Robot edukacyjny dla dzieci

i nie tylko....

agenda

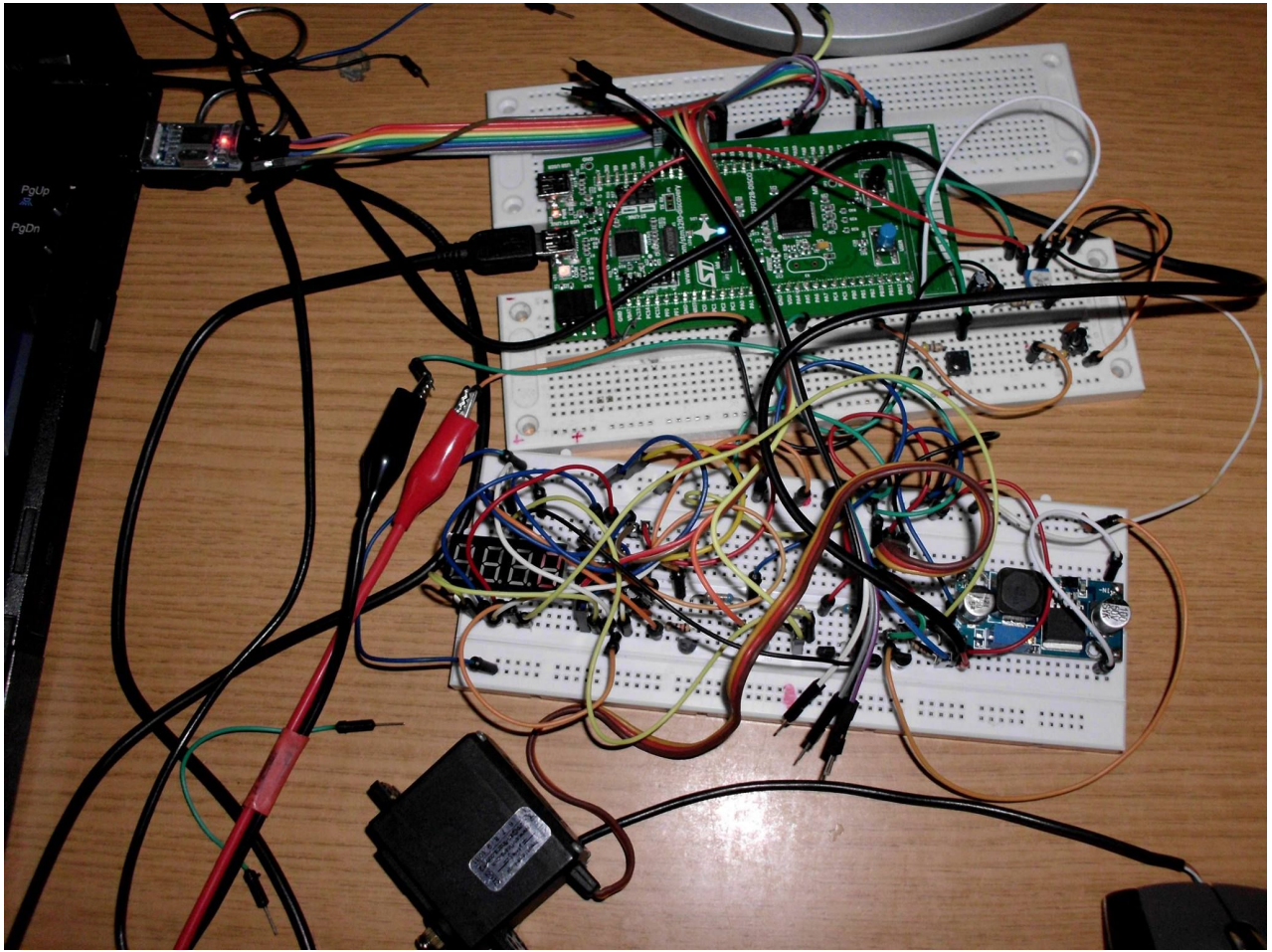
edukacja

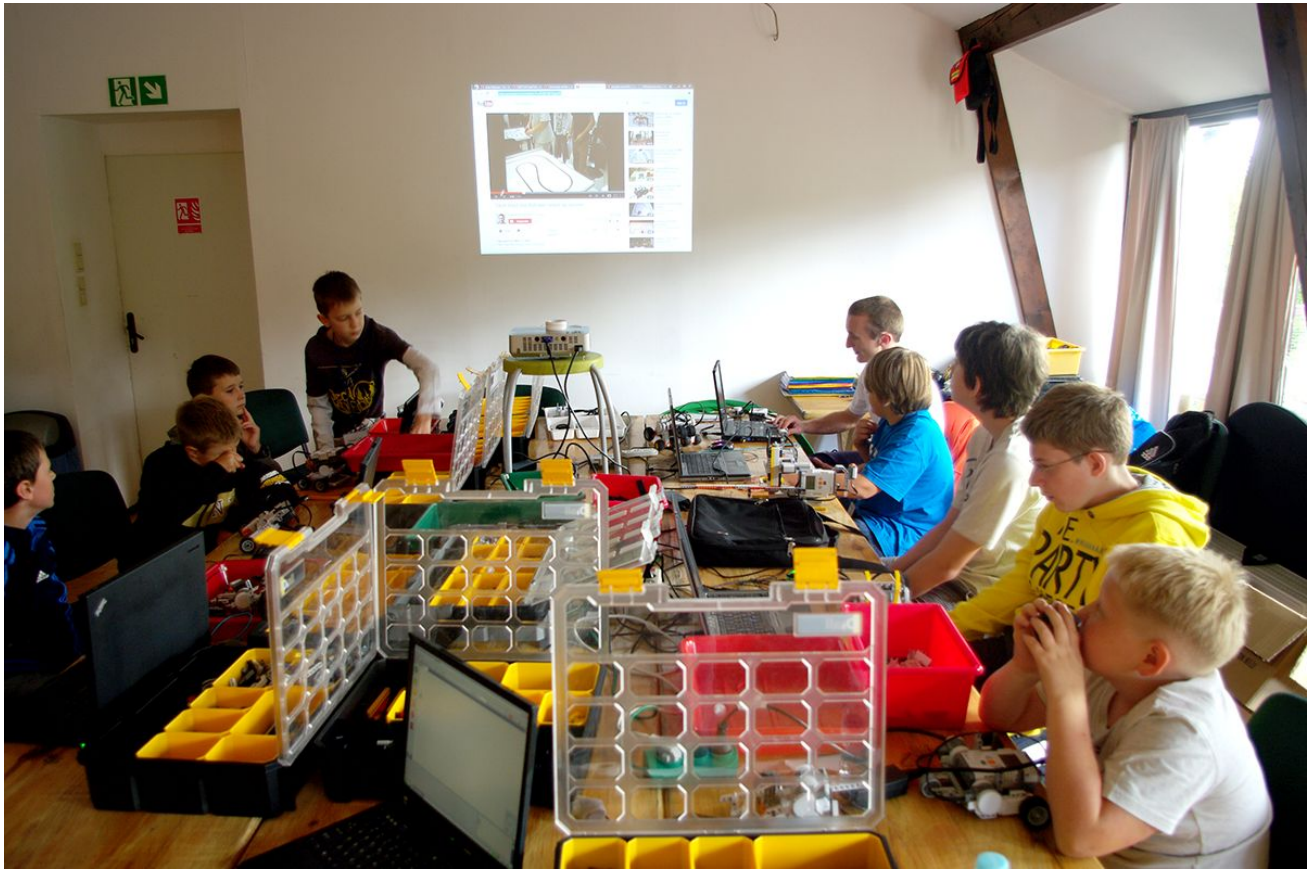
przedstawienie informacji na temat robota

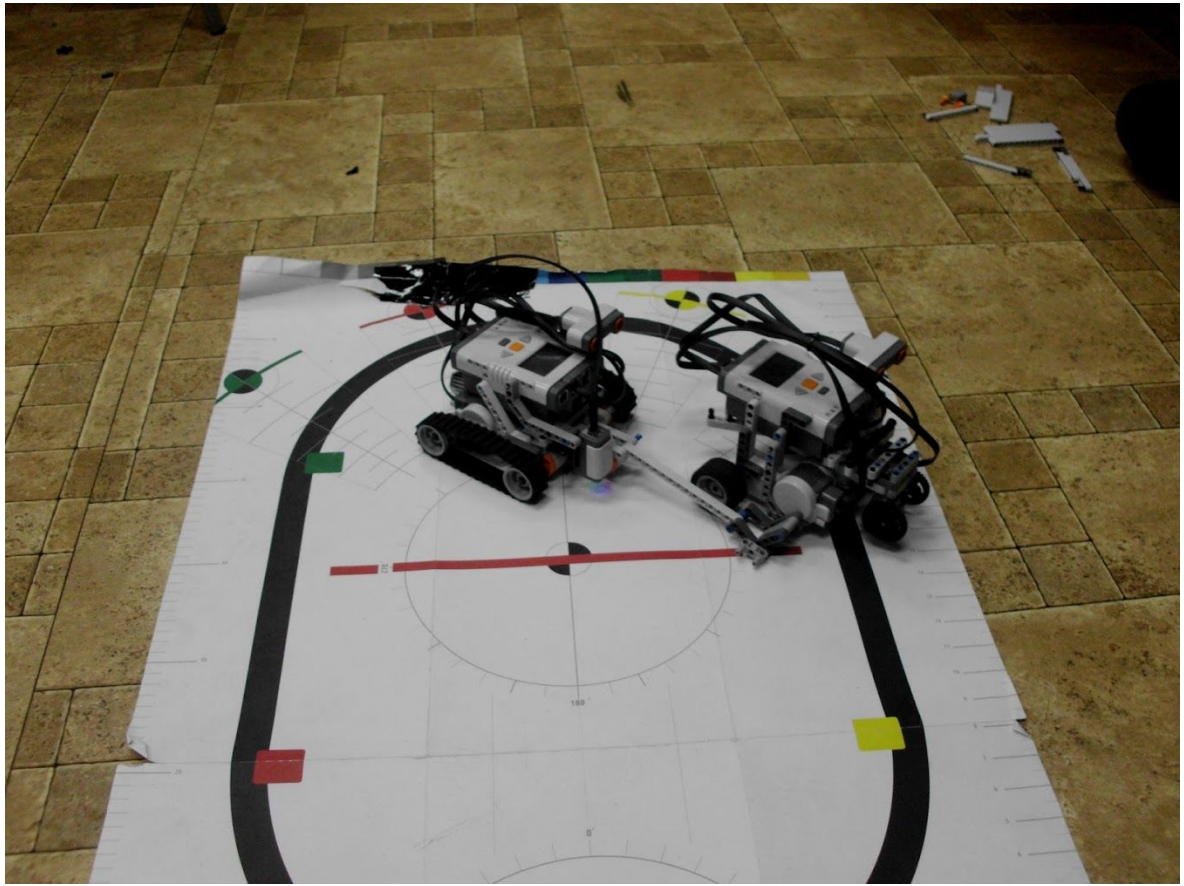
możliwości programowania

przegląd sprzętu

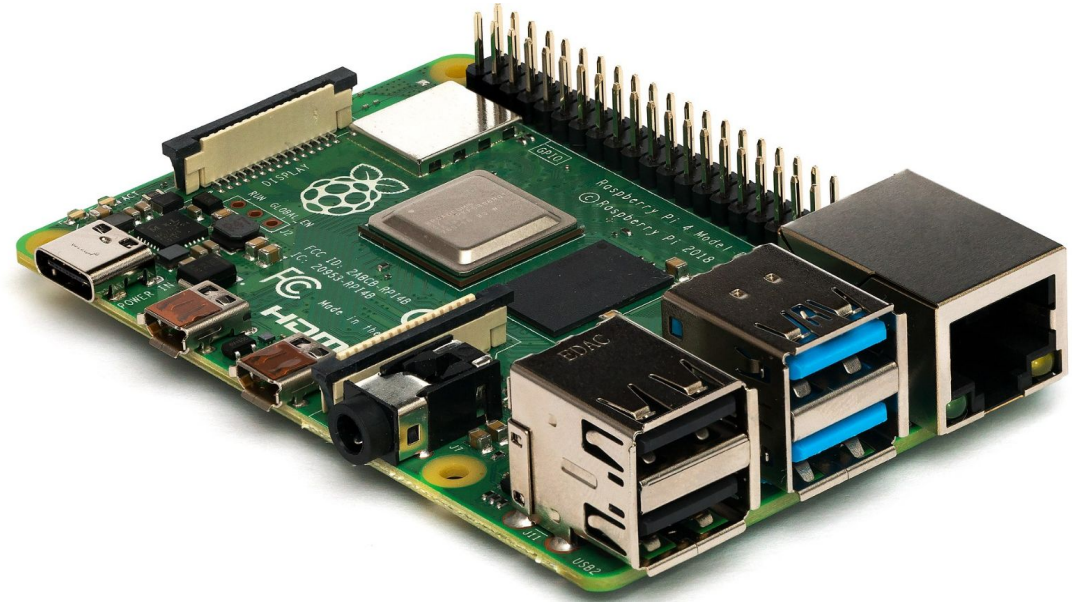
budowa przykładowego programu: omijanie przeszkód


PgUp
PgDn

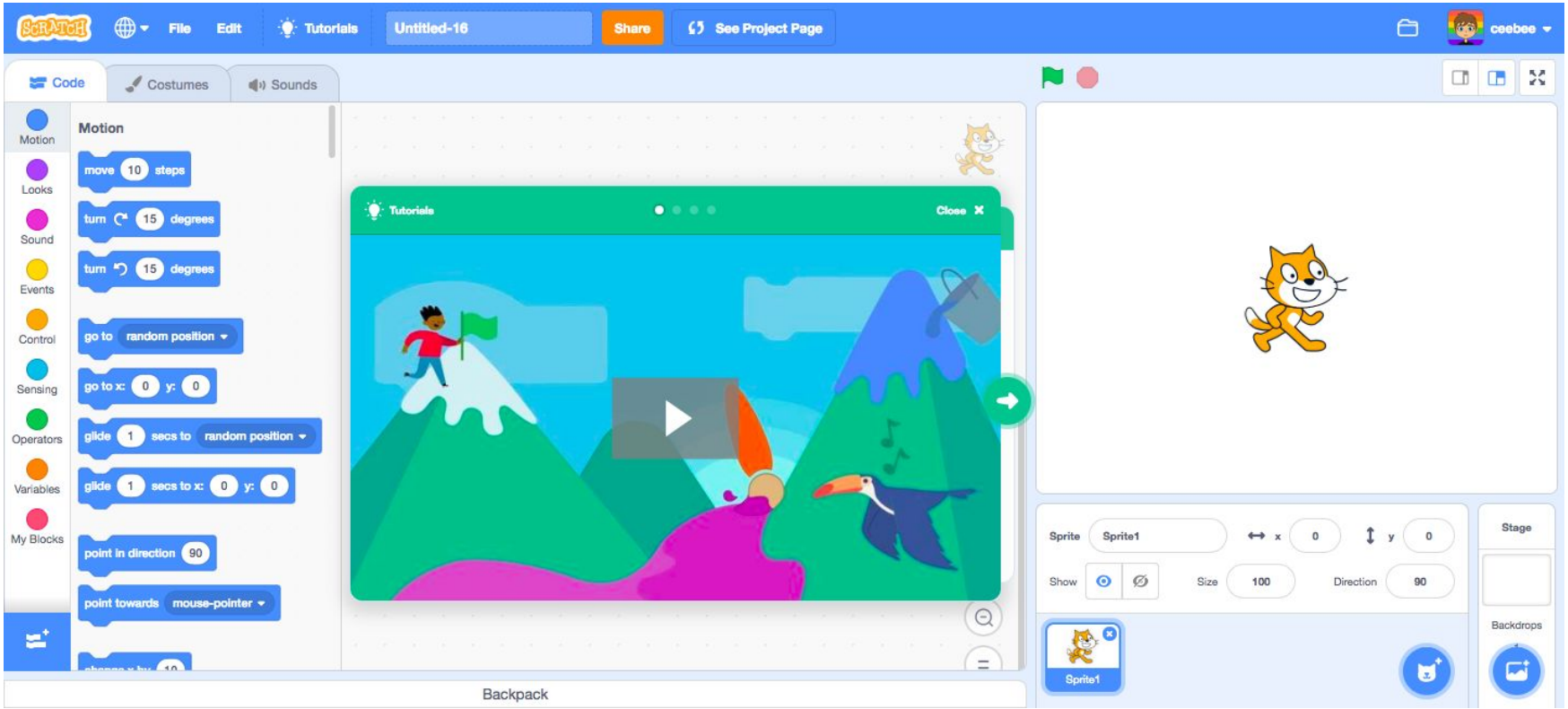


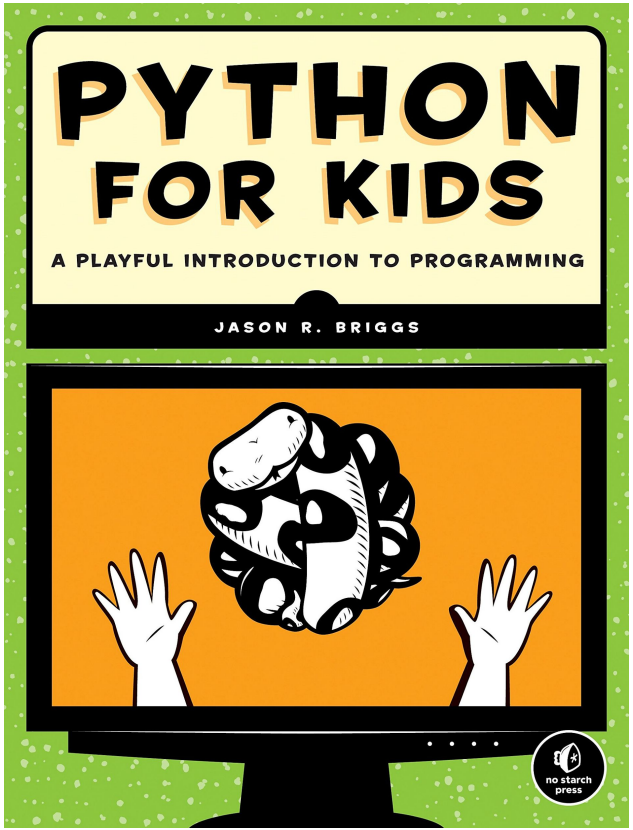


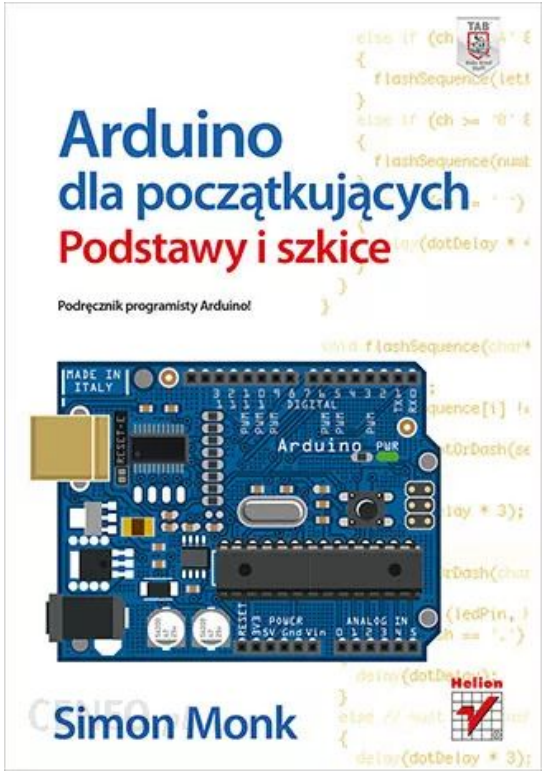

UNO
ARDUINO
MADE IN ITALY

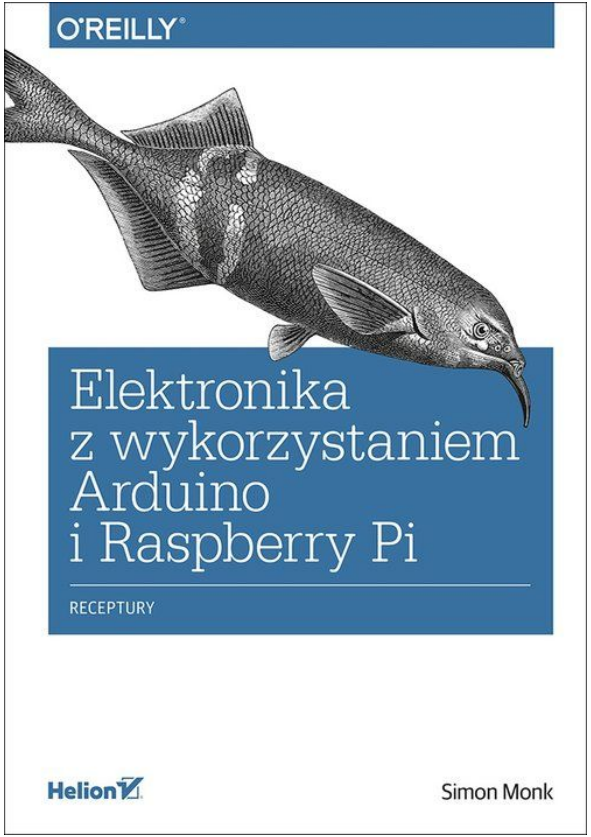

DISPLAY
Raspberry Pi 4 Model
©Raspberry Pi 2018
HDMI
USB2

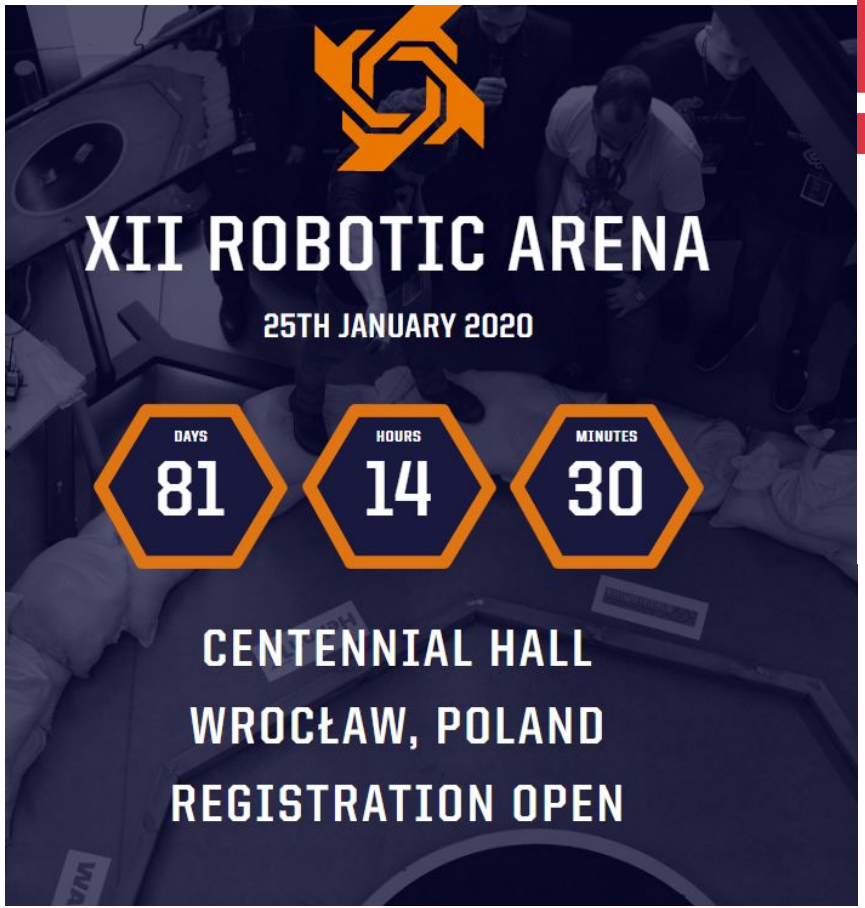

EV3
EV3


File
Edit
Tutorials
Untitled-16
Share
See Project Page
ceebee
Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 0 y: 0
glide 1 secs to random position
glide 1 secs to x: 0 y: 0
point in direction 90
point towards mouse-pointer
Tutorials
Close
Sprite
Sprite1
x 0
y 0
Show
Size 100
Direction 90
Stage
Backdrops
Sprite1
Backpack


PYTHON
FOR KIDS
A PLAYFUL INTRODUCTION TO PROGRAMMING
JASON R. BRIGGS
no starch press


Arduino
dla początkujących
Podstawy i szkice
Podręcznik programisty Arduino!
Simon Monk
Helion


O'REILLY
Elektronika
z wykorzystaniem
Arduino
i Raspberry Pi
RECEPTURY
Helion
Simon Monk



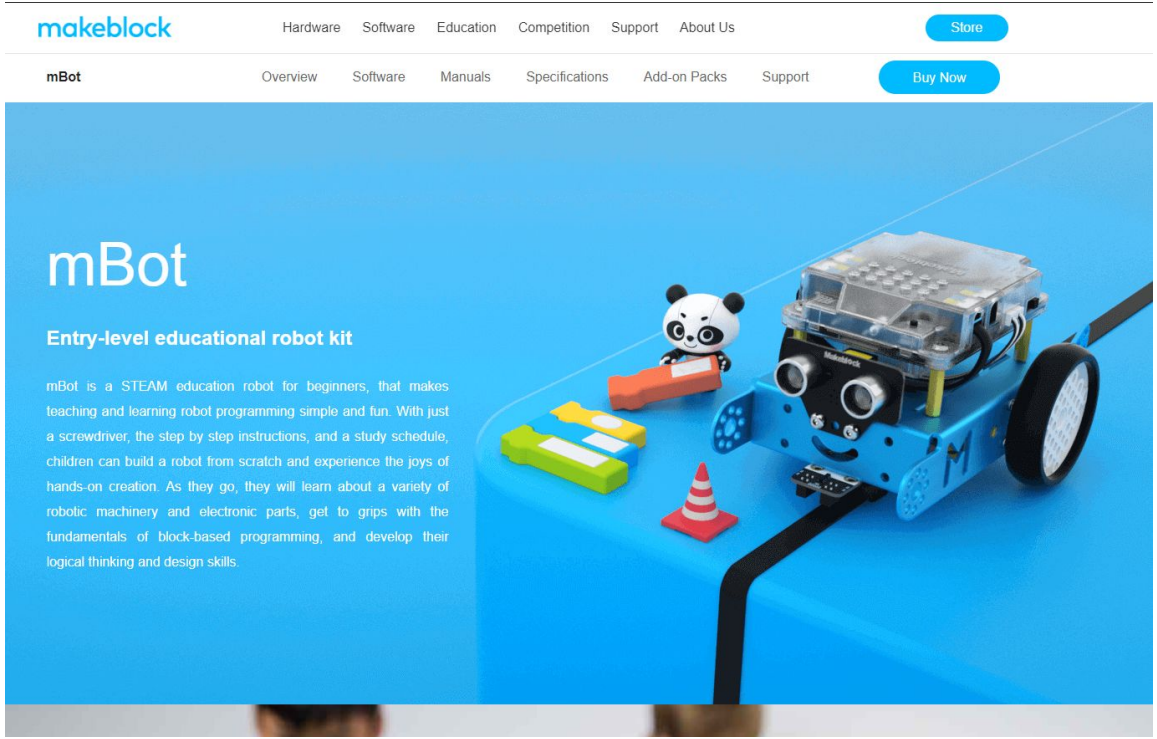
Baltic Robot Battles 2019
17-19 V 2019
Gdansk Science and Technology Park

Competitions

- Sumo
- Line follower
- Freestyle
- Micromouse
- LEGO
- Robohackathon

informacje o producencie

https://www.makeblock.com

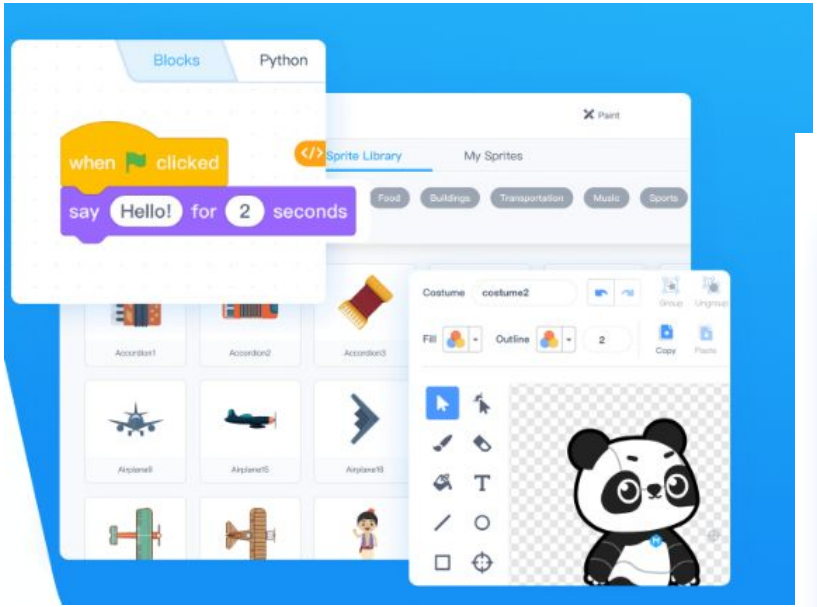


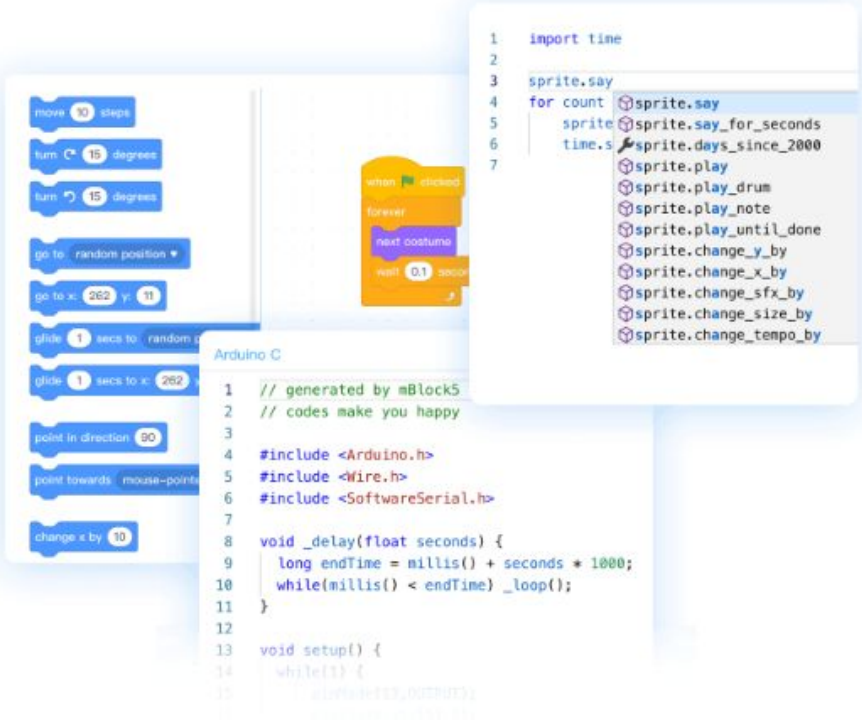

Food grade silicone
Lead free
Eco-friendly, non-toxic materials
RoHS compliant
Safe, rounded corner design


IoT
A
B
C

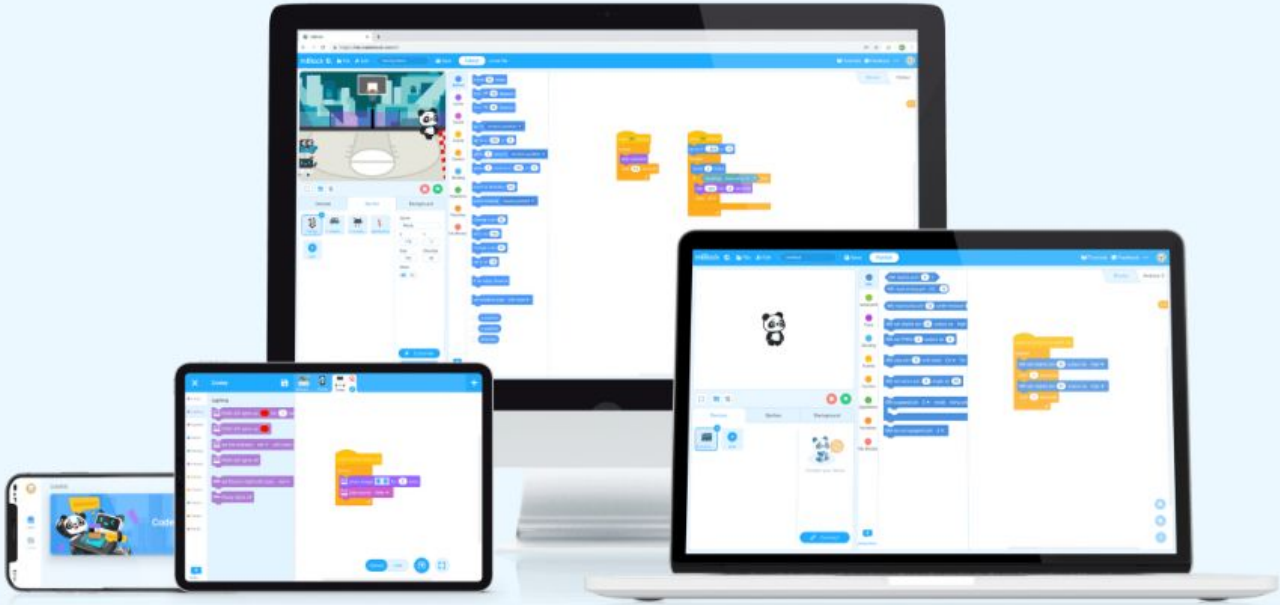

Airblock


neuron


Blocks
Python
when clicked
say Hello! for 2 seconds
Paint
Sprite Library
My Sprites
Food
Buildings
Transportation
Music
Sports
Costume
costume2
Fill
Outline
Group
Ungroup
Copy
Paste


move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 262 y: 11
glide 1 secs to random
glide 1 secs to x: 262
point in direction 90
point towards mouse-pointer
change x by 10
when clicked
forever
next costume
wait 0.1 secs
Arduino C
// generated by mBlock5
// codes make you happy
#include <Arduino.h>
#include <Wire.h>
#include <SoftwareSerial.h>
void _delay(float seconds) {
long endTime = millis() + seconds * 1000;
while(millis() < endTime) _loop();
}
void setup() {
import time
sprite.say
for count
sprite.say
sprite.say_for_seconds
sprite.days_since_2000
sprite.play
sprite.play_drum
sprite.play_note
sprite.play_until_done
sprite.change_y_by
sprite.change_x_by
sprite.change_sfx_by
sprite.change_size_by
sprite.change_tempo_by

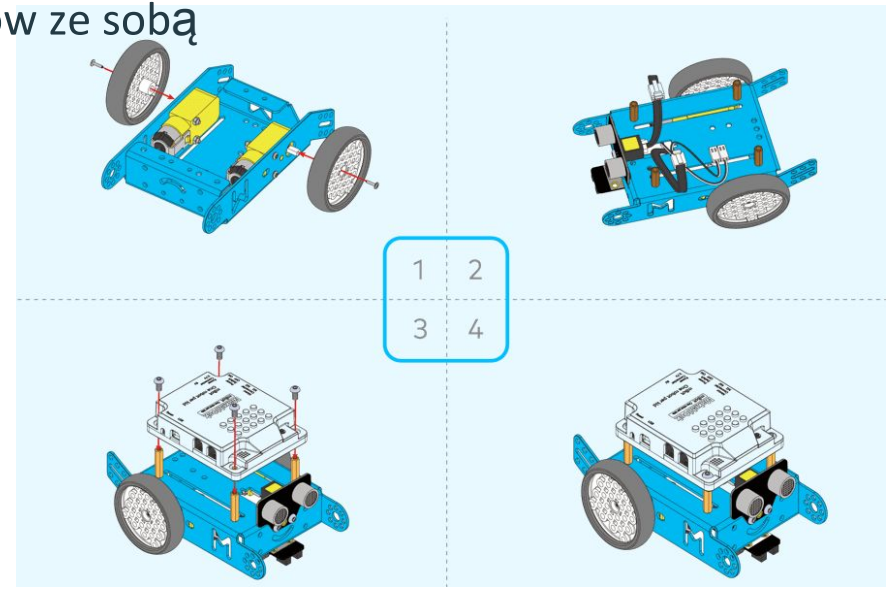
Use mBlock across Windows, Mac, Chromebook and mobile devices to work for different STEAM education purposes.



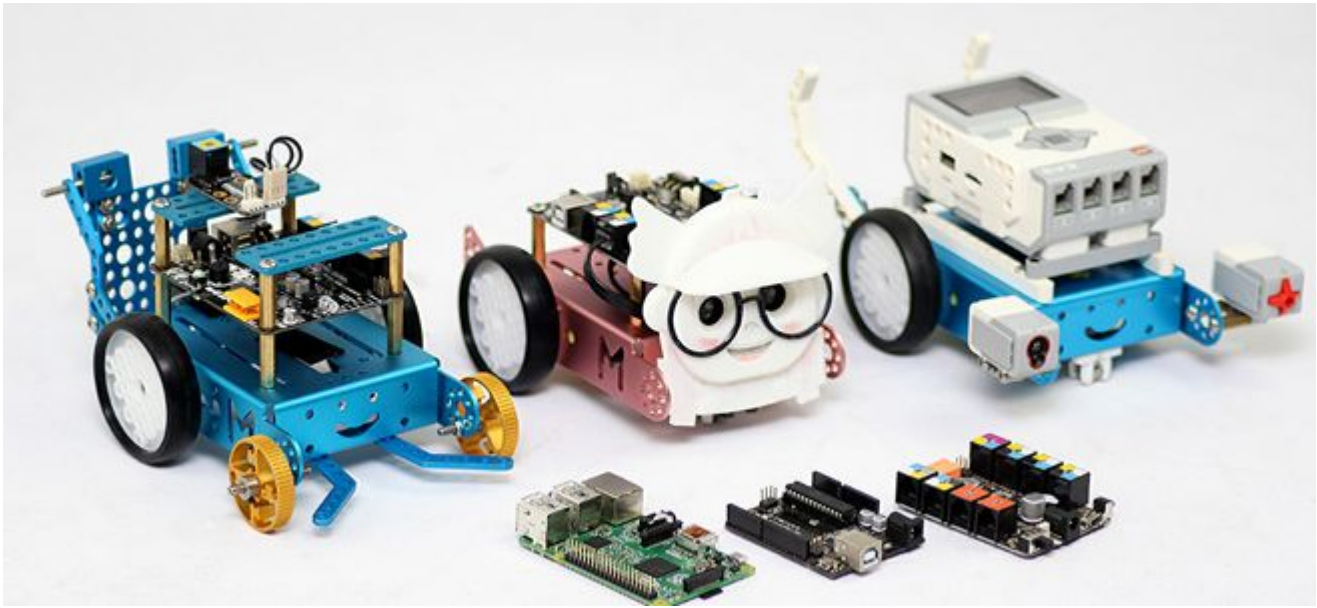
Prezentacja robota

informacje:

- roboty łatwo dostępne również na polskim rynku (cena ok 500zł wersja podstawowa)
- łatwość składania, łączenia modułów ze sobą



- integracja z urządzeniami mobilnymi: komunikacja bluetooth, oprogramowania sterujące
- możliwa rozbudowa o elementy z innych zestawów



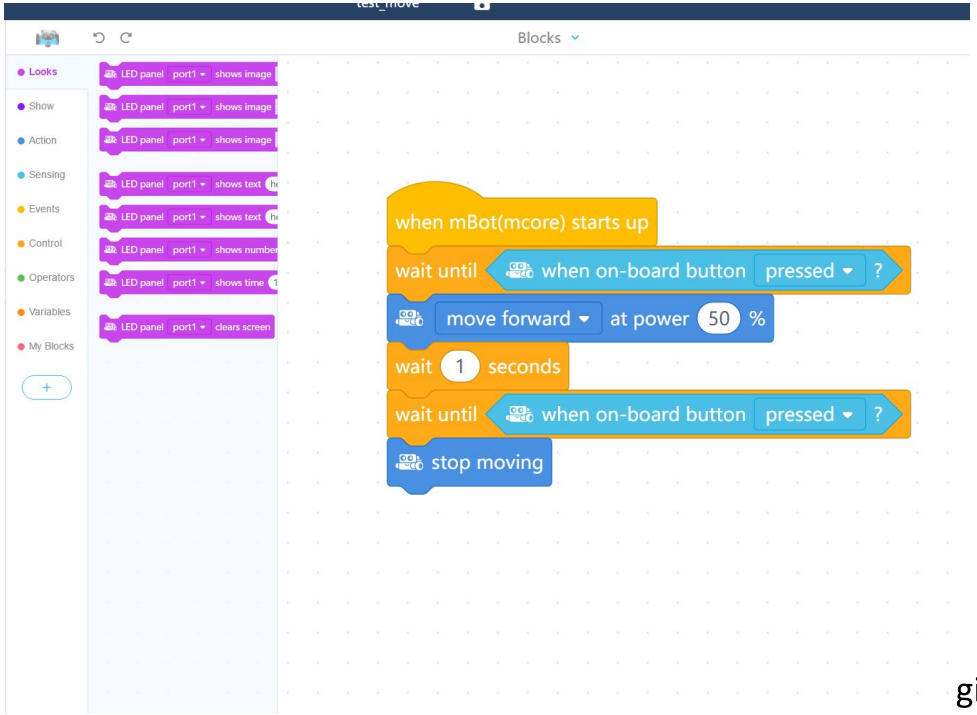
- możliwe zadania: omijanie przeszkód, jazda po linii, rozpoznawanie kolorów, reakcja na poziom dźwięku

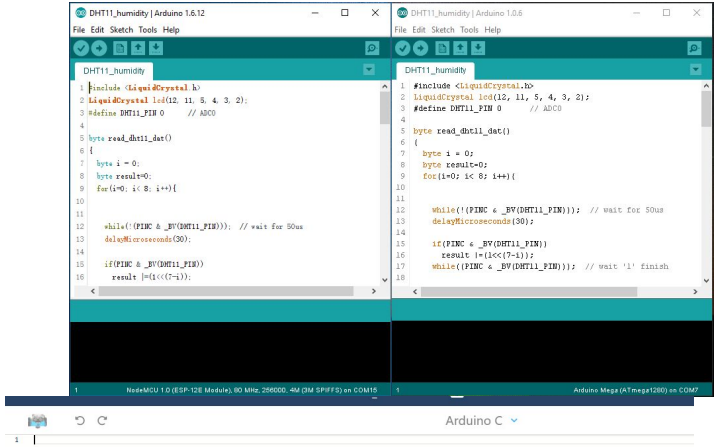
- możliwości współzawodnictwa: soccer game, walki sumo

Źródło: youtube.com

- producent rozwija swoje produkty: sprzęt + oprogramowanie
- dostępne części zamienne oraz rozszerzające moduły dodatkowe

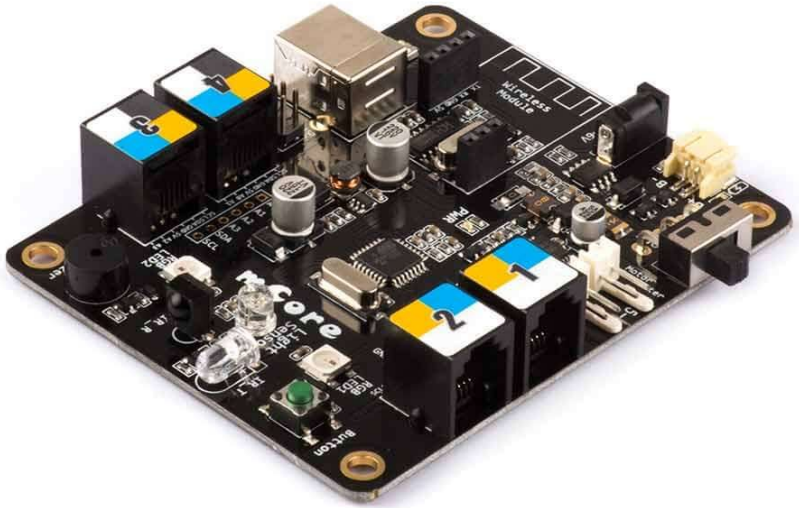
PROGRAMOWANIE





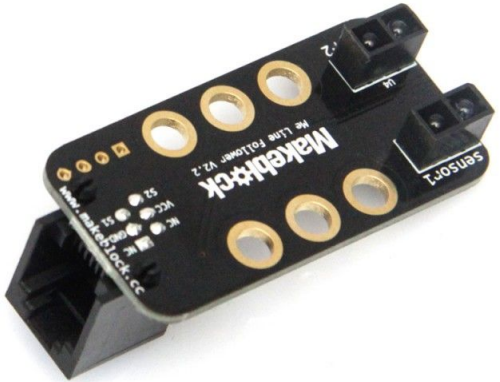
github-> biblioteki python

STEROWNIK



Źródło: https://www.makeblock.com/

Czujniki zewnętrzne w zestawie

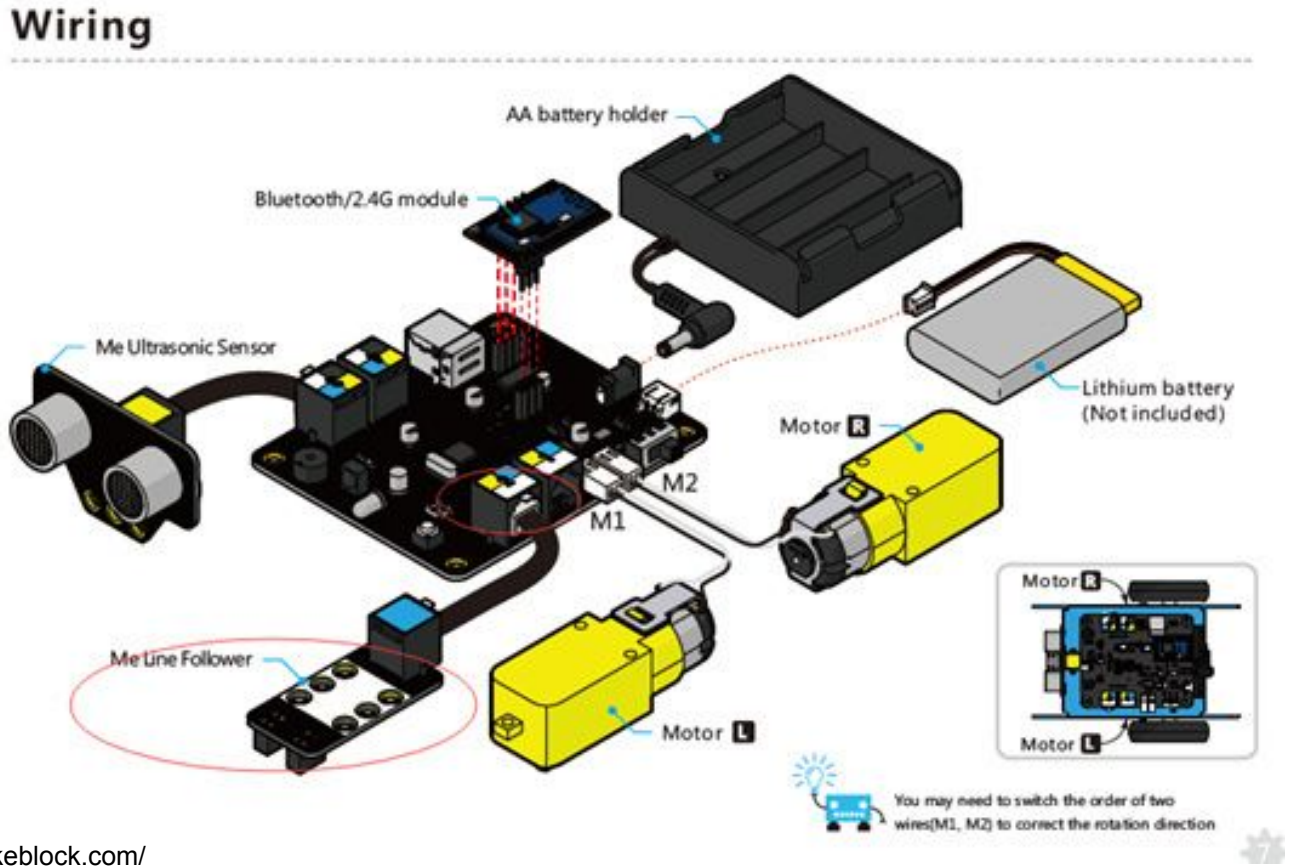


Źródło: https://www.makeblock.com/

Czujniki dodatkowe

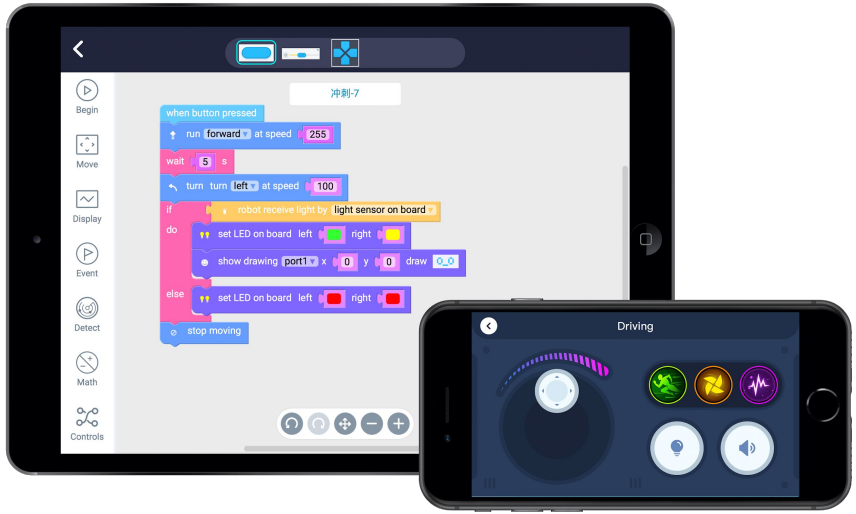
Źródło: https://www.makeblock.com/

połączenie



Źródło: https://www.makeblock.com/

Obsługa z urządzeń mobilnych



Źródło: https://www.makeblock.com/

środowisko programowania

mBlock dostępny na stronie producenta

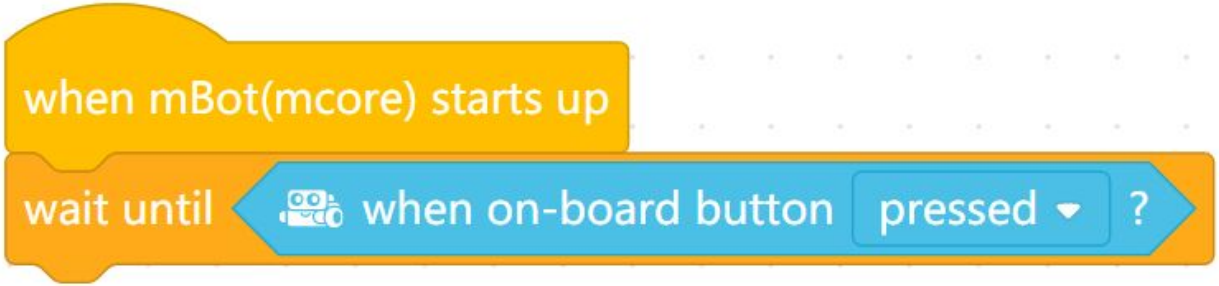
oparty o język scratch

możliwość programowania w Arduino C

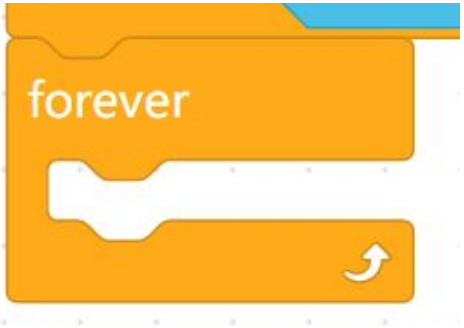
PRZYKŁADOWY PROCES PROGRAMOWANIA

rozpoczynamy od instrukcji startowej:

przydatna funkcjonalność: aktywowanie robota przyciskiem

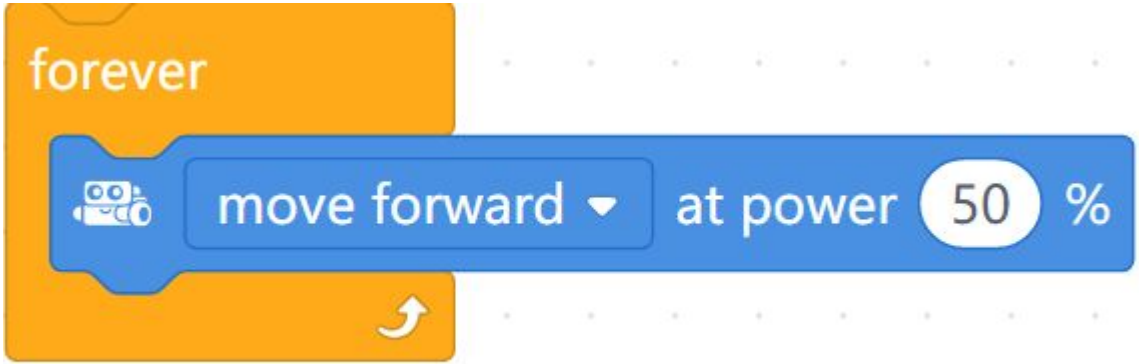


wykorzystamy pętle nieskończoną.



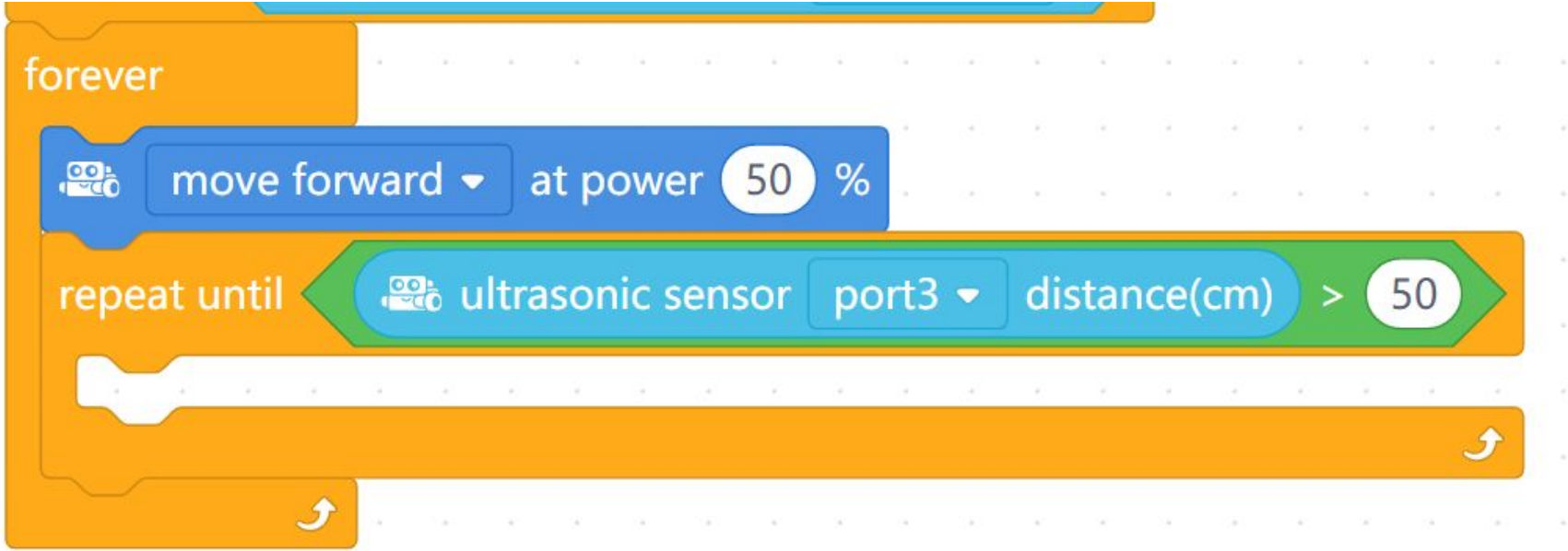
do dyspozycji mamy również innego rodzaju pętle: z licznikami, warunkowe

ruch robota do przodu:

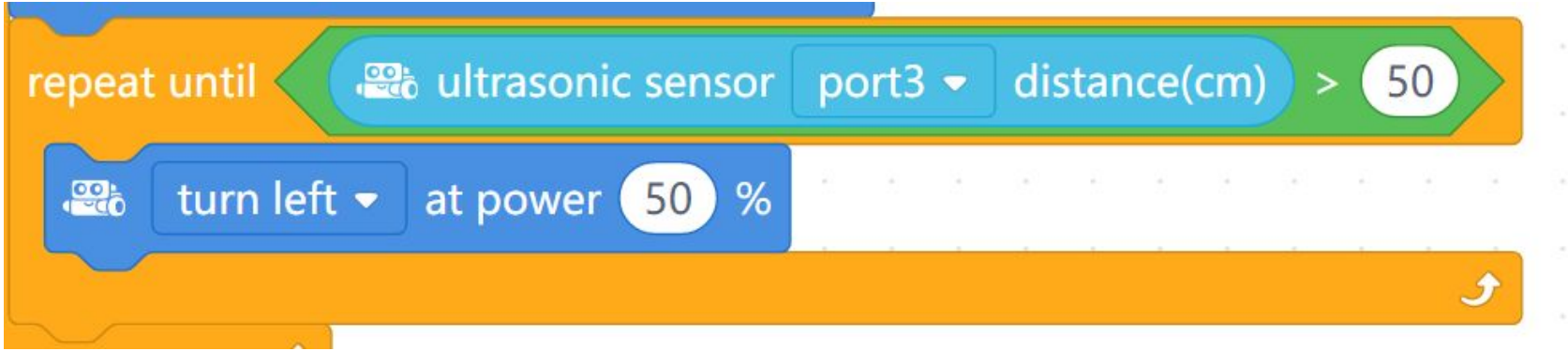


zbliżamy się do przeszkody?:

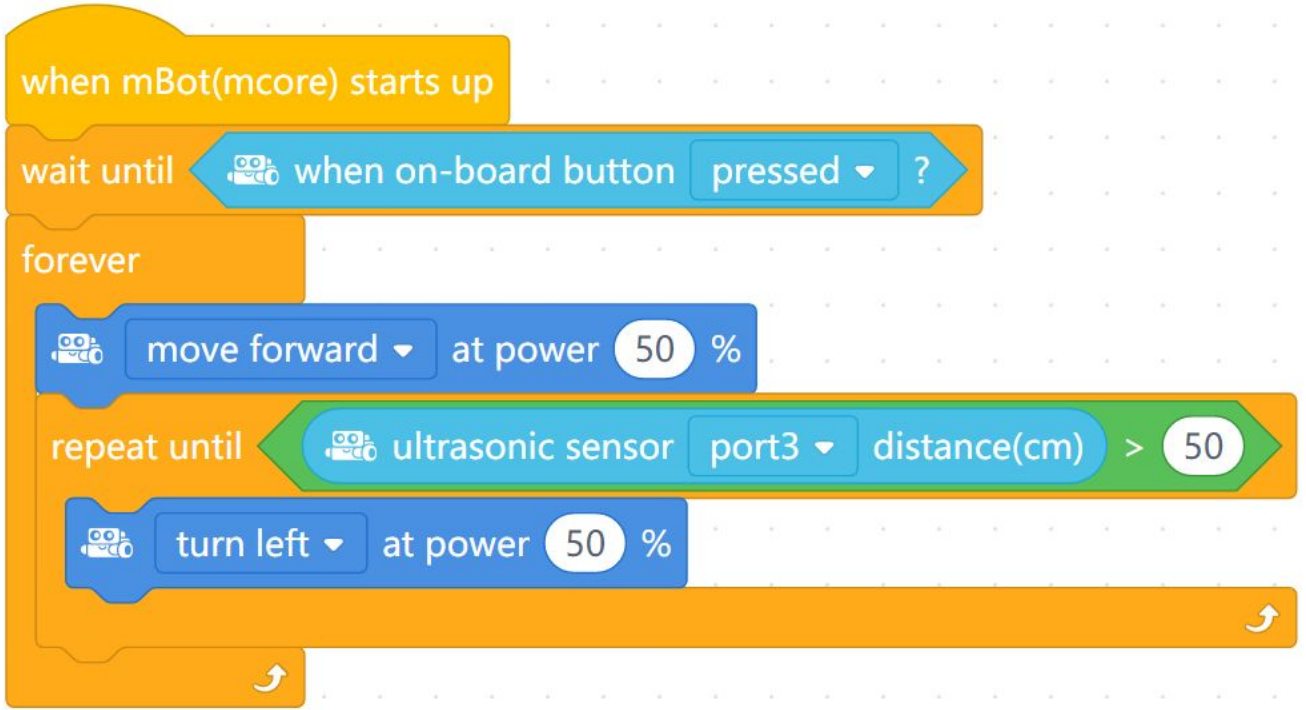
wyrażenie logiczne wstawiamy do instrukcji warunkowej, np:

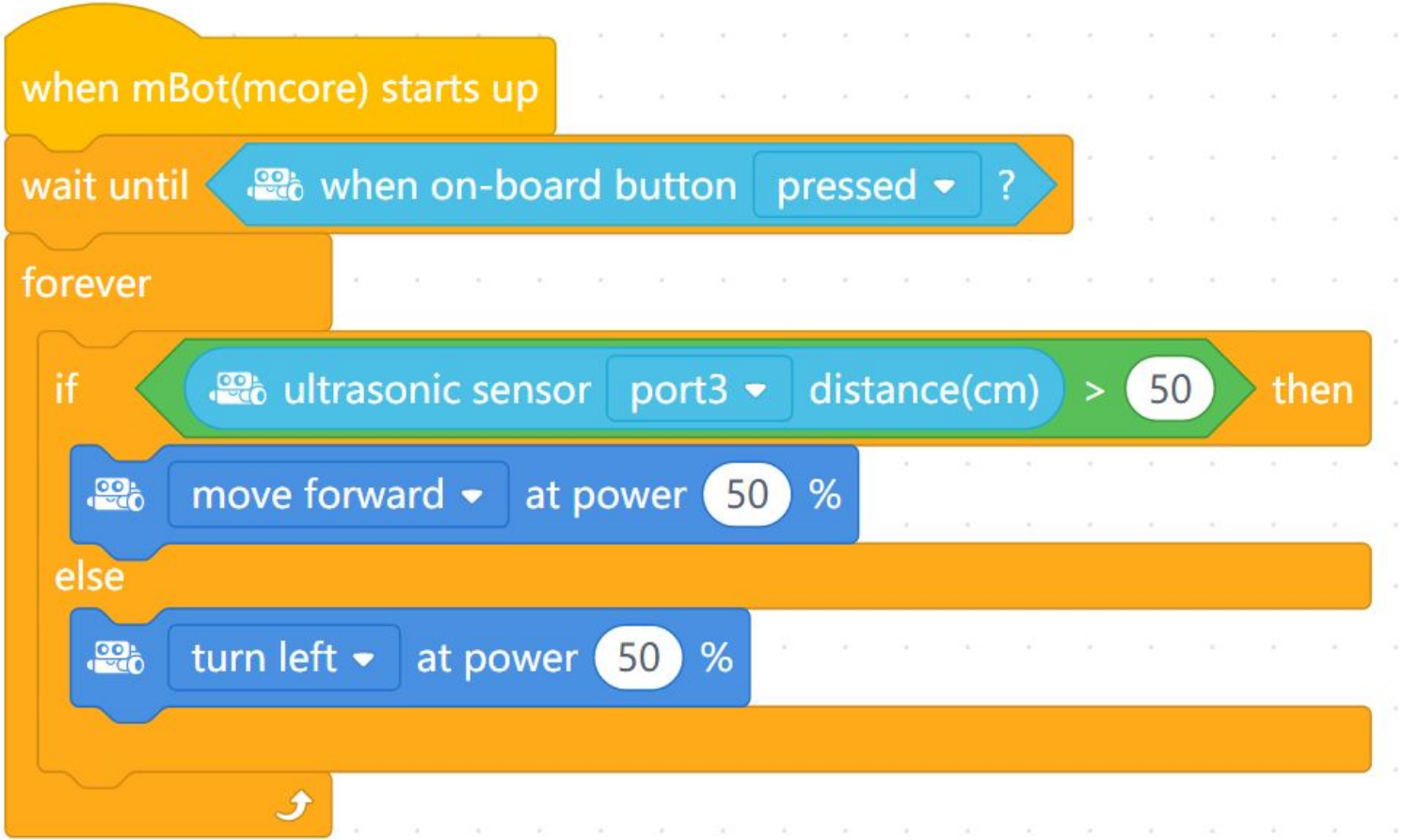


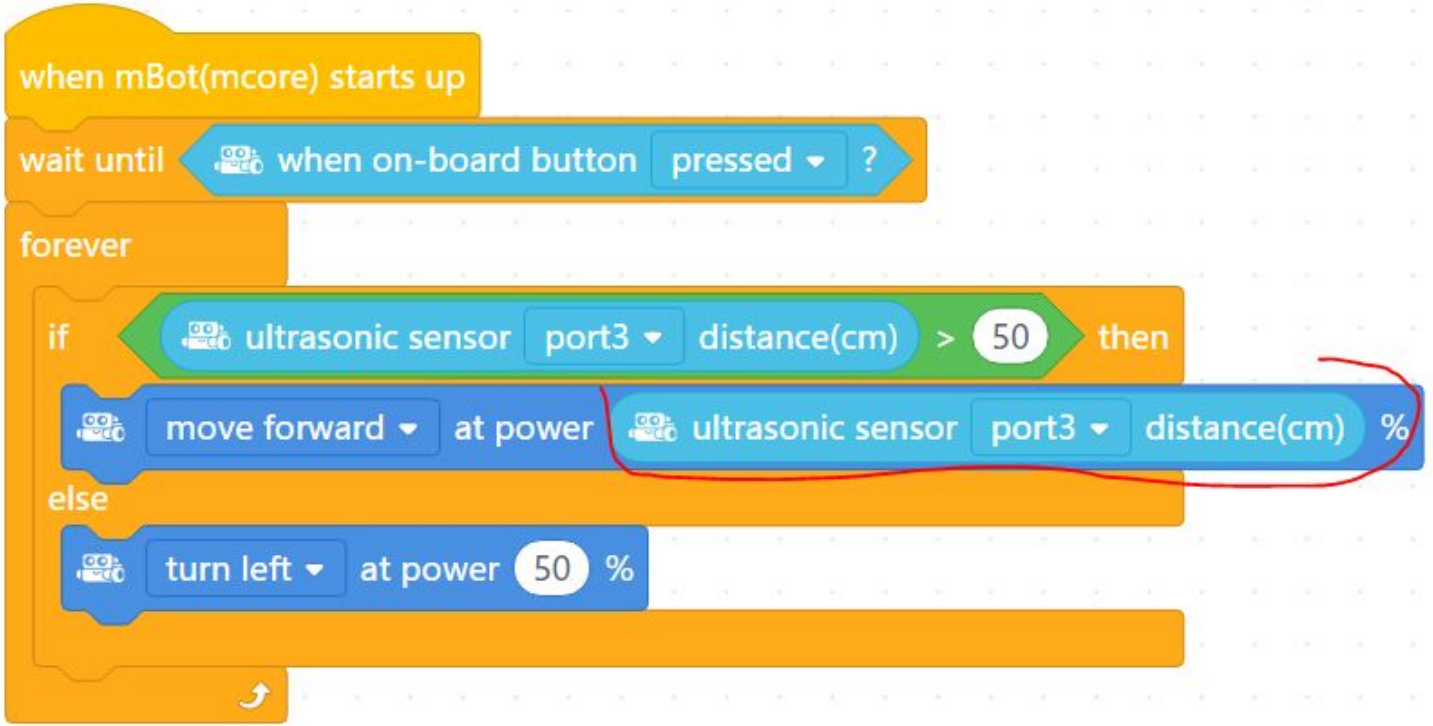
i omijamy przeszkodę



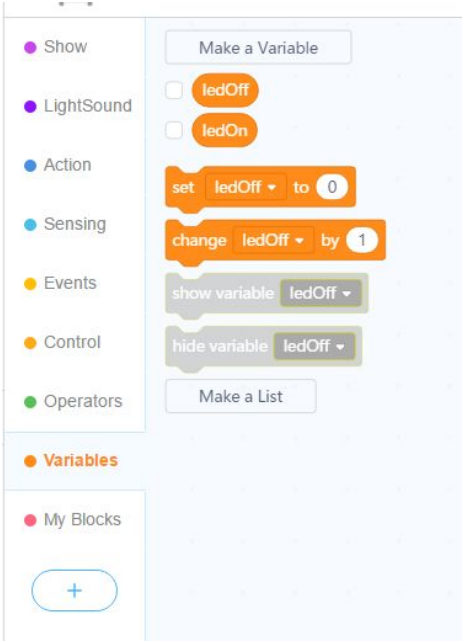
czas na testy

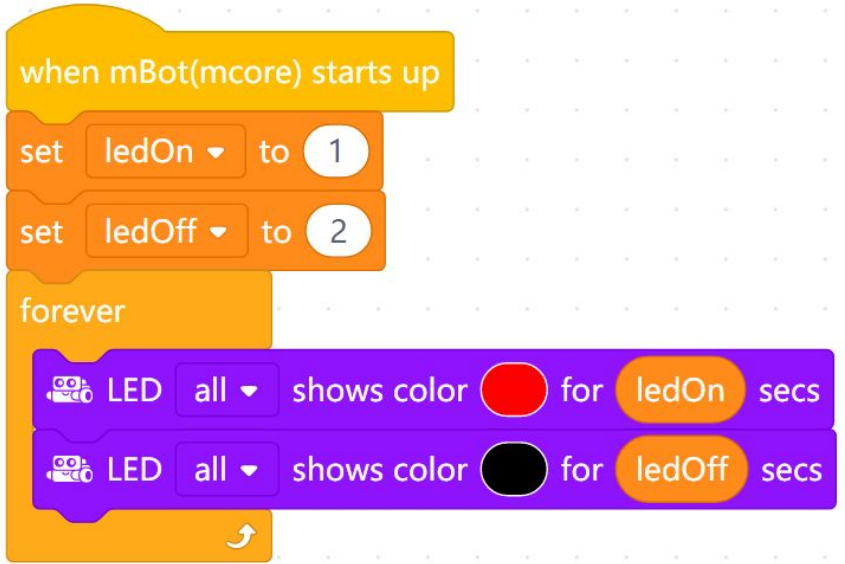



when mBot(mcore) starts up
wait until when on-board button pressed ?
forever
if ultrasonic sensor port3 distance(cm) > 50 then
move forward at power 50 %
else
turn left at power 50 %


when mBot(mcore) starts up
wait until when on-board button pressed ?
forever
if ultrasonic sensor port3 distance(cm) > 50 then
move forward at power ultrasonic sensor port3 distance(cm) %
else
turn left at power 50 %

zmienne?


Show
LightSound
Action
Sensing
Events
Control
Operators
Variables
My Blocks
Make a Variable
ledOff
ledOn
set ledOff to 0
change ledOff by 1
show variable ledOff
hide variable ledOff
Make a List


when mBot(mcore) starts up
set ledOn to 1
set ledOff to 2
forever
LED all shows color for ledOn secs
LED all shows color for ledOff secs

mBlock:

tworzenie własnych bloczków

obsługa innych zestawów

język bloczkowy scratch oraz
 inny język tekstowy: python, C