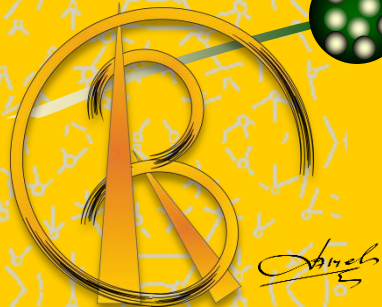
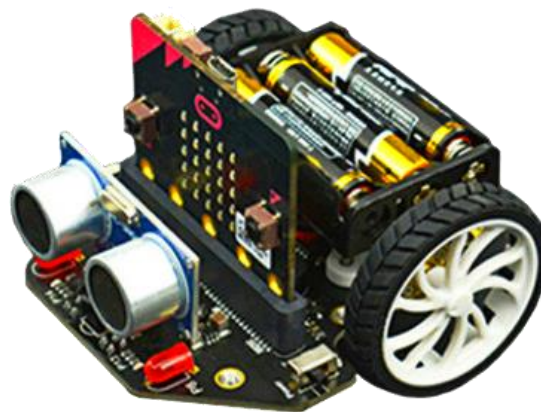
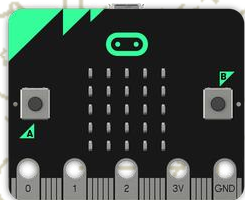


awesome
micro:bit

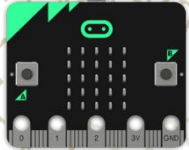


Маqueen robot. Следене на линия





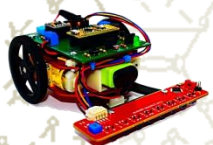
1. Maqueen robot



Maqueen – micro:bit е образователна роботизирана платформа за програмиране. Maqueen е лесен за използване робот за изучаване на програмиране чрез **STEAM** образование.

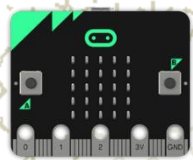


С малкия си корпус и наличието на MicroBit, той позволява на учениците бързо да научат визуалното програмиране по забавен начин, като същевременно развиват своите интереси към науката и логическото мислене.

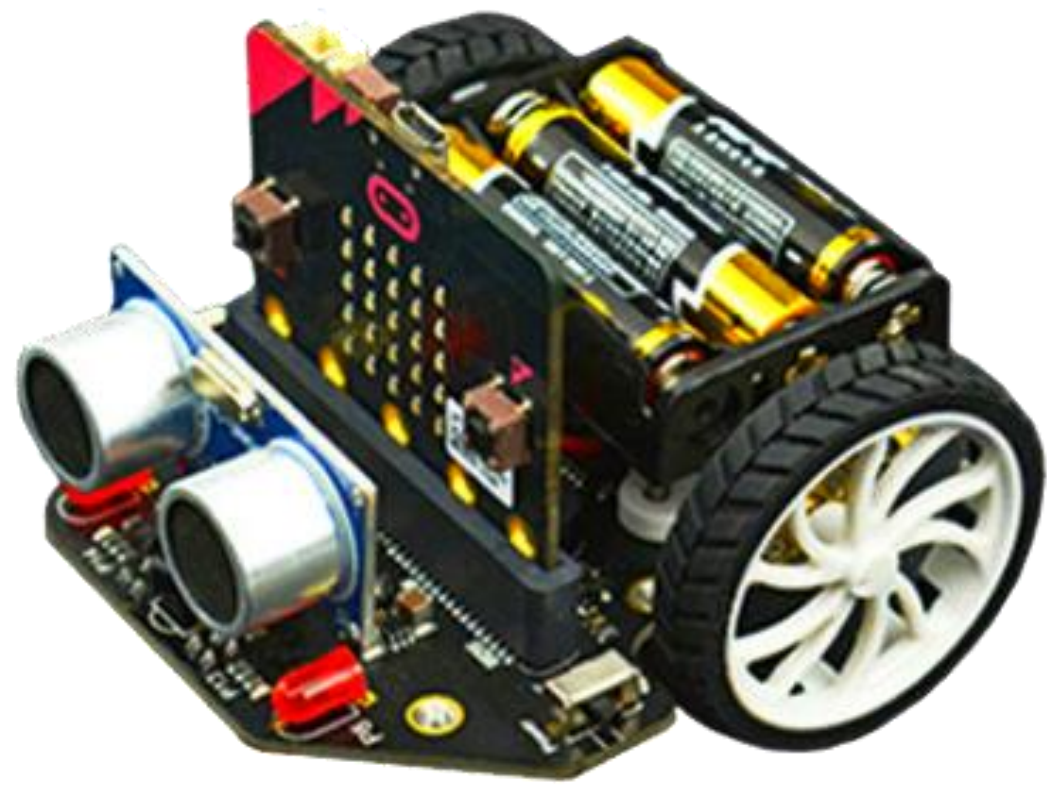
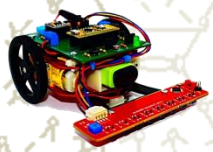




Abir

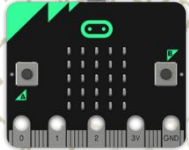


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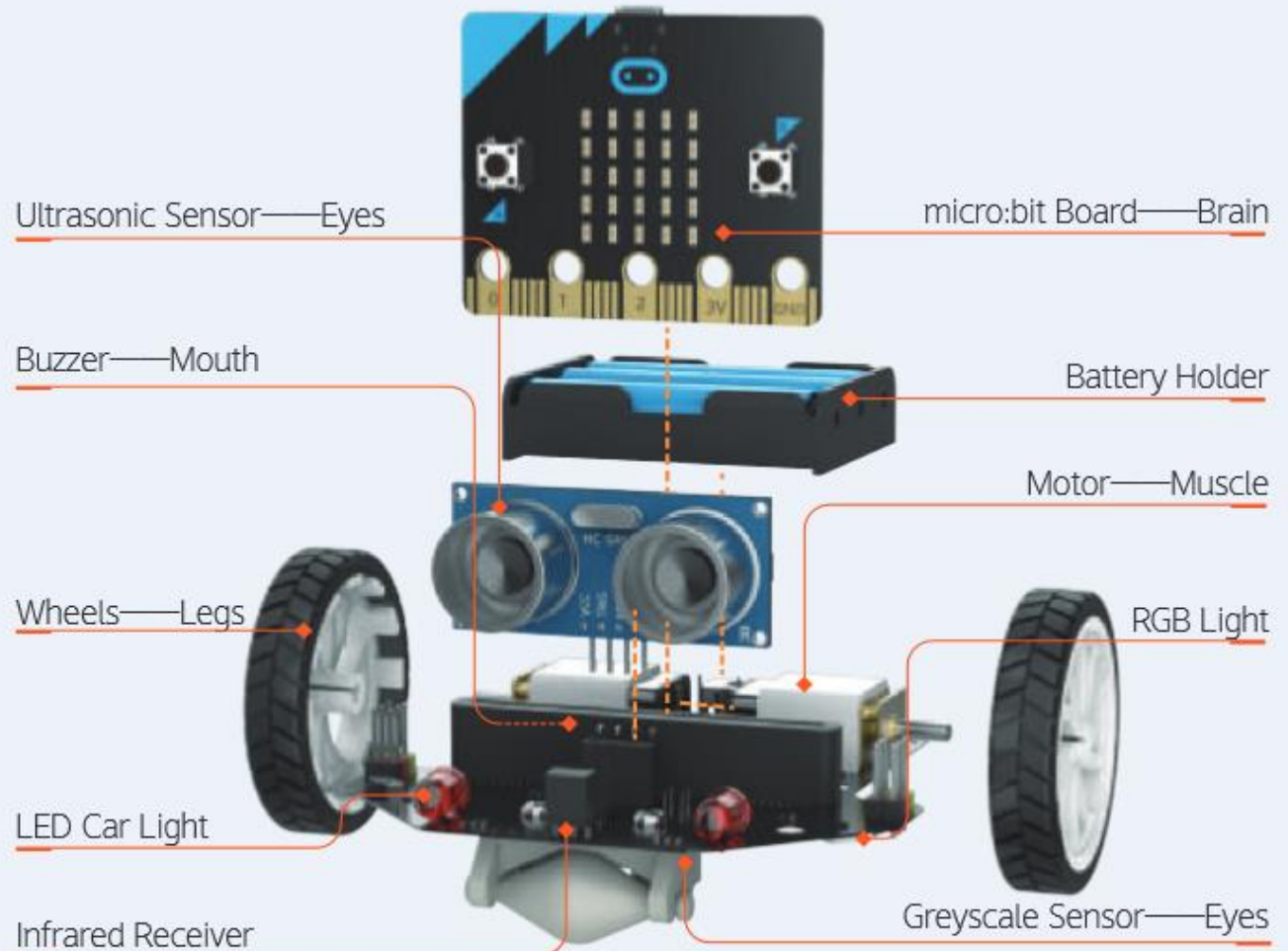
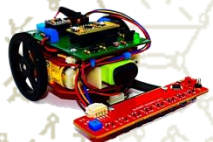




Abhishek

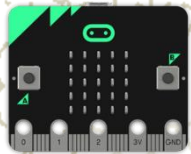


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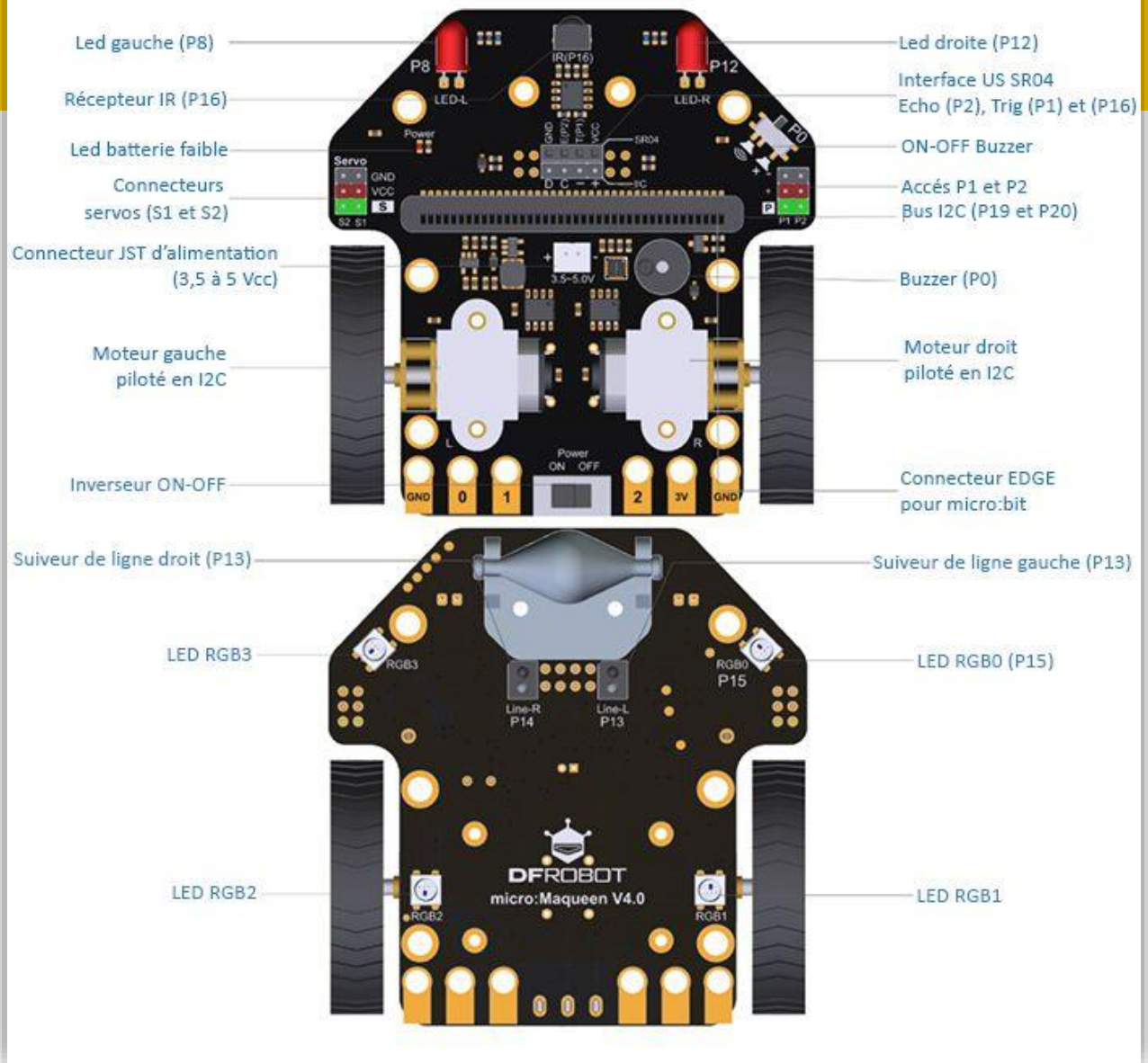
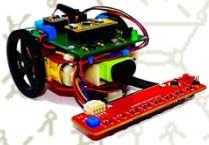


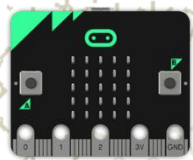


Obiwan

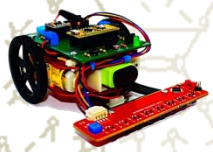


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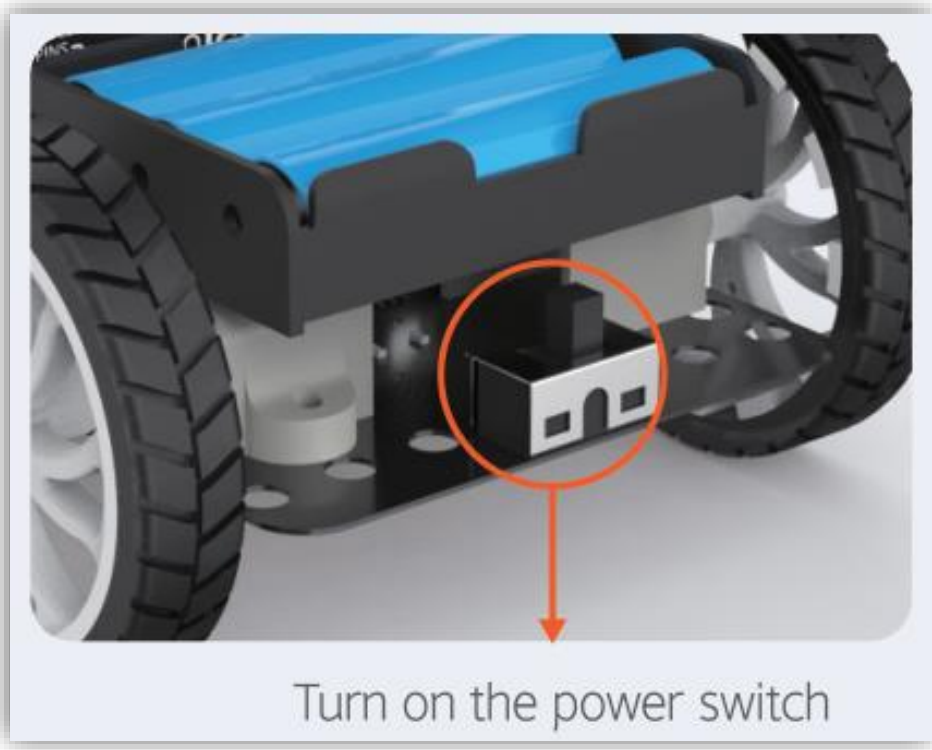


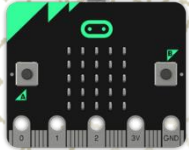


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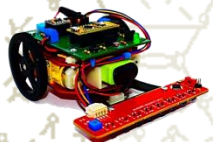


Включване на захранването на робота;

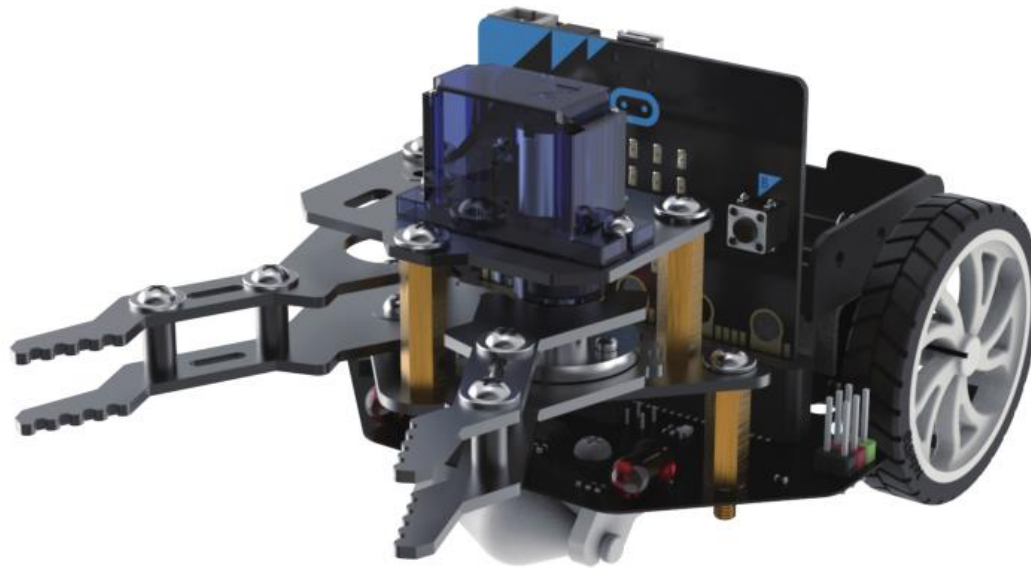




SOCIETY
ROBOTIC



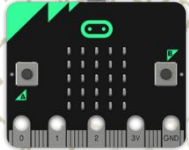
1.1.Разширения



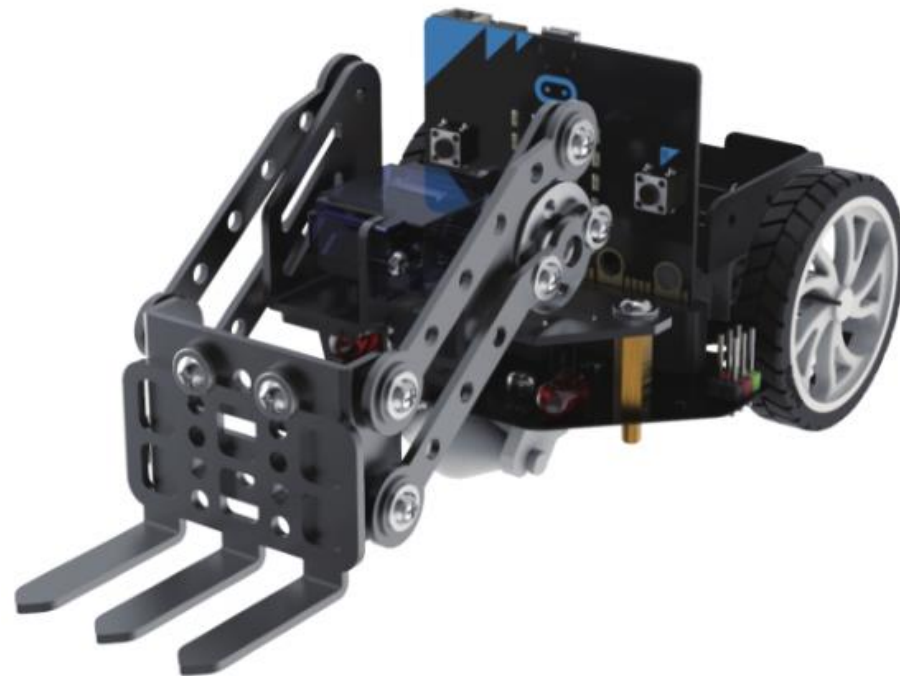
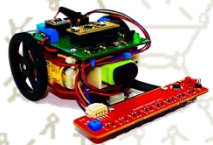
Gripper



Abir



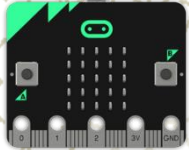
**SOCIETY
ROBOTIC**



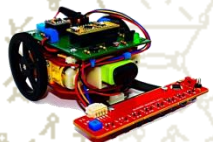
Forklift



Abir



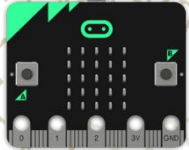
**SOCIETY
ROBOTIC**



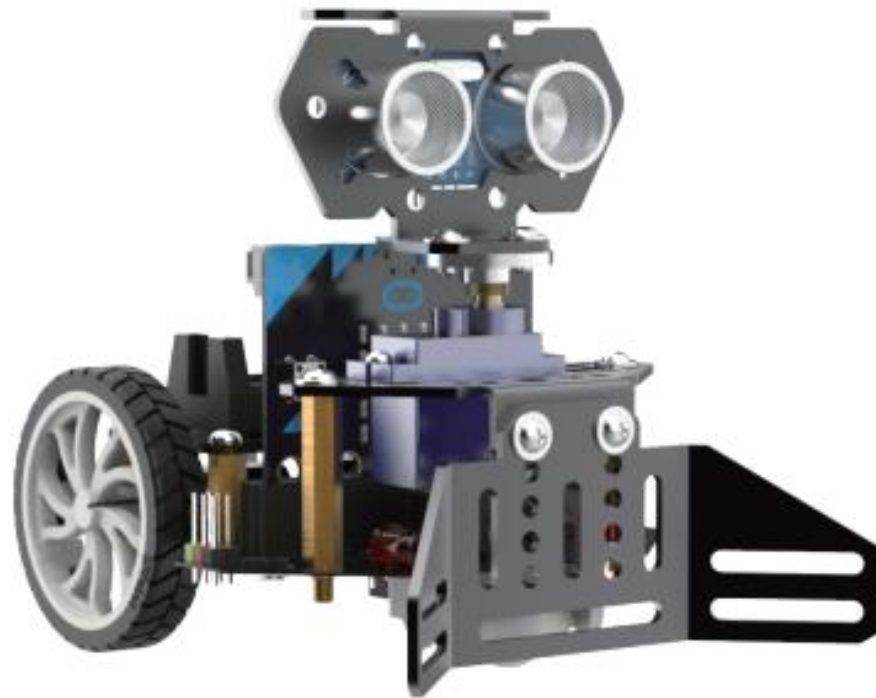
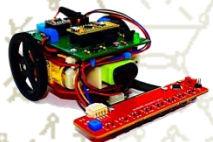
Loader



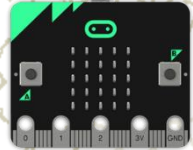
Abhishek



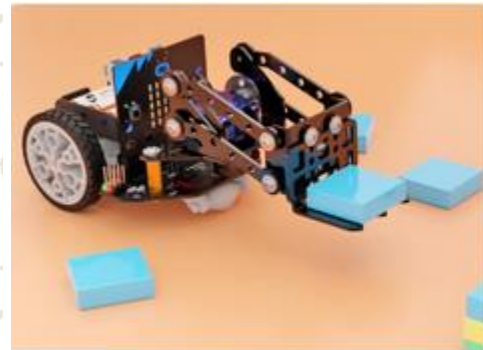
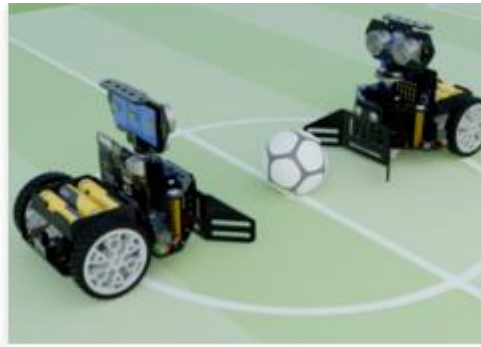
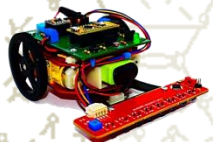
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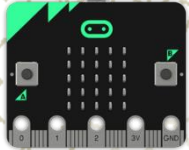


Push

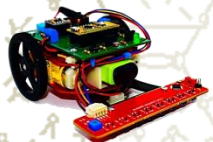


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ROBOTIC-



Mind+ V1.7.2 RC3.0 new-project-1.10.2022 r.-11:12:14.sb3

Back

Select Kit

Board

Kit

Shield

Sensor

Actuator

Communication

Display

Function

Internet

User-Ext

Can't find what you want? [Click here](#) to find more



ROB0116

Vortex

Vortex educational robot
from DFRobot



ROB0135|DFR0305|DFR0004

Romeo

Explorer D1 educational robot
from DFRobot



EDU0047&EDU0048

ArduinounoR3

Wuhan Maker Course custom
Arduino Uno main control
board kit.



ROB0147

Max:bot

Max:bot Robot based on
micro:bit



ROB0137

MAX

MAX (ROB0137) robot
based on Arduino



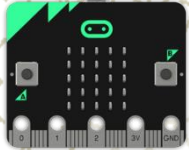
ROB0148

Maqueen

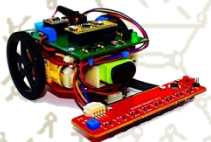
micro:Maqueen robot based
on micro:bit



1. RGB Neopixel



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RGB light control

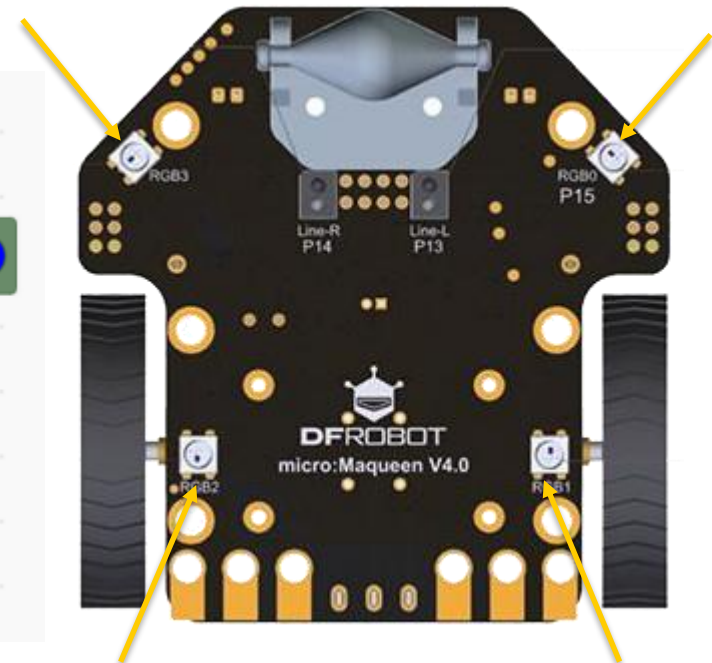
red 255 green 255 blue 255

pin P15 the RGB0 (0) LED display color

pin P15 rotate pixels by 0

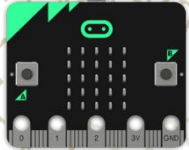
pin P15 LED brightness 255

pin P15 clear all LEDs

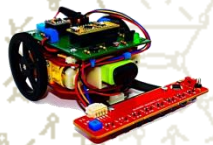




2.HC-SR04 Ultrasonic

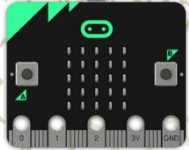


- ⚡ Ултразвуковият сензор за разстояние HC-SR04 осигурява метод за безконтактно измерване от 2 cm до 400 cm с точност на обхвата, която може да достигне до 3 mm.
- ⚡ Всеки модул HC-SR04 включва ултразвуков предавател, приемник и контролна верига.
- ⚡ Има само четири пина - **VCC** (захранване), **TRIG** (излъчвател), **ECHO** (приемник) и GND (земя).

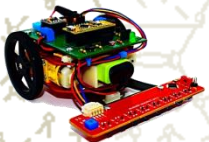




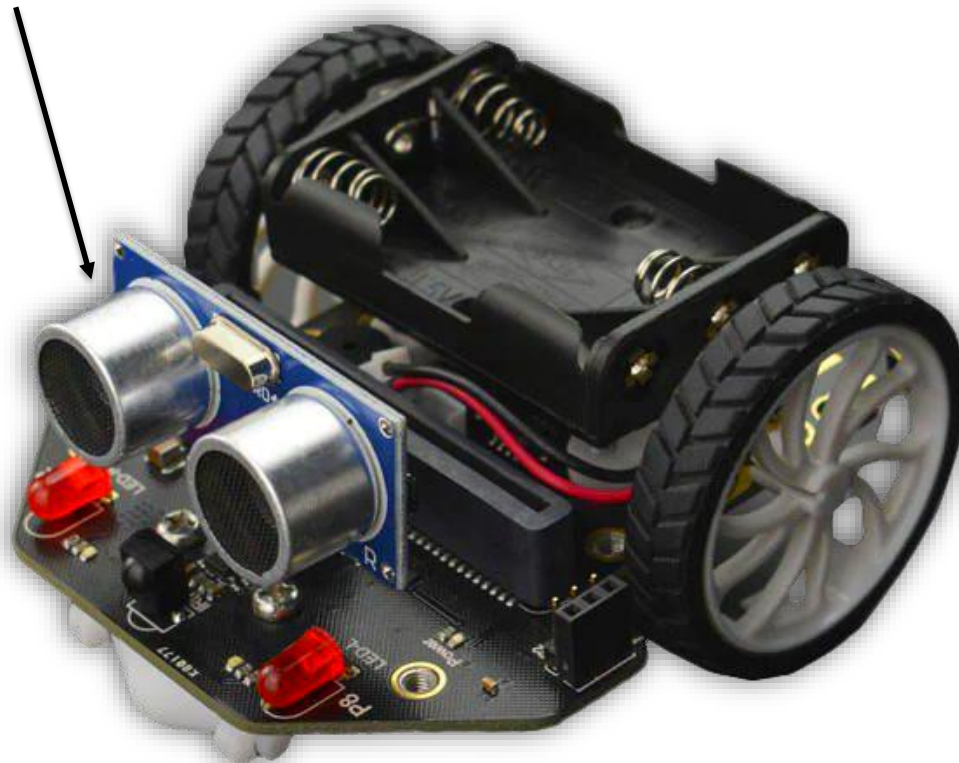
Society of Robotics

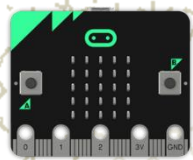


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ROBOTIC**

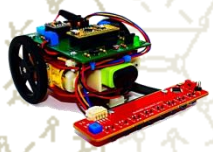


HC-SR04 Ultrasonic

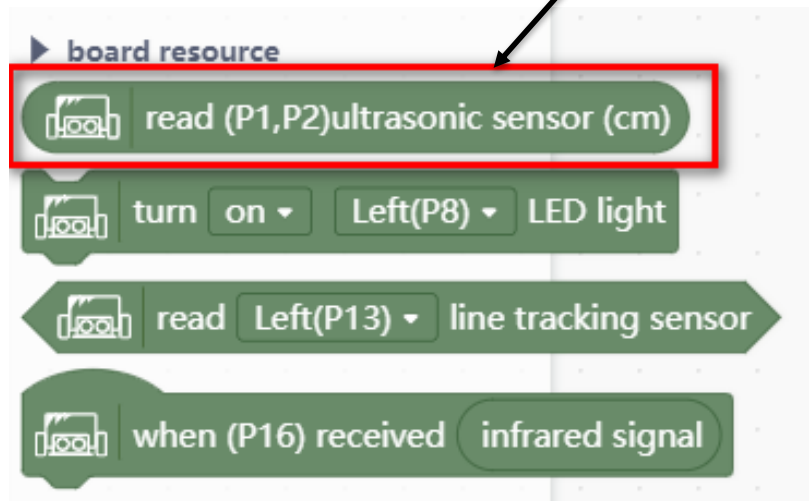




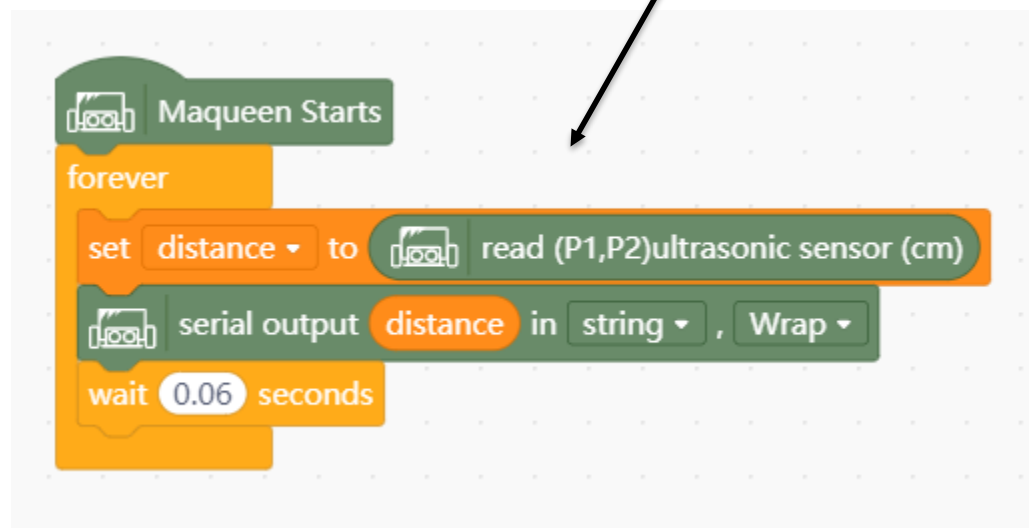
SOCIETY
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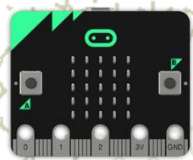


HC-SR04 Ultrasonic

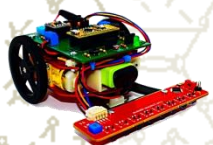


Пример

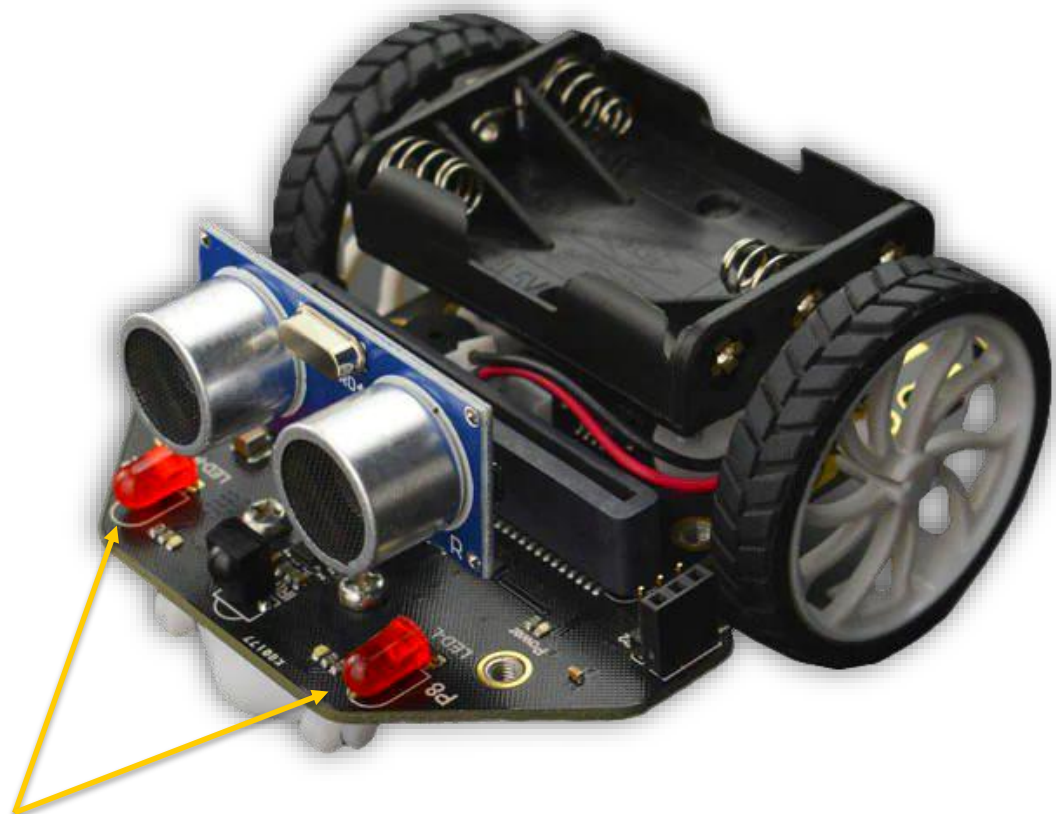




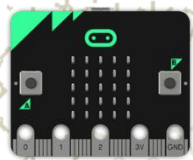
SOCIETY
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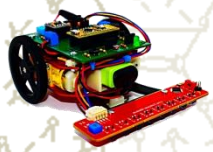
3.LED диоди



LED диоди



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board resource

- read (P1,P2)ultrasonic sensor (cm)
- turn on ▾ Left(P8) ▾ LED light
- read Left(P13) ▾ line tracking sensor
- when (P16) received infrared signal

LED диоди



turn on ▾ Left(P8) ▾ LED light

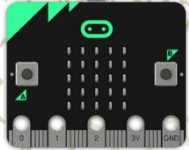
✓ on
off

turn on ▾ Left(P8) ▾ LED light

✓ Left(P8)
Right(P12)



4.IR приемник



Можем да използваме IR дистанционно управление, за да управляваме нашия Maqueen. За целта първо трябва да видим какви стойности изпраща всеки бутон на нашето дистанционно;

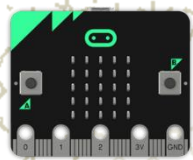


Key	Value
Red key	0
VOL+	1
FUNC/STOP	2
Left arrow	4
Pause	5
Right arrow	6
Down arrow	8
VOL-	9

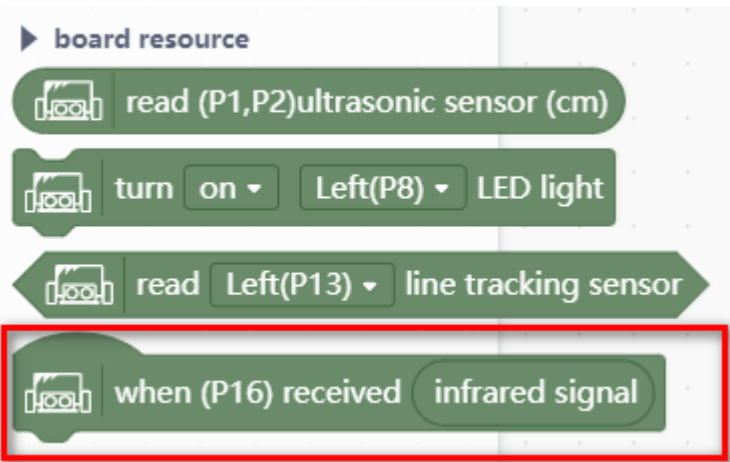
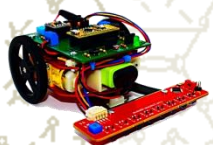
Key	Value
Up arrow	10
0	12
EQ	13
ST/REST	14
1	16
2	17
3	18
4	20

Key	Value
5	21
6	22
7	24
8	25
9	26

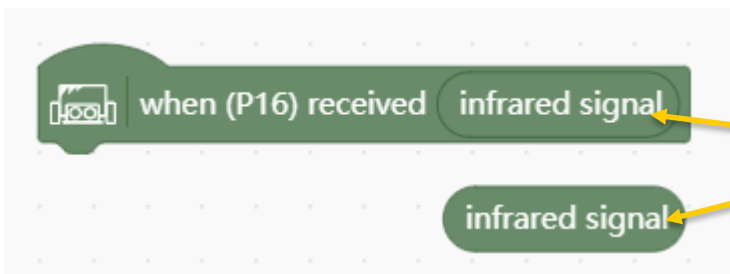




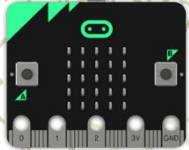
**SOCIETY
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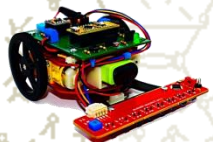
Събитие, което ще настъпи,
когато имаме получени данни
по IR комуникацията



Променлива, където
се съдържат данните
от IR комуникацията

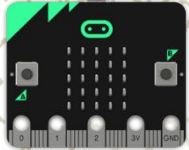


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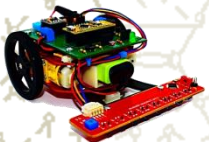


Пример 1

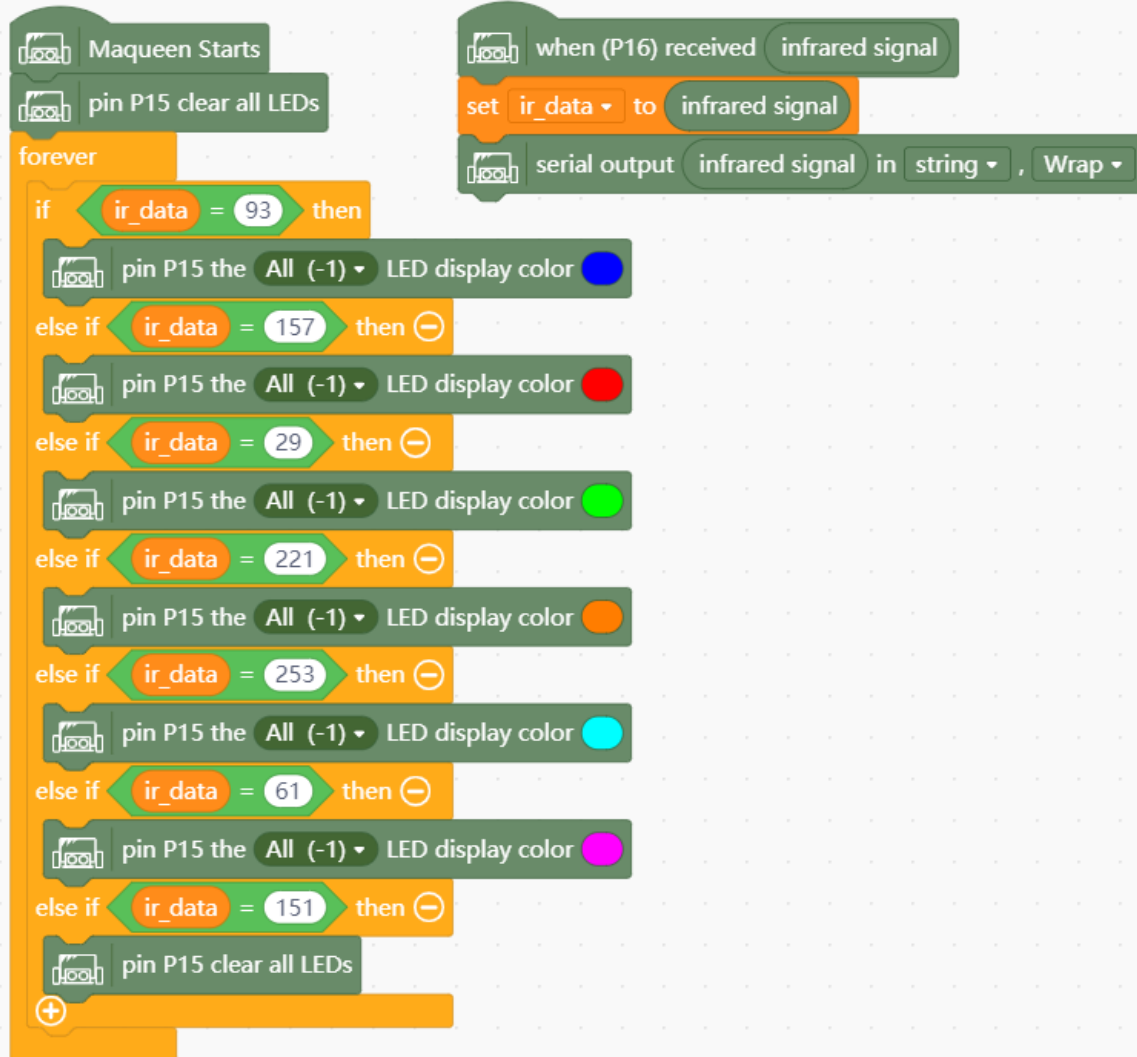




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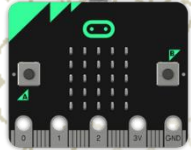


Пример 2

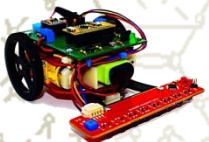




Пример 3



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```
define police
  pin P15 the All (-1) LED display color red
  display pattern [pattern]
  wait 0.1 seconds
  pin P15 the All (-1) LED display color blue
  display pattern [pattern]
  wait 0.25 seconds
```

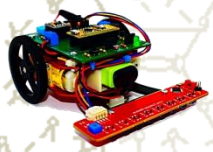
```
define blink_orange
  pin P15 the All (-1) LED display color orange
  display pattern [pattern]
  wait 0.1 seconds
  pin P15 clear all LEDs
  display pattern [pattern]
  wait 0.1 seconds
```

```
Maqueen Starts
pin P15 clear all LEDs
forever
  if IR_val = 93 then
    police
  else if IR_val = 157 then
    blink_orange
  else if IR_val = 151 then
    clear all dot matrixes
    pin P15 clear all LEDs
```

```
when (P16) received infrared signal
  set IR_val to infrared signal
  serial output IR_val in string , Wrap
```



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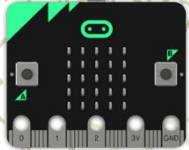
Пример 4

Измерване на температура и извеждане на сериен монитор

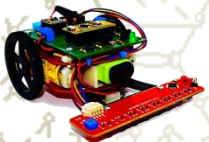
```
Maqueen Starts
forever
  set temp to Read pin P1 DS18B20 temperature(°C)
  serial output Temp = in string , No-Wrap
  serial output temp in string , Wrap
  wait 0.1 seconds
```

```
Temp = 27.00
Temp = 27.00
Temp = 27.00
Temp = 27.00
Temp = 27.00
Temp = 27.00
Temp = 27.00
Temp = 27.00
Temp = 27.00
Temp = 27.00
Temp = 27.00
Temp = 27.00
Temp = 27.00
```

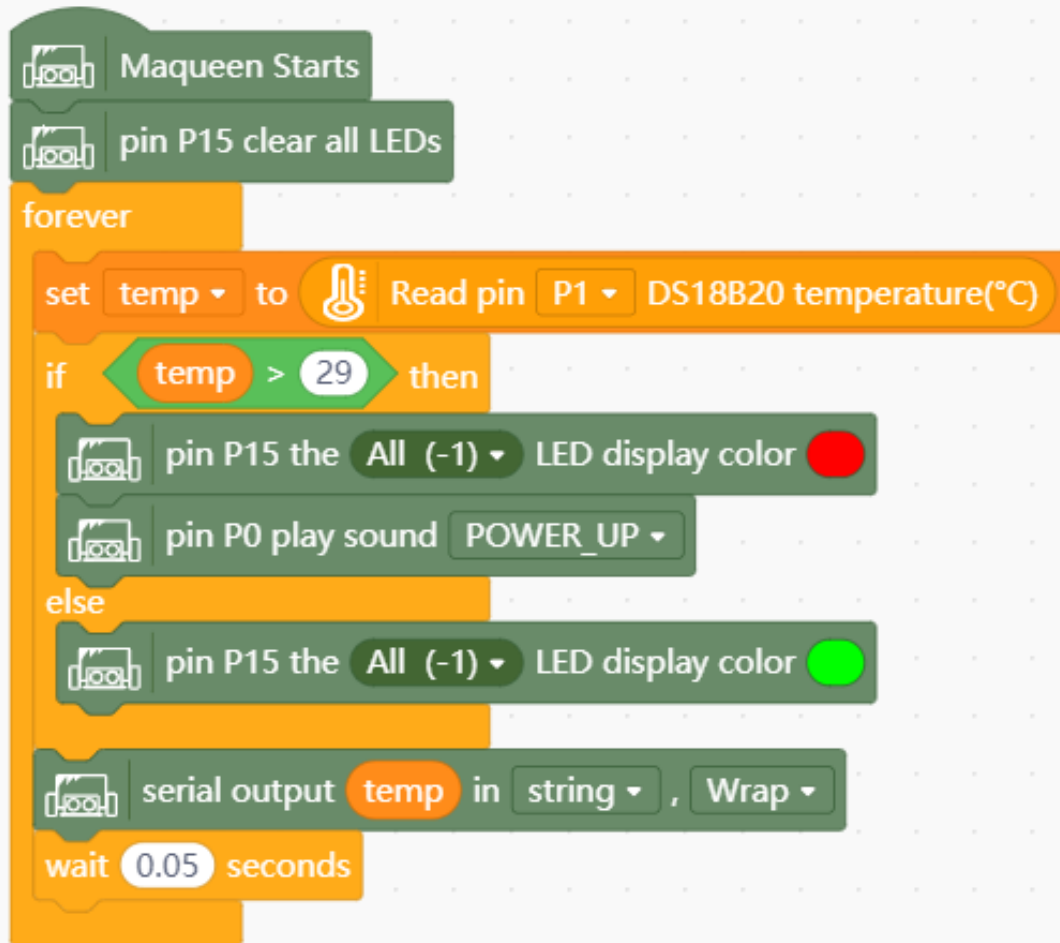
?



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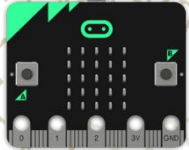


Пример 5

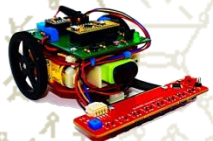
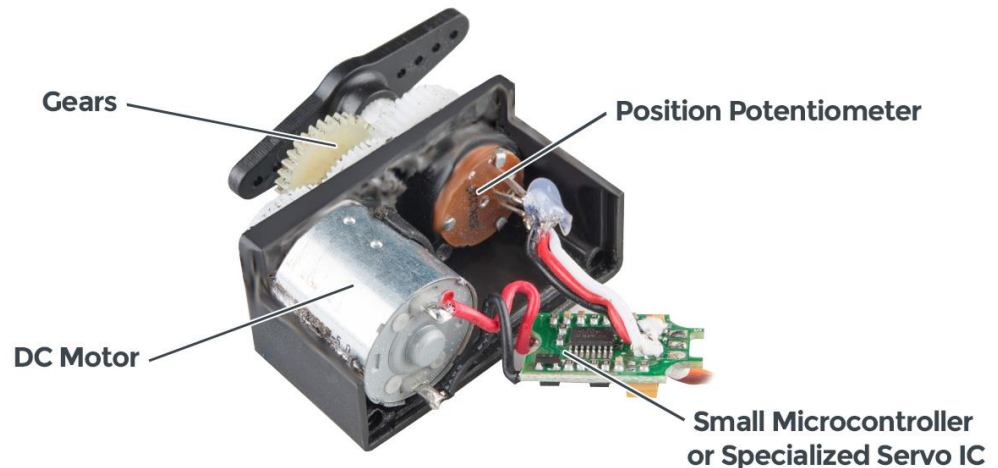


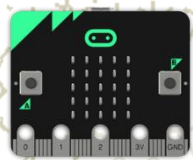


5.Сервомотор

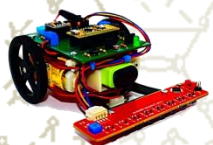


Сервомотор е вид електродвигател, предназначен за привеждане в движение на устройства за управление. С помощта на енкодер предоставя прецизен контрол по линейни и ъглови позиции, скорости и ускорение;



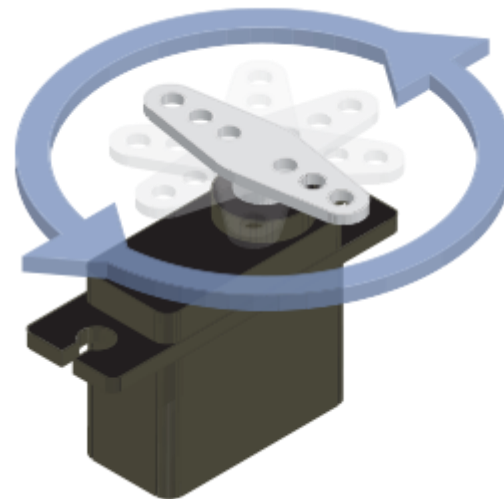
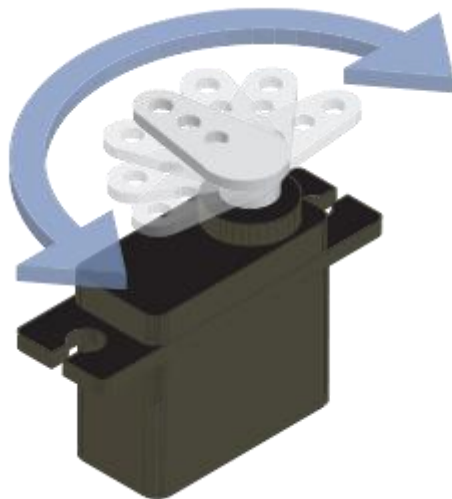


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Съществуват два вида сервомотори в зависимост от диапазона на въртене:

- Сервомотори с въртене до 180 градуса;
- Сервомотори с непрекъснато въртене;





Пример 1

motor control

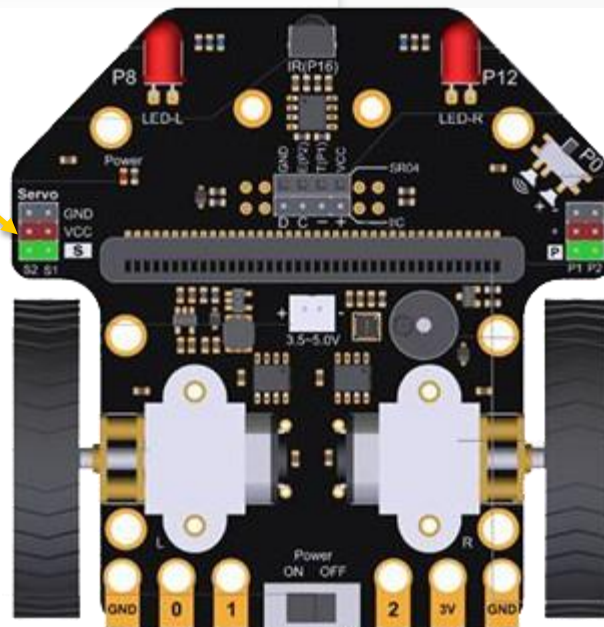
robot move forward at speed 200

motor left move Forward at speed 200

robot (left and right motors) stops

Servo S1 angle 90

сервопин



Maqueen Starts

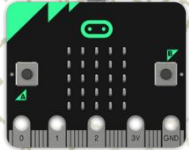
forever

Servo S2 angle 0

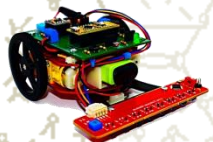
wait 1 seconds

Servo S2 angle 180

wait 1 seconds



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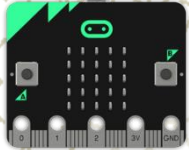


Пример 2

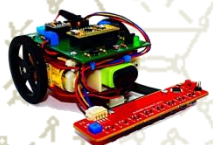
```
when (P16) received infrared signal
  set ir_data to infrared signal
  serial output ir_data in string , Wrap
  if ir_data = 231 then
    Servo S2 angle 90
    wait 0.05 seconds
  else if ir_data = 165 then
    Servo S2 angle 0
    wait 0.05 seconds
  else if ir_data = 239 then
    Servo S2 angle 180
    wait 0.05 seconds
  +
```




6. I2C шина

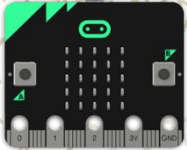


- 💡 **I2C (Inter-Integrated Circuit)**, алтернативно известен като **I2C** или **IIC**, е синхронна, серийна комуникационна шина, изобретена през 1982 г. от Philips Semiconductors;
- 💡 Тя се използва широко за свързване на понискоскоростни периферни интегрални схеми към процесори и микроконтролери при комуникация на къси разстояния в/извън рамките на платката;

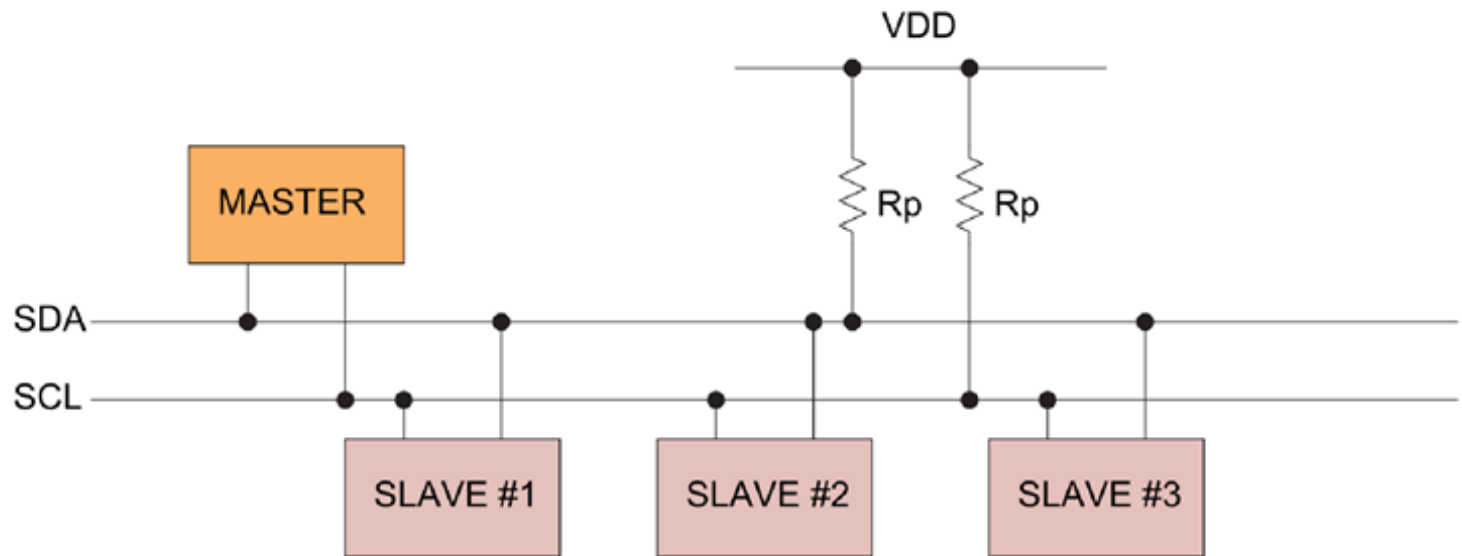
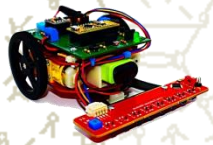




Abhishek

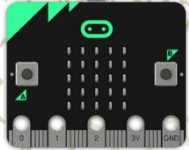


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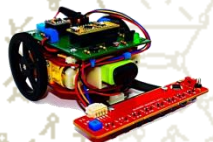


6.1.Принцип на работа



- ⚡ I2C пакетите данни са подредени в 8-битови байтове, включващи подчинен адрес, регистрационен номер и данни, които трябва да бъдат прехвърлени;
- ⚡ Предаването по шината е операция за четене или запис;
- ⚡ Протоколите за четене и запис се основават на поредица от подпротоколи като условия за стартиране и спиране, повтарящи се стартови битове, адресен байт, битове за пренос на данни и битове за потвърждаване/непотвърждаване;

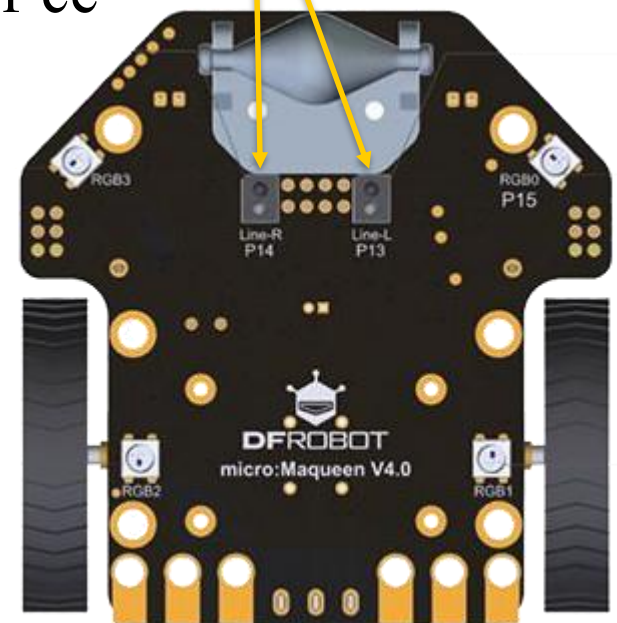
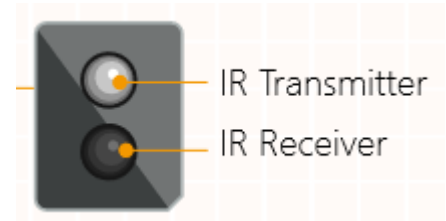
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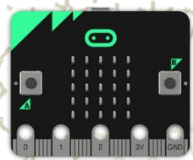
7.Linefollower

Когато сензорът за проследяване на линии открие черната линия на картата, индикаторът се включва и извежда „0“, в противен случай индикаторът се изключва и извежда „1“.

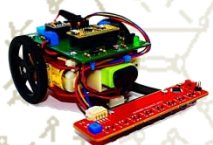




Abriel

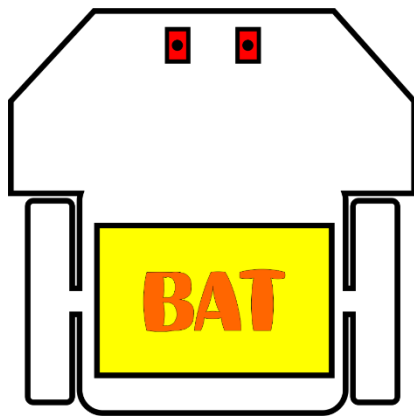


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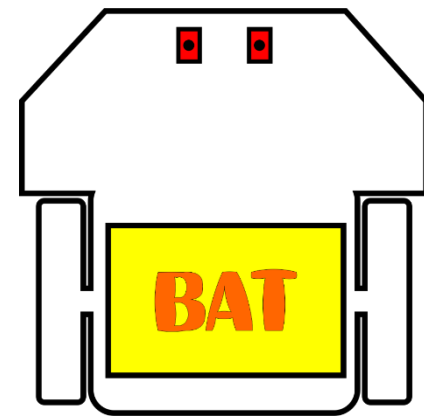


7.1.Завивания

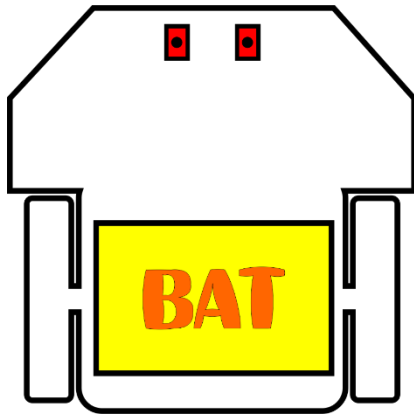
ЛЯВ ЗАВОЙ



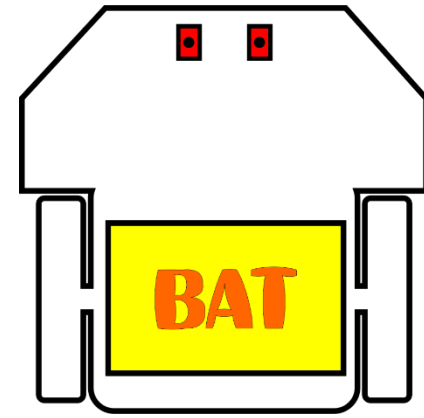
ДЕСЕН ЗАВОЙ



ЛЯВ ЗАВОЙ - ПИВОТ

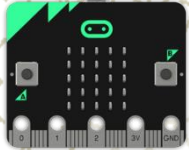


ДЕСЕН ЗАВОЙ - ПИВОТ

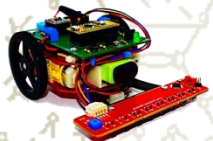




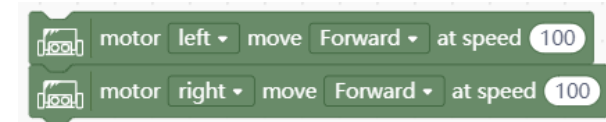
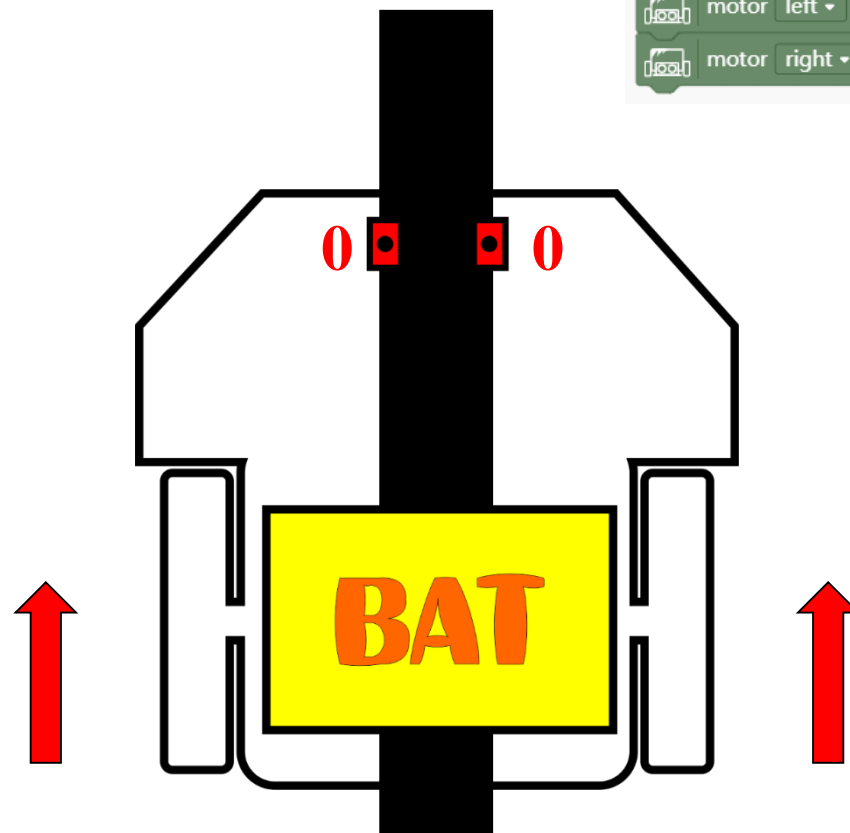
7.2. Състояния (states)



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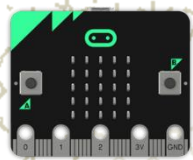


FORWARD - НАПРЕД

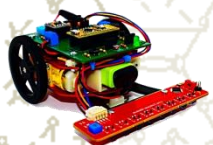




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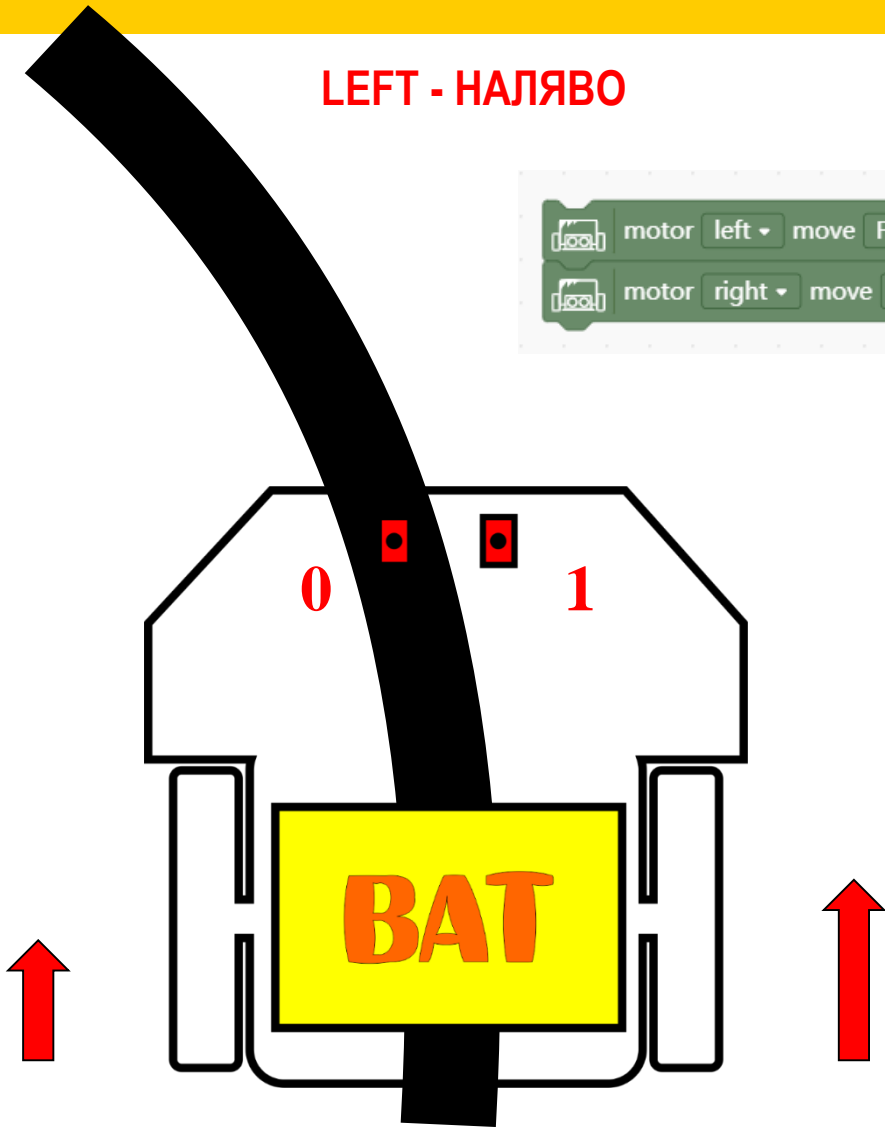
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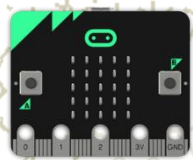


LEFT - НАЛЯВО

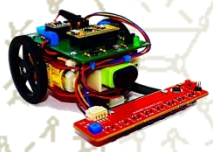
motor left ▾ move Forward ▾ at speed 0

motor right ▾ move Forward ▾ at speed 70

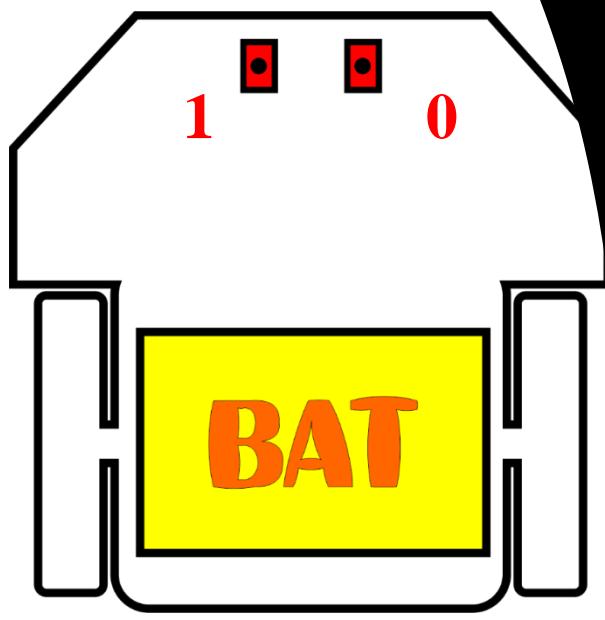
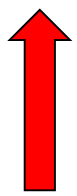
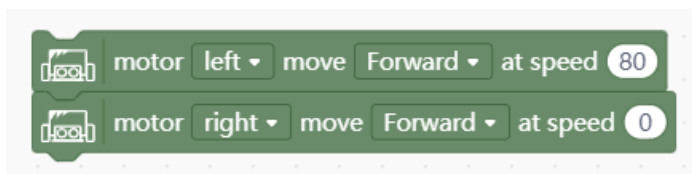




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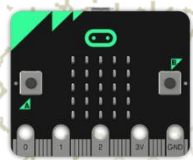


RIGHT - НАДЯСНО

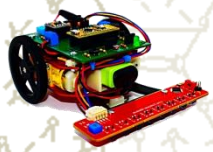




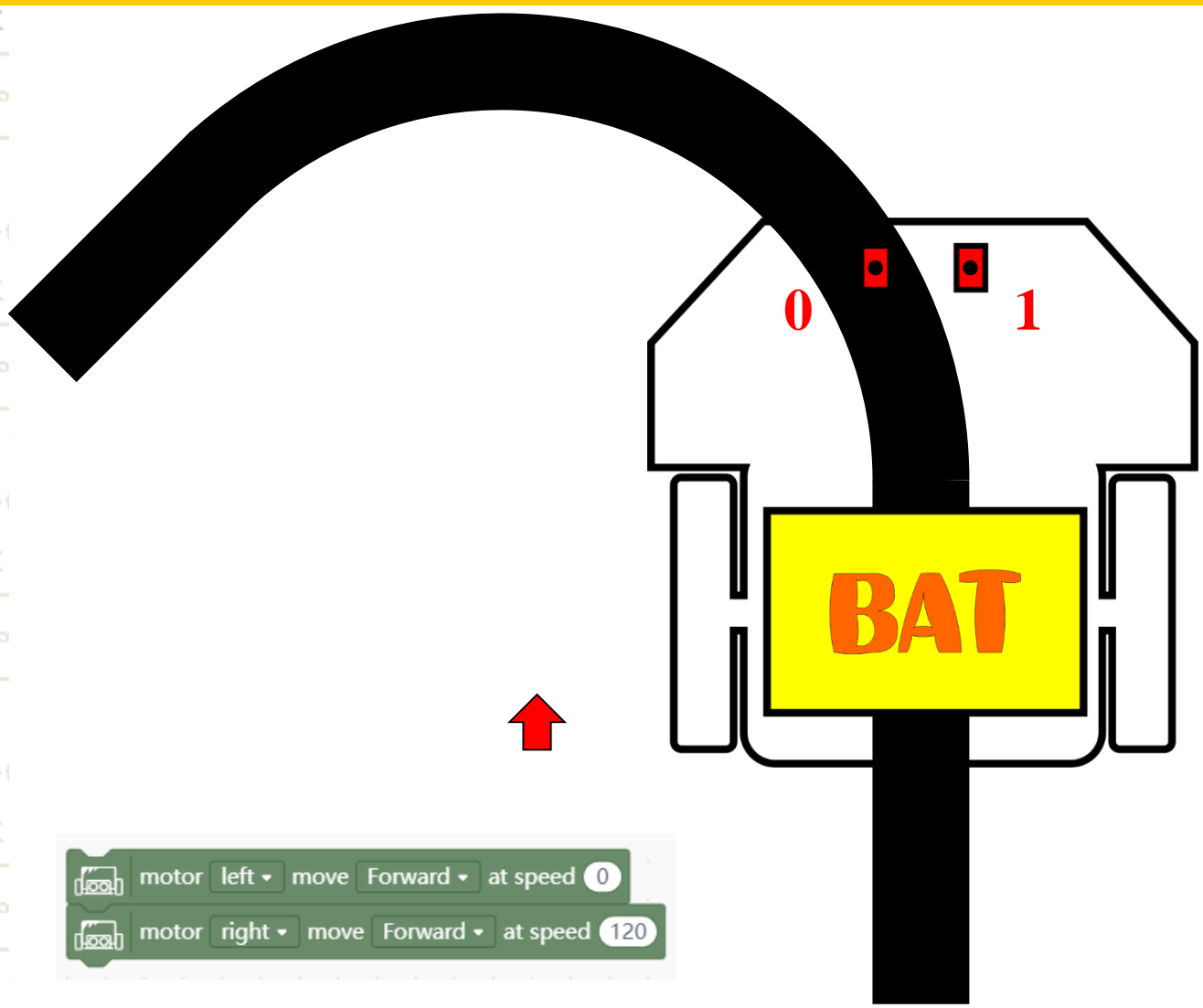
Abirah



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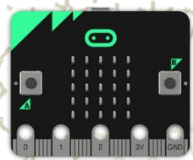
STRONG LEFT – ОСТЪР НАЛЯВО



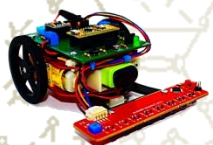
```
motor left move Forward at speed 0
motor right move Forward at speed 120
```



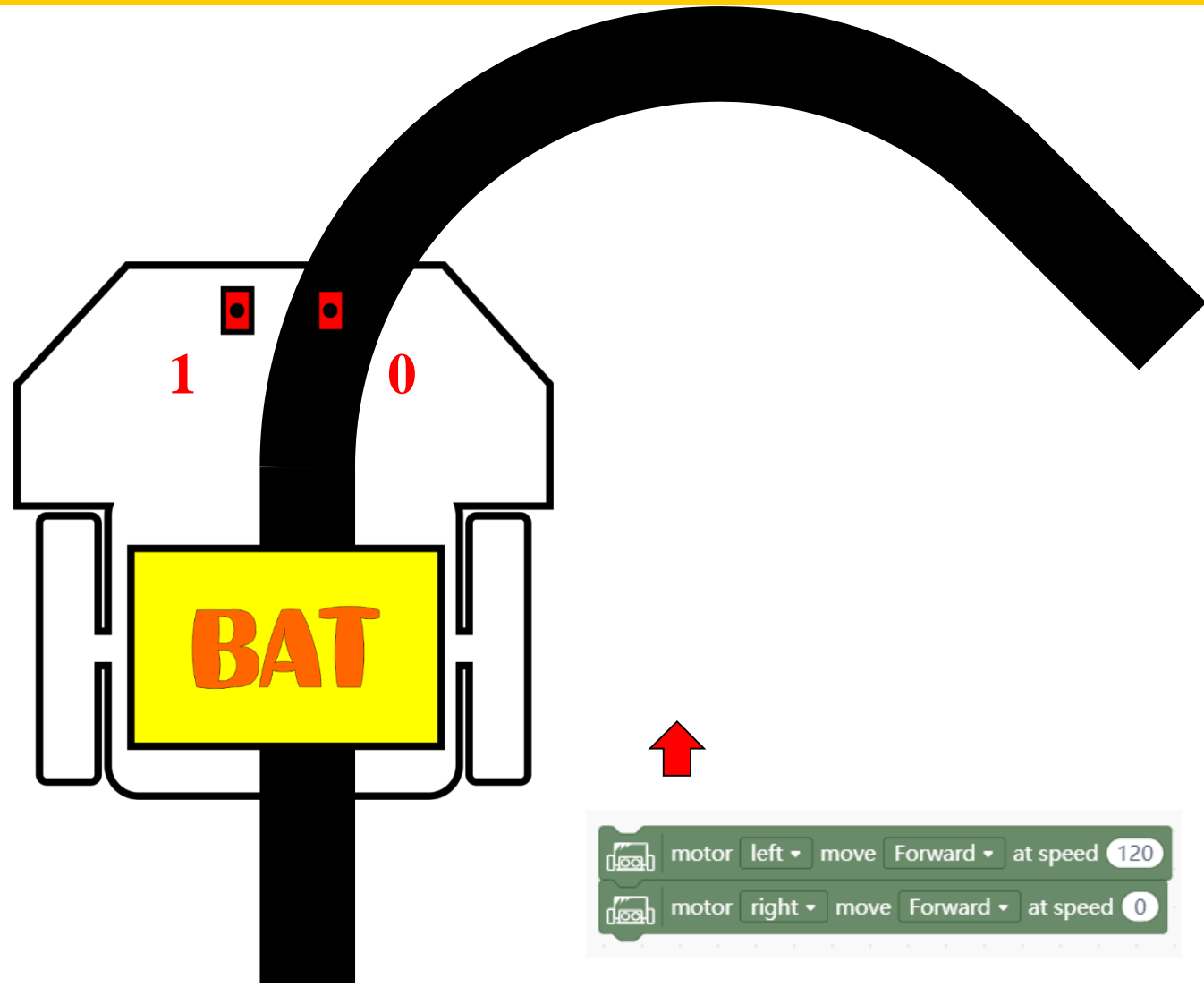
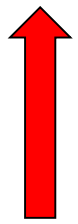
Abriel



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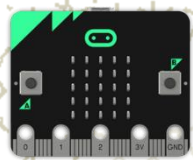
STRONG RIGHT – ОСТЪР НАДЯСНО



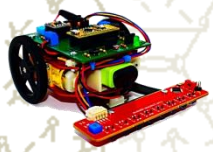
motor	left ▾	move	Forward ▾	at speed	120
motor	right ▾	move	Forward ▾	at speed	0



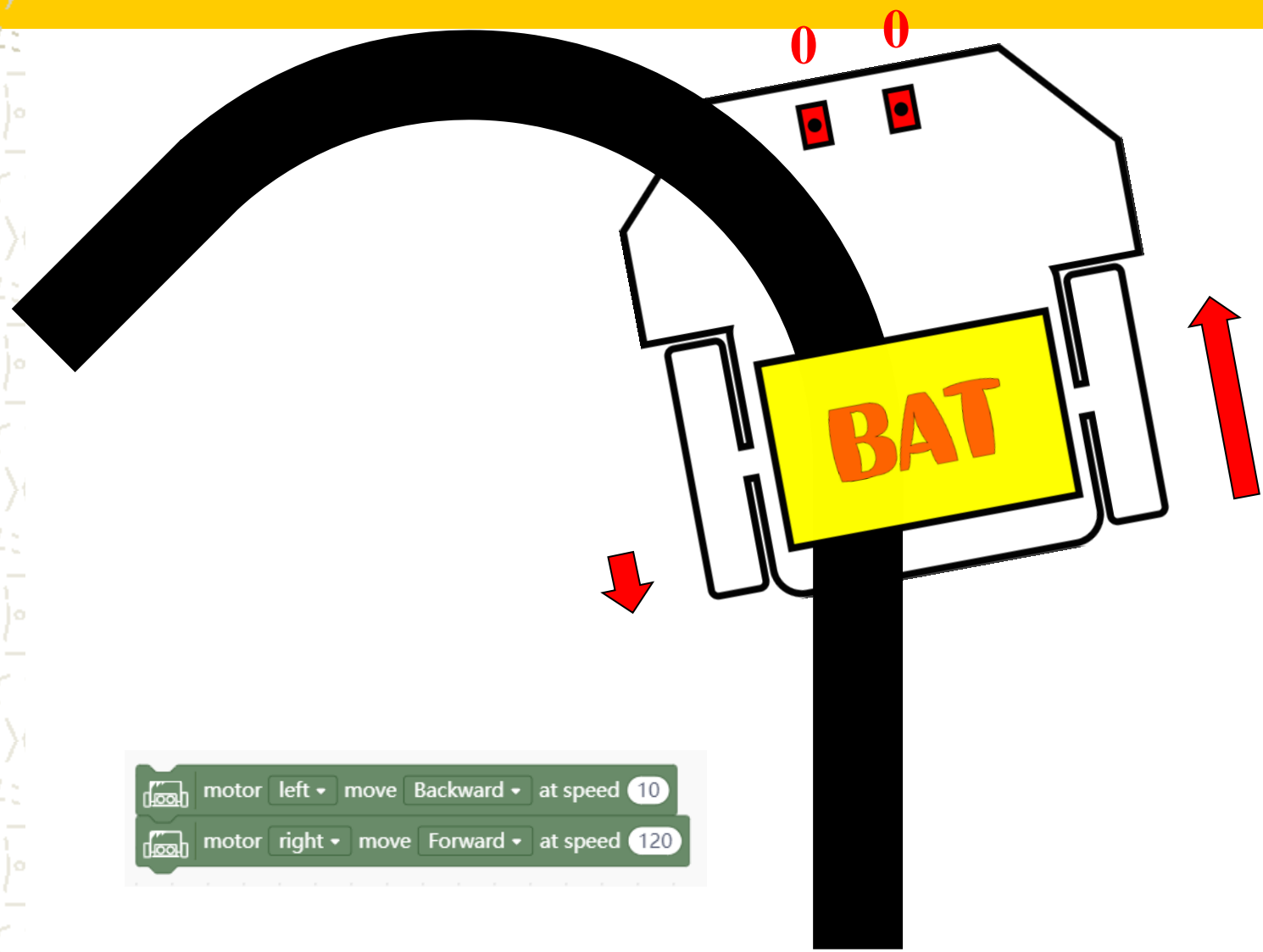
Abriel



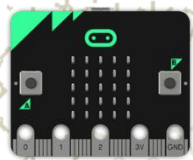
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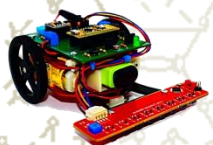
PIVOT LEFT – ПИВОТ НАЛЯВО



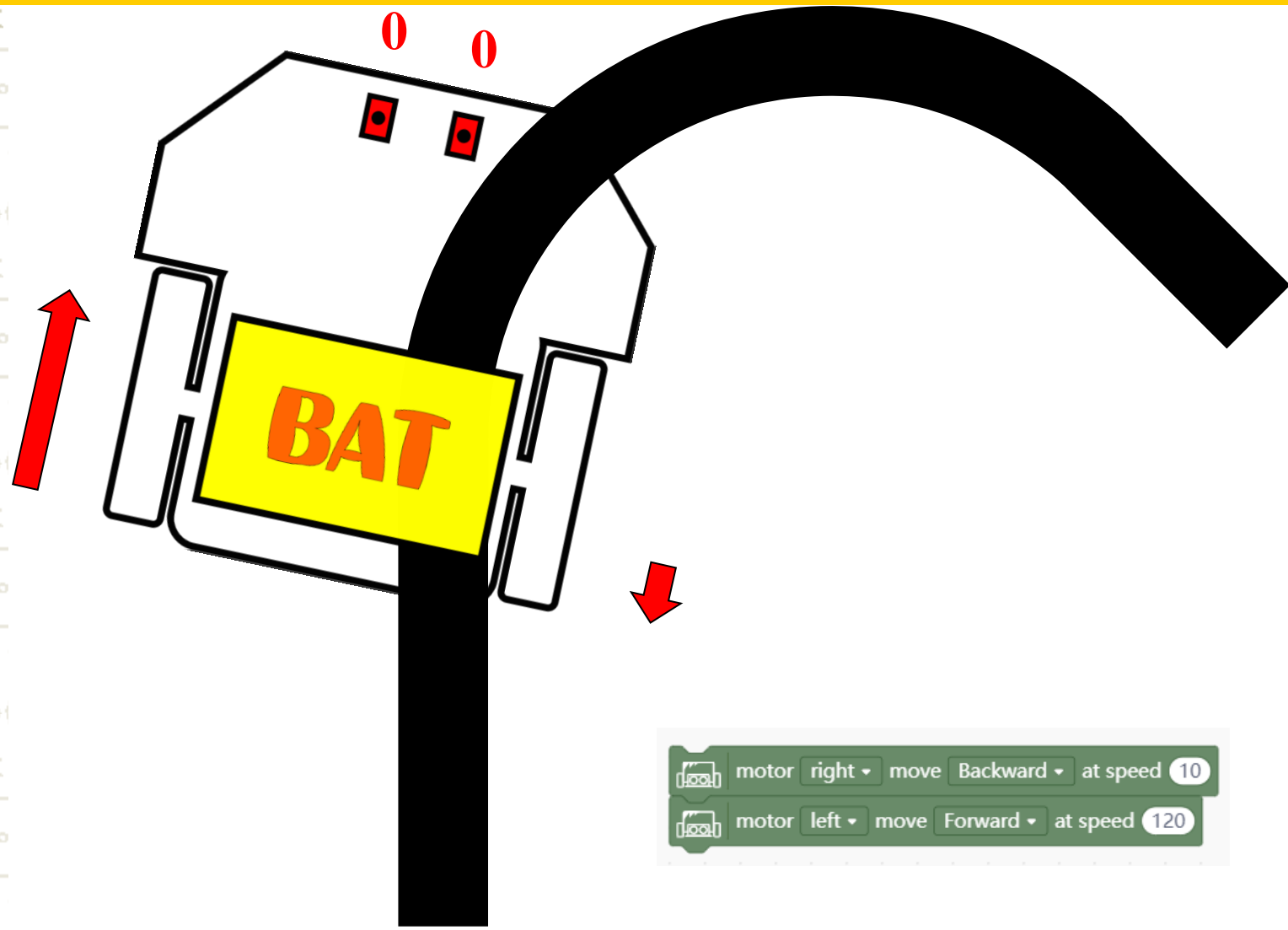
```
motor left move Backward at speed 10
motor right move Forward at speed 120
```



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PIVOT RIGHT – ПИВОТ НАДЯСНО



```
motor right move Backward at speed 10  
motor left move Forward at speed 120
```