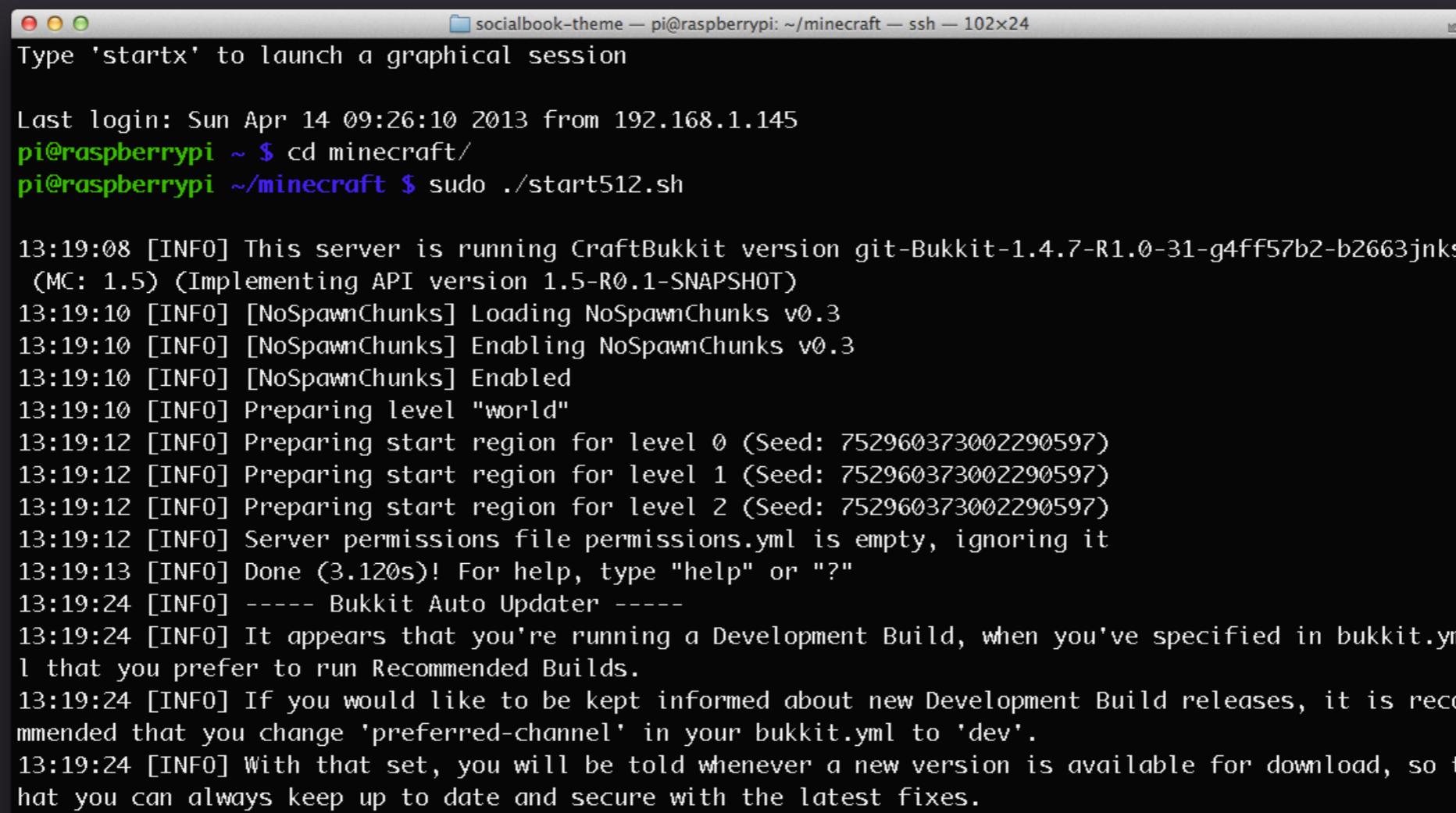
Komputer, więc...

Odpali Minecrafta



Komputer, więc...

Odpali serwer do Minecrafta



A screenshot of a terminal window titled "socialbook-theme — pi@raspberrypi: ~/minecraft — ssh — 102x24". The window shows the command-line interface for starting a Minecraft server. It starts with a message to type 'startx' for a graphical session, followed by the server's log output. The log includes details about the CraftBukkit version, plugin loading (NoSpawnChunks v0.3), and server preparation for levels 0, 1, and 2. It also mentions a permissions file and a Bukkit Auto Updater notice.

```
Type 'startx' to launch a graphical session

Last login: Sun Apr 14 09:26:10 2013 from 192.168.1.145
pi@raspberrypi ~ $ cd minecraft/
pi@raspberrypi ~/minecraft $ sudo ./start512.sh

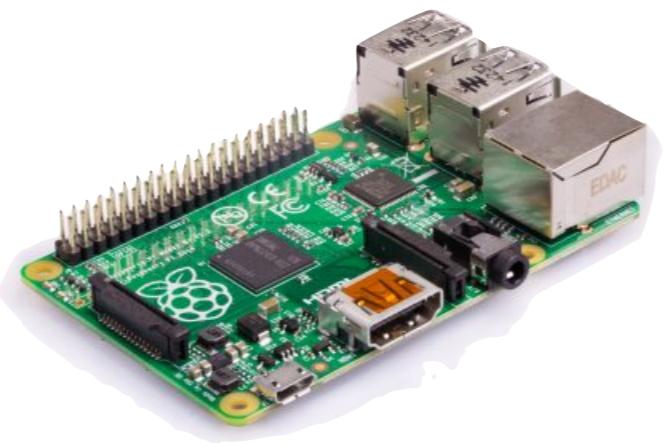
13:19:08 [INFO] This server is running CraftBukkit version git-Bukkit-1.4.7-R1.0-31-g4ff57b2-b2663jnks
(MC: 1.5) (Implementing API version 1.5-R0.1-SNAPSHOT)
13:19:10 [INFO] [NoSpawnChunks] Loading NoSpawnChunks v0.3
13:19:10 [INFO] [NoSpawnChunks] Enabling NoSpawnChunks v0.3
13:19:10 [INFO] [NoSpawnChunks] Enabled
13:19:10 [INFO] Preparing level "world"
13:19:12 [INFO] Preparing start region for level 0 (Seed: 752960373002290597)
13:19:12 [INFO] Preparing start region for level 1 (Seed: 752960373002290597)
13:19:12 [INFO] Preparing start region for level 2 (Seed: 752960373002290597)
13:19:12 [INFO] Server permissions file permissions.yml is empty, ignoring it
13:19:13 [INFO] Done (3.120s)! For help, type "help" or "?"
13:19:24 [INFO] ----- Bukkit Auto Updater -----
13:19:24 [INFO] It appears that you're running a Development Build, when you've specified in bukkit.yml that you prefer to run Recommended Builds.
13:19:24 [INFO] If you would like to be kept informed about new Development Build releases, it is recommended that you change 'preferred-channel' in your bukkit.yml to 'dev'.
13:19:24 [INFO] With that set, you will be told whenever a new version is available for download, so that you can always keep up to date and secure with the latest fixes.
```

Co to jest?

tanie* to jest



Pi 1 model A+
119 zł



Pi 2 model B+
145 zł



Pi 3 model B+
179 zł

Ceny ze sklepu:

Tanie to jest

... ale to tańsze

Grażyna!
Bierzemy!

Pi Zero
26 zł

Ceny ze sklepu:



Jak to jest
zrobione?

Jak to jest zrobione?

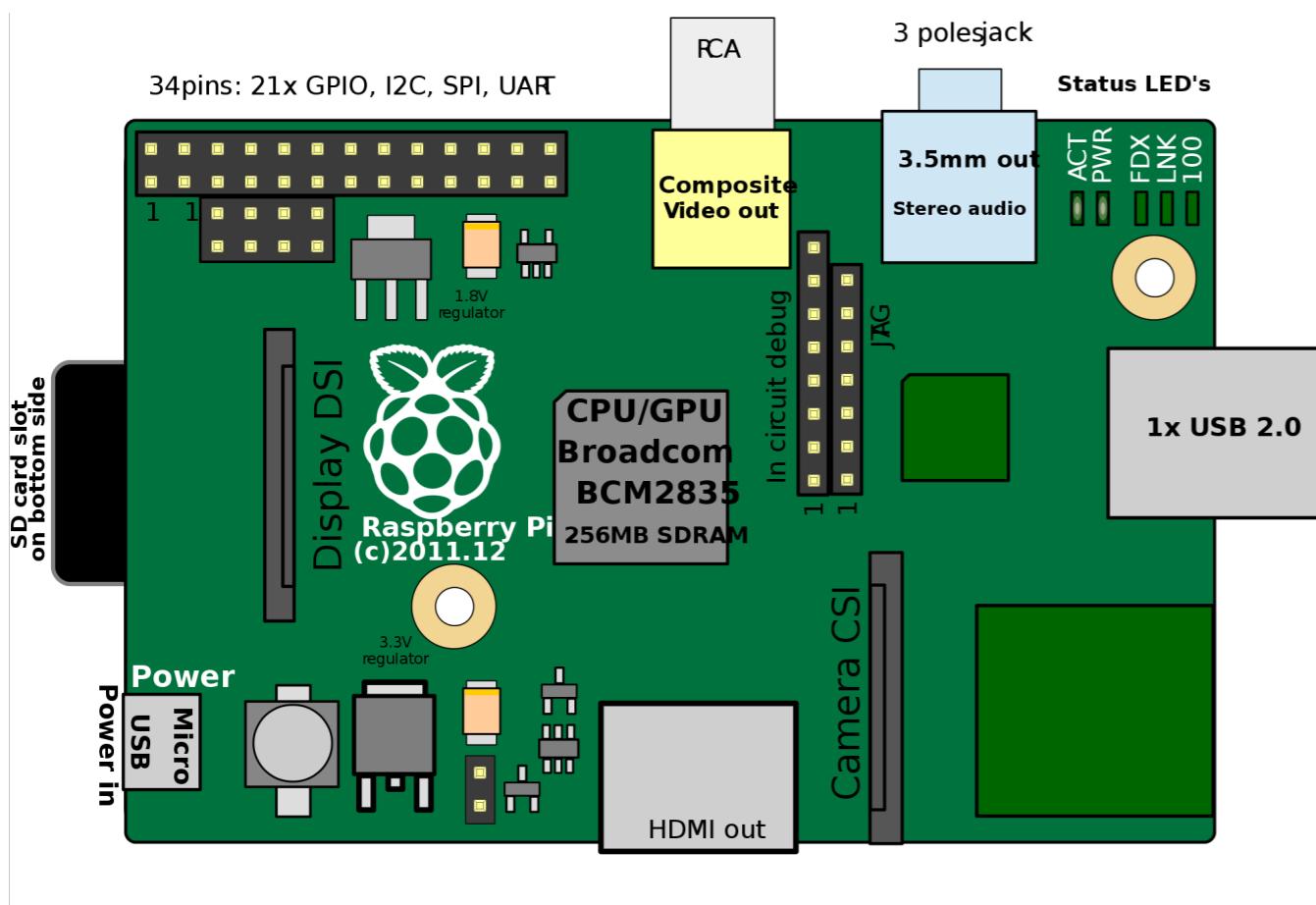
...to ma kilka wersji

w sumie **11**

każda z nich ma trochę inne
podzespoły
(+poprawki)

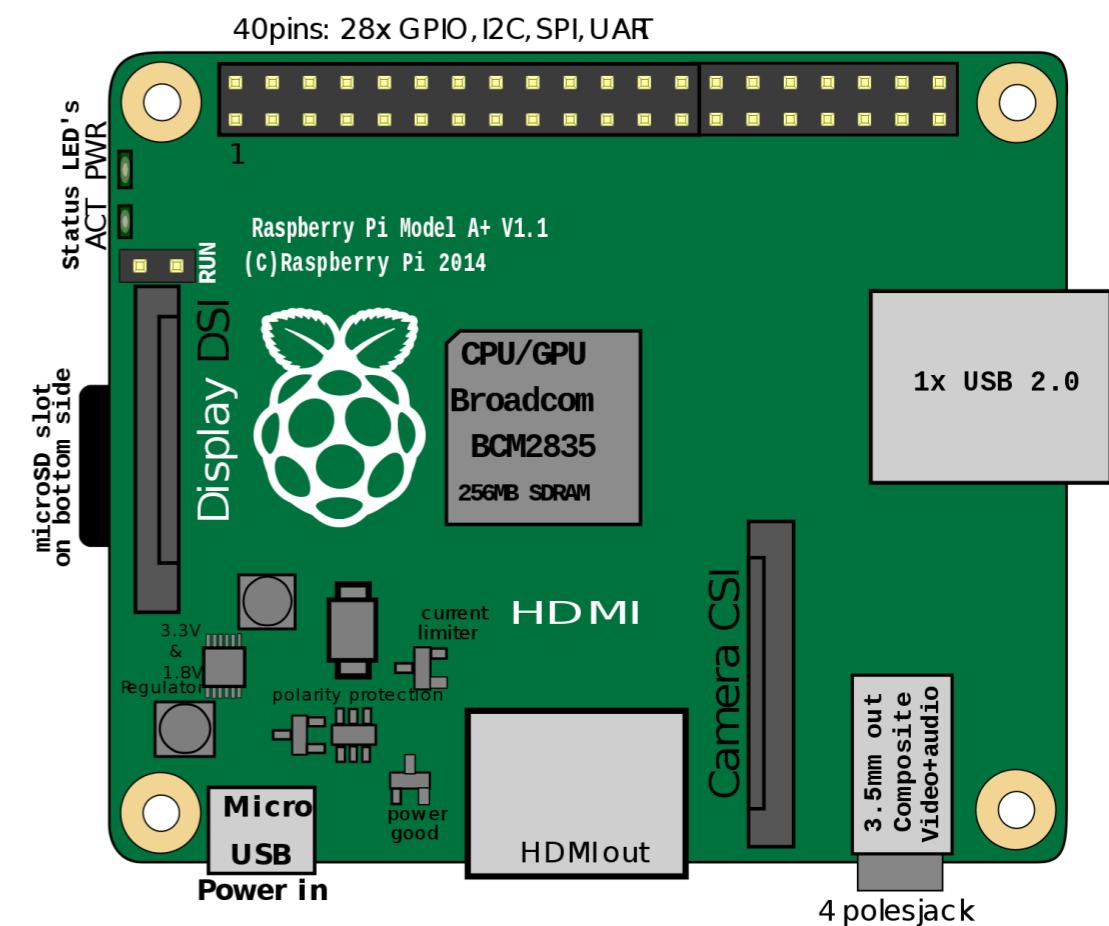
Wersje Raspberry

Model A i B
Generacja 1



Wyjście HDMI i RCA
(Composite Video)

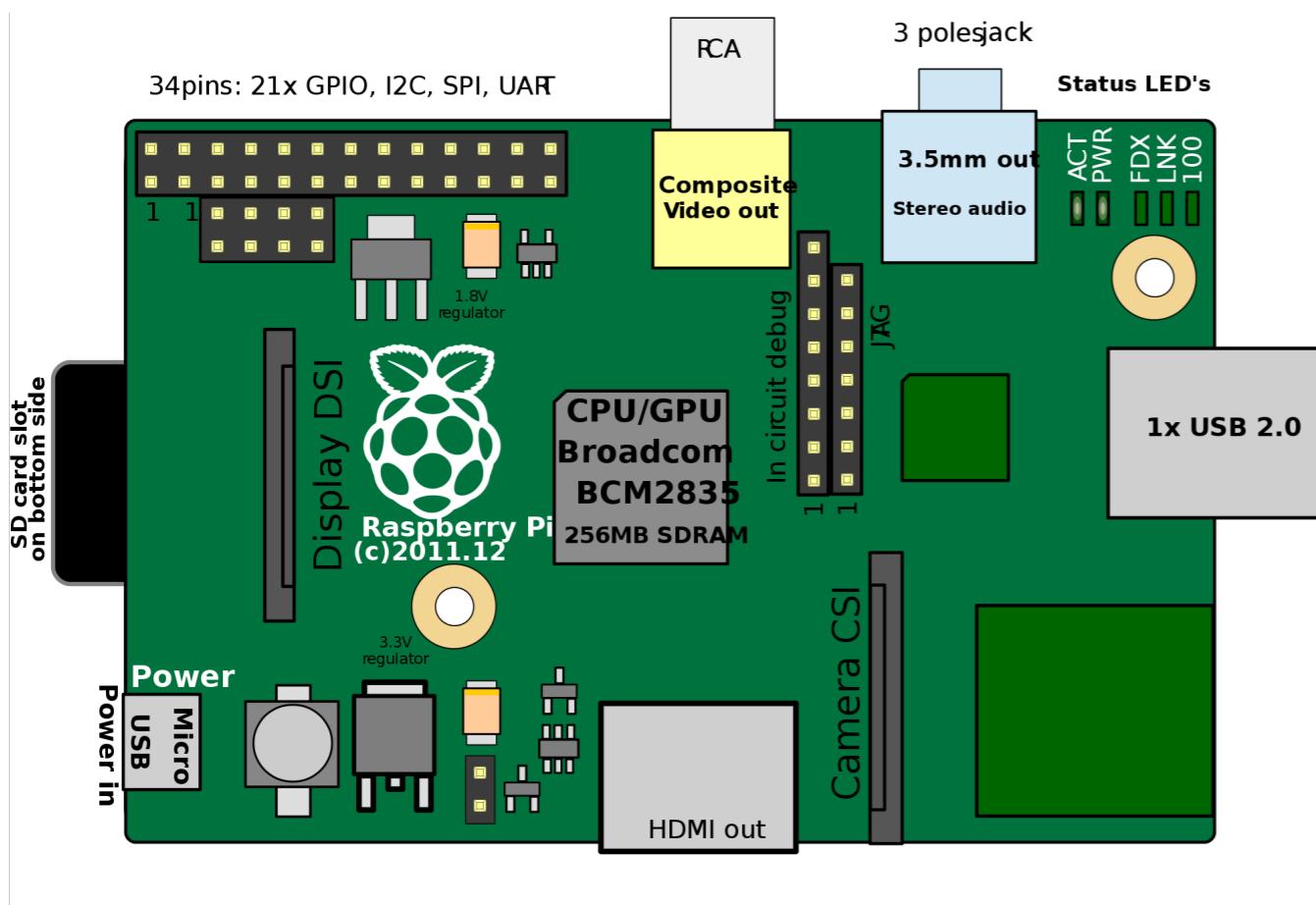
Model A+



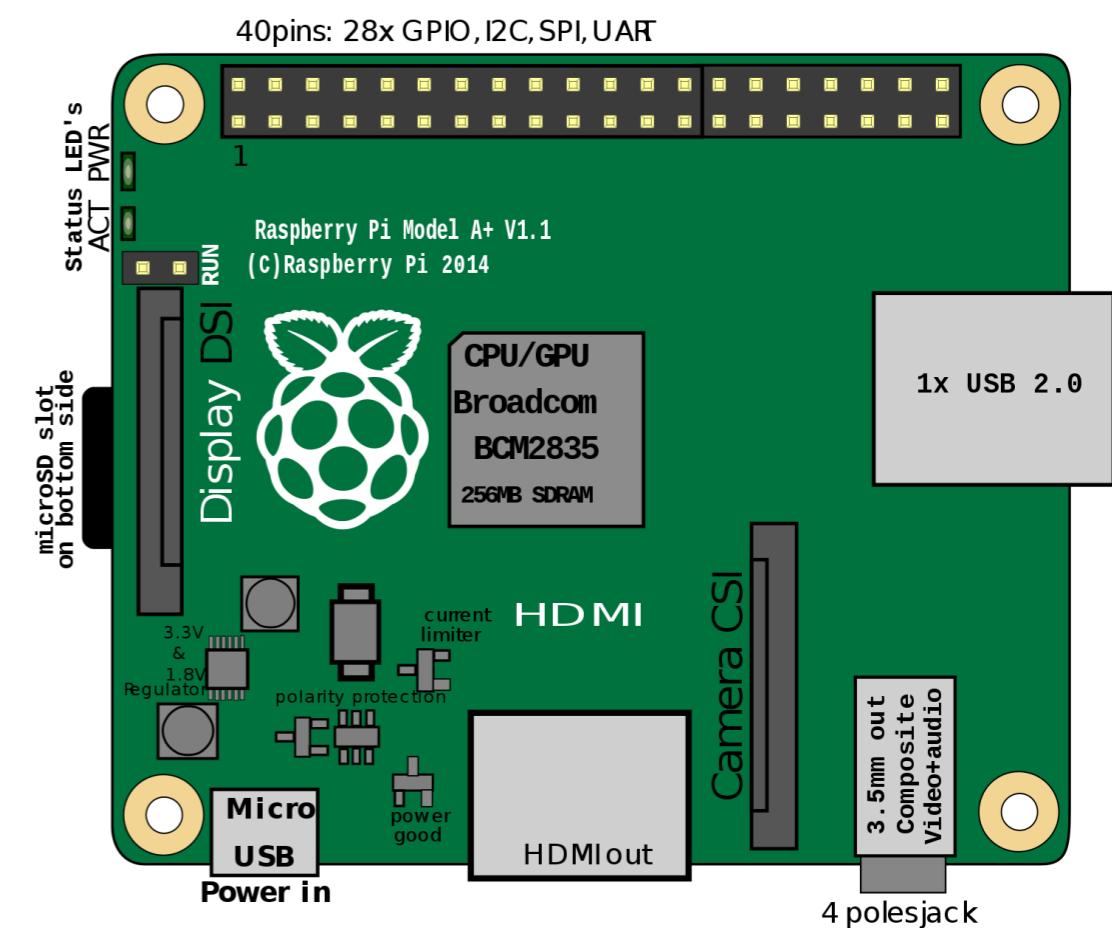
Tylko HDMI

Wersje Raspberry

Model A i B
Generacja 1



Stereo Audio



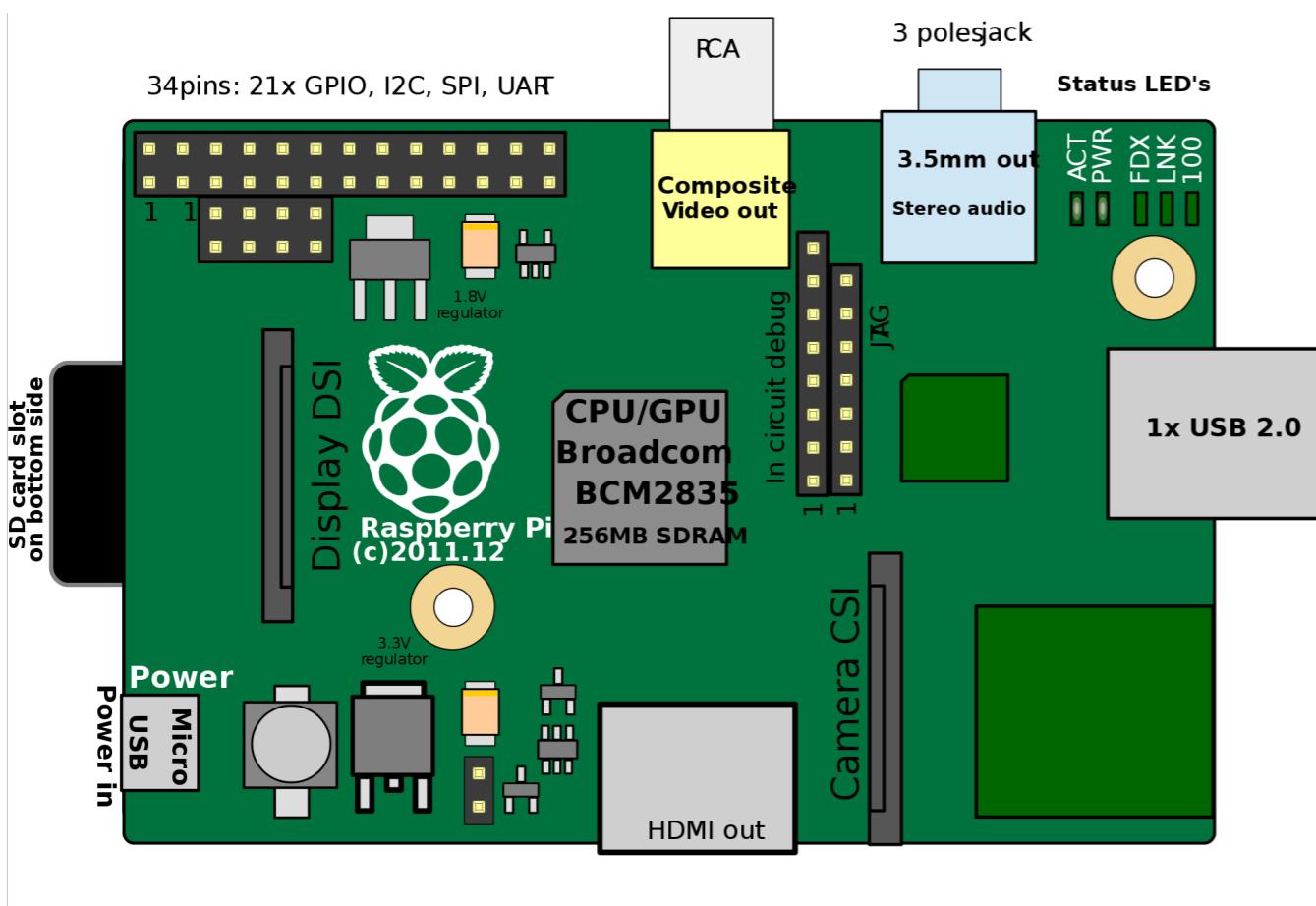
Jest JACK!

Stereo Audio
+ Component Video



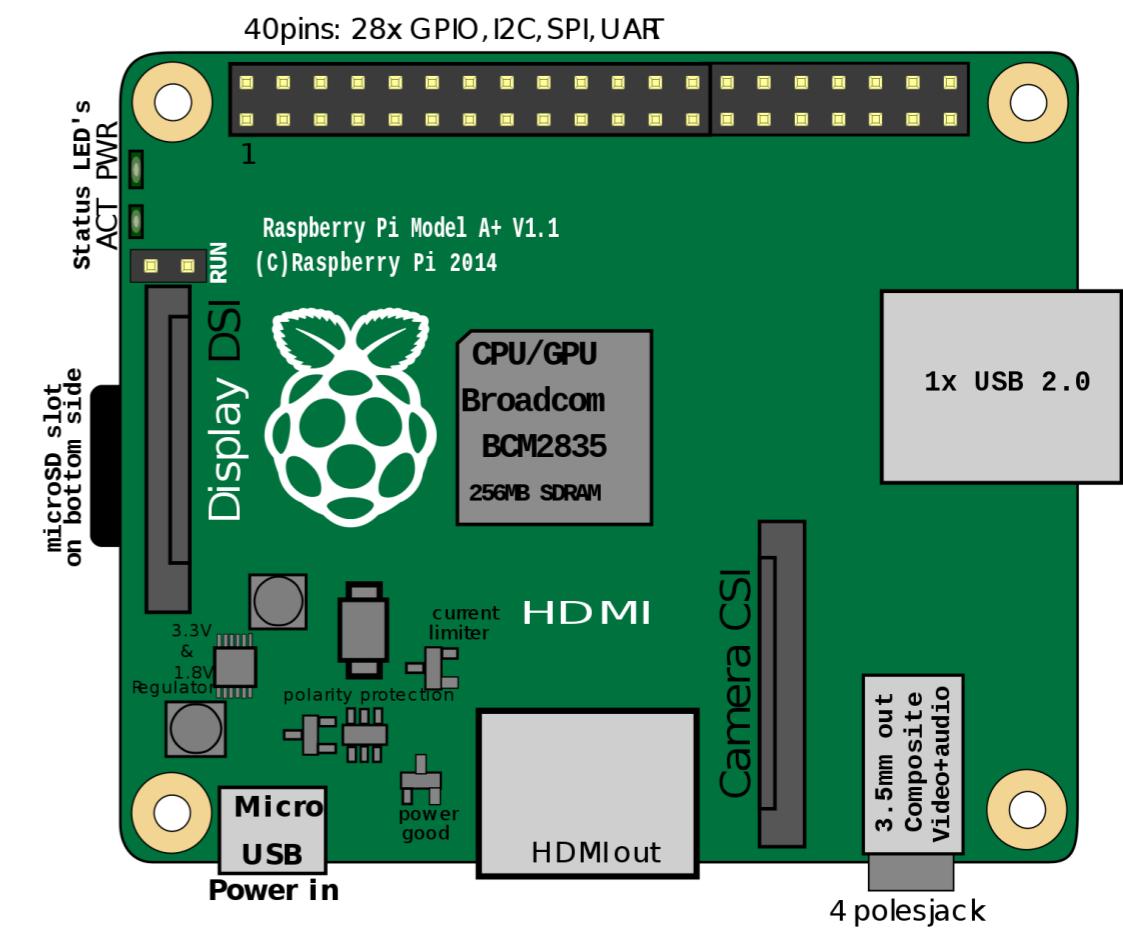
Wersje Raspberry

Model A i B
Generacja 1



Slot SD

Model A+

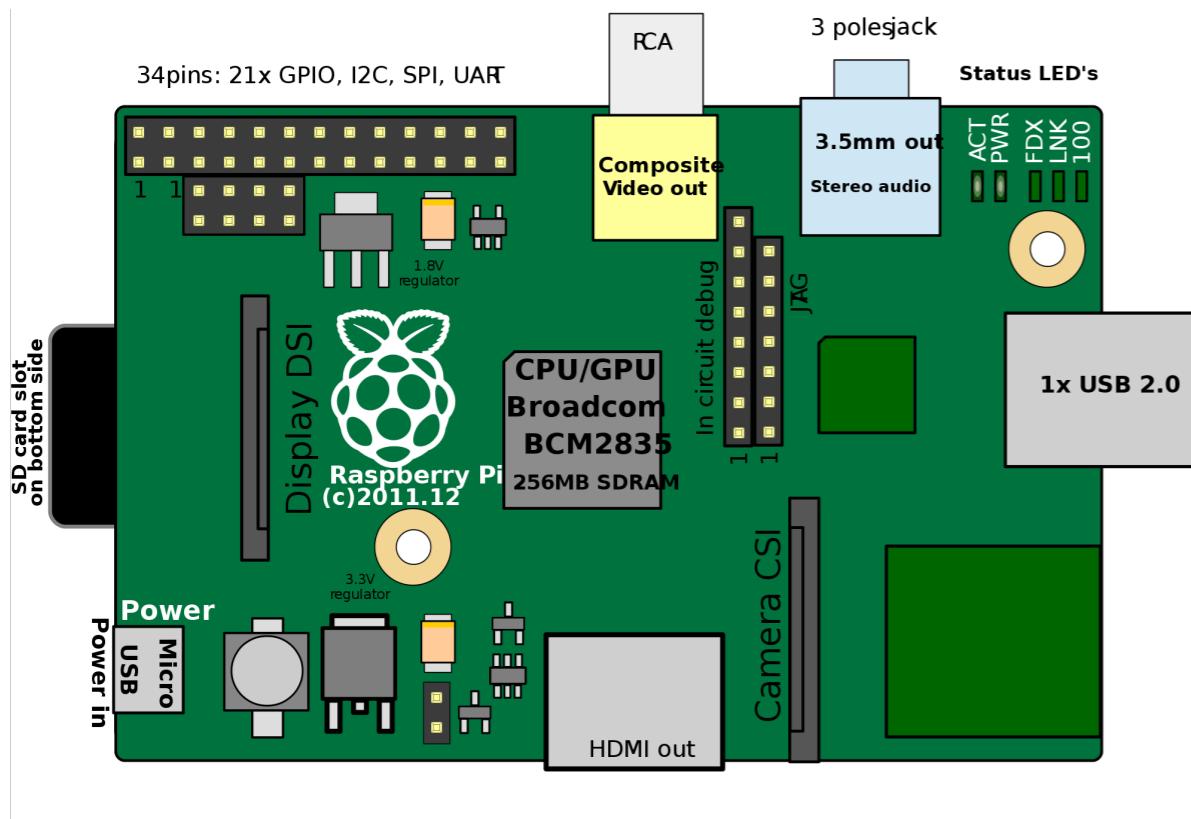


Slot microSD

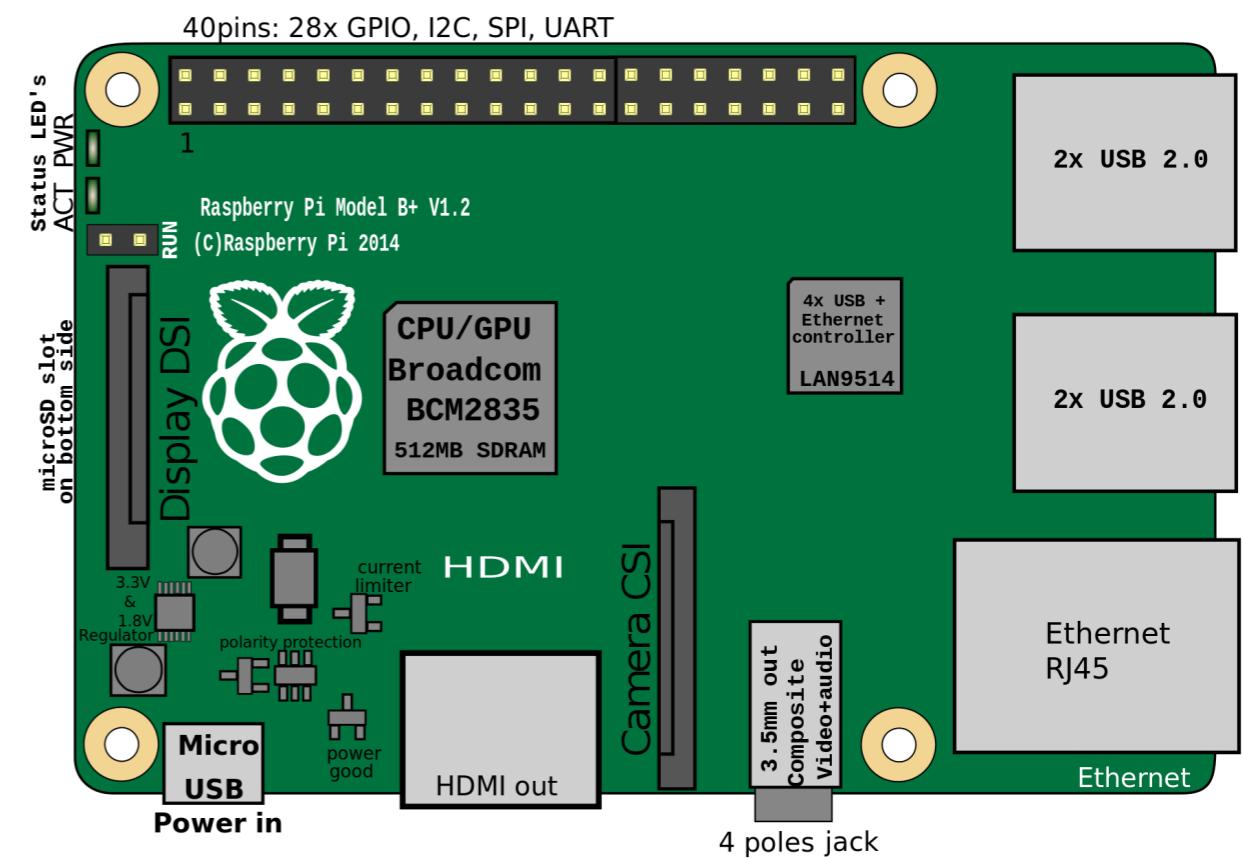
Wersje Raspberry

Model B

Generacja 1



Generacja 2

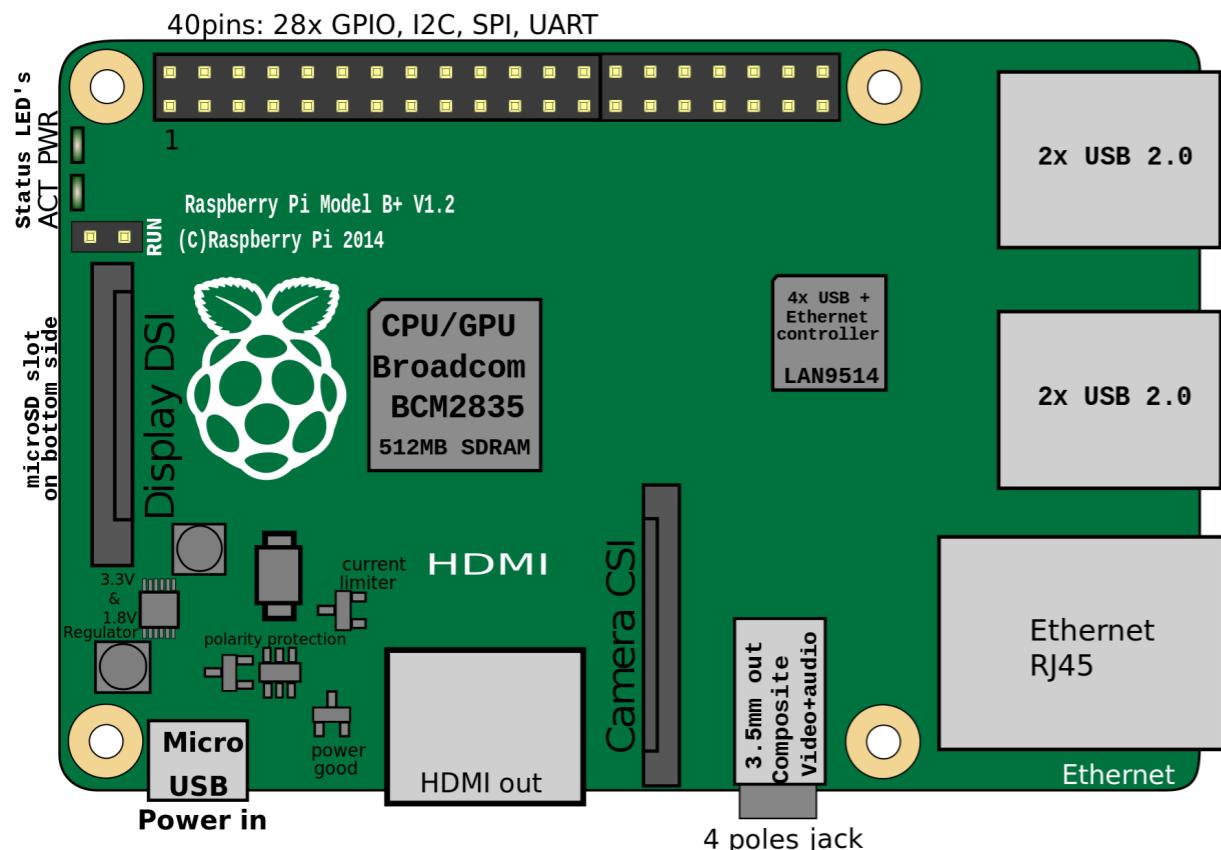


+ RJ45

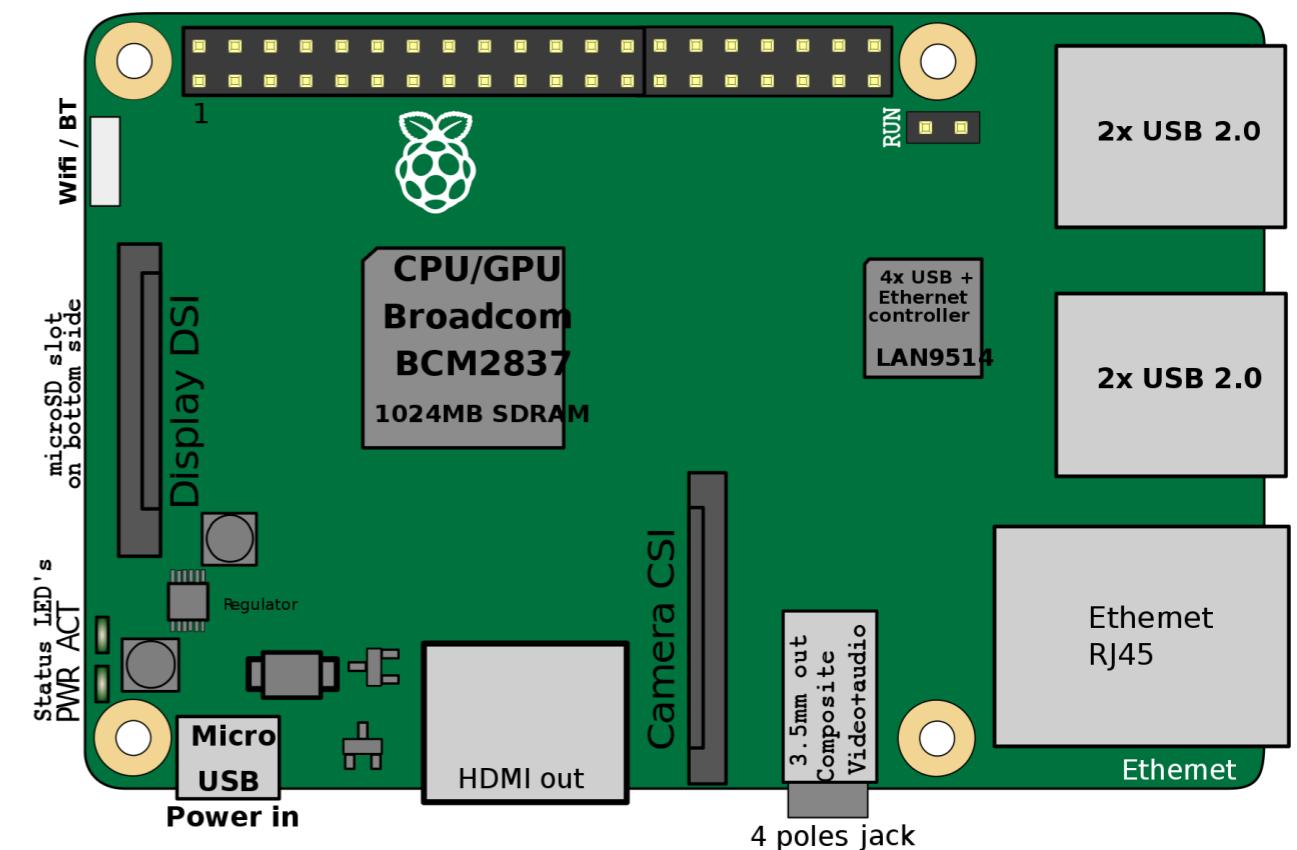
Wersje Raspberry

Model B

Generacja 2



Generacja 3



+ Wifi oraz Bluetooth

Wersje Raspberry

Wszystkie modele mają:

Procesor ARM od Broadcom

Porty USB 2.0

Porty GPIO

Gniazdo microUSB na zasilanie

Interfejs na kamerę (CSI)

Wersje Raspberry

Obecnie w sprzedaży dostępne są tylko:
Model B - 2v1.2, 3, 3+

Parametr	2	3	3+
CPU	900 MHz 64-bit quad-core ARM Cortex-A53	1.2 GHz 64-bit quad-core ARM Cortex-A53	1.4 GHz 64-bit quad-core ARM Cortex-A53
RAM		1 GB	
Ilość portów USB		4	
Predkości Ethernet	10/100		10/100/1000
WiFi	brak	802.11n	802.11ac dual band
Bluetooth	brak	Bluetooth 4.1	Bluetooth 4.2 LS BLE
Ilość pinów GPIO		17	

oraz...

Wersje Raspberry

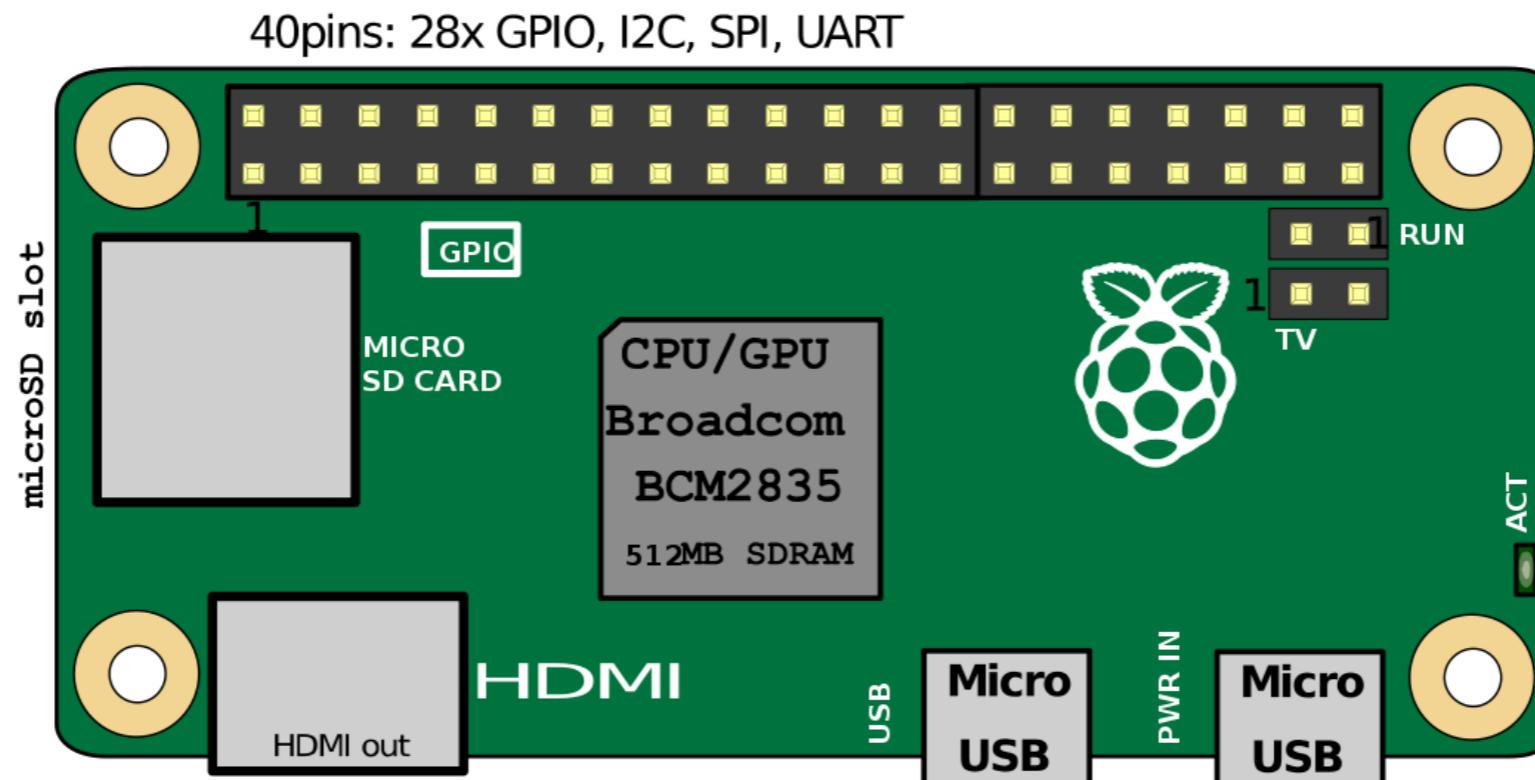
w 2016 roku został wprowadzony nowy model

ZERO

w cenie 5\$

Wersje Raspberry

ZERO



Wyjście HDMI

2 x microUSB

zasilanie

microSD na system

urządzenia I/O

Wersje Raspberry

ZERO Parametry

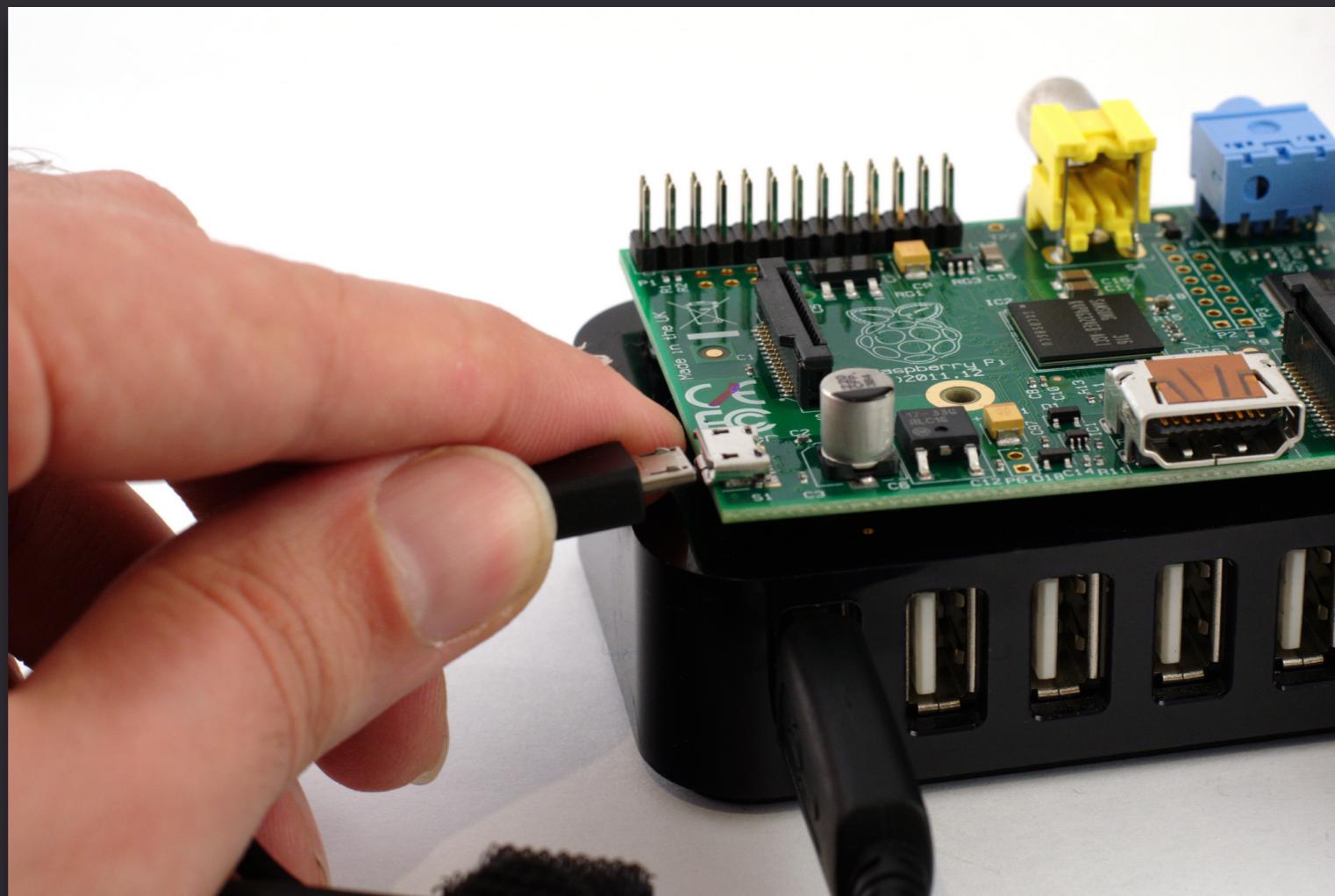
Procesor	Broadcom BCM2835
Taktowanie	1 GHz single-core
Pamięć RAM	512 MB
Ilość pinów GPIO	17
+ w wersji W moduł WiFi i Bluetooth	

Po co ten dynks?

...do czego służą te wszystkie porty?

Po co ten dynks?

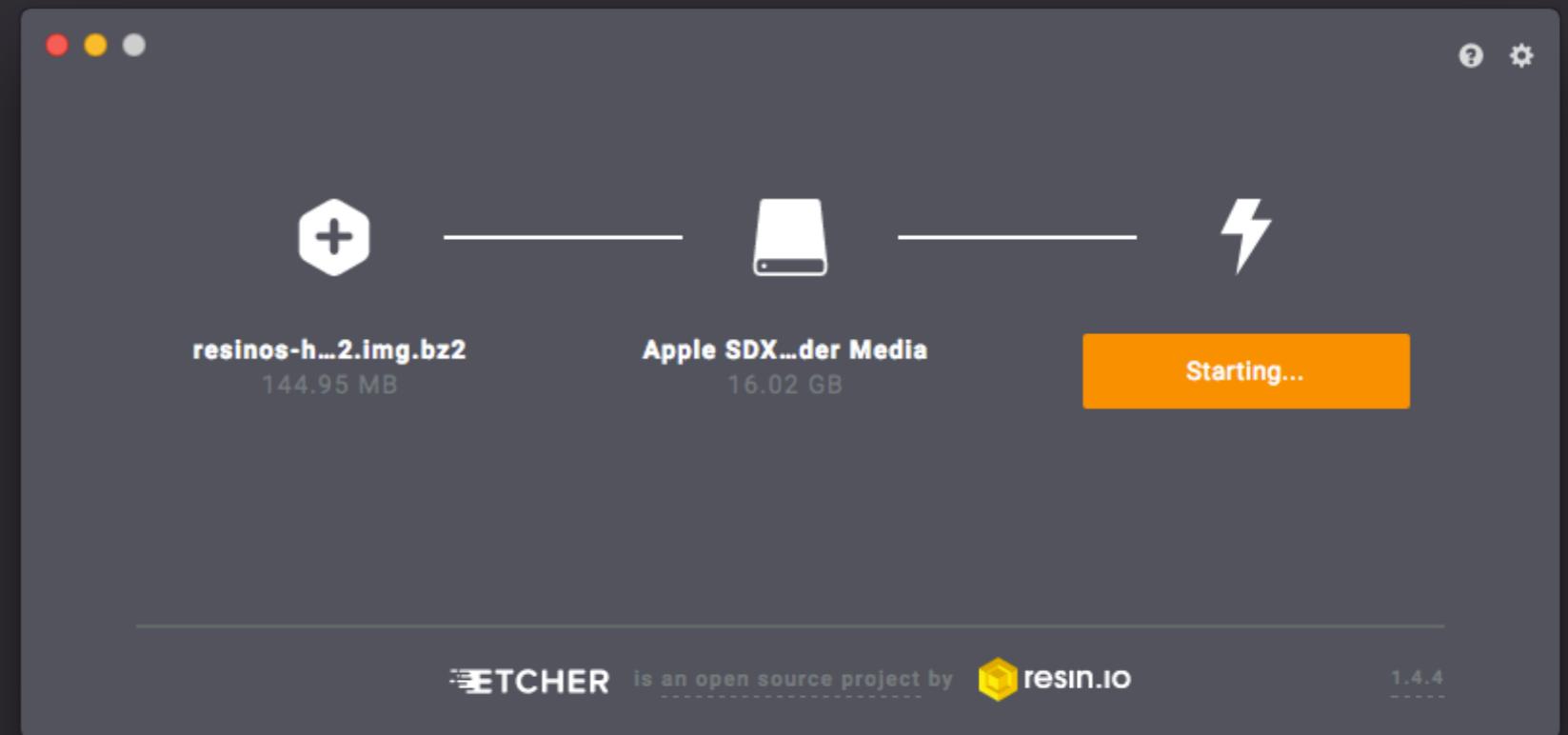
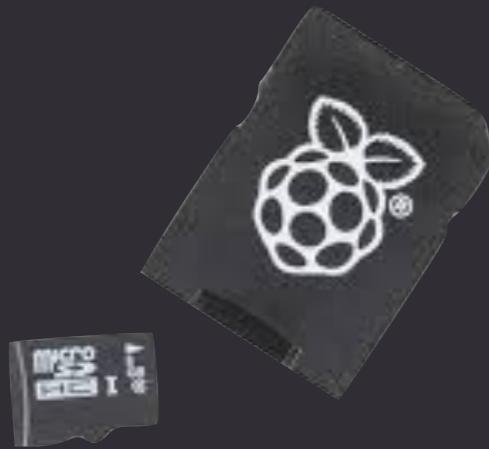
microUSB



Zasilanie - 5V

Po co ten dynks?

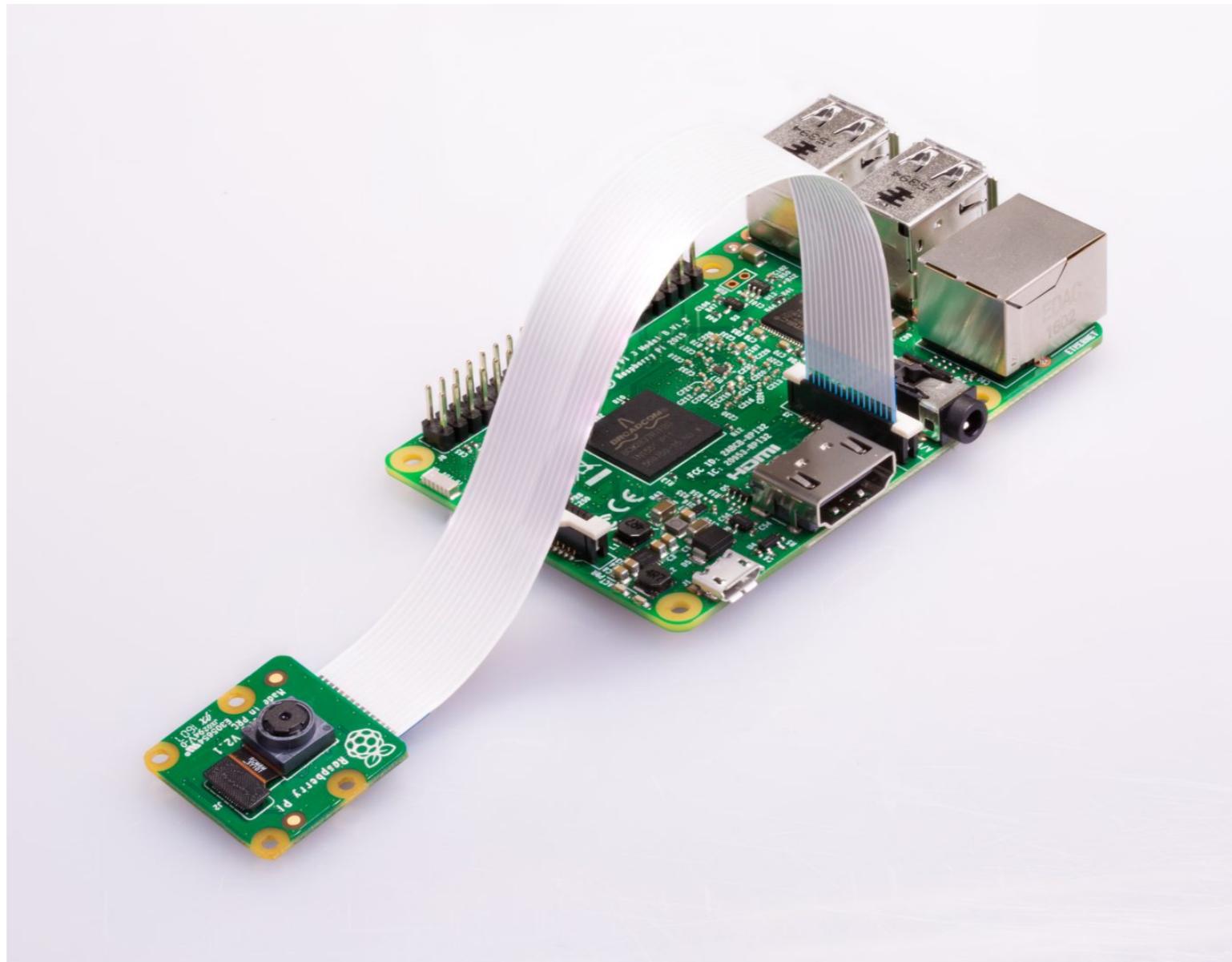
microSD



Pamięć - tutaj wgrywamy system

Po co ten dynks?

CSI



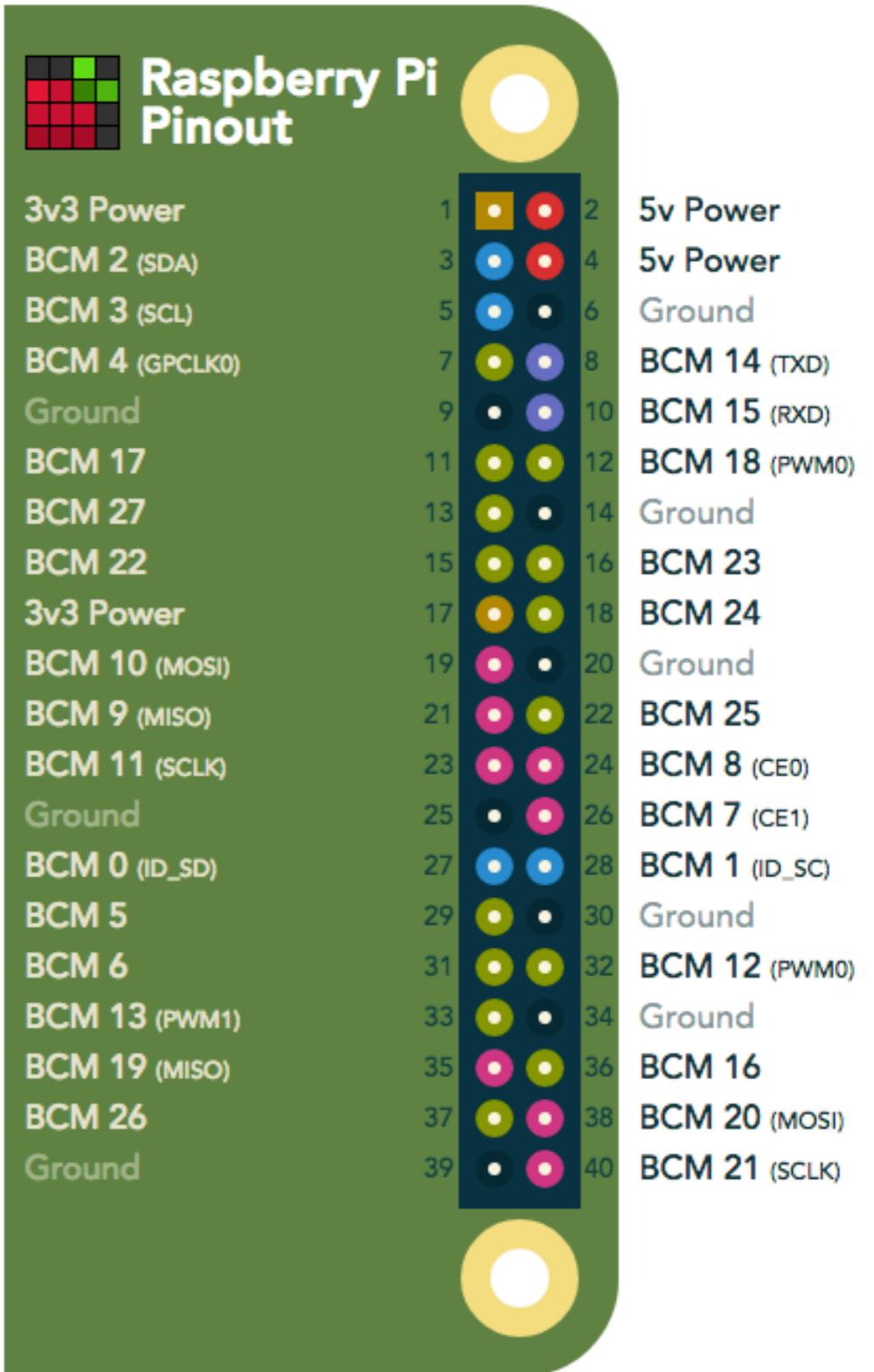
Podłączenie kamery

Po co ten dynks?

GPIO

general-purpose input/output

porty umożliwiają sterowanie i zasilanie praktycznie dowolnymi urządzeniami



Po co to komu?

czyli zastosowania

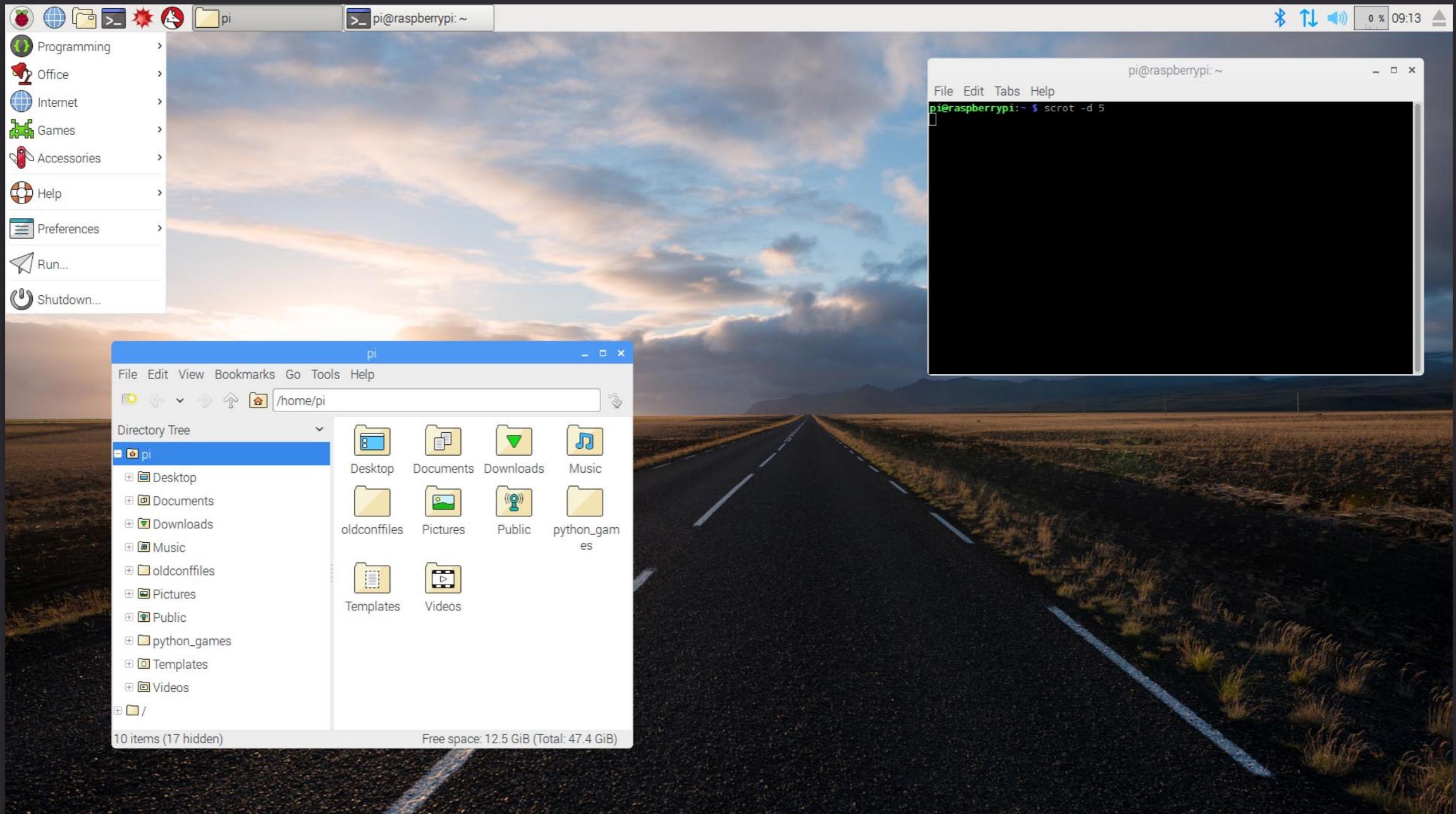
Po co to komu?

Ze względu na swoją wielkość oraz niską cenę
Raspberry Pi ma wiele zastosowań.

Oto niektóre z nich...

Po co to komu?

Prosty komputer domowy



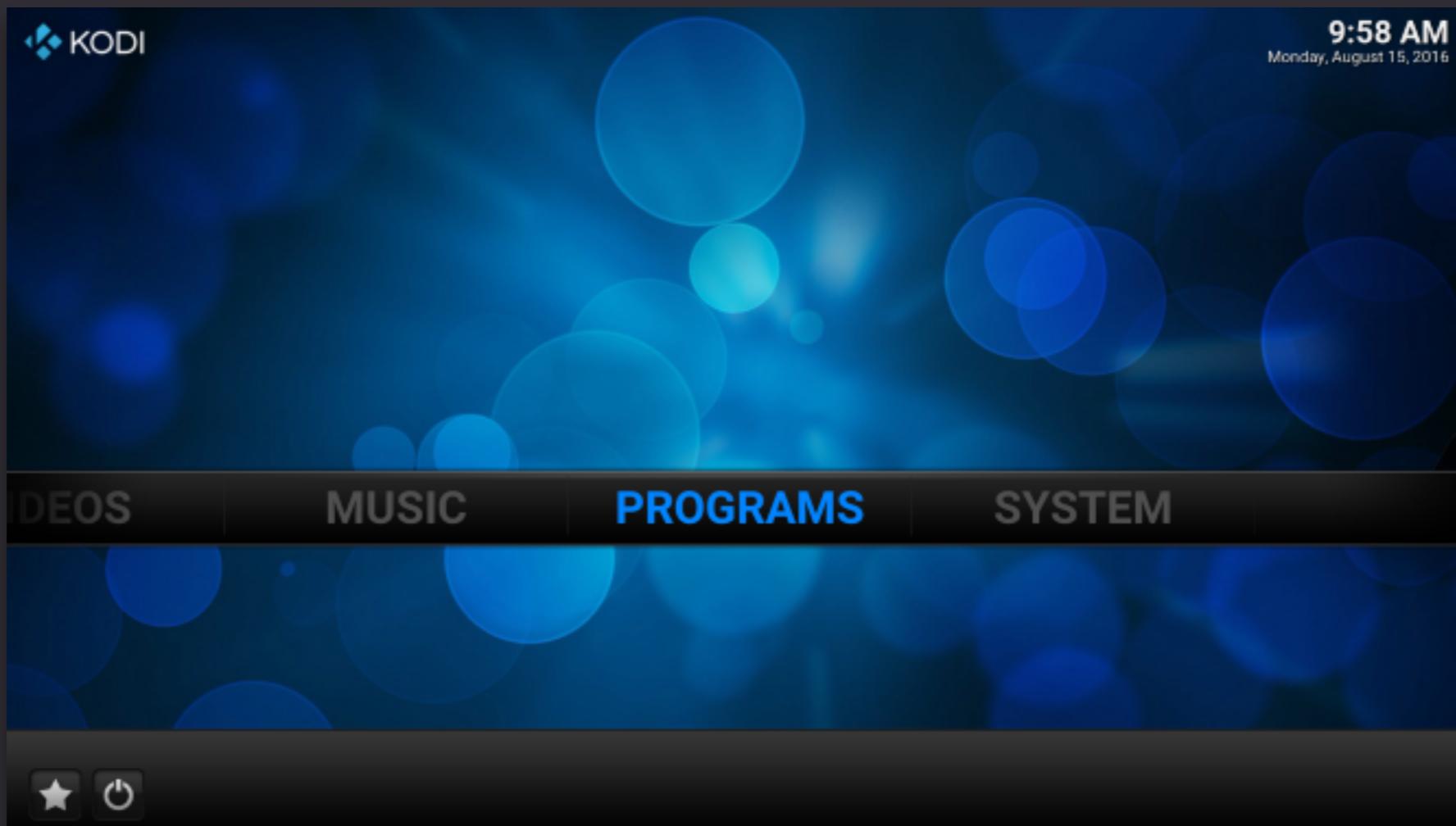
Po co to komu?

Serwer wydruków



Po co to komu?

Centrum multimedialne
lub Smart TV dla starych telewizorów



Kodi

Po co to komu?

Centrum multimedialne

lub Smart TV dla starych telewizorów



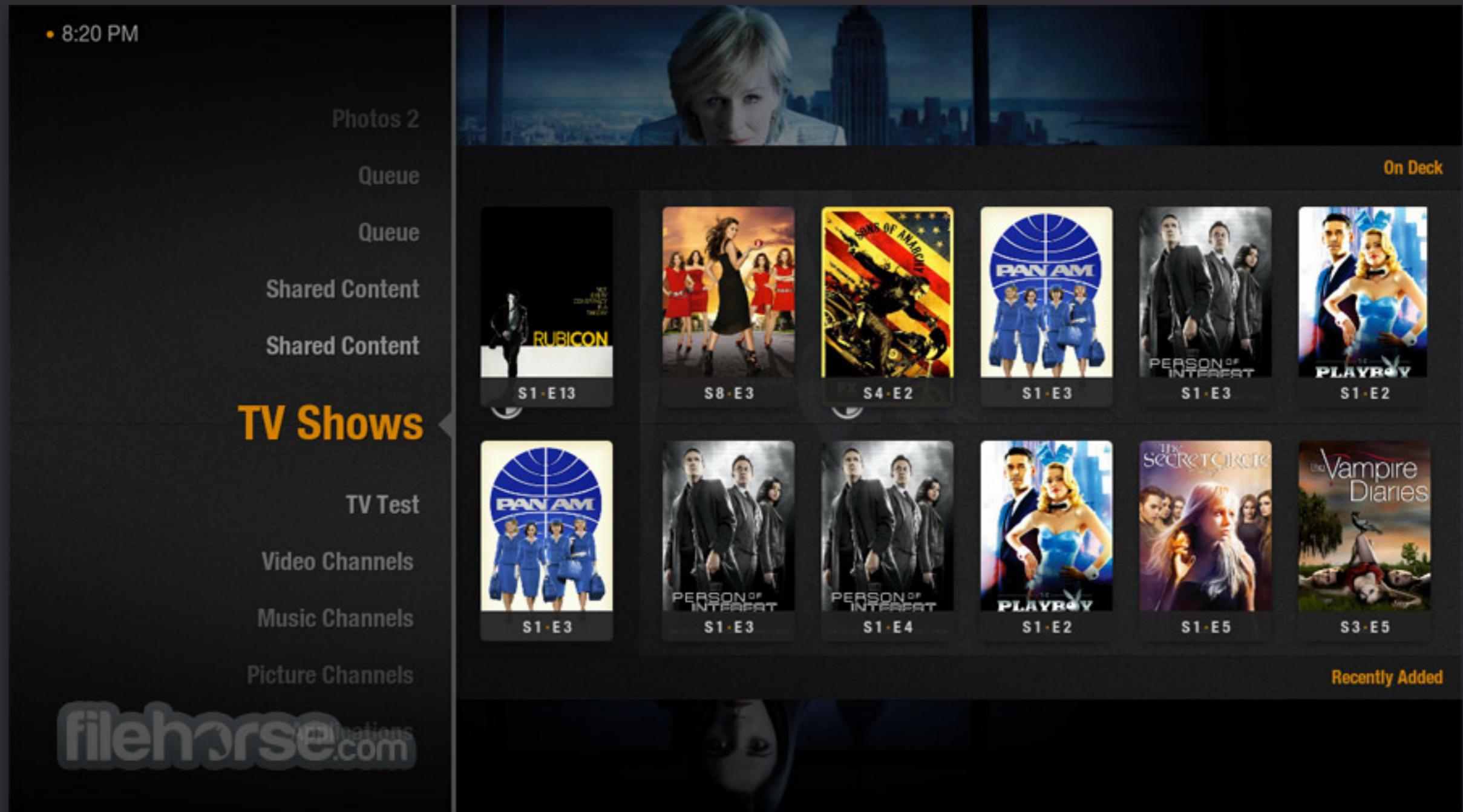
OSM



LibreELEC
Just enough OS for KODI

Po co to komu?

Centrum multimedialne
lub Smart TV dla starych telewizorów



Plex Media Center

Po co to komu?

Serwer NAS

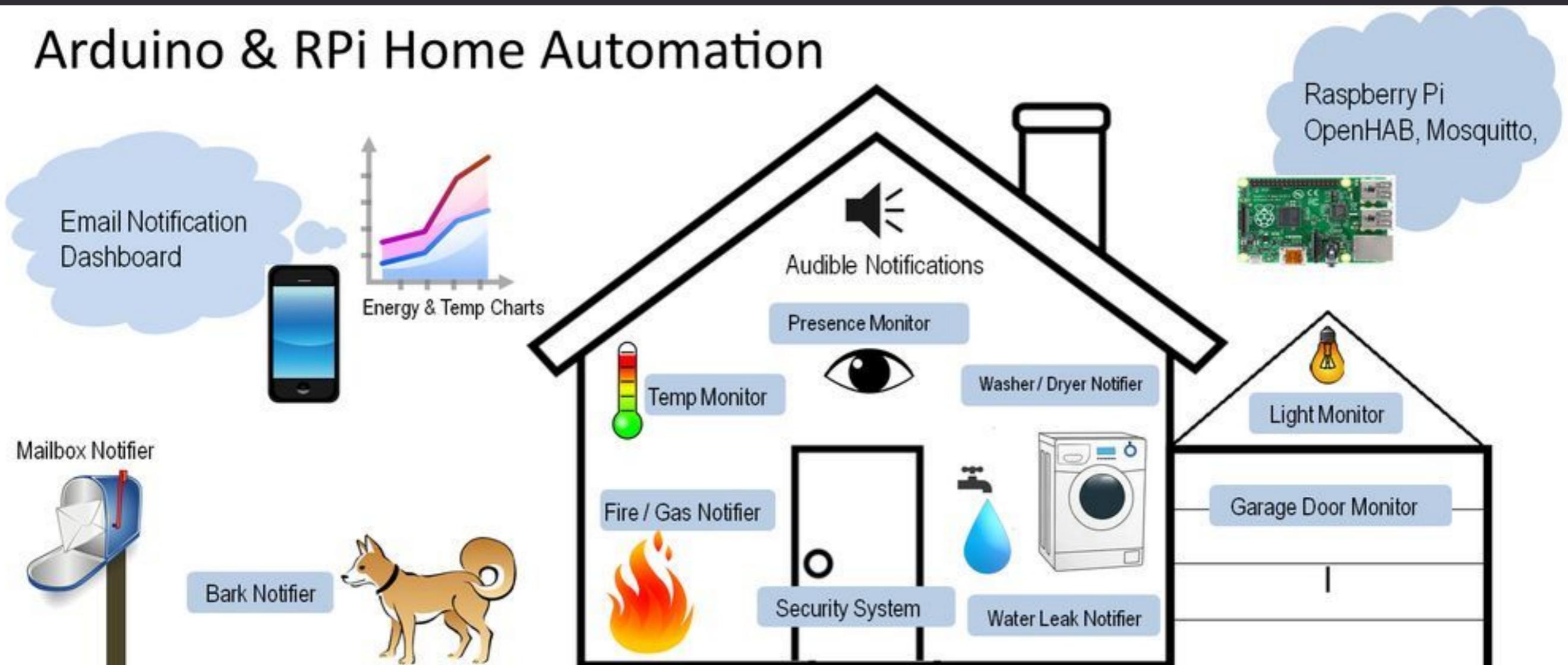
Przechowywanie plików na dysku sieciowym



Po co to komu?

Smart Home
System automatyki domowej

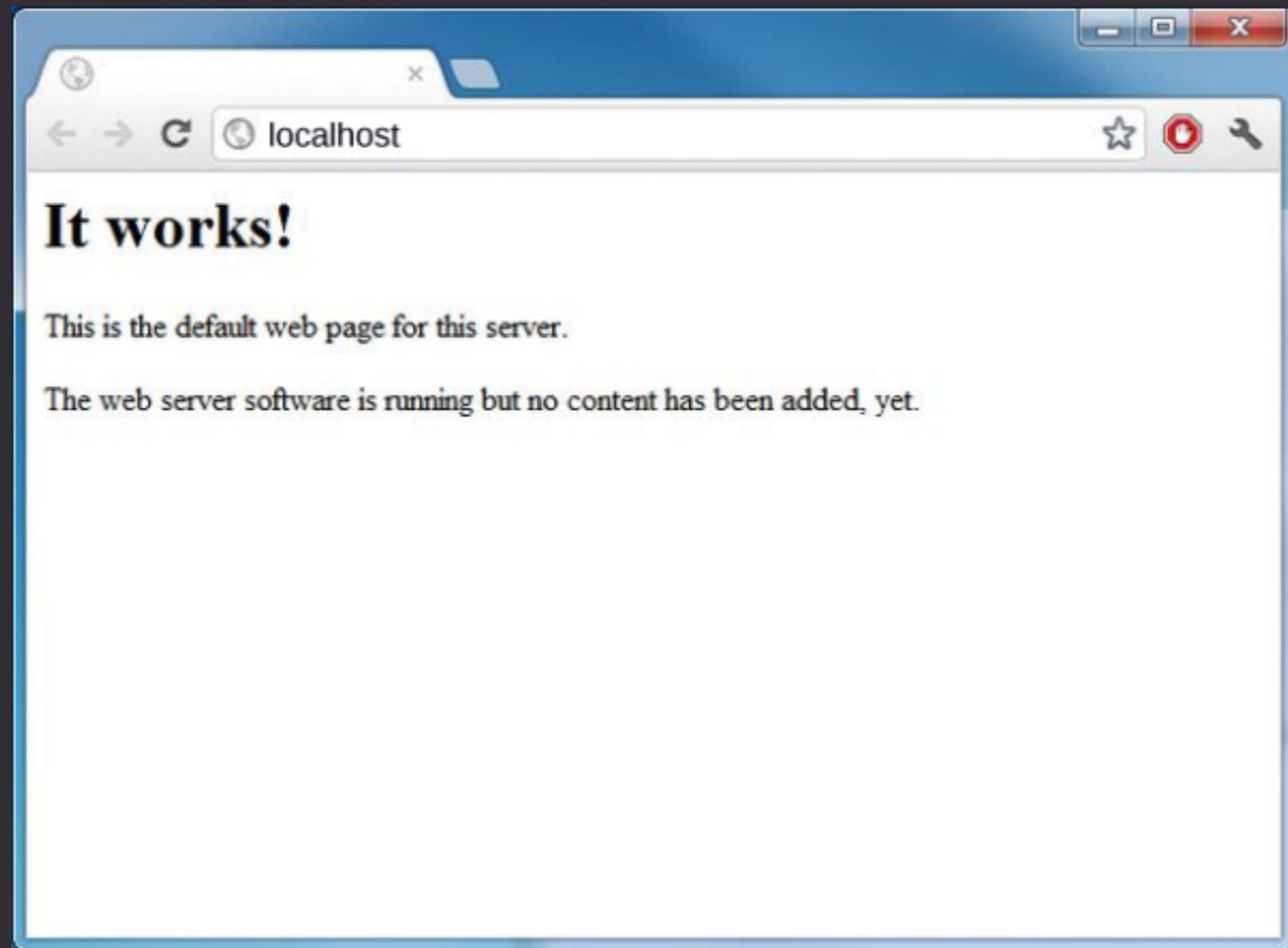
Arduino & RPi Home Automation



Po co to komu?

Hosting

Własny serwer stron WWW



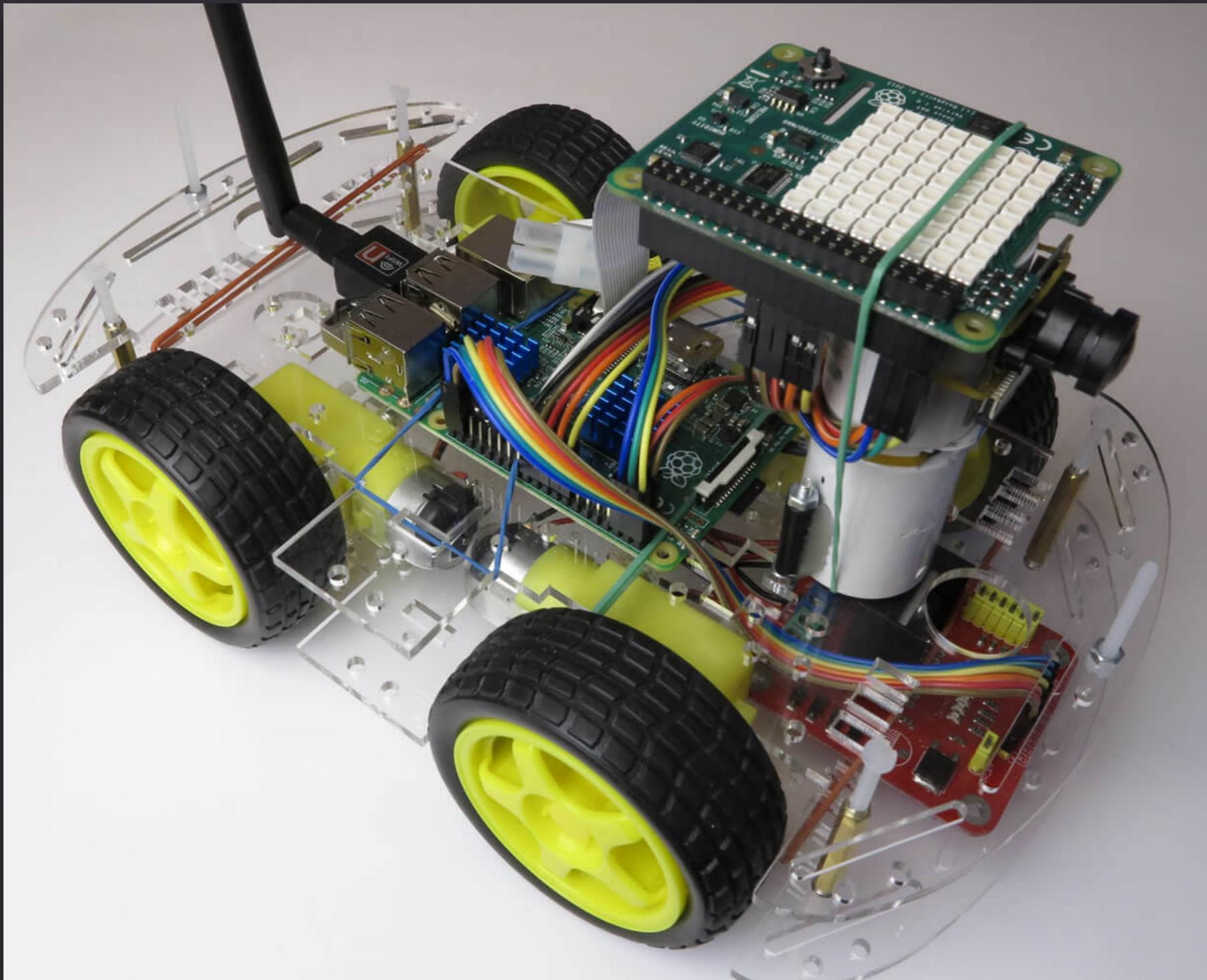
Po co to komu?

Automat lub konsola do gier retro



Po co to komu?

Robot



Po co to komu?

Mr. Robot



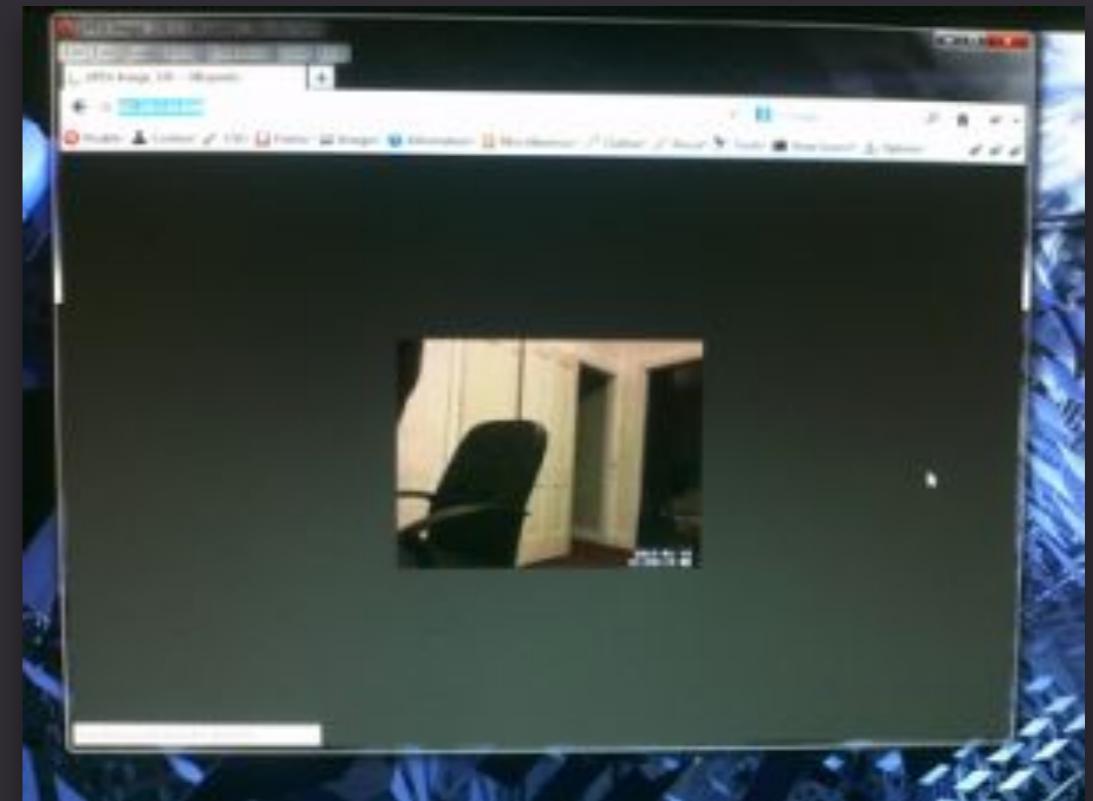
Po co to komu?

Mr. Robot



Po co to komu?

Monitoring



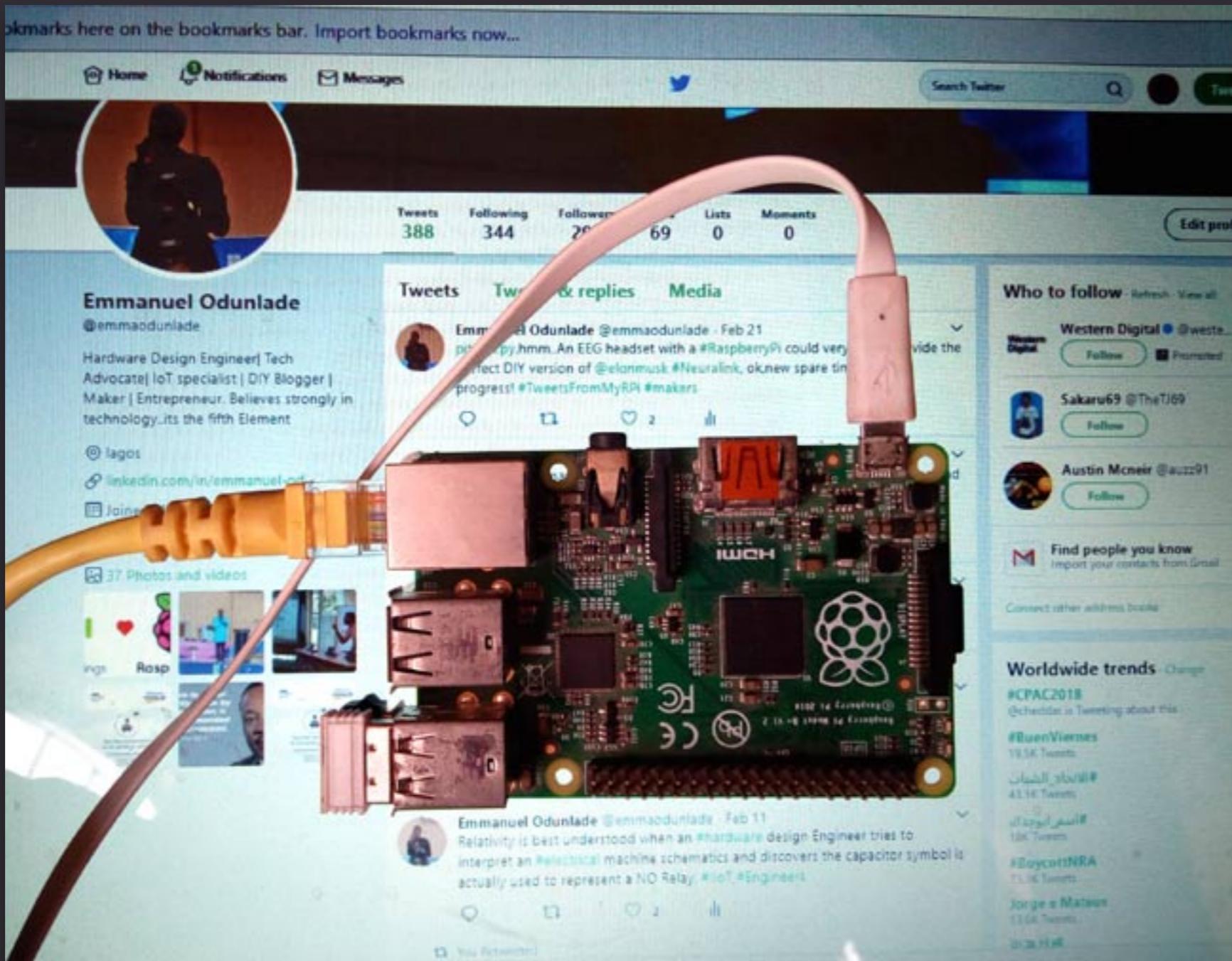
Po co to komu?

Monitoring



Po co to komu?

Boty do Twittera



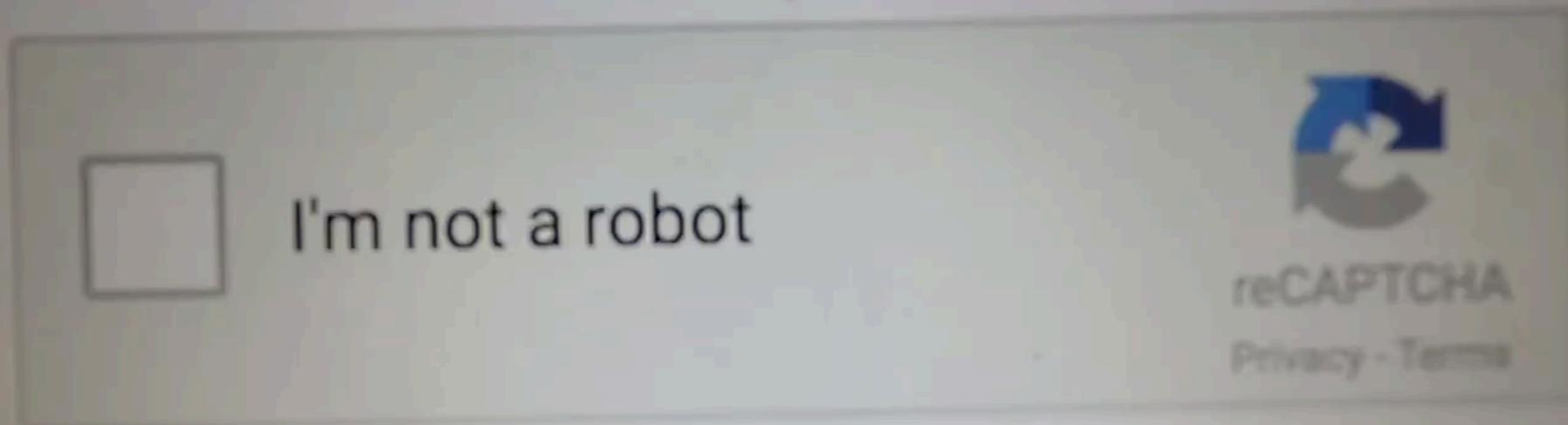
Po co to komu?

Boty do CS'a



Po co to komu?

Boty do Captchy



Po co to komu?

Radio w samochodzie



Po co to komu?

Radio w samochodzie



Po co to komu?

System automatycznego podlewania



Po co to komu?

Wiele, wiele, wiele więcej...

Demo

Serwer druku ,

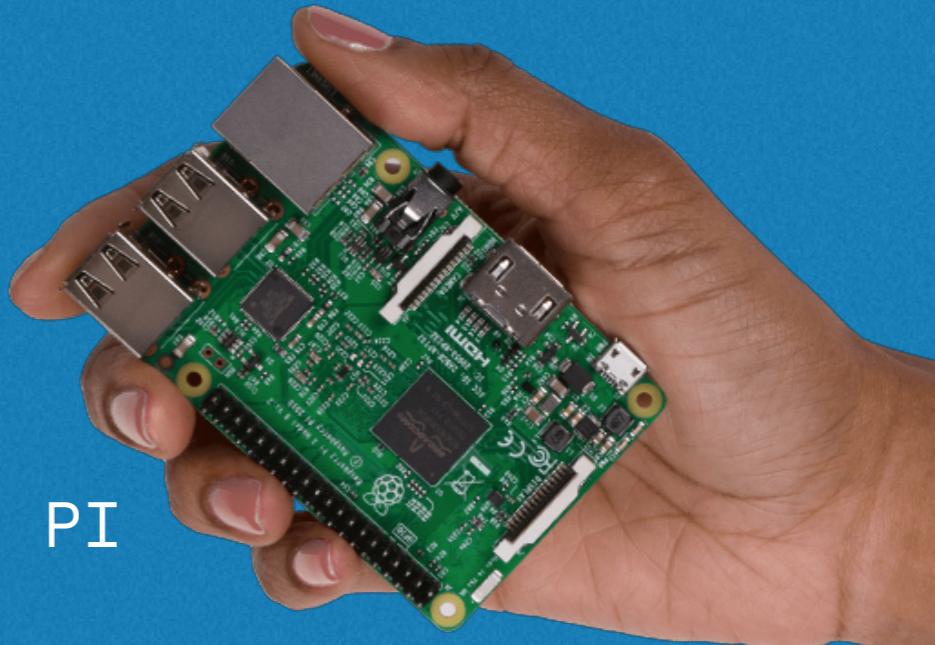
Samba

Serwer druku

Co będzie nam potrzebne?



Drukarka



Raspberry PI



Karta microSD

Serwer druku

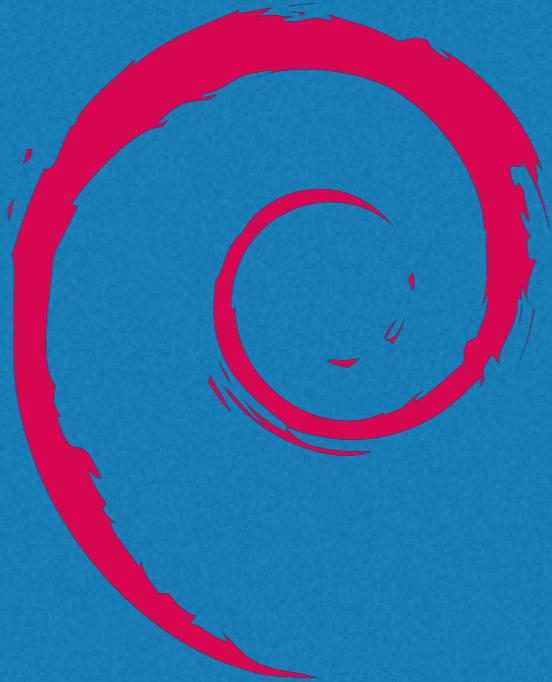
Co będzie nam potrzebne?



Serwer wydruków CUPS

Serwer druku

Co będzie nam potrzebne?



Raspbian

Zainstalowany system Raspbian

Jak to zrobić? - Hardware

Podpinamy drukarkę do Raspberry Pi oraz zasilanie





Pc

e

Jak to zrobić? - Hardware

Mogliśmy podłączyć również dysk zewnętrzny w celu przechowywania danych:



Uwaga!

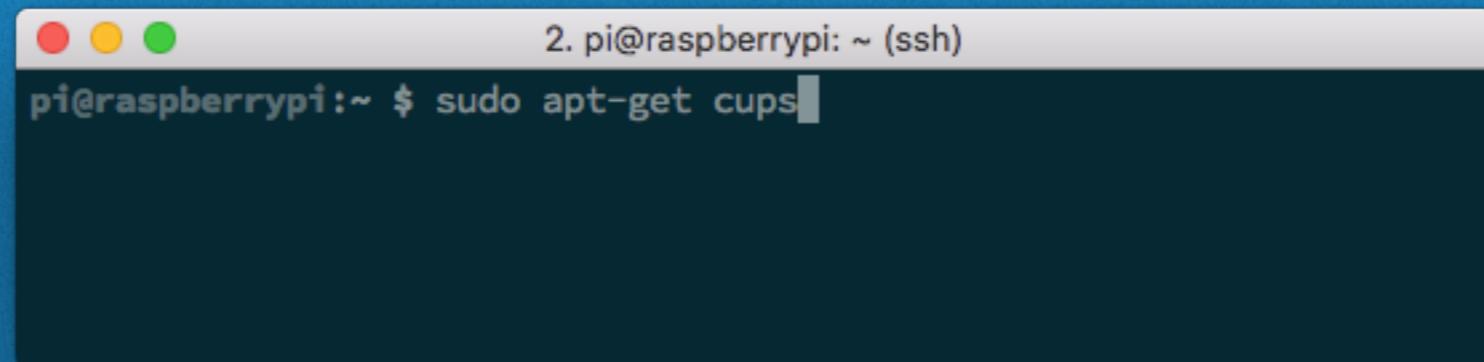
Dysk zewnętrzny HDD nie będzie działał po bezpośrednim podłączeniu, ponieważ domyślne napięcie z Raspberry jest zbyt niskie!

Trzeba użyć huba usb, z dodatkowym zasilaniem:



Jak to zrobić?

Instalujemy serwer CUPS

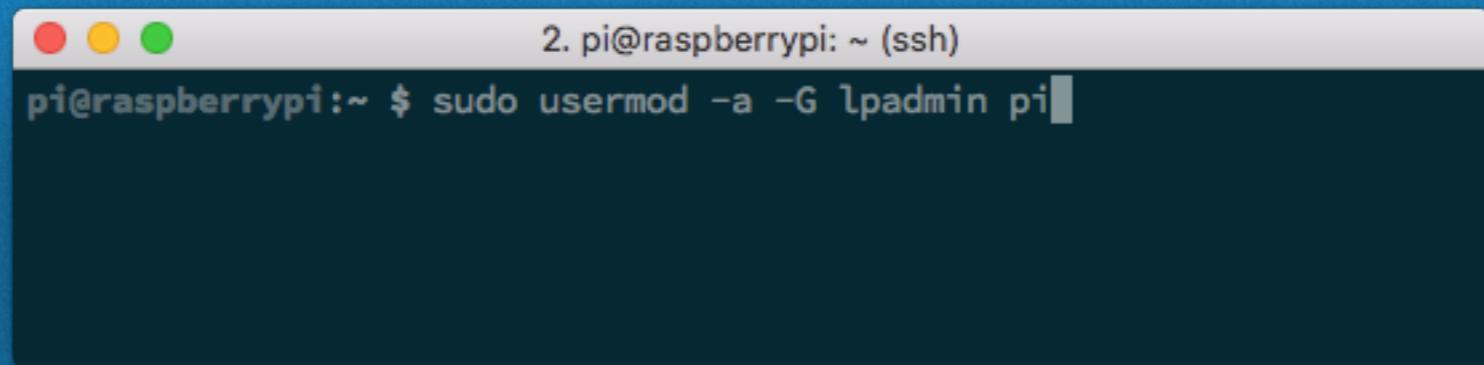


A screenshot of a terminal window with a dark background and light-colored text. The window title bar says "2. pi@raspberrypi: ~ (ssh)". The command "pi@raspberrypi:~ \$ sudo apt-get cups" is visible, with the cursor at the end of "cups". The window has a standard OS X-style title bar with red, yellow, and green buttons.

```
2. pi@raspberrypi: ~ (ssh)
pi@raspberrypi:~ $ sudo apt-get cups
```

Jak to zrobić?

Dodajemy naszego domyślnego użytkownika do grupy lpadmin



2. pi@raspberrypi: ~ (ssh)

```
pi@raspberrypi:~ $ sudo usermod -a -G lpadmin pi
```

Jak to zrobić?

Przechodzimy pod adres naszego Raspberry na domyślnym porcie CUPS 631:

The screenshot shows a web browser window titled "Home - CUPS 2.2.1". The address bar contains the URL "192.168.1.156:631". The page content is the CUPS 2.2.1 homepage. At the top, there is a navigation menu with links for "CUPS.org", "Home", "Administration", "Classes", "Help", "Jobs", and "Printers". Below the menu, the title "CUPS 2.2.1" is displayed in large bold letters. A descriptive text follows: "CUPS is the standards-based, open source printing system developed by Apple Inc. for macOS® and other UNIX®-like operating systems." The page is divided into three main sections: "CUPS for Users", "CUPS for Administrators", and "CUPS for Developers", each listing several links to various documentation pages.

CUPS for Users	CUPS for Administrators	CUPS for Developers
Overview of CUPS	Adding Printers and Classes	Introduction to CUPS Programming
Command-Line Printing and Options	Managing Operation Policies	CUPS API
User Forum	Using Network Printers	Filter and Backend Programming
	cupsd.conf Reference	HTTP and IPP APIs
		Developer Forum

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Jak to zrobić?

W zakładce Printers powinna być widoczna nasza drukarka:

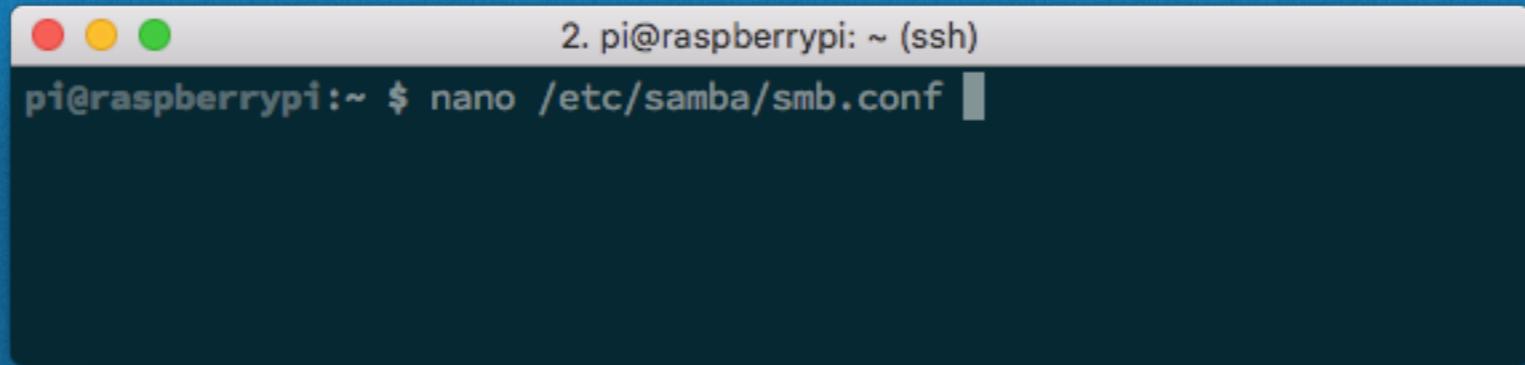
The screenshot shows a web browser window titled "Printers - CUPS 2.2.1". The address bar displays the URL "192.168.1.156:631/printers/". The navigation menu includes links for "CUPS.org", "Home", "Administration", "Classes", "Help", "Jobs", and "Printers". The main content area is titled "Printers" and contains a search bar with the placeholder "Search in Printers:" and buttons for "Search" and "Clear". Below the search bar, a message says "Showing 3 of 3 printers.". A table lists the following printer information:

Queue Name	Description	Location	Make and Model	Status
Brother_HL-5350DN_series	Brother HL-5350DN series		Brother HL-5350DN BR-Script3	Idle
Brother_HL_5350DN_series	Brother HL-5350DN series @ MacBook Pro	MacBook-Pro.local (Port: 631)	Remote printer: Brother HL-5350DN series CUPS	Idle
MFCJ880DW	MFCJ880DW		Brother MFC-J880DW CUPS	Idle

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Jak to zrobić?

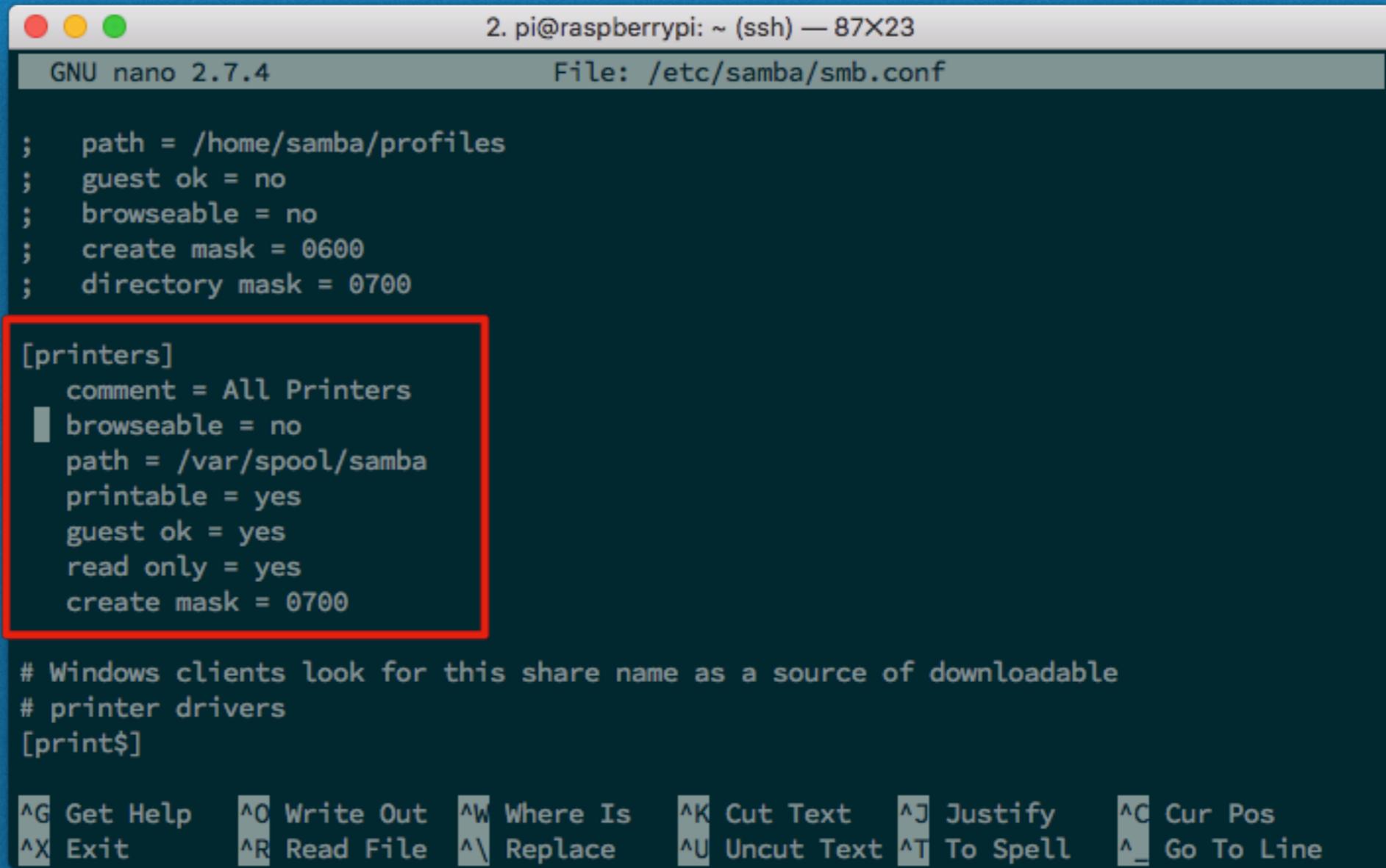
Konfigurujemy sambę
(u mnie jest już zainstalowana)



2. pi@raspberrypi: ~ (ssh)
pi@raspberrypi:~ \$ nano /etc/samba/smb.conf

Jak to zrobić?

Tworzymy sekcję dla drukarek w konfiguracji:



```
2. pi@raspberrypi: ~ (ssh) — 87X23
GNU nano 2.7.4                               File: /etc/samba/smb.conf

; path = /home/samba/profiles
; guest ok = no
; browseable = no
; create mask = 0600
; directory mask = 0700

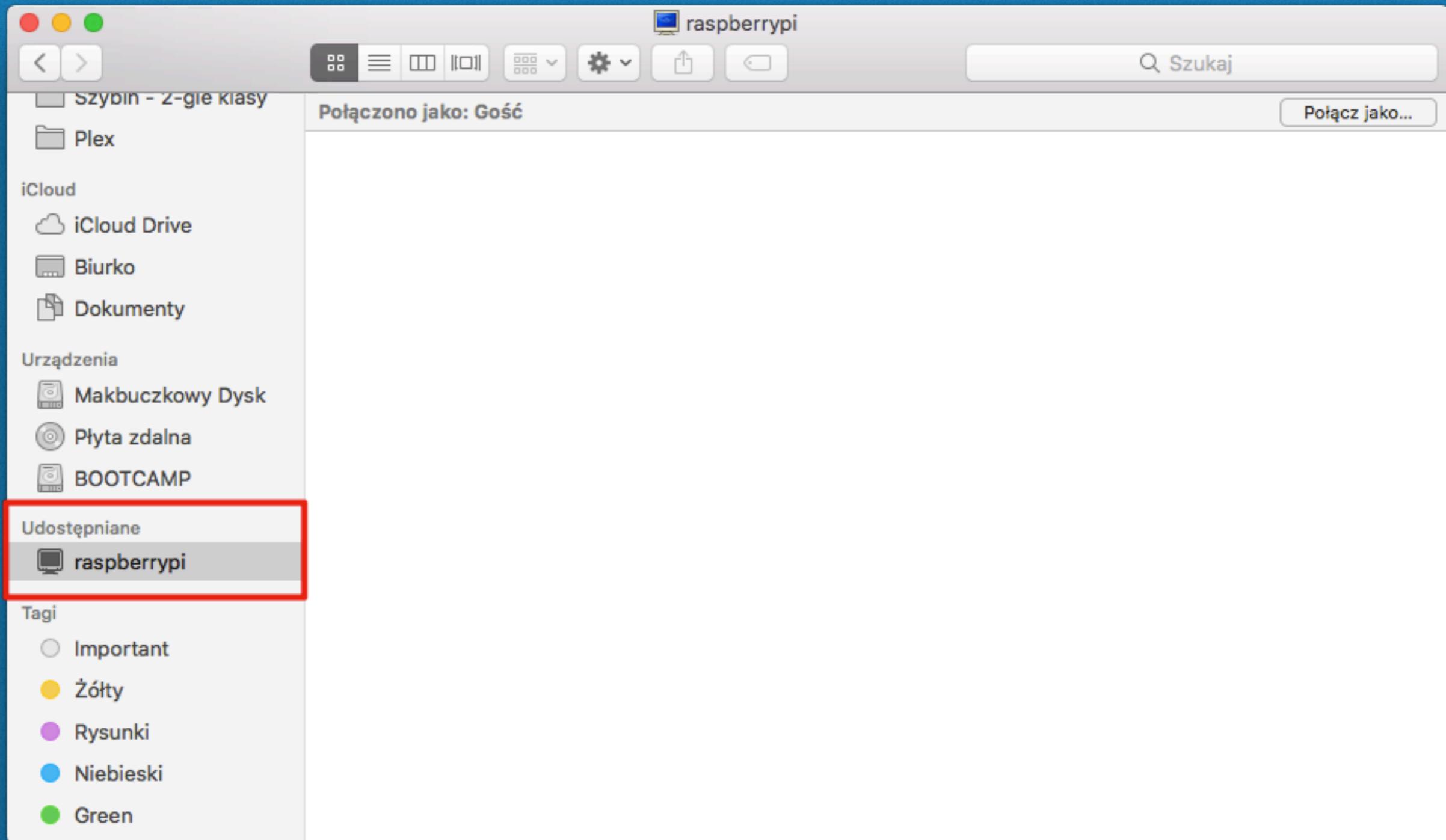
[printers]
comment = All Printers
browseable = no
path = /var/spool/samba
printable = yes
guest ok = yes
read only = yes
create mask = 0700

# Windows clients look for this share name as a source of downloadable
# printer drivers
[print$]
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line

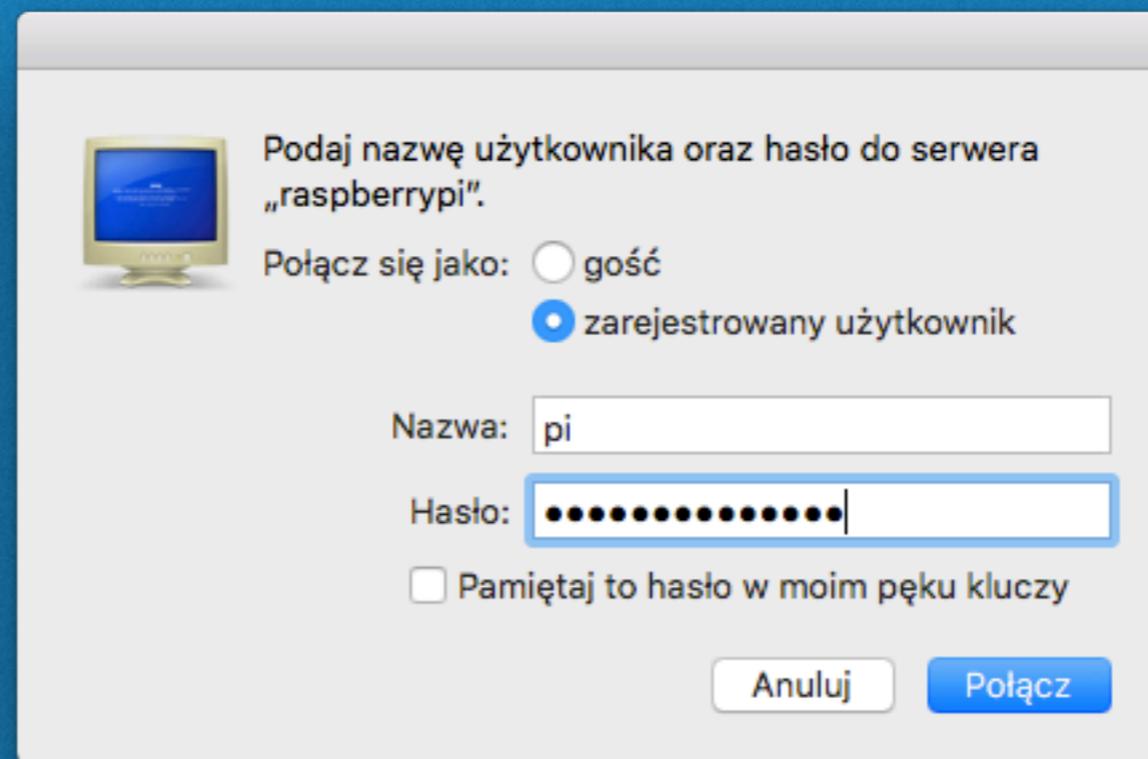
Jak to zrobić?

Raspberry powinno zostać wykryte w sieci domowej:



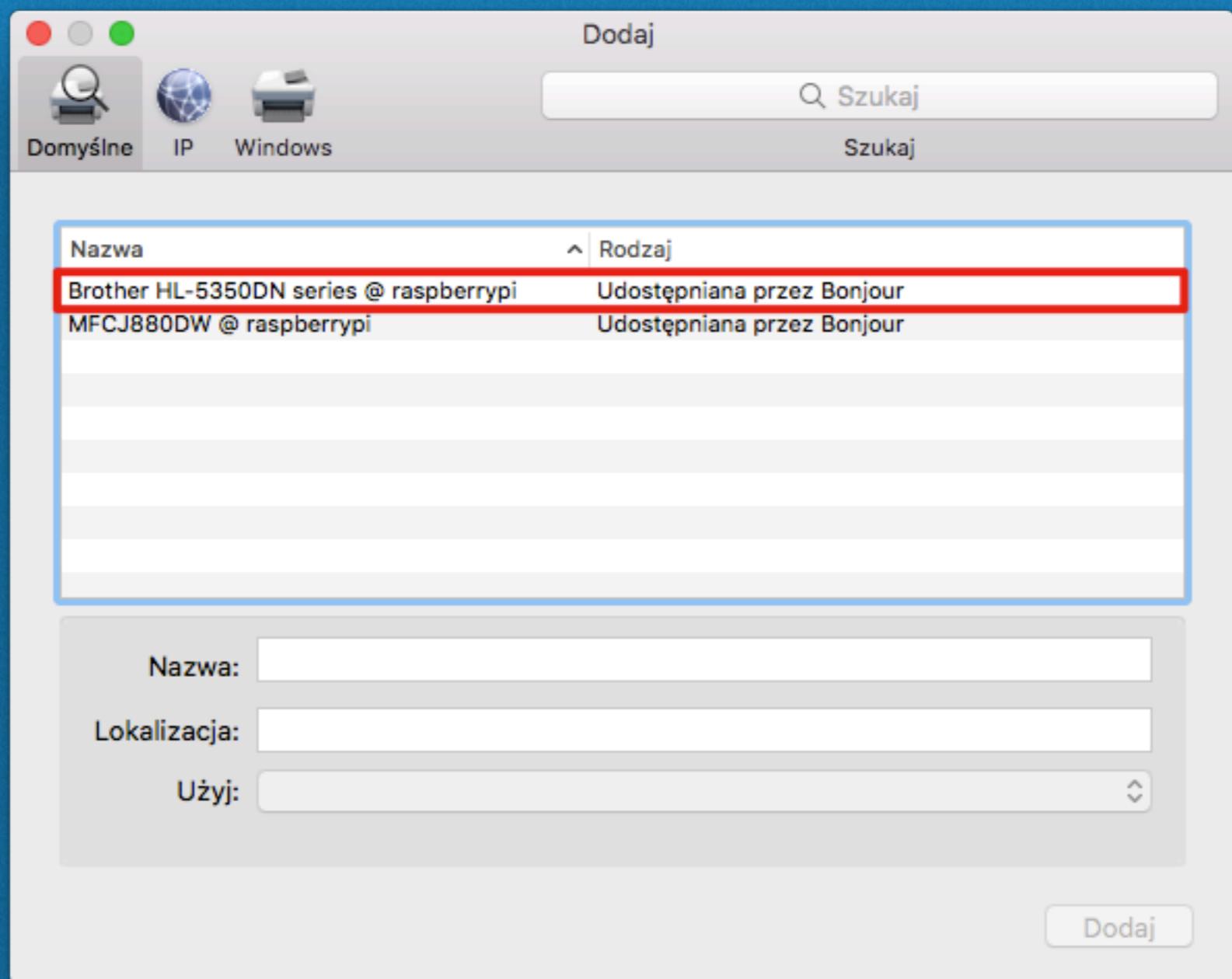
Jak to zrobić?

Musimy zalogować się jako domyślny użytkownik:



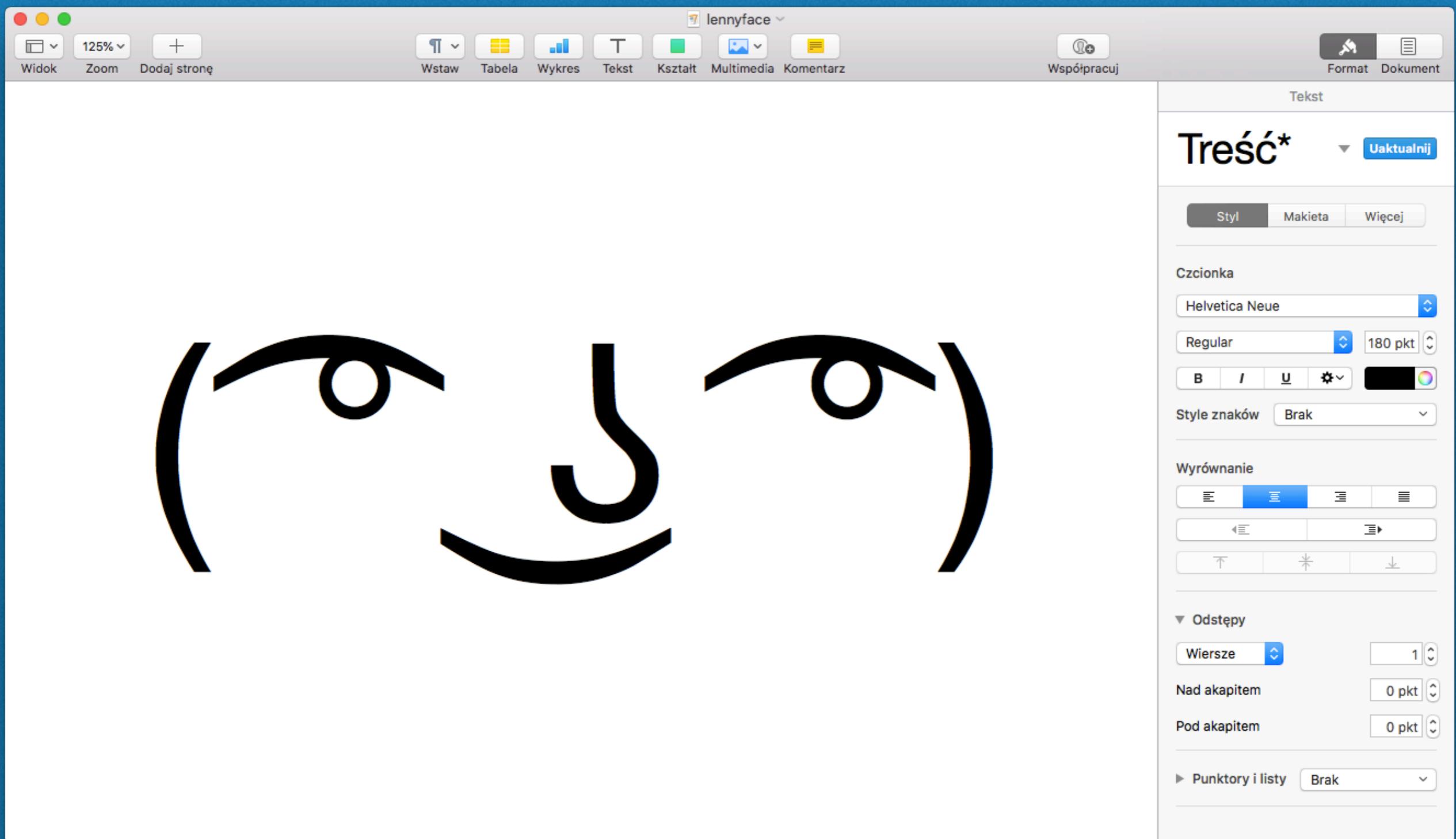
Jak to zrobić?

W ustawieniach systemu możemy skonfigurować nową drukarkę sieciową:



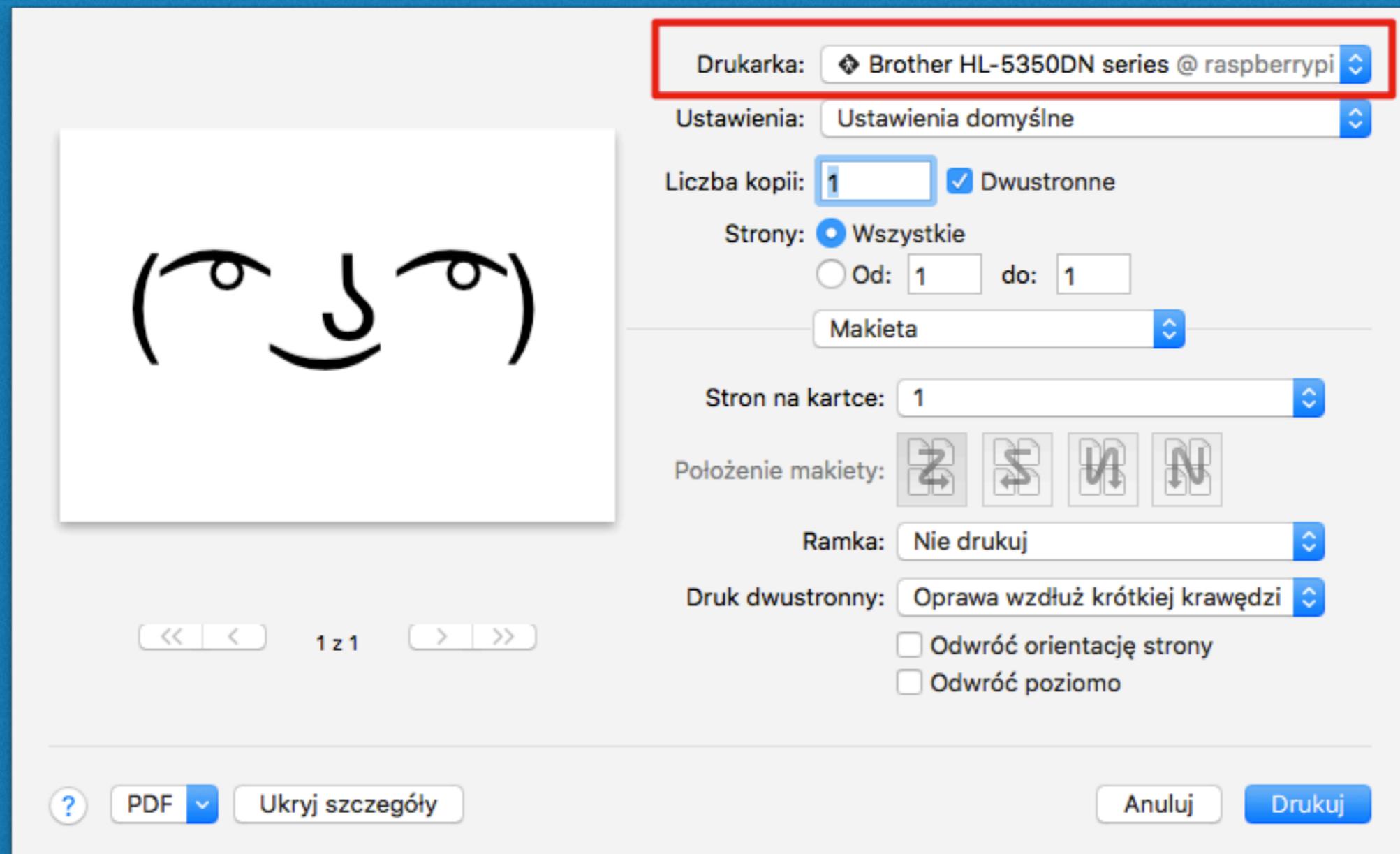
Jak to zrobić?

Stworzyłem przykładowy dokument do przetestowania drukowania przez sieć:



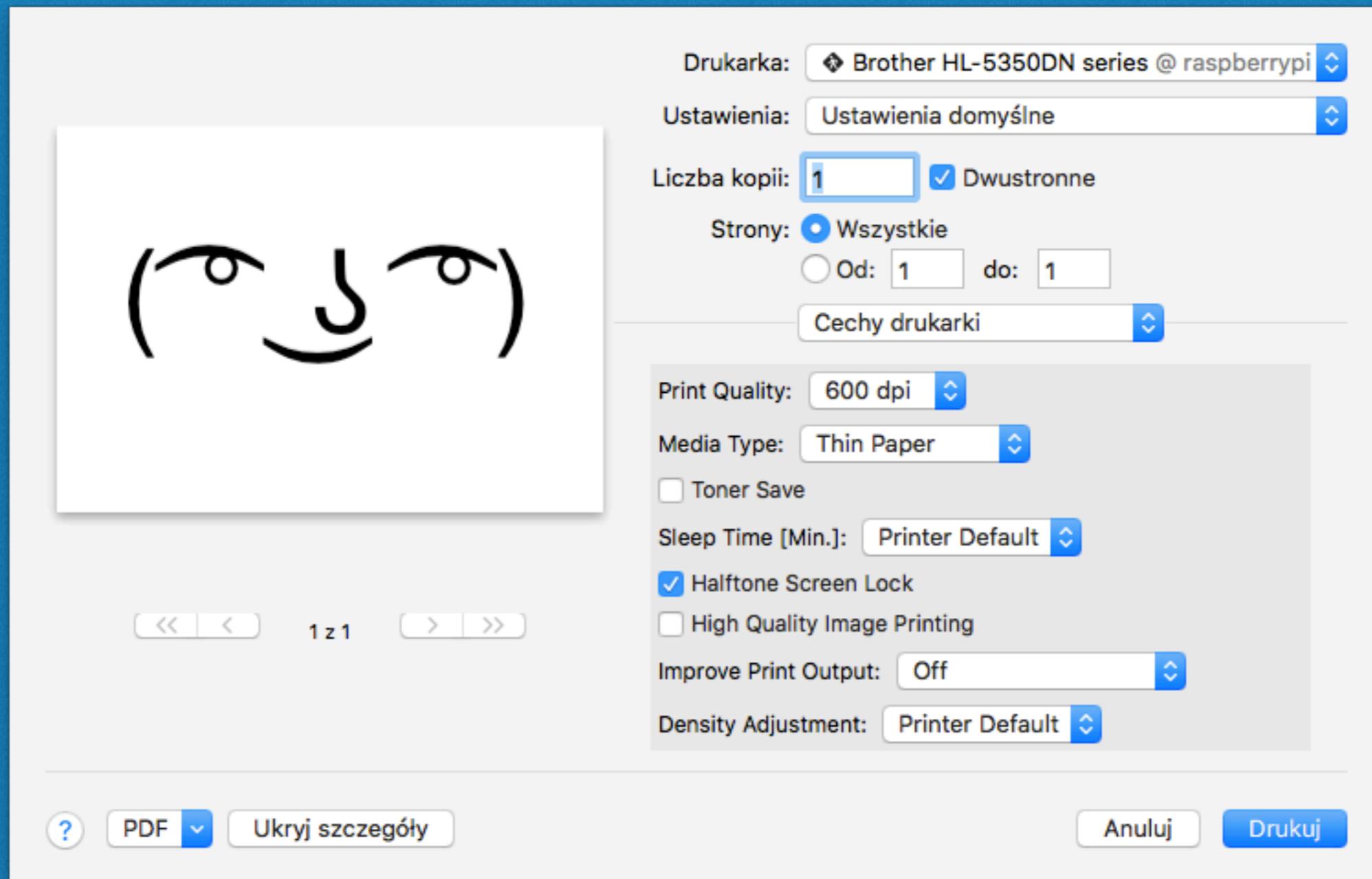
Jak to zrobić?

Wybieramy dodaną drukarkę sieciową:



Jak to zrobić?

Widoczne są nawet ustawienia specyficzne dla danej drukarki (znaczy to, że został wybrany poprawny sterownik)



Jak to zrobić?

Drukujemy!

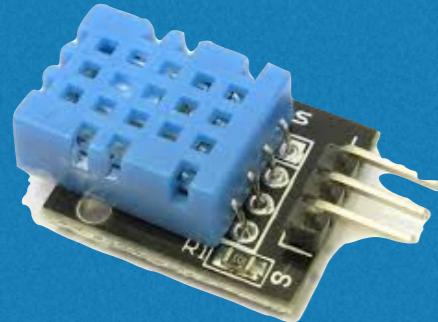


Demo

Czujnik temperatury

Czujnik temperatury

Co będzie nam potrzebne?



Czujnik temperatury
DHT11



Raspberry PI

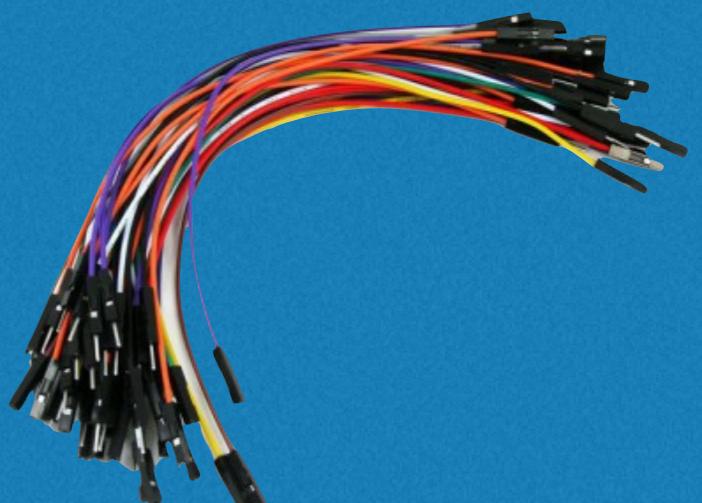


Karta microSD

<http://www.argos.co.uk/product/1066926>

<https://sklep.wizro.pl/prototypowanie-testy-nauka/358-przewody-po-czeniowe-premium-m-sko-m-skie-15cm-50szt.html>

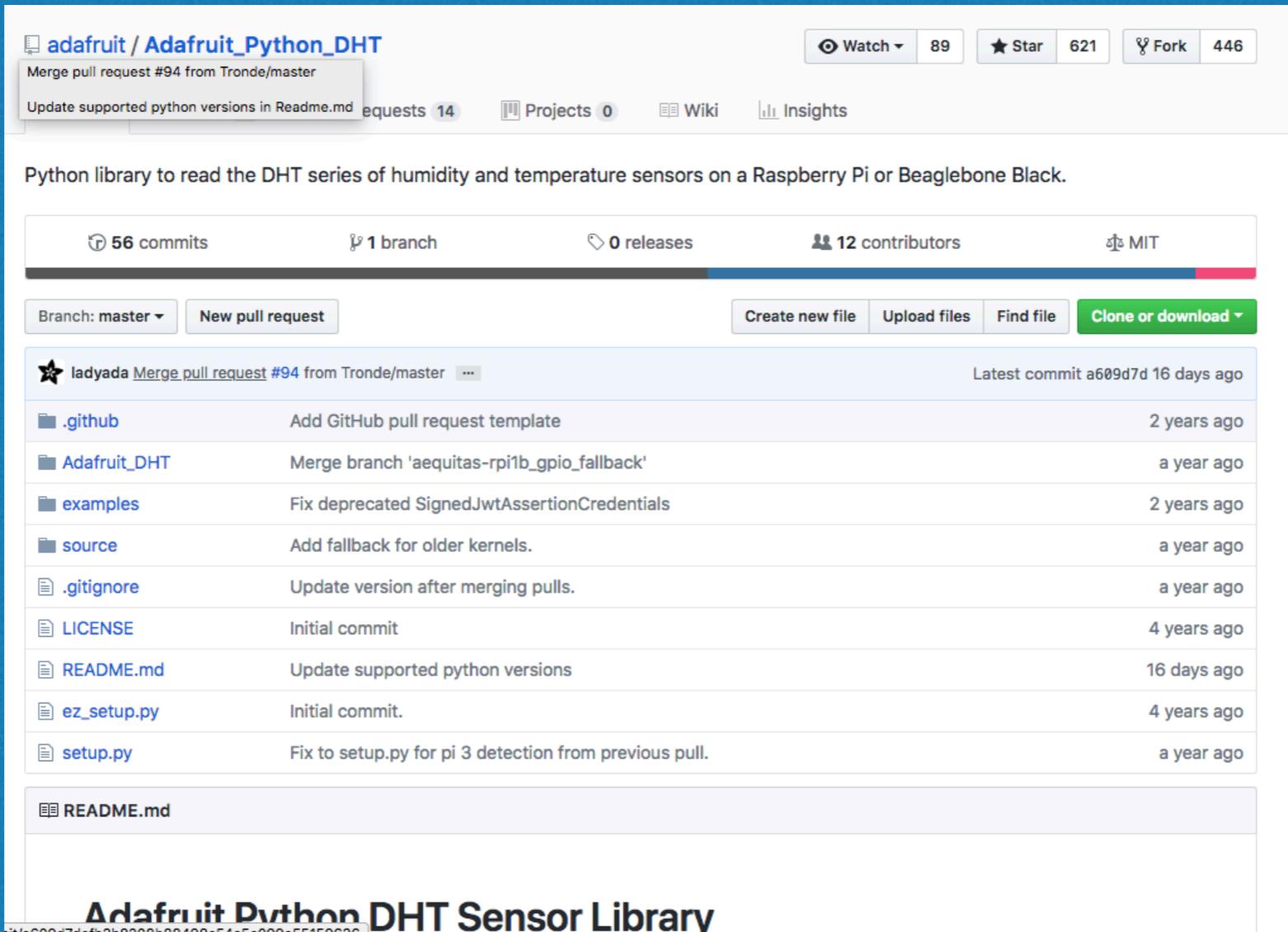
<http://www.annymart.com/product/dht11-humidity-temperature-sensor-with-pcb/>



Przewody połączeniowe

Czujnik temperatury

Co będzie nam potrzebne?



The screenshot shows the GitHub repository page for Adafruit Python DHT. The repository has 56 commits, 1 branch, 0 releases, 12 contributors, and is licensed under MIT. The latest commit was made 16 days ago. The repository contains files like .github, Adafruit_DHT, examples, source, .gitignore, LICENSE, README.md, ez_setup.py, and setup.py. The README.md file is visible at the bottom.

Merge pull request #94 from Tronde/master

Update supported python versions in Readme.md

56 commits 1 branch 0 releases 12 contributors MIT

Branch: master New pull request Create new file Upload files Find file Clone or download

ladyada Merge pull request #94 from Tronde/master ... Latest commit a609d7d 16 days ago

.github Add GitHub pull request template 2 years ago

Adafruit_DHT Merge branch 'aequitas-rpi1b_gpio_fallback' a year ago

examples Fix deprecated SignedJwtAssertionCredentials 2 years ago

source Add fallback for older kernels. a year ago

.gitignore Update version after merging pulls. a year ago

LICENSE Initial commit 4 years ago

README.md Update supported python versions 16 days ago

ez_setup.py Initial commit. 4 years ago

setup.py Fix to setup.py for pi 3 detection from previous pull. a year ago

README.md

Adafruit Python DHT Sensor Library

Sterowniki czujnika od Adafruit ze strony
https://github.com/adafruit/Adafruit_Python_DHT

Czujnik temperatury

Co będzie nam potrzebne?

The screenshot shows the 'Interfejs' (Interface) tab of the ASUS RT-AC66U router's configuration page. The main content is a table titled 'All list' displaying information about connected clients. The columns are: Internet status, Ikonę (Icon), Nazwa klienta (Client Name), Adres IP klienta (Client IP Address), Adres MAC klienta (Client MAC Address), Interfejs (Interface), Tx Rate (Mbps), Rx Rate (Mbps), and Czas dostępu (Access Time). The table lists seven devices:

Internet status	Ikonę	Nazwa klienta	Adres IP klienta	Adres MAC klienta	Interfejs	Tx Rate (Mbps)	Rx Rate (Mbps)	Czas dostępu	
🌐	💻	iPad-Jonasz	192.168.1.26	DHCP	94:E9:6A:64:9E:6C	2.4 G	130	-	30:07:18
🌐	📱	iPhone-Jonatan	192.168.1.28	DHCP	C8:E0:EB:DB:FE:FC	2.4 G	58.5	24	04:13:45
🌐	💻	Jonasz-LAPTOP	192.168.1.55	DHCP	5C:AC:4C:62:5A:8E	2.4 G	1	1	00:49:22
🌐	📱	iPad-Jonatan	192.168.1.122	DHCP	A4:F1:E8:92:01:88	2.4 G	144.4	-	09:06:48
🌐	📱	iPhone-Kasia	192.168.1.191	DHCP	84:85:06:54:E2:B3	2.4 G	1	-	06:54:58
🌐	💻	MacBook-Pro	192.168.1.218	DHCP	B8:8D:12:2E:2D:40	2.4 G	52	-	02:16:19
🌐	📱	Samsung	192.168.1.219	DHCP	A0:82:1F:43:6D:18	2.4 G	1	6	01:19:35

At the bottom right of the table area is a 'Eksportuj' (Export) button.

Adres IP Raspberry
(można odczytać z routera)

Jak to zrobić?

Musimy połączyć się przez SSH z
Raspberry



Następnie pobieramy i
instalujemy git-a



```
1. pi@raspberrypi: ~ (ssh) 1167 14:42:07
~ ➔ ssh pi@192.168.1.156
The authenticity of host '192.168.1.156 (192.168.1.156)' can't be established.
ECDSA key fingerprint is SHA256:MUlRNUsaEb2dErjFax2uisi7Vmp3hj7mmAWJb0sFxgg.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.1.156' (ECDSA) to the list of known hosts.
pi@192.168.1.156's password:
Permission denied, please try again.
pi@192.168.1.156's password:
Linux raspberrypi 4.9.59-v7+ #1047 SMP Sun Oct 29 12:19:23 GMT 2017 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Mar 28 17:20:55 2018
pi@raspberrypi:~ $ sudo apt-get install git-core
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  git-core
0 upgraded, 1 newly installed, 0 to remove and 1 not upgraded.
Need to get 1410 B of archives.
After this operation, 8192 B of additional disk space will be used.
Get:1 http://mirrordirector.raspbian.org/raspbian stretch/main armhf git-core all 1:2.11.0-3+deb9u2 [1410 B]
Fetched 1410 B in 0s (8330 B/s)
apt-listchanges: Can't set locale; make sure $LC_* and $LANG are correct!
perl: warning: Setting locale failed.
perl: warning: Please check that your locale settings:
  LANGUAGE = (unset),
  LC_ALL = (unset),
  LC_CTYPE = "en_US.UTF-8",
  LANG = "pl_PL.UTF-8"
    are supported and installed on your system.
perl: warning: Falling back to a fallback locale ("pl_PL.UTF-8").
locale: Cannot set LC_CTYPE to default locale: No such file or directory
locale: Nie mo?na ustawi? LC_ALL na domy?ln? lokalizacj?: Nie ma takiego pliku a
ni katalogu
Selecting previously unselected package git-core.
(Reading database ... 128552 files and directories currently installed.)
Preparing to unpack .../git-core_1%3a2.11.0-3+deb9u2_all.deb ...
Unpacking git-core (1:2.11.0-3+deb9u2) ...
Setting up git-core (1:2.11.0-3+deb9u2) ...
pi@raspberrypi:~ $
```

Jak to zrobić?

Klonujemy repozytorium z githuba

```
1. pi@raspberrypi: ~ (ssh)  
pi@raspberrypi:~ $ git clone https://github.com/adafruit/Adafruit_Python_DHT.git  
Cloning into 'Adafruit_Python_DHT'...  
remote: Counting objects: 253, done.  
remote: Compressing objects: 100% (4/4), done.  
remote: Total 253 (delta 0), reused 0 (delta 0), pack-reused 249  
Receiving objects: 100% (253/253), 79.11 KiB | 0 bytes/s, done.  
Resolving deltas: 100% (142/142), done.  
pi@raspberrypi:~ $ █
```

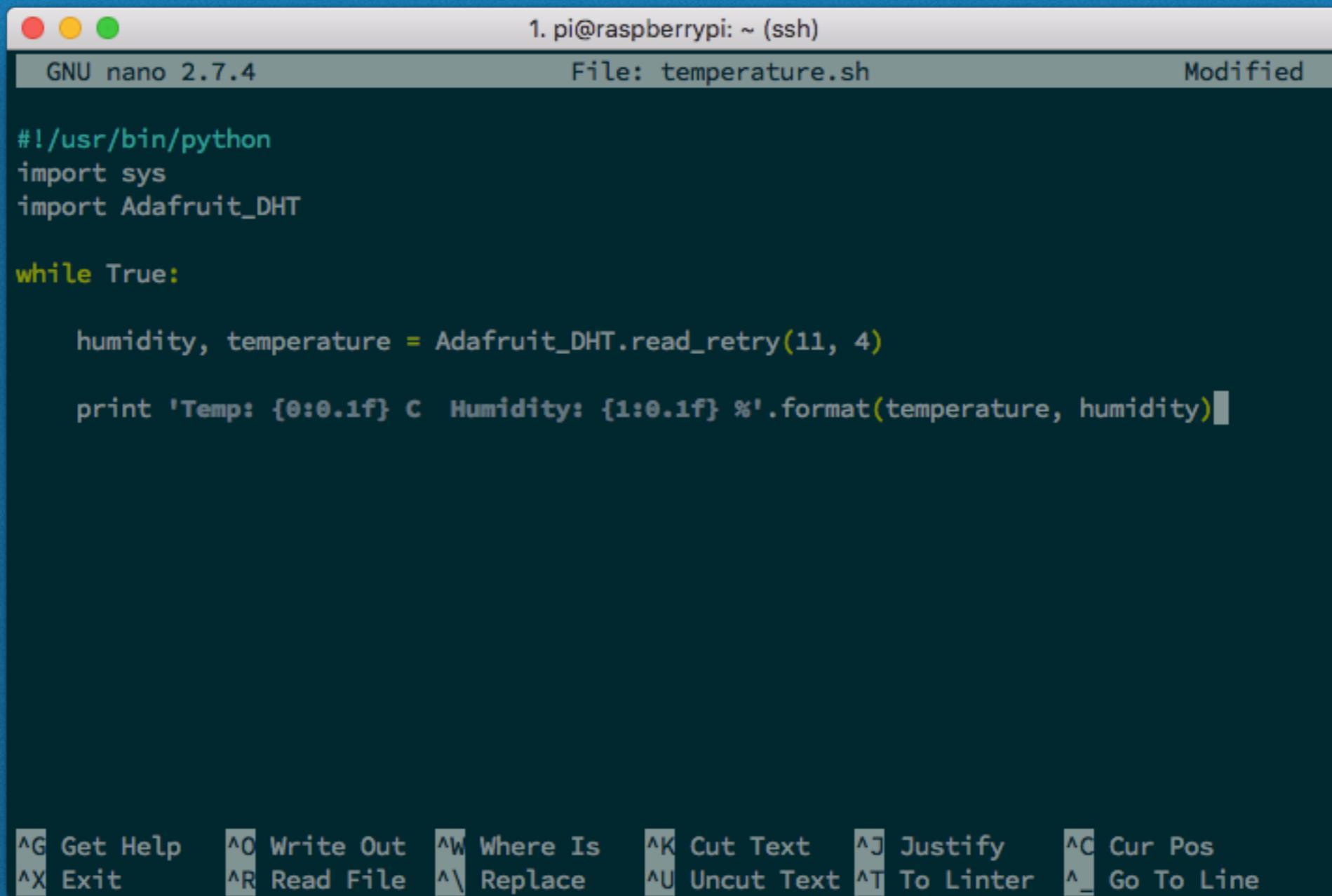
Jak to zrobić?

Instalujemy sterowniki

```
1. pi@raspberrypi: ~/Adafruit_Python_DHT (ssh)
pi@raspberrypi:~ $ cd Adafruit_Python_DHT/
pi@raspberrypi:~/Adafruit_Python_DHT $ sudo python setup.py install
running install
running bdist_egg
running egg_info
creating Adafruit_DHT.egg-info
writing Adafruit_DHT.egg-info/PKG-INFO
writing top-level names to Adafruit_DHT.egg-info/top_level.txt
writing dependency_links to Adafruit_DHT.egg-info/dependency_links.txt
writing manifest file 'Adafruit_DHT.egg-info/SOURCES.txt'
reading manifest file 'Adafruit_DHT.egg-info/SOURCES.txt'
writing manifest file 'Adafruit_DHT.egg-info/SOURCES.txt'
installing library code to build/bdist.linux-armv7l/egg
running install_lib
running build_py
creating build
creating build/lib.linux-armv7l-2.7
creating build/lib.linux-armv7l-2.7/Adafruit_DHT
copying Adafruit_DHT/Raspberry_Pi.py -> build/lib.linux-armv7l-2.7/Adafruit_DHT
copying Adafruit_DHT/Beaglebone_Black.py -> build/lib.linux-armv7l-2.7/Adafruit_DHT
copying Adafruit_DHT/platform_detect.py -> build/lib.linux-armv7l-2.7/Adafruit_DHT
copying Adafruit_DHT/Raspberry_Pi_2.py -> build/lib.linux-armv7l-2.7/Adafruit_DHT
```

Jak to zrobić?

Tworzymy prosty skrypt w Pythonie
odczytujący dane z czujnika



The screenshot shows a terminal window titled "1. pi@raspberrypi: ~ (ssh)" running the "GNU nano 2.7.4" editor. The file being edited is "temperature.sh". The script content is as follows:

```
#!/usr/bin/python
import sys
import Adafruit_DHT

while True:

    humidity, temperature = Adafruit_DHT.read_retry(11, 4)

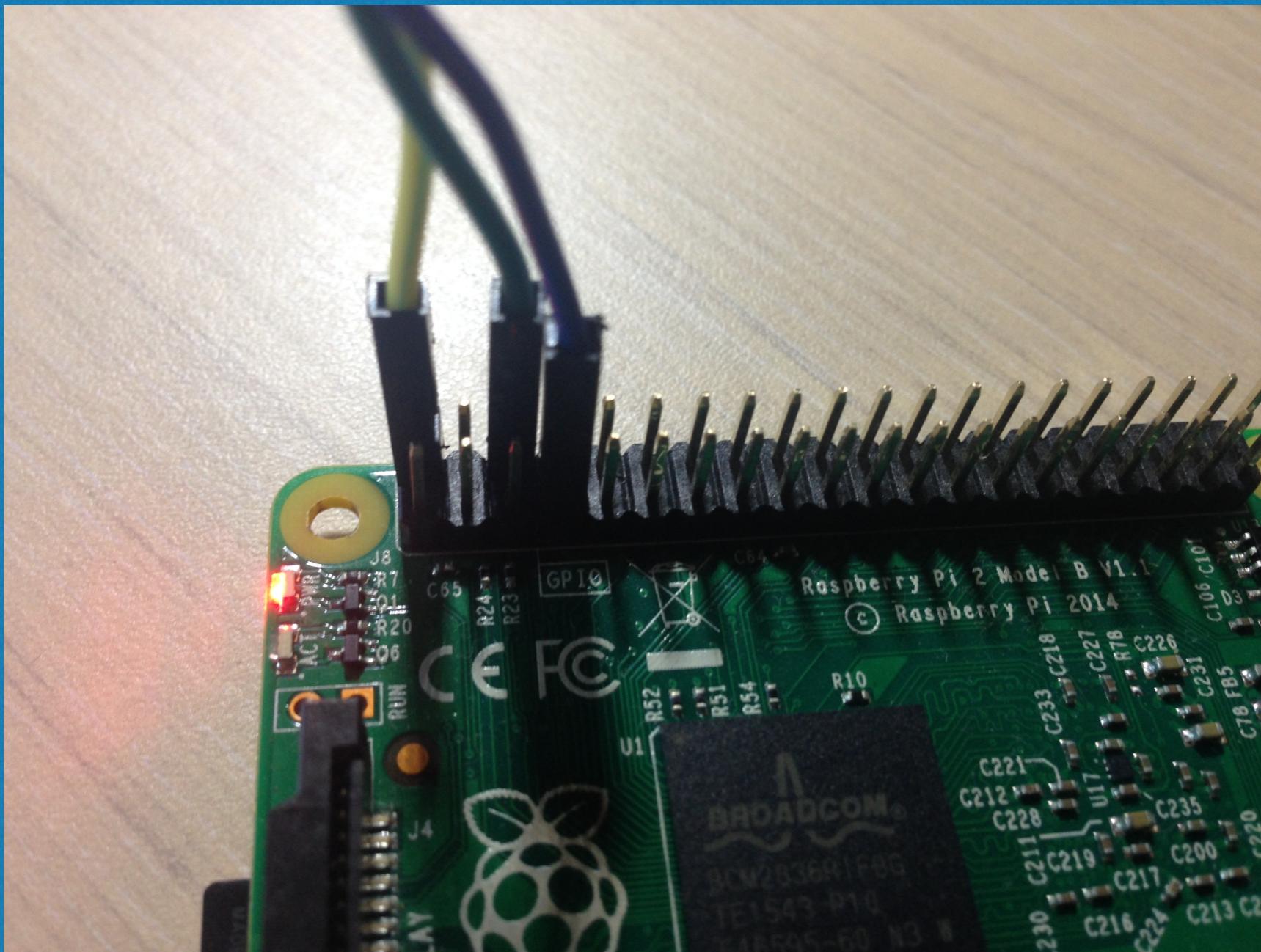
    print 'Temp: {0:0.1f} C  Humidity: {1:0.1f} %'.format(temperature, humidity)
```

The bottom of the terminal shows a series of keyboard shortcuts:

^{^G} Get Help	^{^O} Write Out	^{^W} Where Is	^{^K} Cut Text	^{^J} Justify	^{^C} Cur Pos
^{^X} Exit	^{^R} Read File	^{^V} Replace	^{^U} Uncut Text	^{^T} To Linter	^{^_} Go To Line

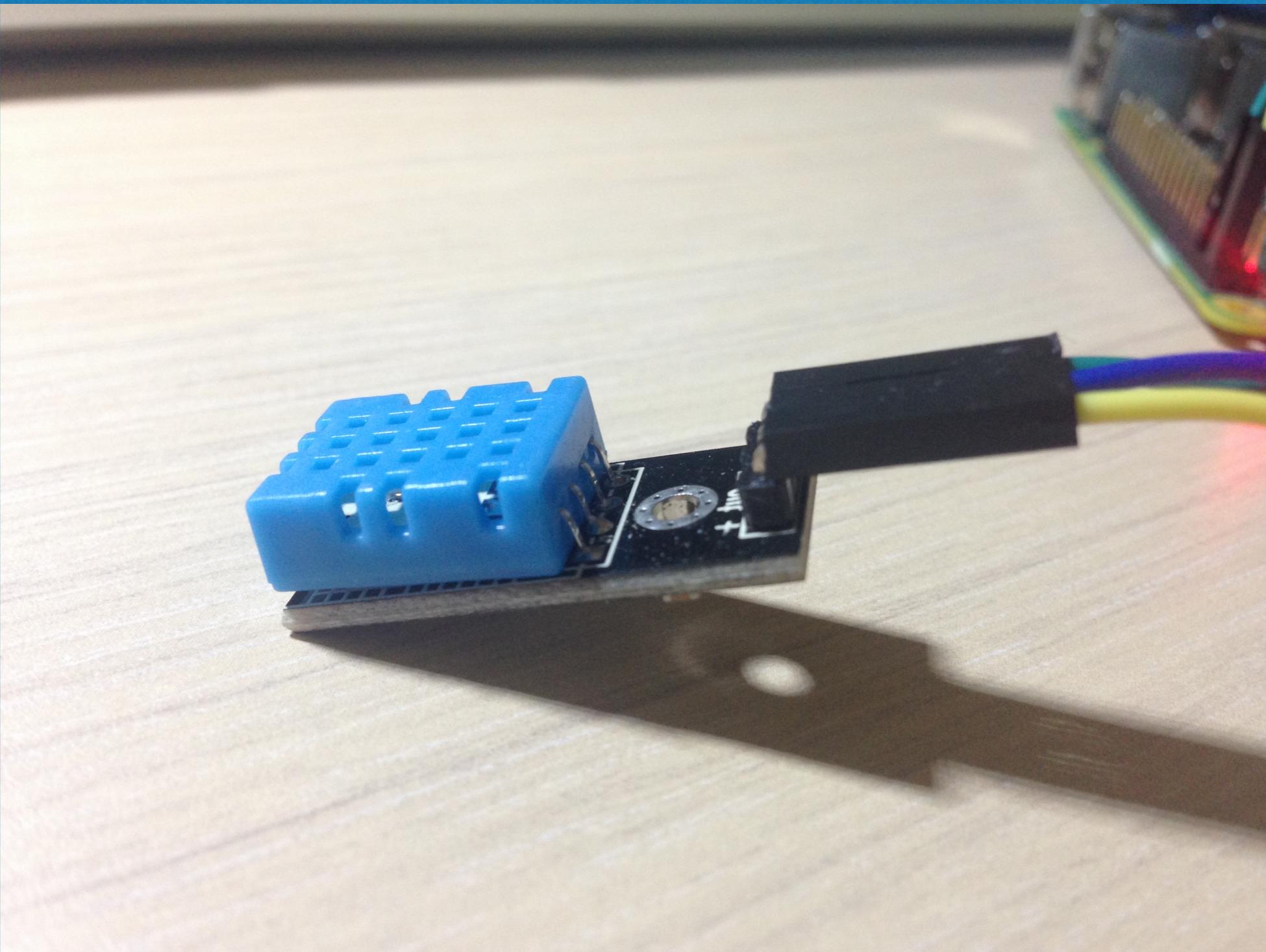
Jak to zrobić? - Hardware

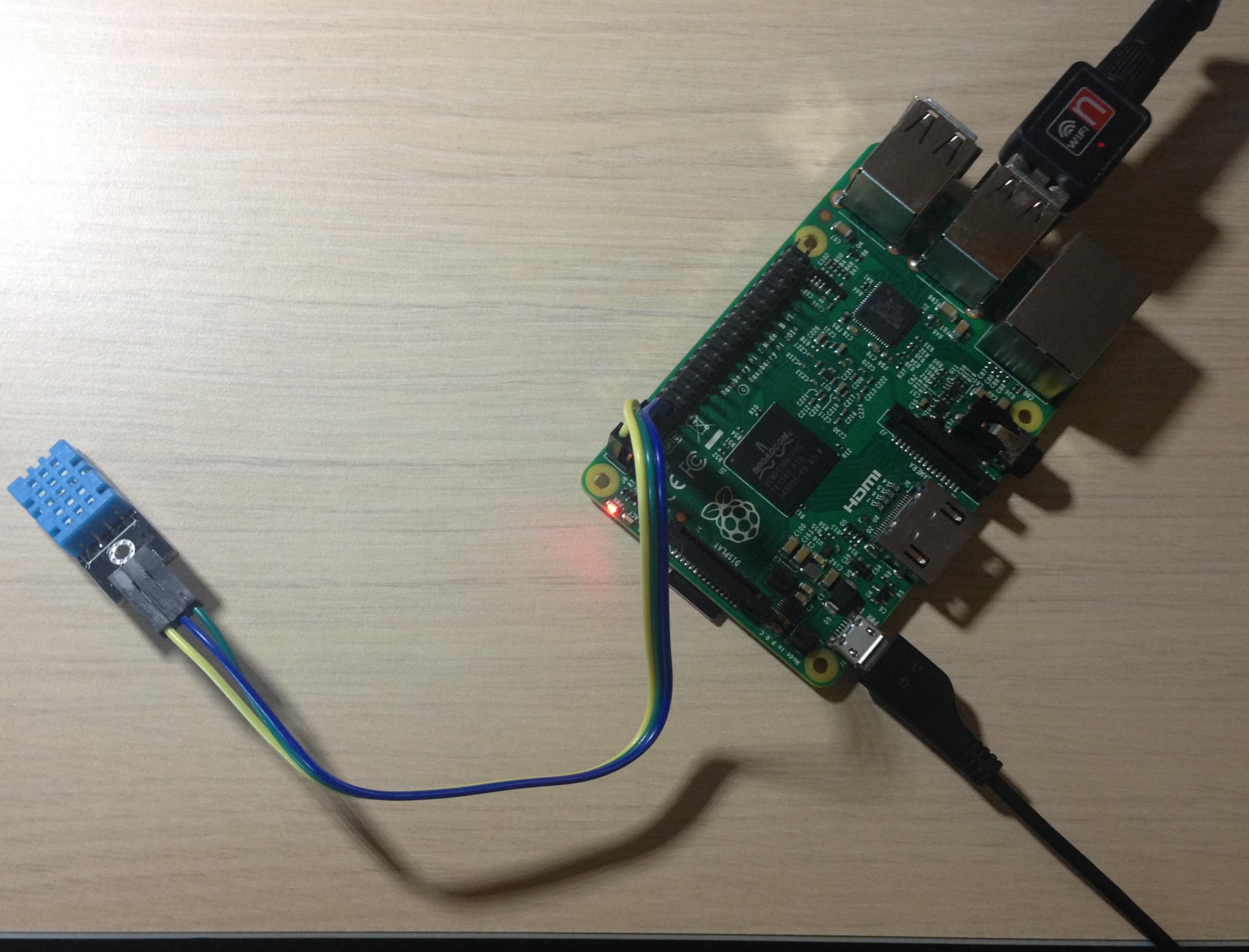
Podpinamy kable do odpowiednich portów GPIO



Jak to zrobić? - Hardware

... oraz czujnika

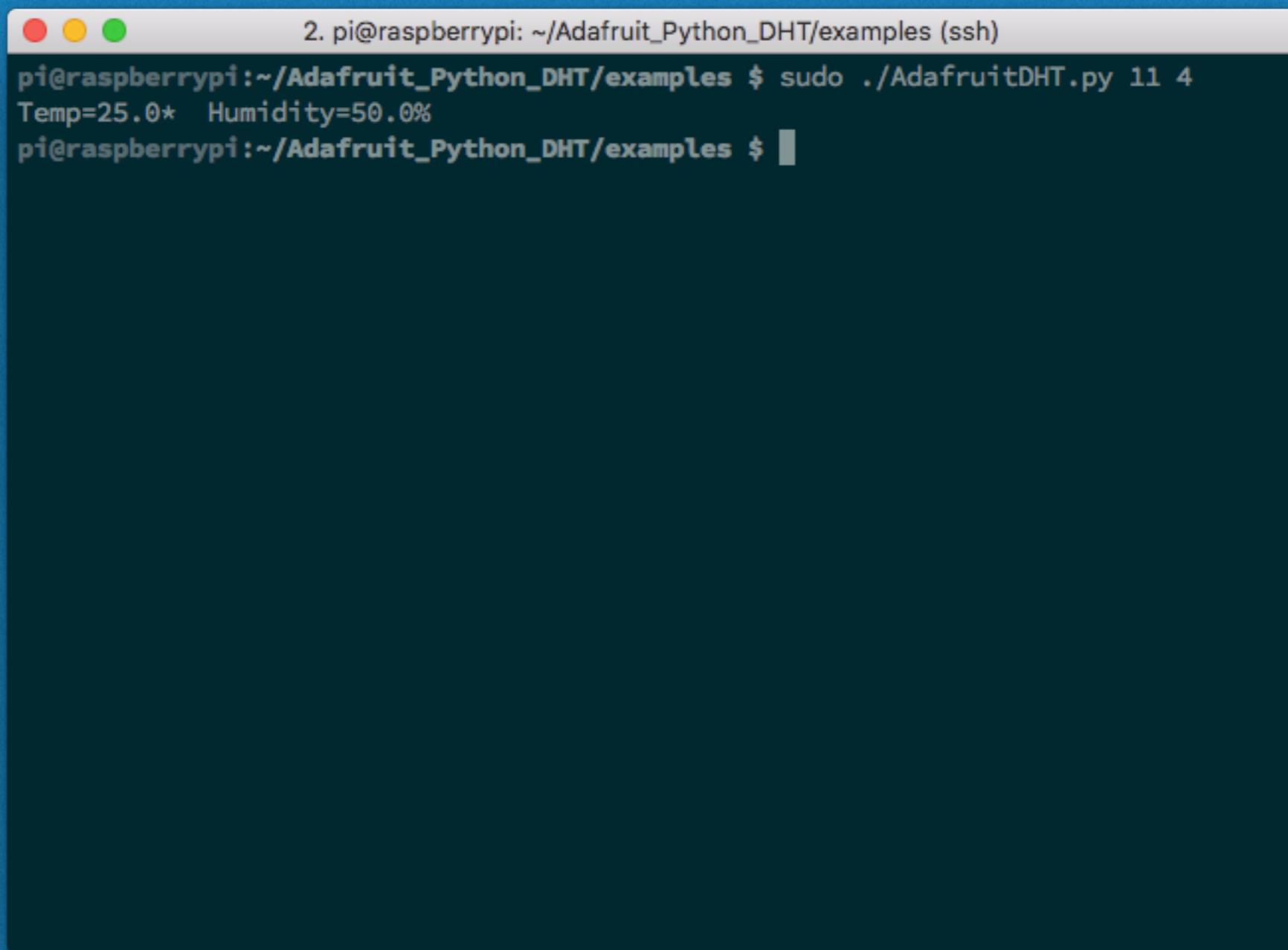




Fellowes.® Microban®

Jak to zrobić?

Po uruchomieniu skryptu dostajemy w konsoli aktualną temperaturę i wilgotność:



The screenshot shows a terminal window with a dark background and light-colored text. At the top, there are three colored window control buttons (red, yellow, green) followed by the text "2. pi@raspberrypi: ~/Adafruit_Python_DHT/examples (ssh)". Below this, the command "pi@raspberrypi:~/Adafruit_Python_DHT/examples \$ sudo ./AdafruitDHT.py 11 4" is entered. The output of the script is displayed: "Temp=25.0* Humidity=50.0%". At the bottom of the terminal window, the prompt "pi@raspberrypi:~/Adafruit_Python_DHT/examples \$" is visible.

```
2. pi@raspberrypi: ~/Adafruit_Python_DHT/examples (ssh)
pi@raspberrypi:~/Adafruit_Python_DHT/examples $ sudo ./AdafruitDHT.py 11 4
Temp=25.0* Humidity=50.0%
pi@raspberrypi:~/Adafruit_Python_DHT/examples $
```

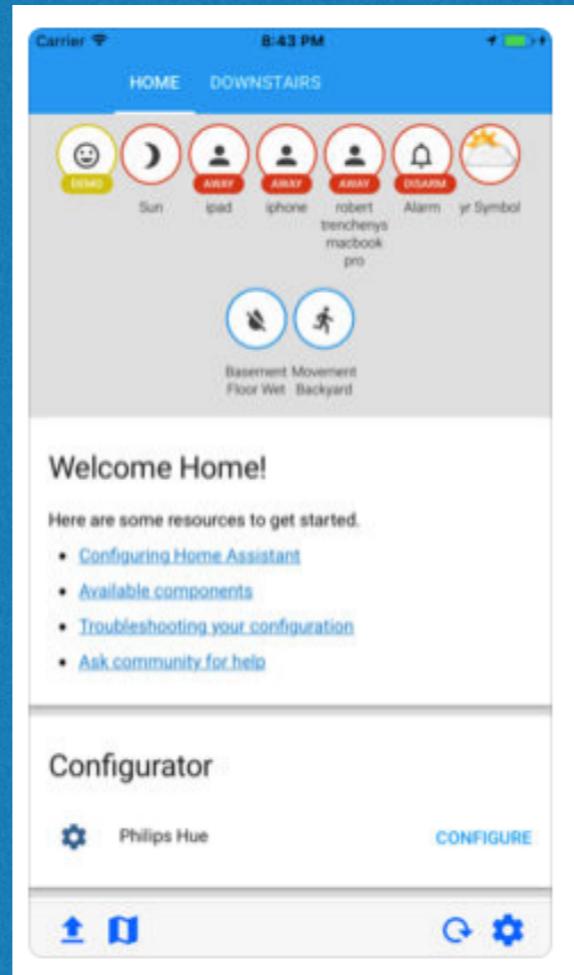
Uwagi

- czujnik DHT11 nie jest zbyt dokładny
- nie powinien być używany w temperaturach poniżej 0 °C
- pozwala na odczyt tylko co kilkanaście sekund
- odczyt z konsoli to nie najlepsze rozwiążanie

Uwagi

Żeby jednak wykorzystać w pełni nasz czujnik skorzystamy z systemu automatyki domowej

Dzięki temu, będziemy mogli w prostszy sposób odczytać temperaturę nawet na naszym smartfonie



Demo

System automatyki
domowej

Co będzie nam potrzebne?

The image shows the Home Assistant website. On the left, a smartphone displays the Home Assistant mobile application. The app's interface includes a top bar with a house icon, 'Home Assistant' text, and navigation links for 'Getting started', 'Components', 'Docs', 'Examples', 'Blog', and 'Need help?'. Below this is a card for 'Sun' and 'Anne Therese'. The main screen shows a 'Living Room' section with icons for 'Bowl' and 'Ceiling' lights, each with a blue toggle switch. On the right, the main website landing page features the heading 'Awaken your home' in large white text. Below it, a paragraph describes Home Assistant as an open-source platform running on Python 3, used for tracking and controlling devices at home and automating control, perfect for a Raspberry Pi. It includes links for 'GET STARTED', 'VIEW DEMO', and 'BROWSE CODE ON GITHUB'.

Home Assistant

Getting started Components Docs Examples Blog Need help?

Sun Anne Therese

HOME OTHER

Living Room

Bowl Ceiling

Awaken your home

Home Assistant is an open-source home automation platform running on Python 3. Track and control all devices at home and automate control. Perfect to run on a Raspberry Pi.

GET STARTED VIEW DEMO BROWSE CODE ON GITHUB

System automatyki domowej hass.io

Jak to zrobić?

Pobieramy system ze strony
<https://www.home-assistant.io/getting-started/>

supported by Hass.io.

SOFTWARE REQUIREMENTS

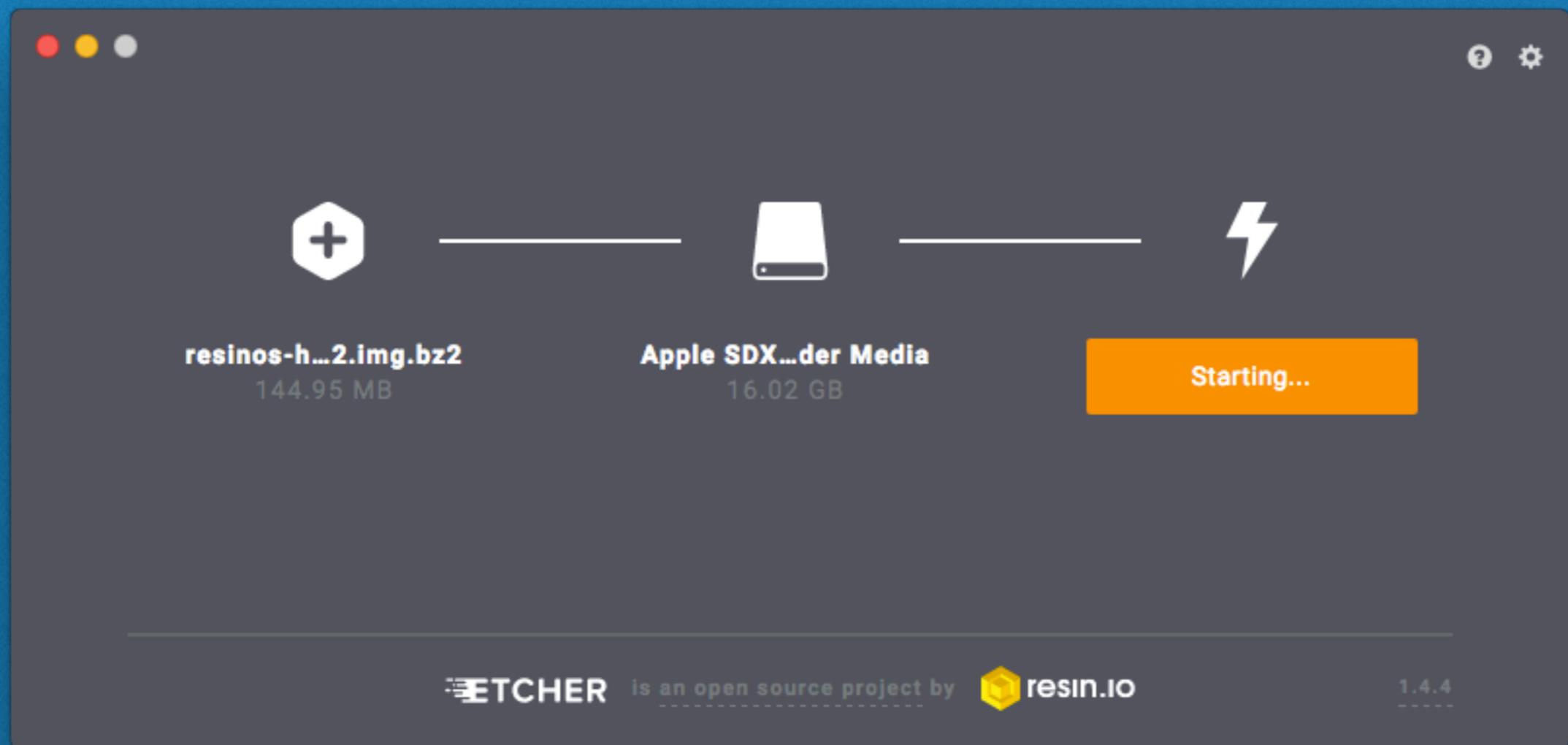
- Download [Hass.io image for Raspberry Pi 3](#)
- Download [Etcher](#) to write the image to an SD card
- Text Editor like [Visual Studio Code](#)



INSTALLING HASS.IO

Jak to zrobić?

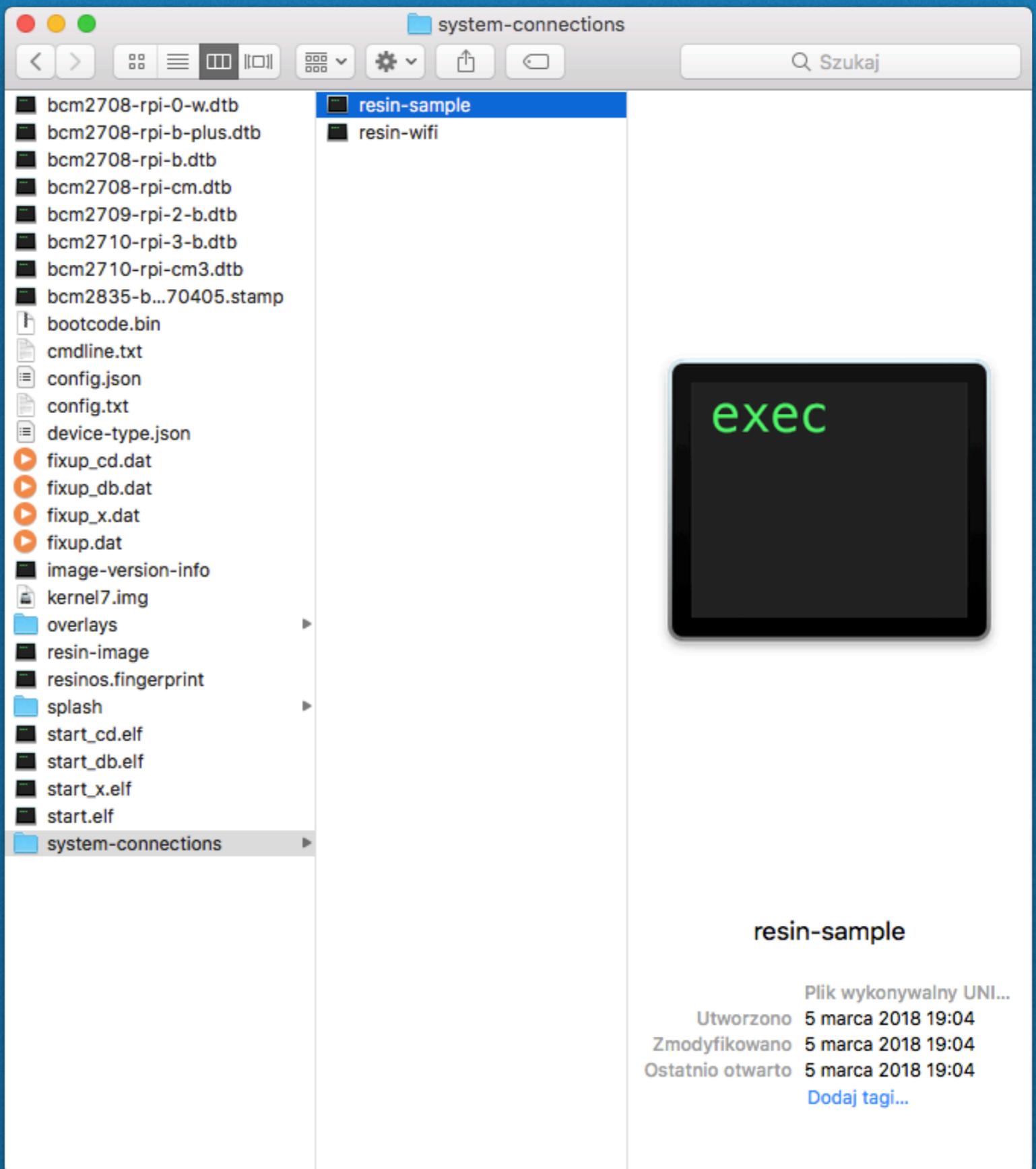
Flashujemy system na karcie microSD
używamy do tego programu Etcher



Jak to zrobić?

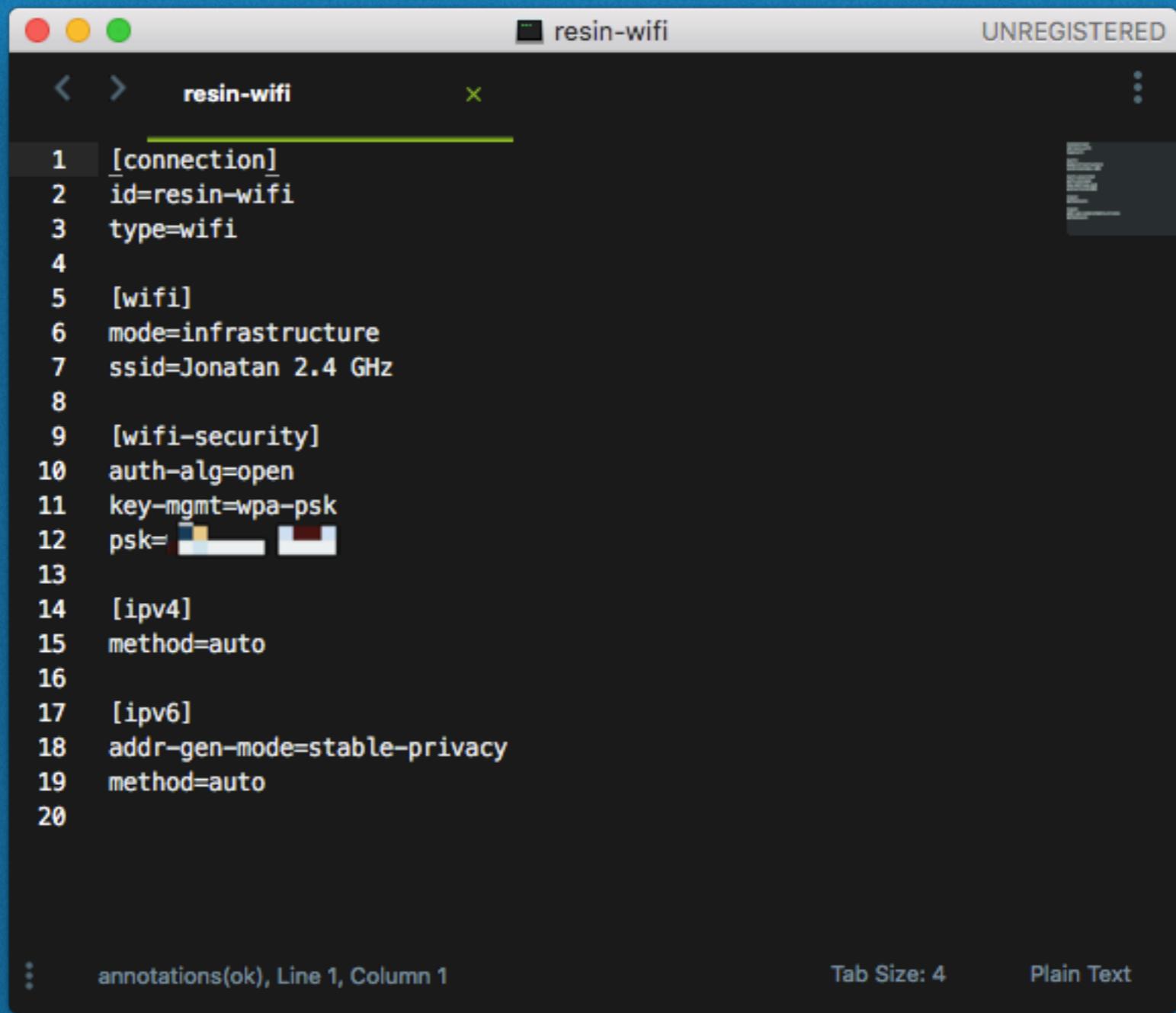
Nie mam kabla sieciowego, dlatego ustawiam system aby podczas pierwszego połączenia połączyl się z moją siecią WiFi

Trzeba utworzyć plik w:
system-connections>resin-wifi



Jak to zrobić?

Tak będzie wyglądał nasz plik:



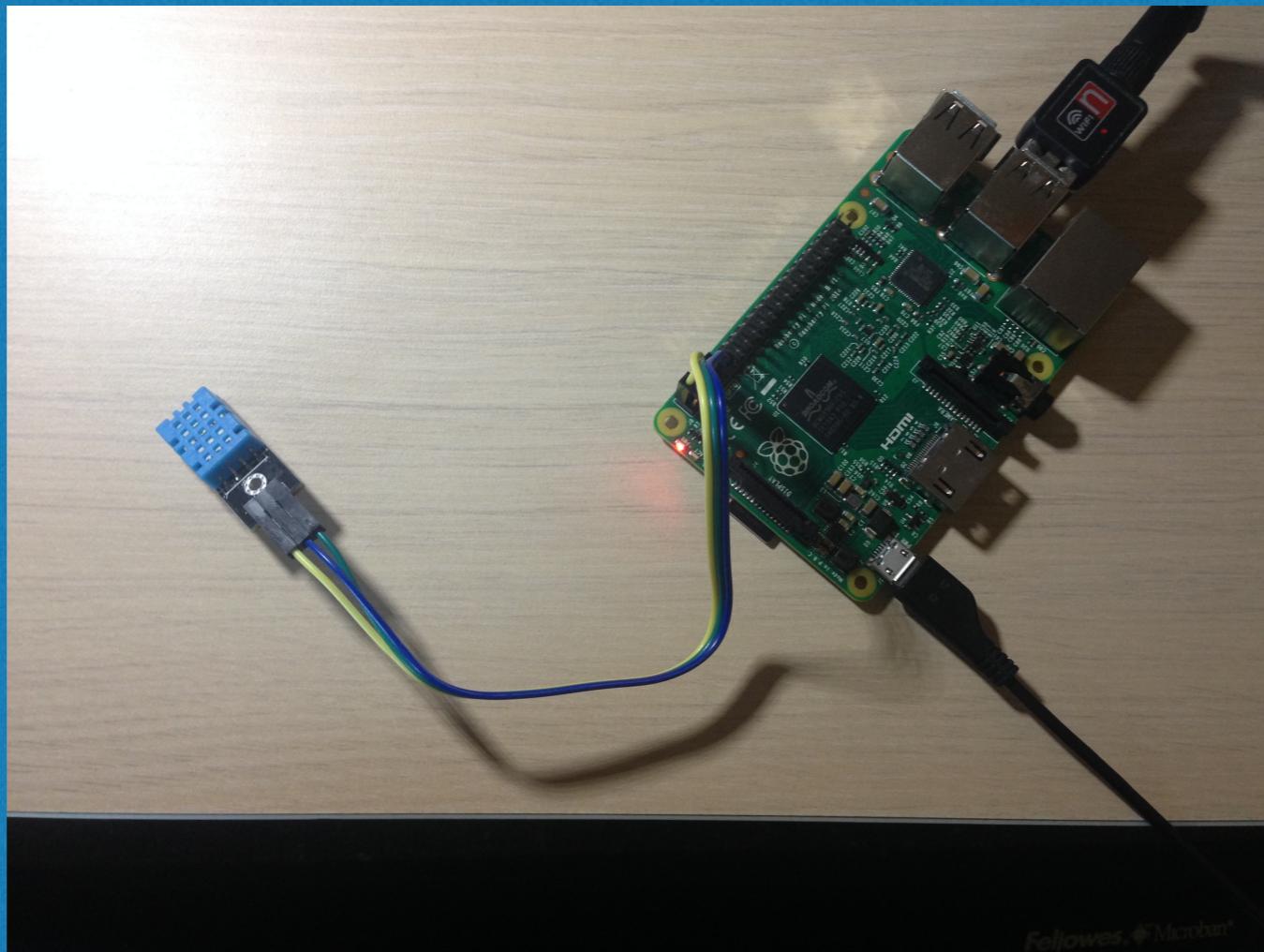
The screenshot shows a terminal window titled "resin-wifi" with the status "UNREGISTERED". The window contains a configuration file with the following content:

```
1 [connection]
2 id=resin-wifi
3 type=wifi
4
5 [wifi]
6 mode=infrastructure
7 ssid=Jonatan 2.4 GHz
8
9 [wifi-security]
10 auth-alg=open
11 key-mgmt=wpa-psk
12 psk= [REDACTED]
13
14 [ipv4]
15 method=auto
16
17 [ipv6]
18 addr-gen-mode=stable-privacy
19 method=auto
20
```

Annotations at the bottom left indicate "annotations(ok), Line 1, Column 1". The bottom right shows "Tab Size: 4" and "Plain Text".

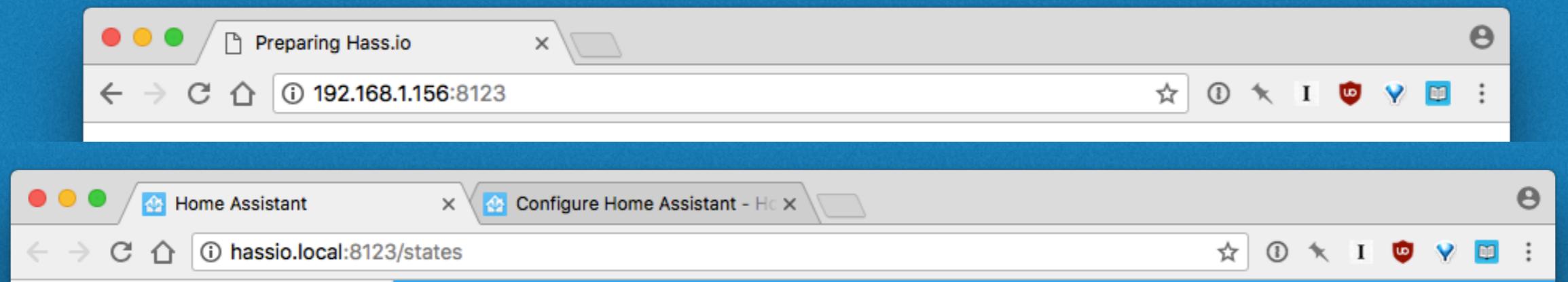
Jak to zrobić?

Wkładamy kartę microSD i podłączamy zasilanie



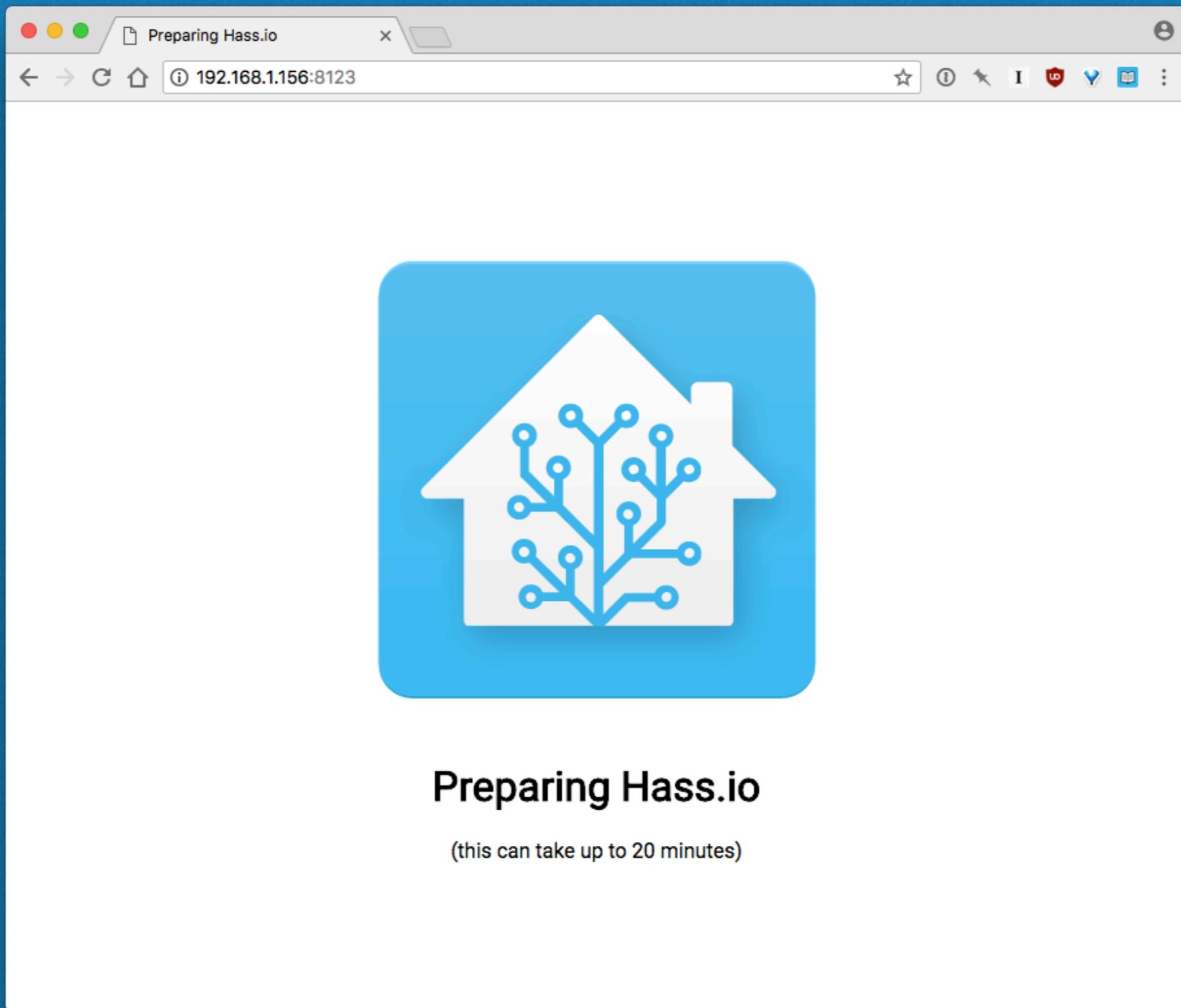
Jak to zrobić?

Wchodzimy pod adres Raspberry Pi z portem 8123
lub użyć adresu hassio.local



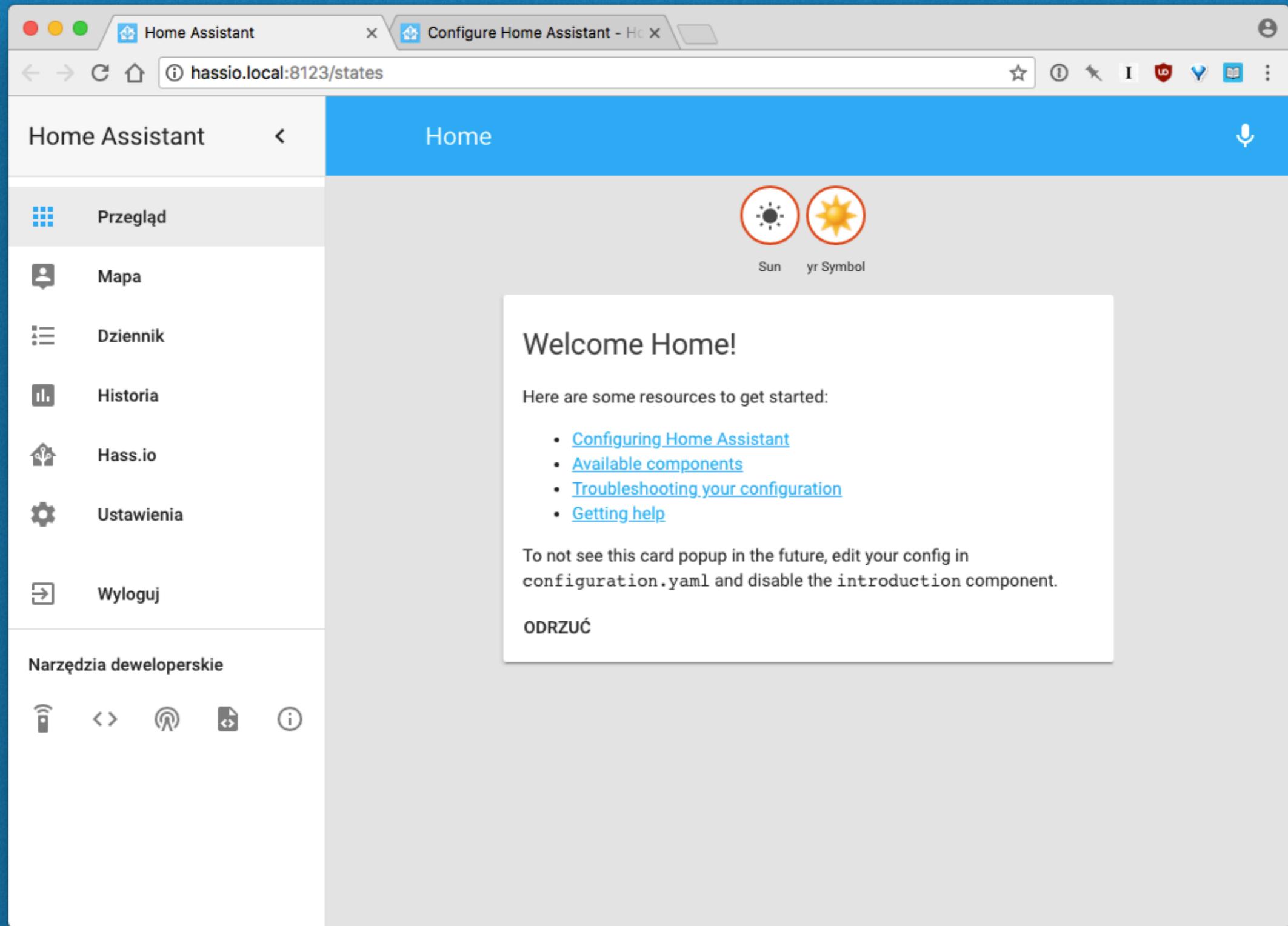
Jak to zrobić?

Czekamy ok. 20 minut na instalację systemu
(w 100% automatyczna)



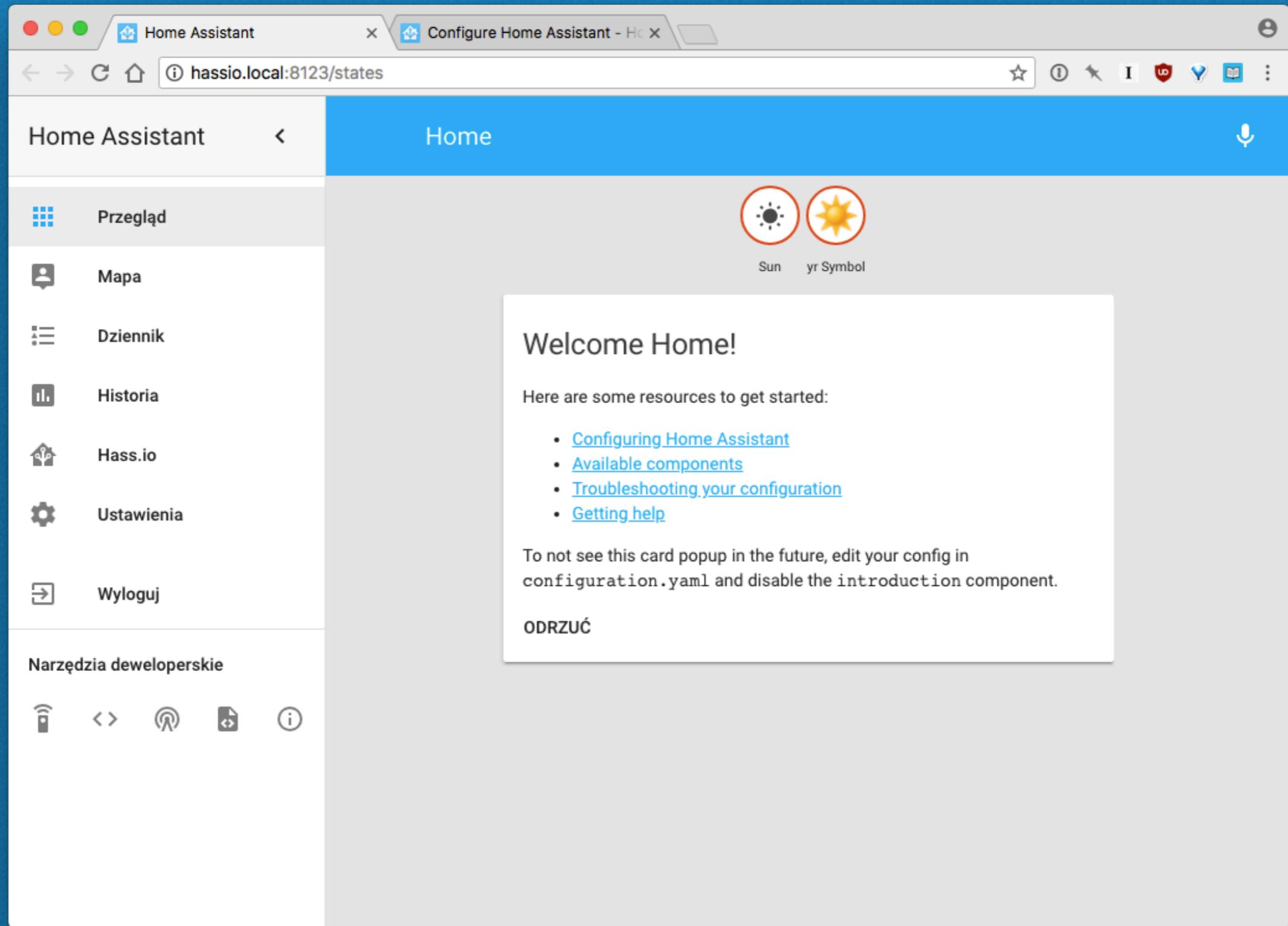
Jak to zrobić?

Po instalacji:



Konfiguracja hass.io

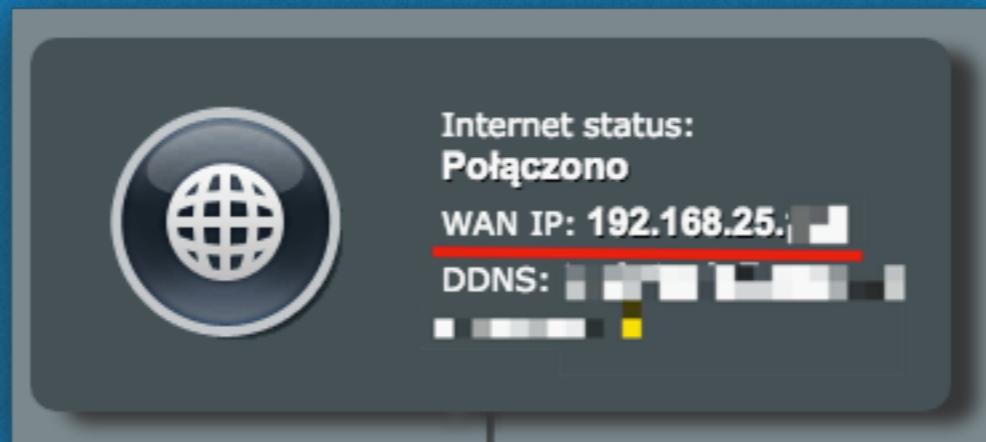
Po instalacji:



Uwaga!

Aby połączyć się spoza sieci domowej, trzeba użyć adresu zewnętrznego.

Można go odczytać na routerze:



Jeśli nasz adres zewnętrzny się zmienia
można również skorzystać z DDNS

Uwaga!

Poza tym nasz zewnętrzny adres musi być publicznie dostępny
(nie jak u mnie)

Jeśli nasz adres zewnętrzny się zmienia
można również skorzystać z DDNS

Uwaga!

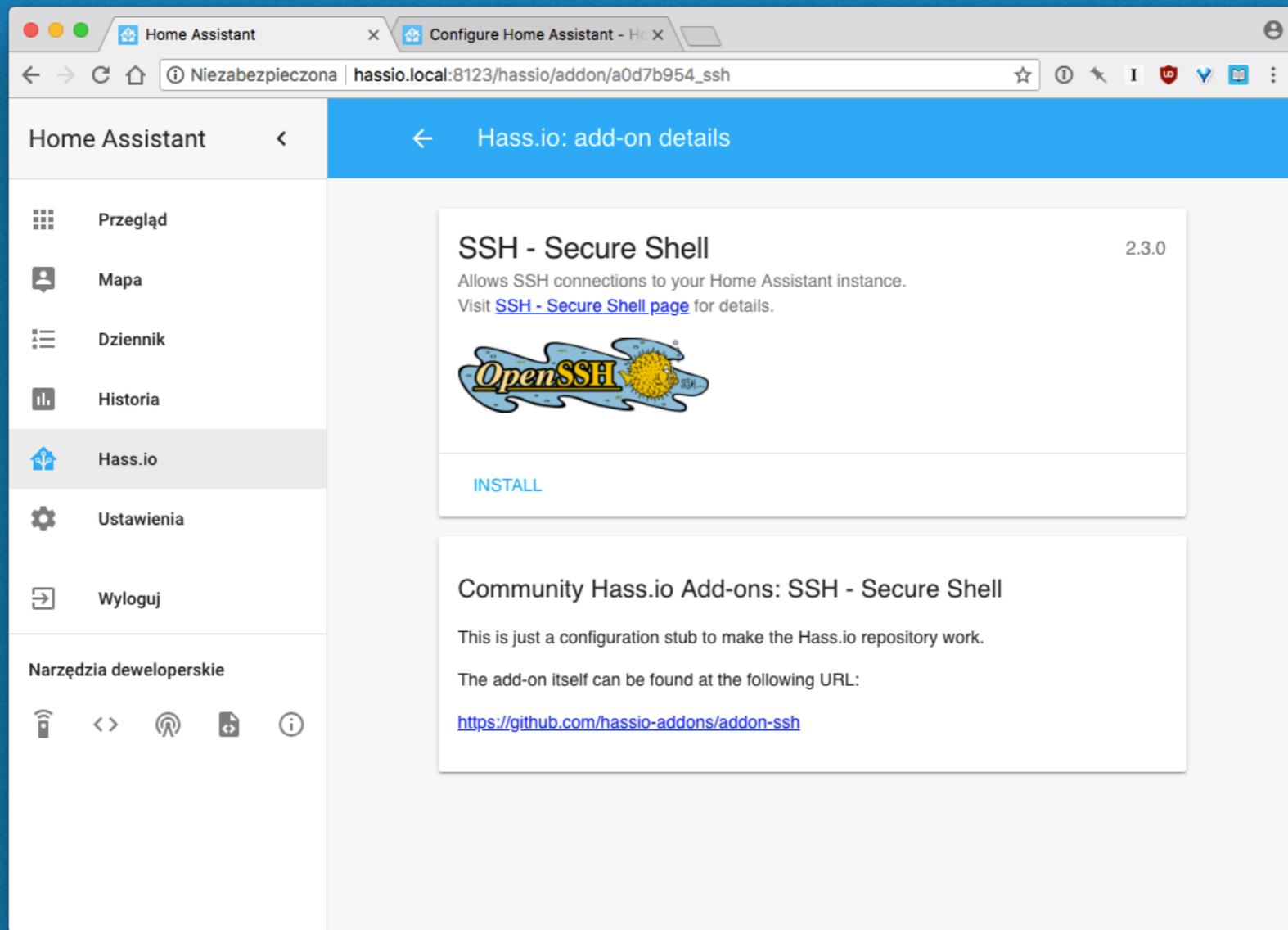
Na koniec trzeba skonfigurować przekierowanie portów na routerze lub strefę DMZ, tak aby port 8123 był dostępny z zewnątrz

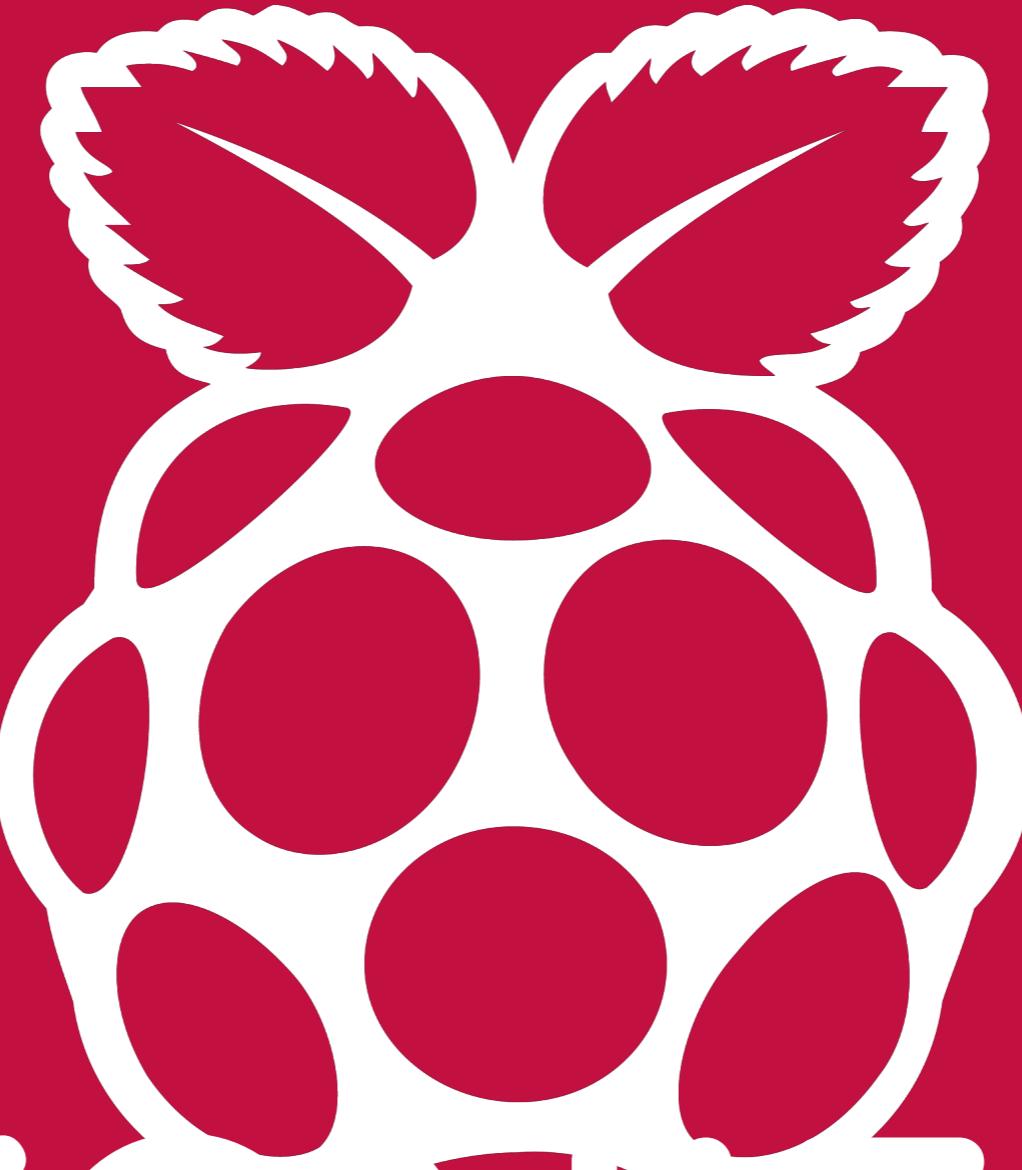
The screenshot shows the configuration interface for an ASUS Wireless Router RT-AC66U. The main title bar indicates the device is in 'Tryb routera bezprzewodowego' (Wireless Router mode) with firmware version 3.0.0.4.380_8120. The SSID listed is 'Jonatan 2.... Jonatan 5...'. The top navigation bar includes links for 'Połączenie Internetowe', 'Dual WAN', 'Port Trigger', 'Przekierowanie portów' (selected), 'DMZ', 'DDNS', and 'Okienko NAT'. On the left, a sidebar menu lists various settings: 'Quick Internet Setup', 'Ogólne' (General) with 'Mapa sieci', 'Sieć gościnna', 'Menadżer ruchu', 'kontrola rodzicielska', 'Aplikacja USB', and 'AiCloud 2.0'; 'Ustawienia Zaawansowane' (Advanced Settings) with 'Wireless', 'LAN', 'WAN' (selected), 'IPv6', and 'VPN'; and 'Firewall' (highlighted with a large red arrow). The central content area is titled 'WAN - Przekierowanie portów' (WAN - Port Forwarding) and contains instructions about port forwarding. It includes fields for enabling port forwarding ('Włącz Port Forwarding (Przekierowanie portów)'), selecting favorite servers ('Lista ulubionych serwerów'), selecting favorite games ('Lista ulubionych gier'), and specifying the FTP server port ('FTP Server Port'). Below this is a table titled 'Port Forwarding List (Lista przekierowania portów)' with columns for 'Nazwa usługi.' (Service Name), 'Source Target' (Target IP), 'Zakres portów' (Port Range), 'Lokalny IP' (Local IP), 'Port lokalny' (Local Port), 'Protokół' (Protocol), and 'Dodaj / Usuń' (Add / Remove). A single entry is shown: 'Raspberry' as the service name, '8123' as the port range, '192.168.1.156' as the local IP, and '8123' as the local port. The status message at the bottom of the table says 'Brak danych w tabeli.' (No data in the table).

Uwaga!

Jeśli nie posiadamy publicznego IP możemy użyć przekierowywania portów przez SSH

Do tego będzie nam potrzebny zewnętrzny serwer VPS oraz dodatek SSH do hass.io:





KONIEC
Raspberry Pi