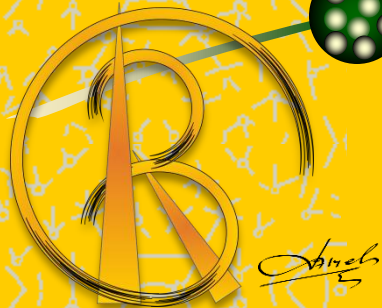
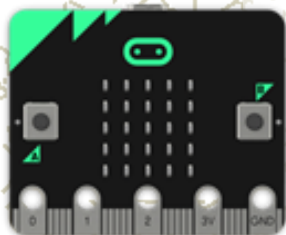
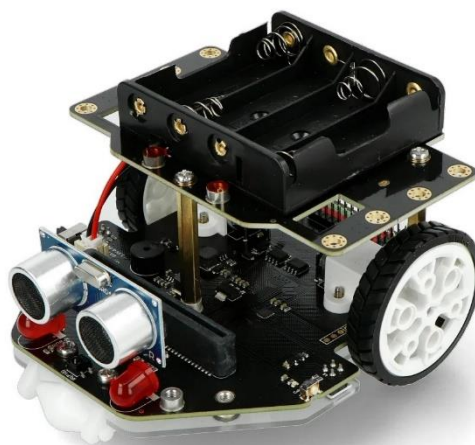


awesome
micro:bit

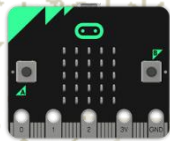


Роботика и компютърно моделиране с MicroBit

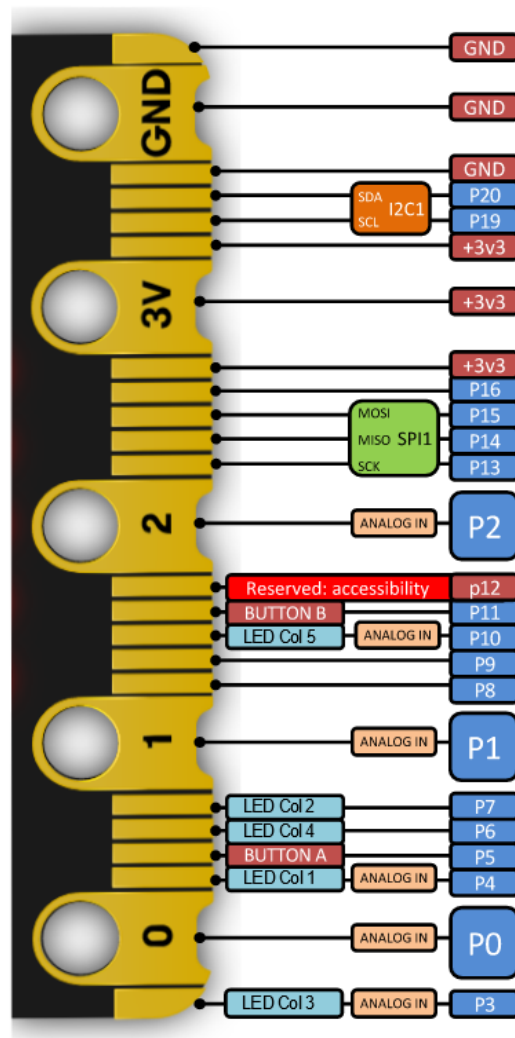
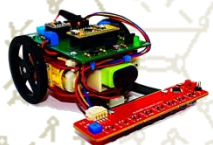




Карта на пиновете



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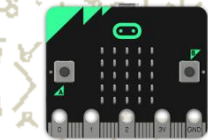
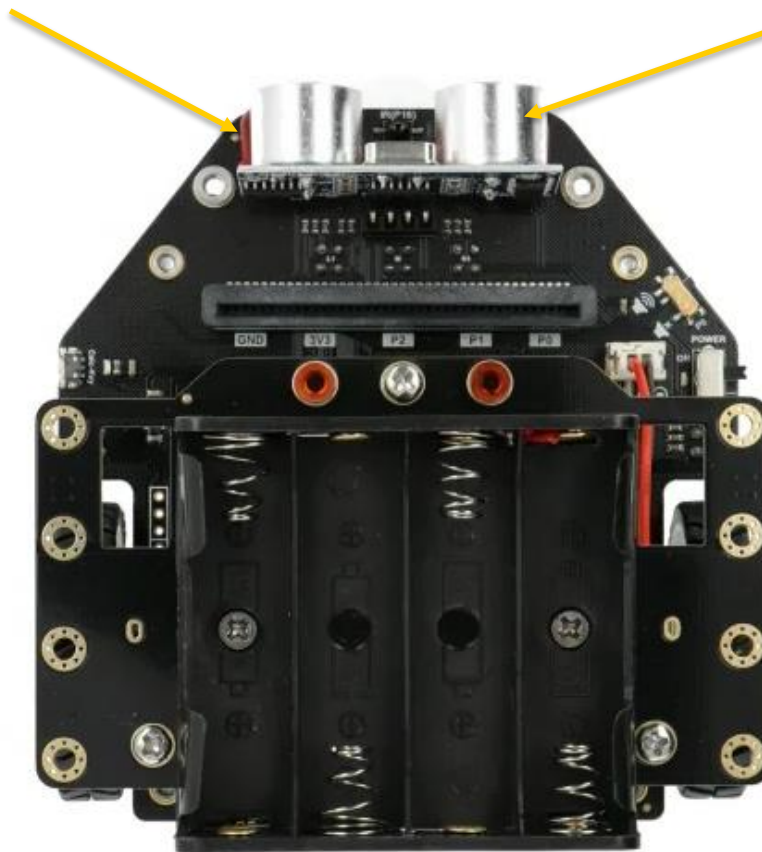




Maqueen plus robot

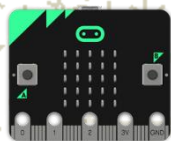
Червени
светодиоди

HC-SR04
ultrasonic

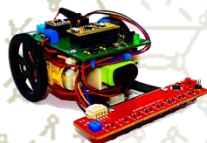


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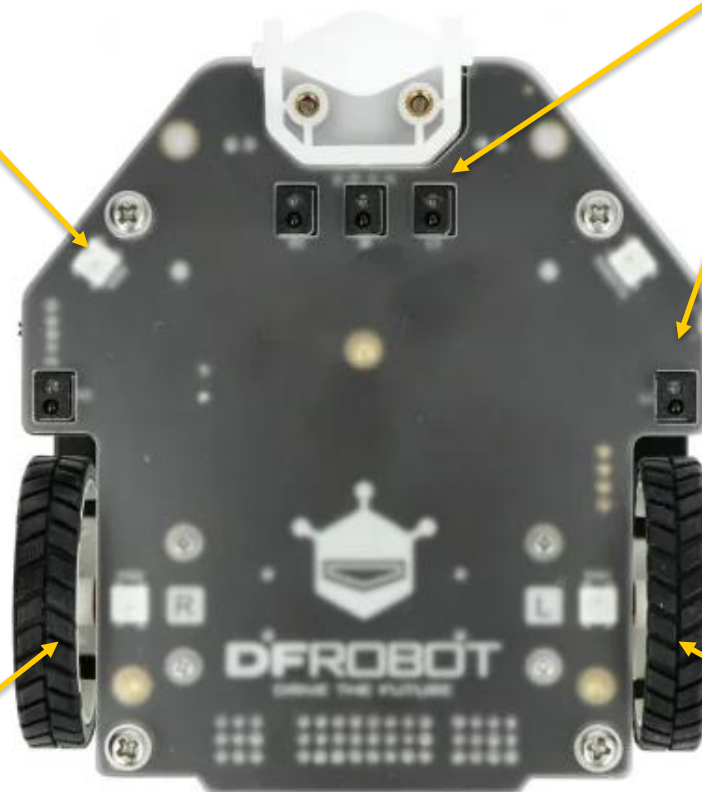


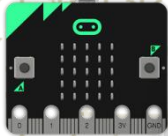
WS2812 RGB
светодиоди

IR сензори за
следене на линия

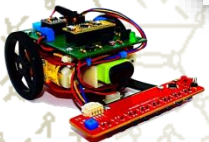
Десен DC мотор

Ляв DC мотор






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[← Back](#)[Select Shield](#)


[Board](#)[Kit](#)[Shield](#)[Sensor](#)[Actuator](#)[Communication](#)[Display](#)[Fun](#)

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MBT0014

micro:bit & mPython expansion board
I/O expansion board with micro:bit and control board (with motor driver)




MBT0021

Maqueen Plus
The advanced educational robot that supports both micro:bit and mPython



MBT0021-EN

Maqueen Plus V2
An entry-level minicar based on the control version

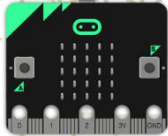


DFR0548

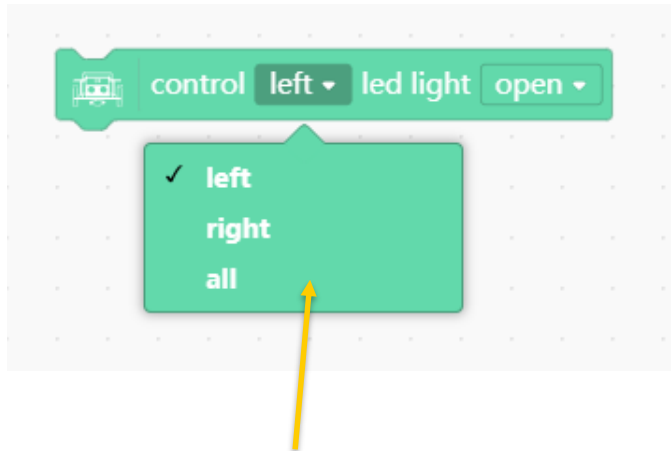
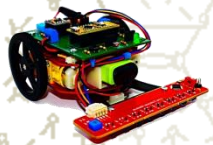
motor:bit expansion board



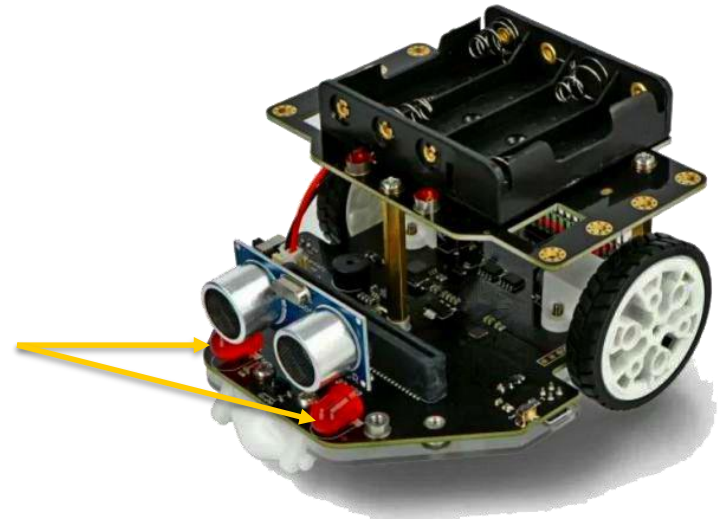
Светодиоди



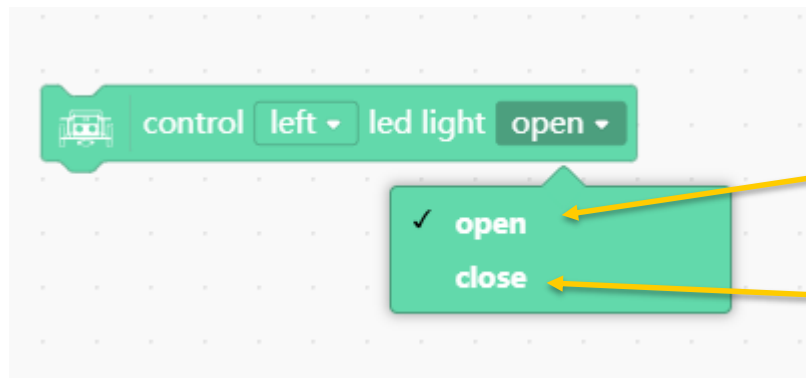
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Указване на светодиодиите



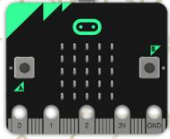
Светва светодиодиите



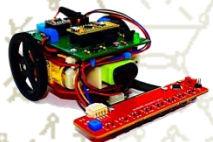
Светва светодиодиите



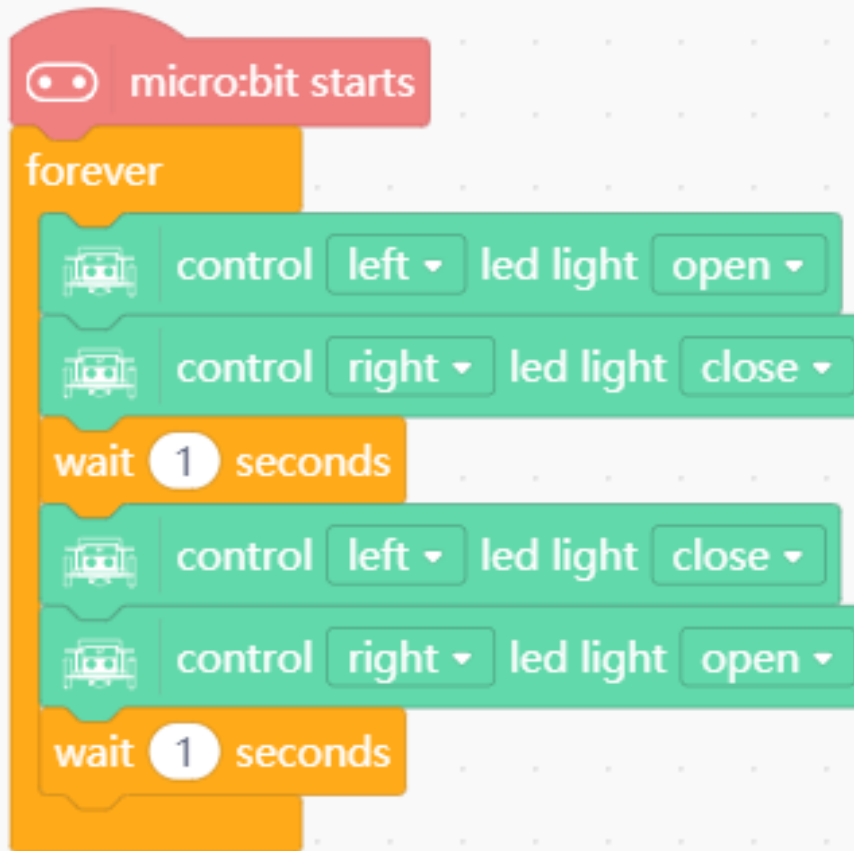
Society of Robotics



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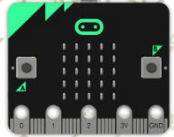


leds_on_off_1

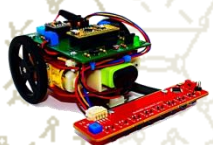




RGB Neopixel LED



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WS2812 RGB
светодиоди

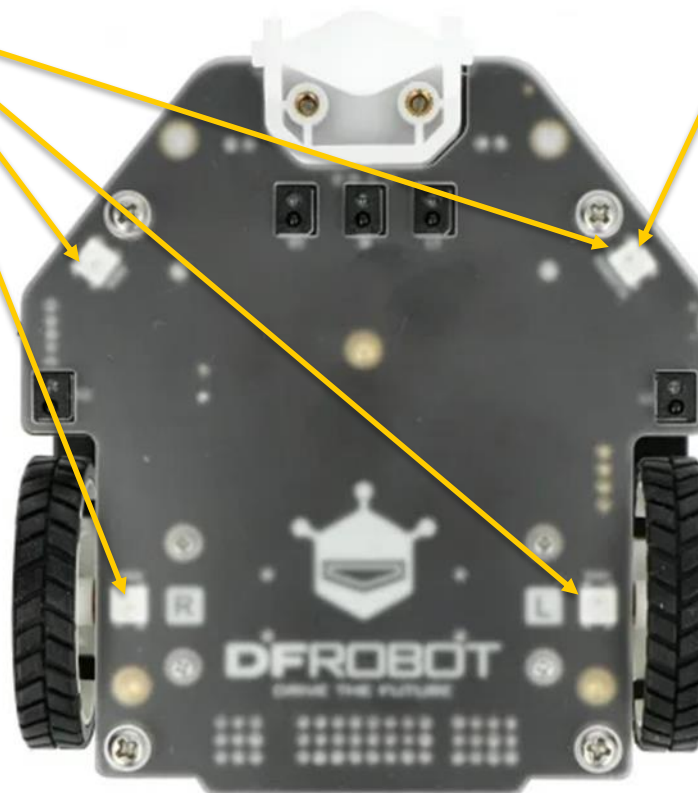
Неорixel пин 15

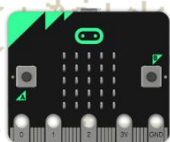
LED 3

LED 0

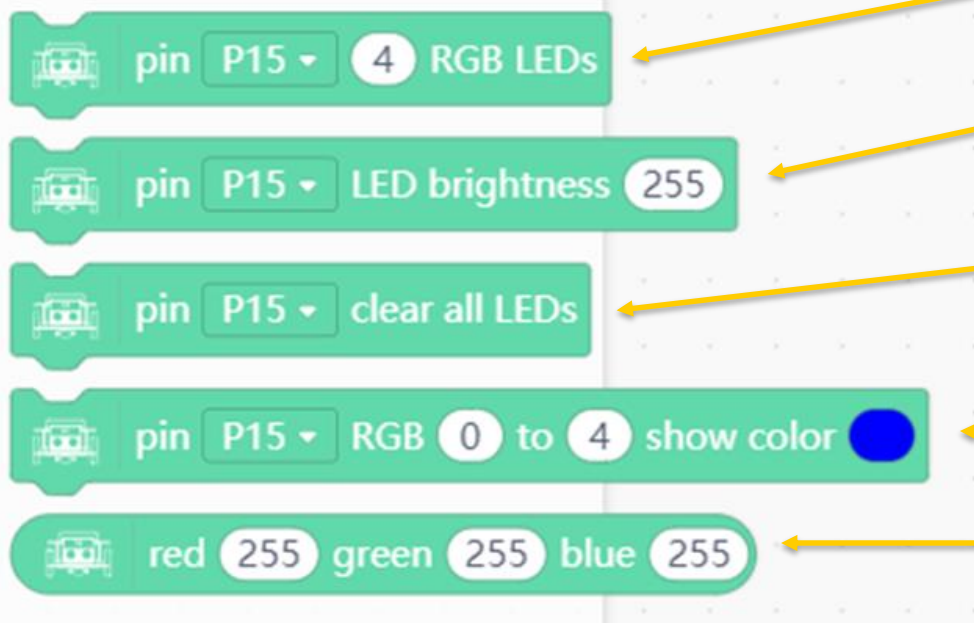
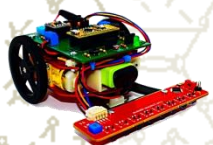
LED 2

LED 1





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Задава брой светодиоди

Задава яркост на светене

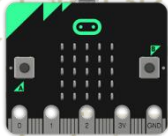
Изгася светодиодите

Светва светодиодите
в определен цвят

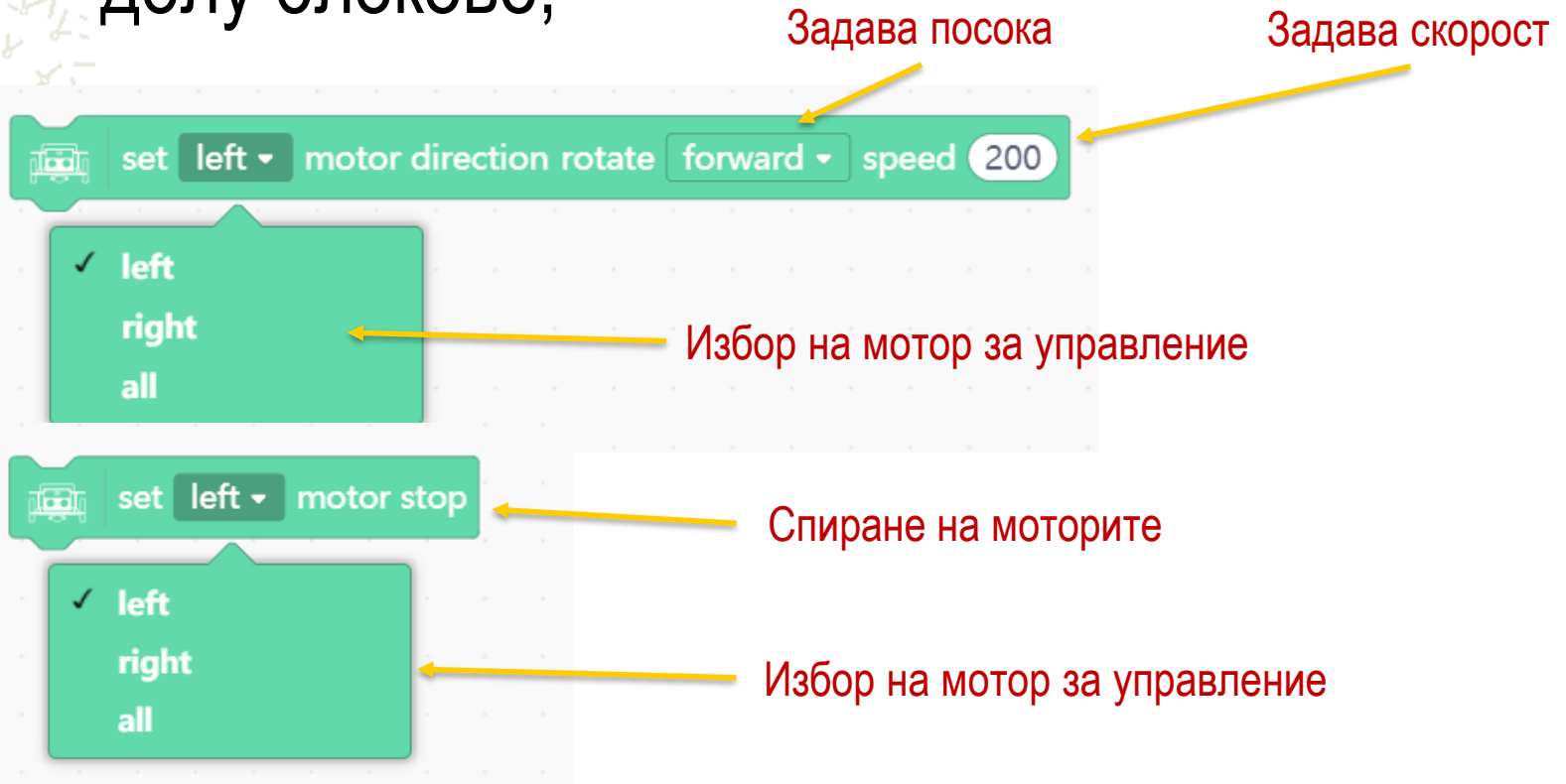
Задава определени
стойности на основните
цветове



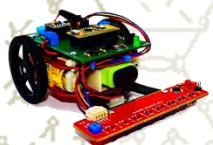
Управление на мотори



Maqueen Plus v2 разполага с два правотокови мотора, които се управляват с показаните по-долу блокове;



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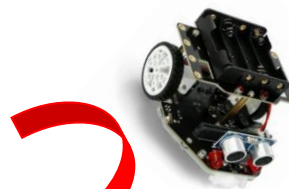


Движение по тайминги

Движението по тайминги представлява процес, при който различните движения на робота се управляват от функции на времето;

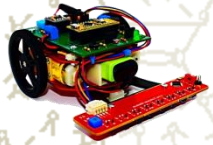


Движение за време t_1



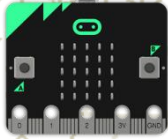
Движение за време t_2

ОБЕКТ

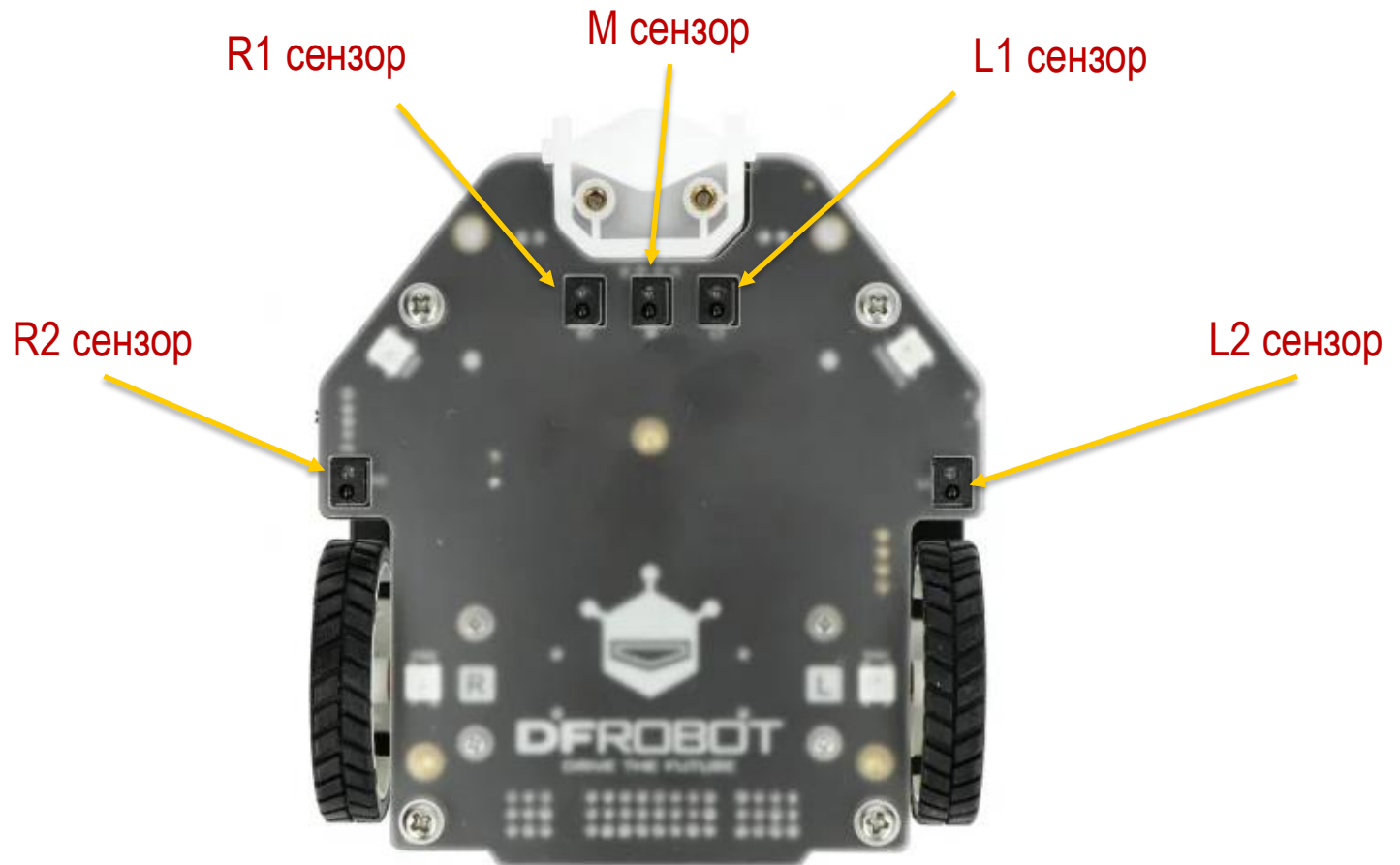
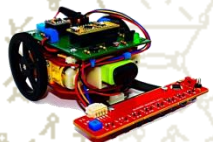




IR сензори за линия

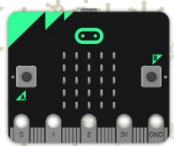


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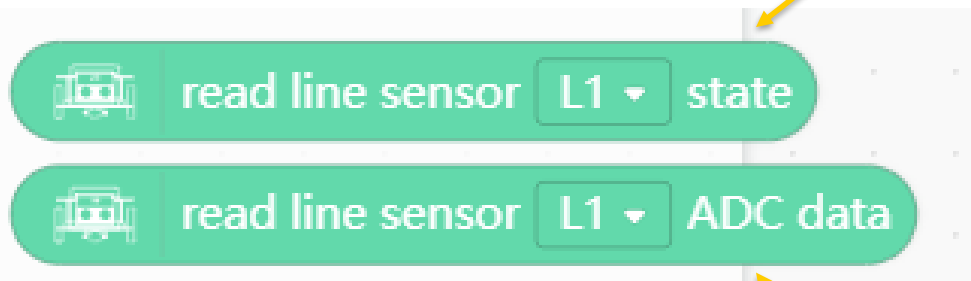
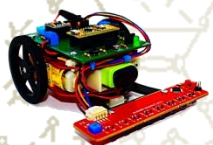




Society of Robotics

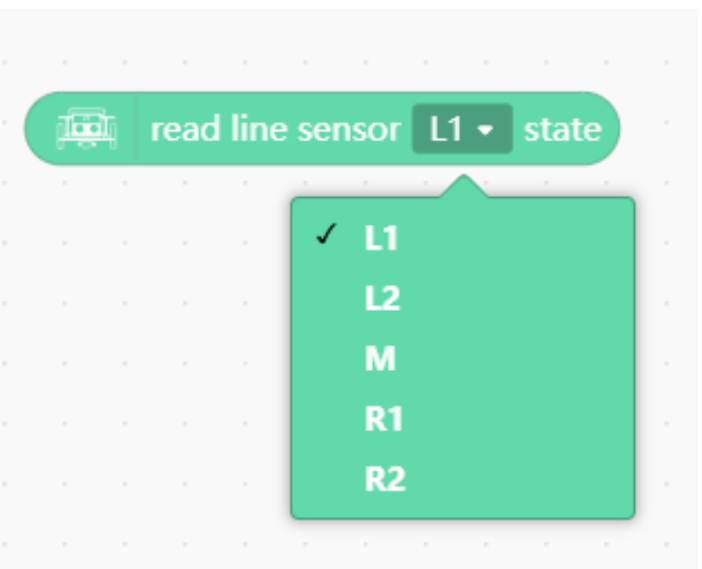


SOCIETY OF ROBOTICS



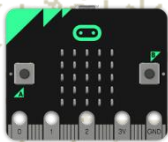
Прочита сензорите като цифрови

Прочита сензорите като аналогови

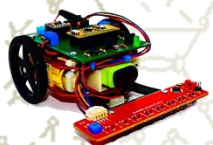




Abir



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```

when button B pressed
  pin P15 clear all LEDs

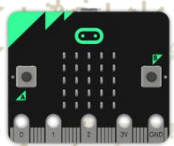
when button A pressed
  pin P15 4 RGB LEDs
  pin P15 LED brightness 120
  pin P15 RGB 0 to 3 show color

micro:bit starts
  forever
    serial output read line sensor L2 state in string , No-Wrap
    serial output | in string , No-Wrap
    serial output read line sensor L1 state in string , No-Wrap
    serial output | in string , No-Wrap
    serial output read line sensor M state in string , No-Wrap
    serial output | in string , No-Wrap
    serial output read line sensor R1 state in string , No-Wrap
    serial output | in string , No-Wrap
    serial output read line sensor R2 state in string , Wrap
    wait 0.04 seconds
  
```

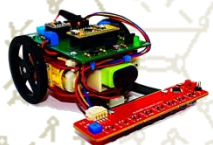
Прочита сензорите като цифрови



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read_line_sensor_ADC_2a

```
when button B pressed
  pin P15 clear all LEDs

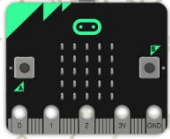
when button A pressed
  pin P15 4 RGB LEDs
  pin P15 LED brightness 120
  pin P15 RGB 0 to 3 show color

micro:bit starts
  forever
    serial output read line sensor L2 ADC data in string , No-Wrap
    serial output | in string , No-Wrap
    serial output read line sensor L1 ADC data in string , No-Wrap
    serial output | in string , No-Wrap
    serial output read line sensor M ADC data in string , No-Wrap
    serial output | in string , No-Wrap
    serial output read line sensor R1 ADC data in string , No-Wrap
    serial output | in string , No-Wrap
    serial output read line sensor R2 ADC data in string , Wrap
  wait 0.04 seconds
```

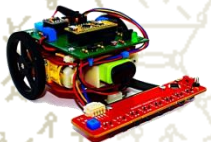
Прочита сензорите като аналогови



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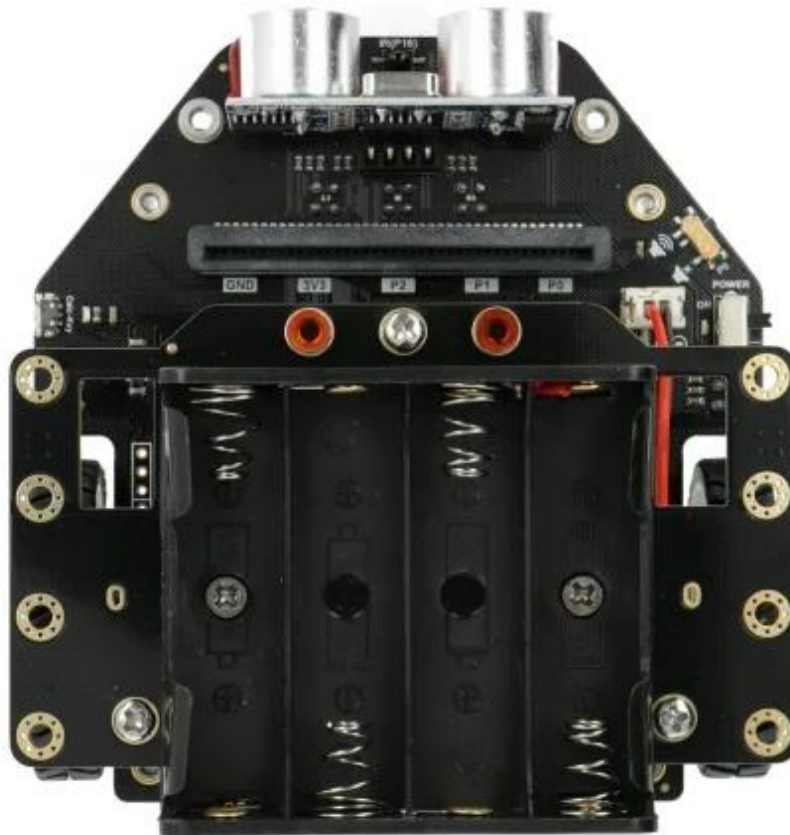


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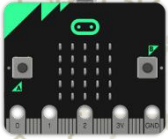
HC-SR04 ултразвуков сензор

TRIG pin 13
ECHO pin 14

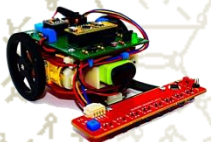




Abir



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read_distance_3

micro:bit starts

set serial-port baud rate to 9600

forever

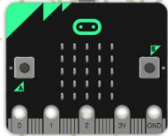
set distance to  set ultrasonic sensor TRIG pin P13 ECHO pin P14 read data company:cm

serial output distance in string , Wrap

wait 0.07 seconds

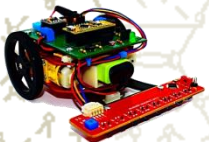


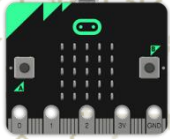
Linefollower



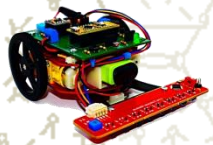
- ⚡ Движението на робота по зададена траектория се нарича „**следене на линия**“;
- ⚡ Алгоритъмът може да се базира на използването на цифрови или аналогови сензори;
- ⚡ Траекторията може да бъде черна линия на бяла фон или бяла линия на черен фон. Важно е да има максимален контраст между линията и фона;

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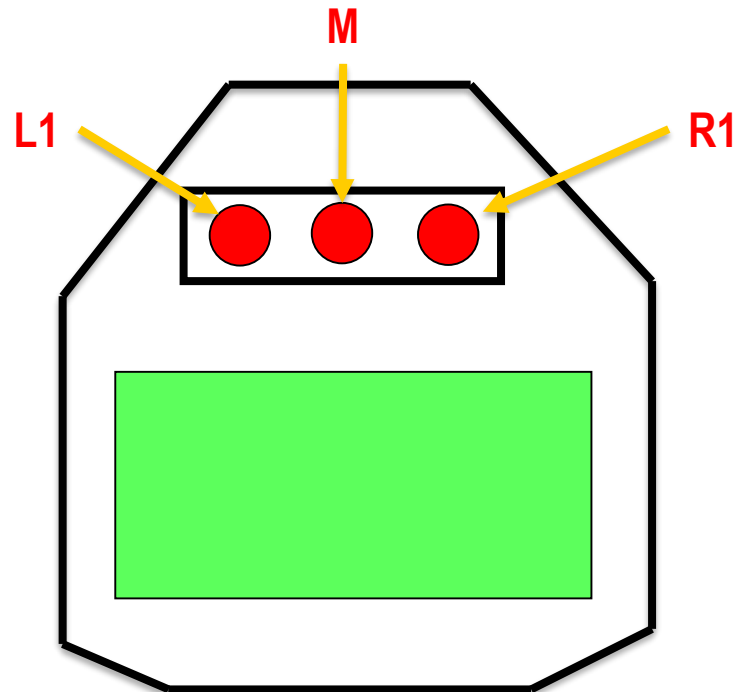




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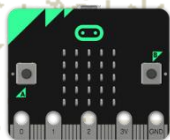


Когато под даден цифров сензор има черна линия, неговата стойност е **1**, а когато има бяло поле, стойността на сензора е **0**;

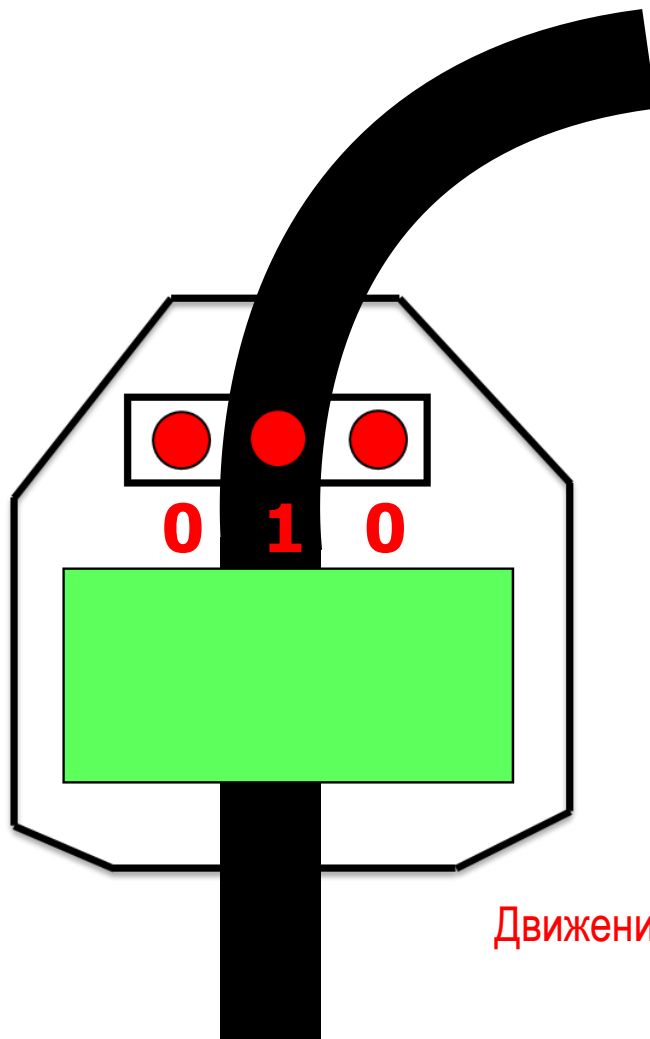
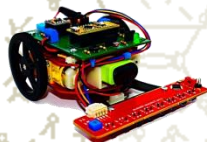




Възможни варианти



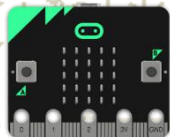
SOCIETY
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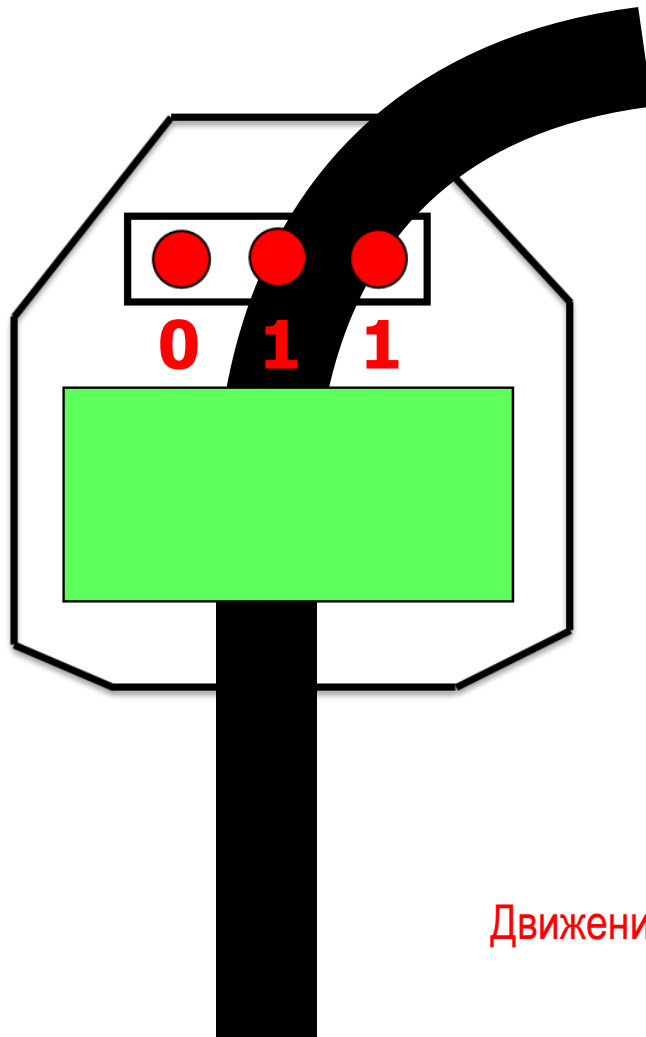
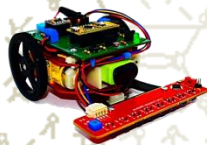
Движение **НАПРЕД**



Abriel



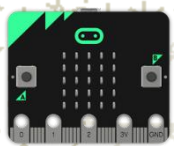
SOCIETY
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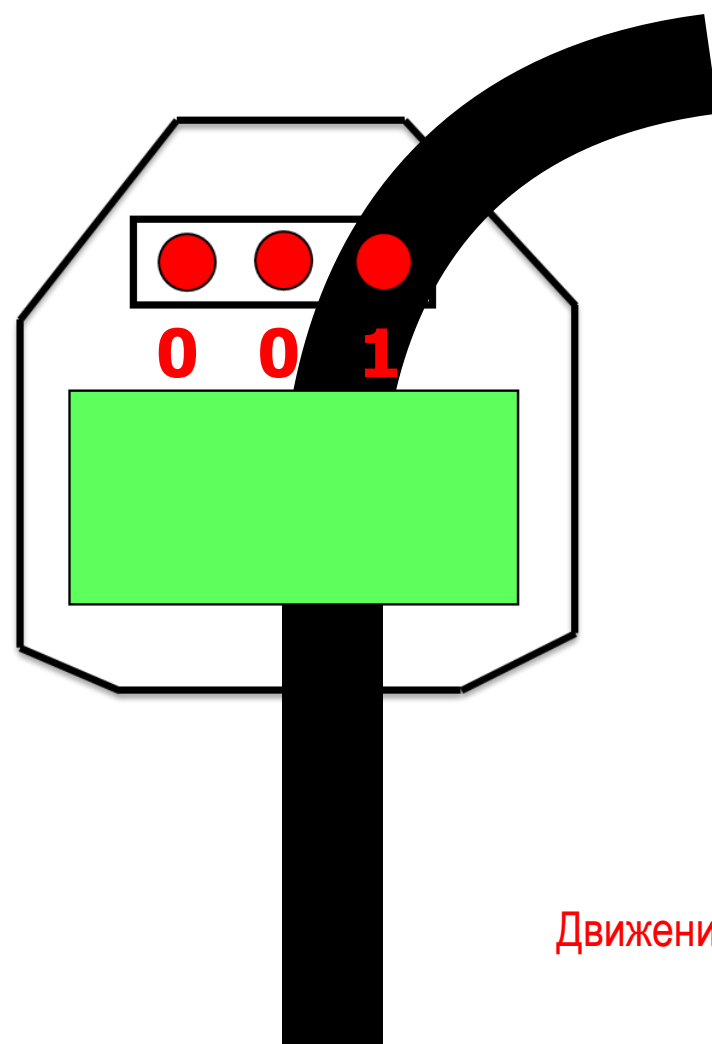
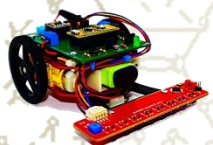
Движение НАДЯСНО



Abriel



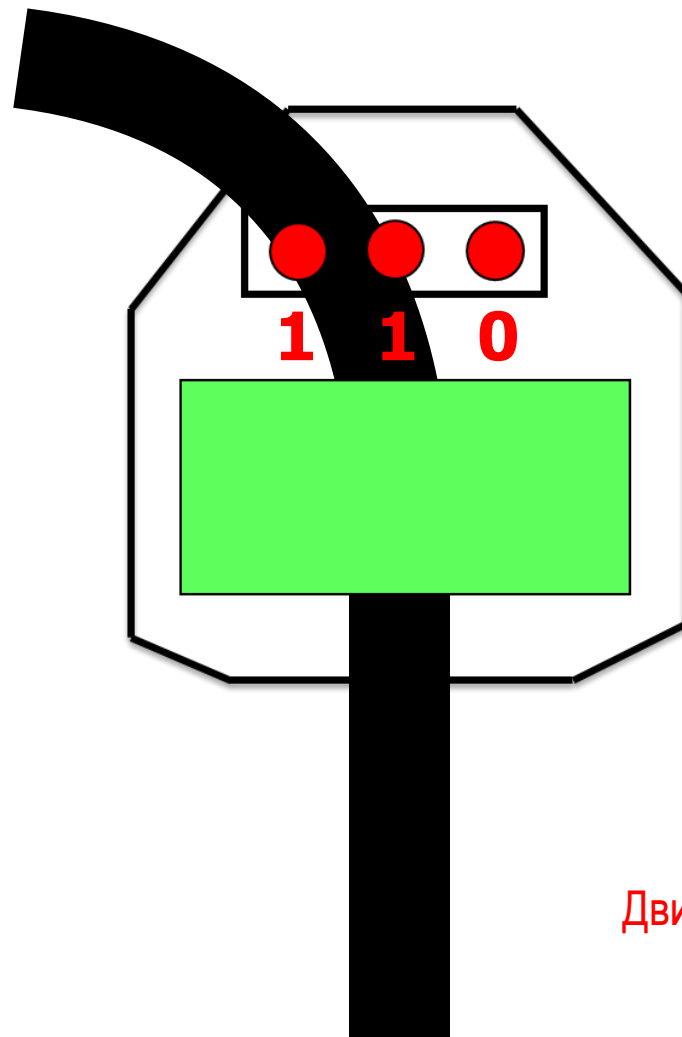
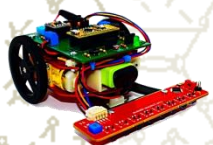
SOCIETY
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Движение ОСТРО НАДЯСНО



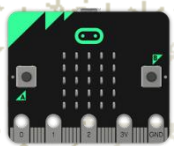
SOCIETY
ROBOTIC



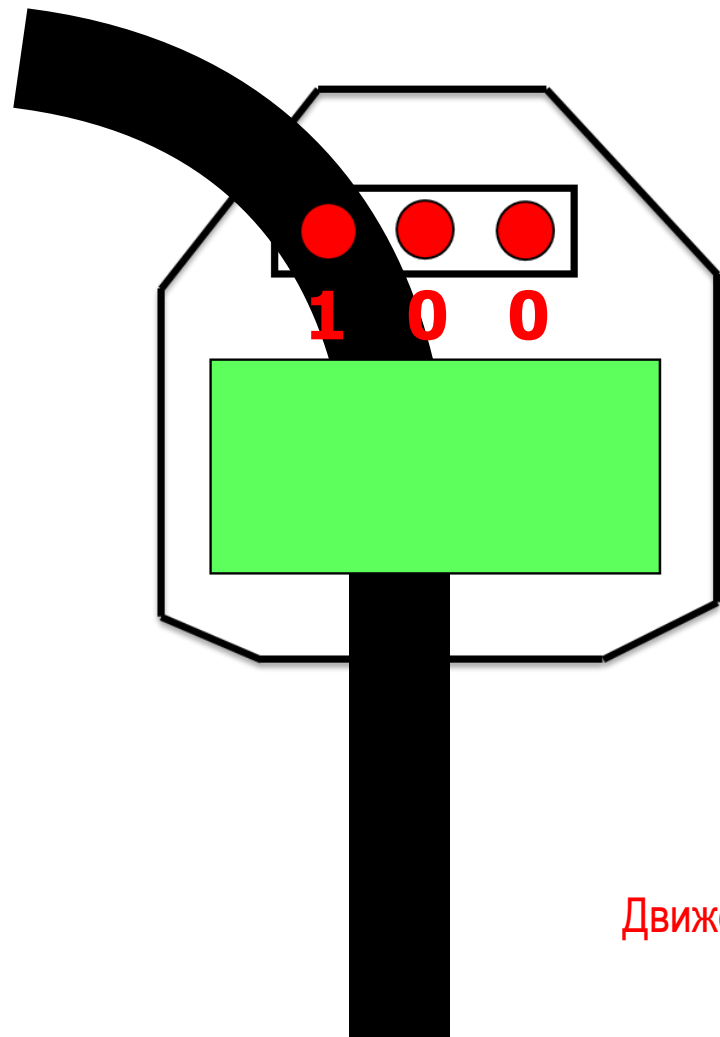
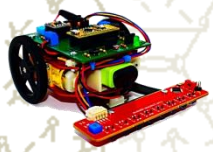
Движение НАЛЯВО



Abriel



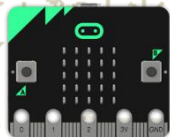
SOCIETY
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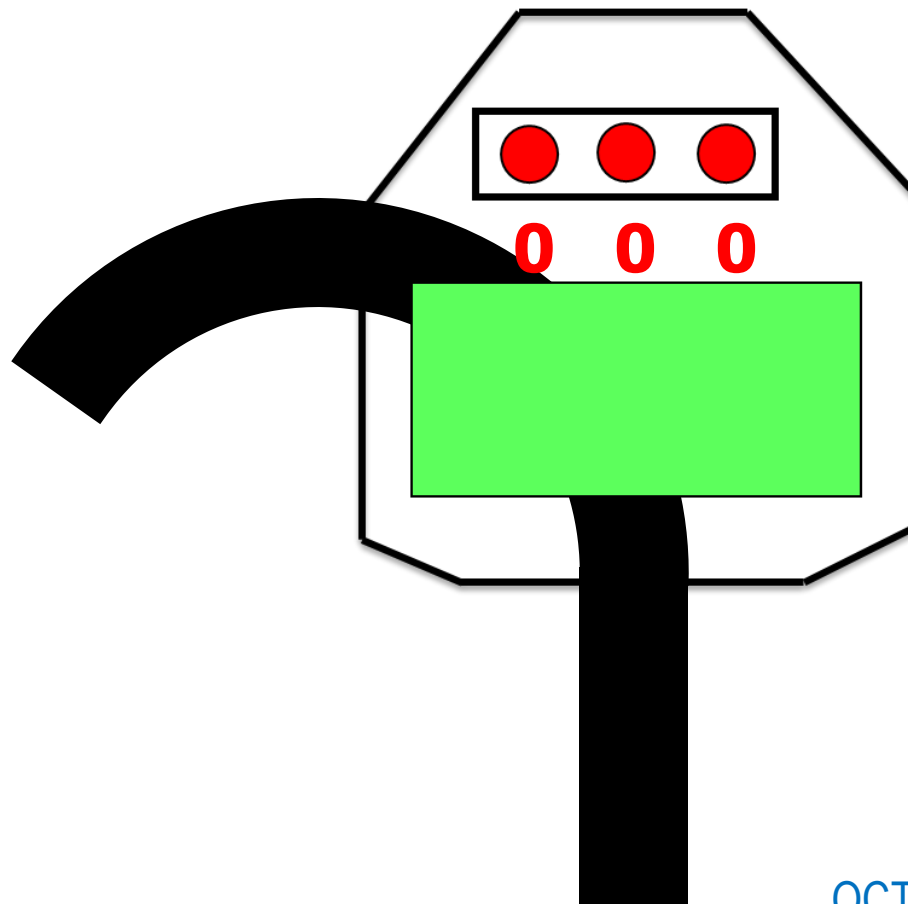
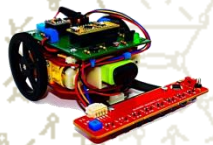
Движение ОСТРО НАЛЯВО



Abriel



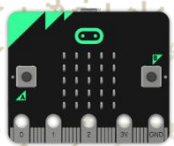
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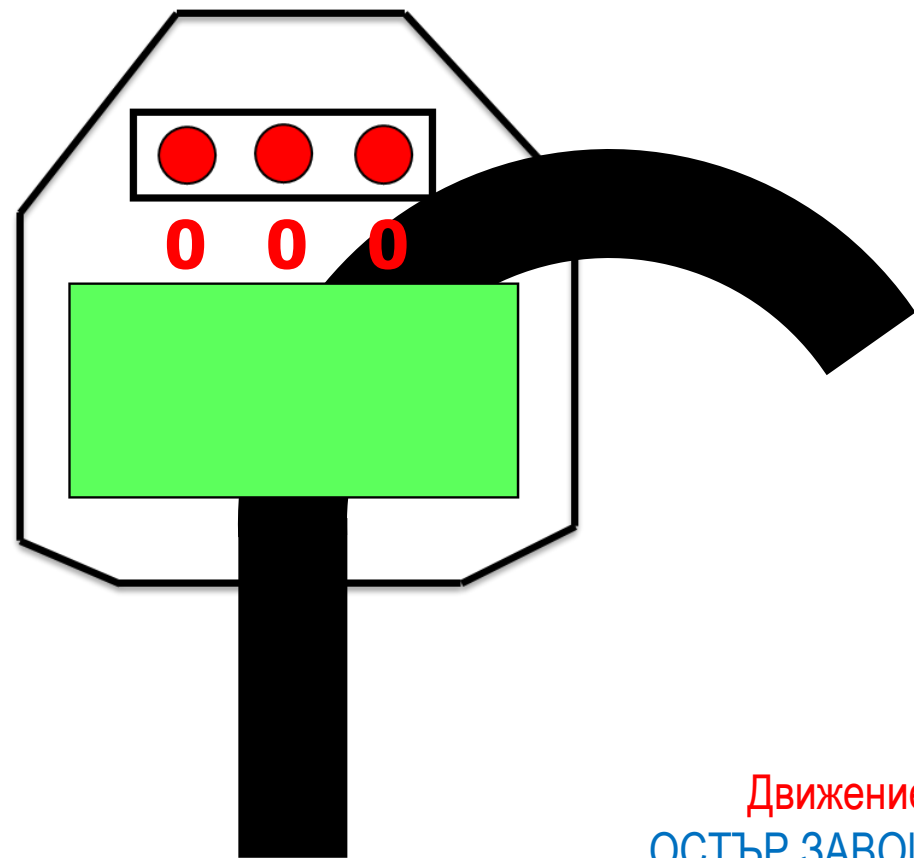
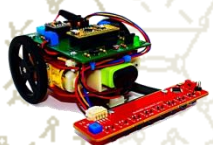
Движение пивот
ОСТЪР ЗАВОЙ НАЛЯВО



Obrech



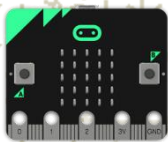
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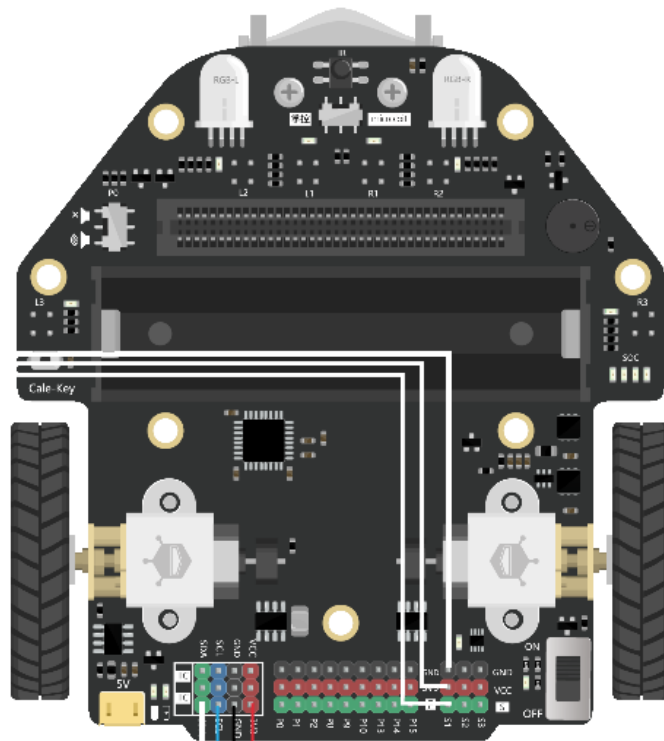
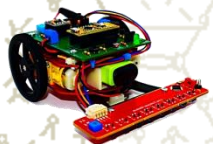
Движение пивот
ОСТЪР ЗАВОЙ НАДЯСНО



Движение НАПРАВО



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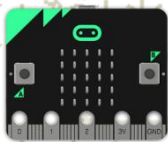
Ляв мотор

Десен мотор

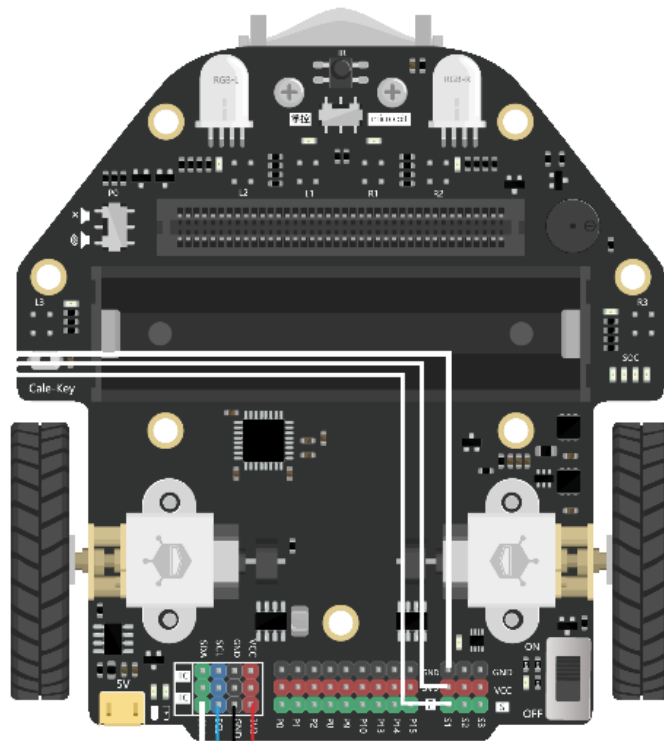
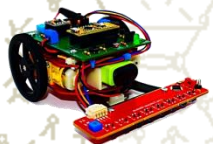
скорост на левия мотор = скорост на десния мотор



Движение НАЛЯВО



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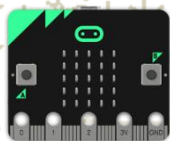
Ляв мотор

Десен мотор

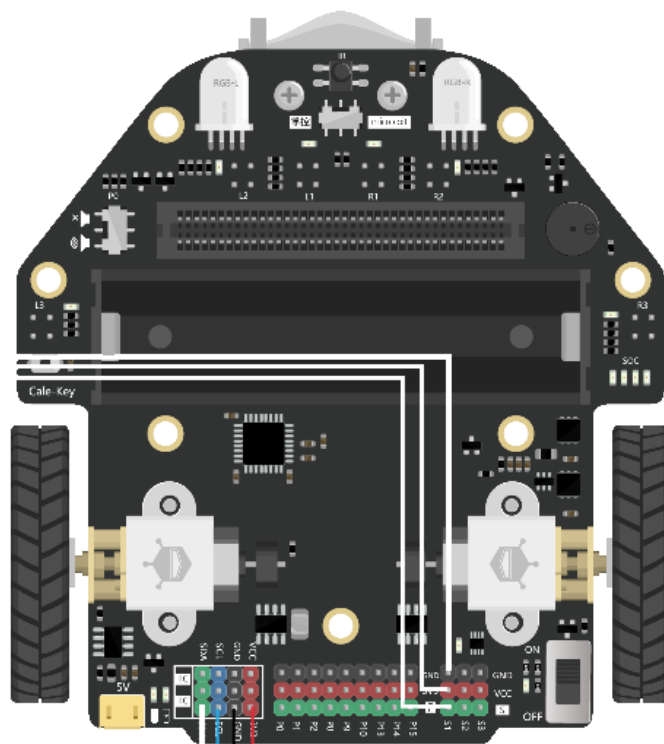
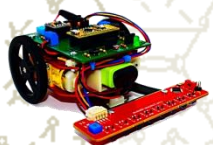
скорост на левия мотор < скорост на десния мотор



Движение ОСТРО НАЛЯВО



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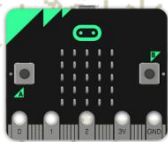
Ляв мотор

Десен мотор

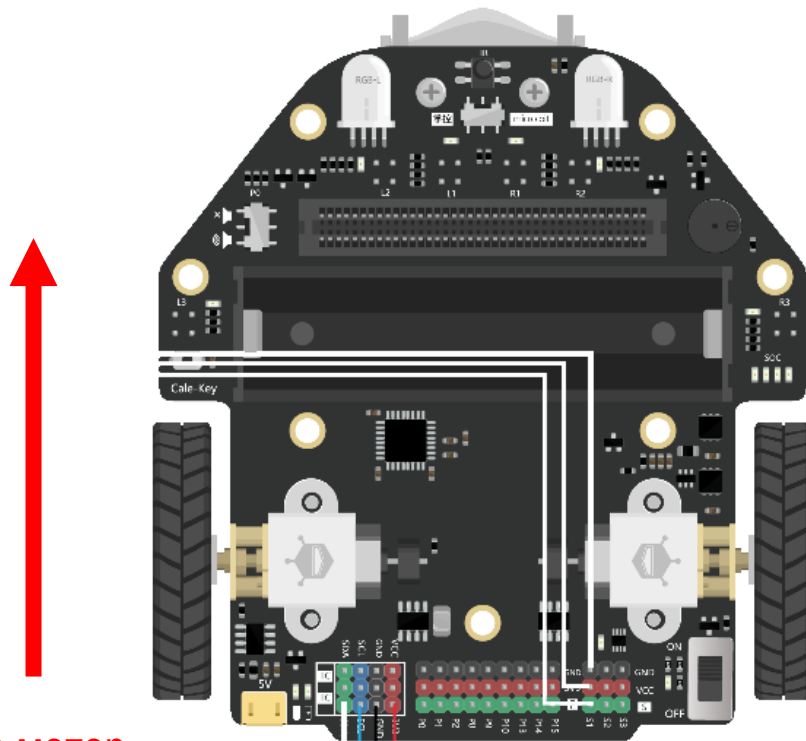
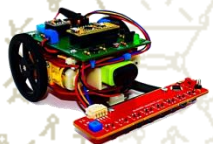
скорост на левия мотор <<< скорост на десния мотор



Движение НАДЯСНО



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ROBOTIC



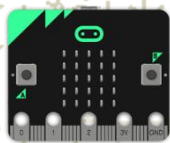
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Десен мотор

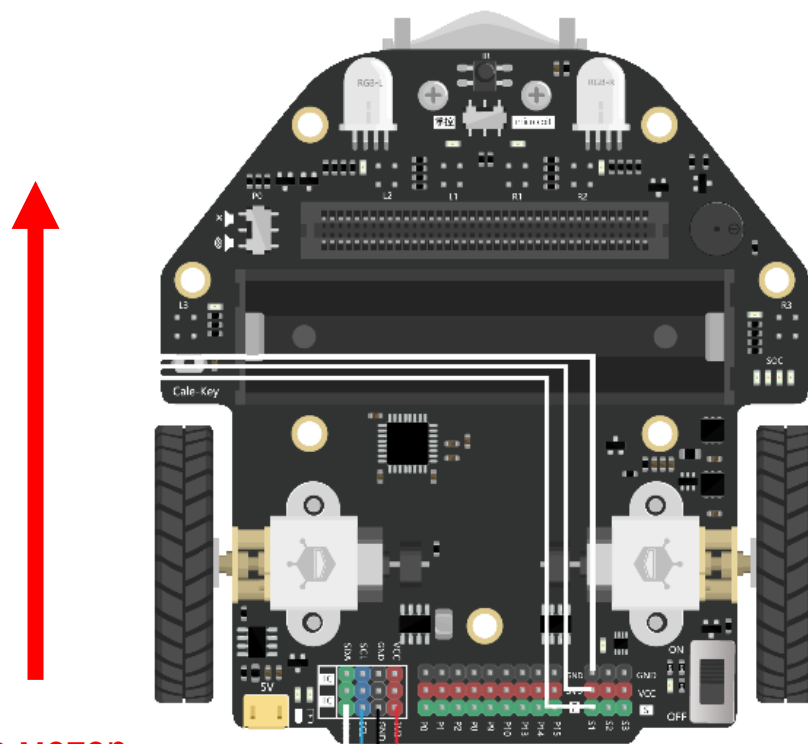
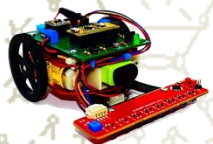
скорост на левия мотор > скорост на десния мотор



Движение ОСТРО НАДЯСНО



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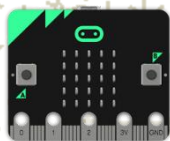
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Десен мотор

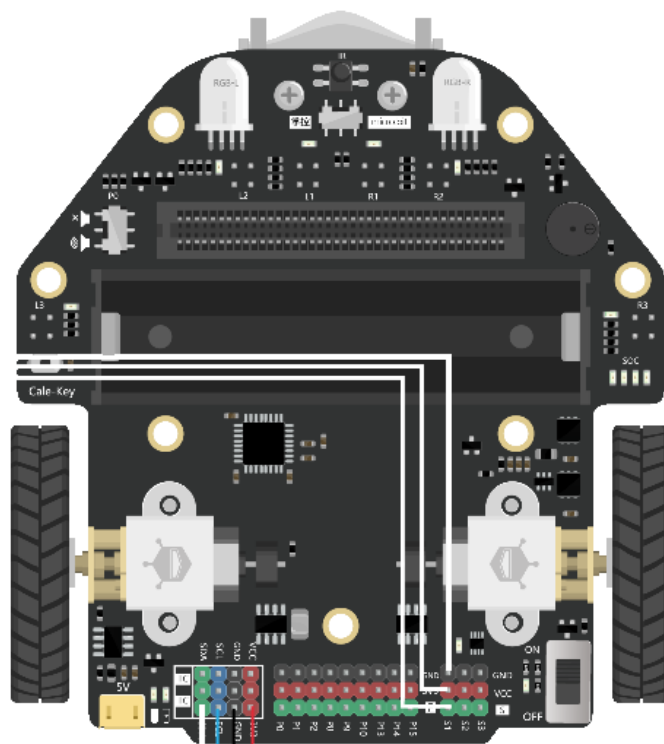
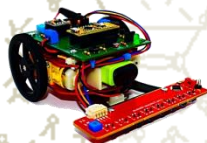
скорост на левия мотор >>> скорост на десния мотор



Пивот завои НАЛЯВО



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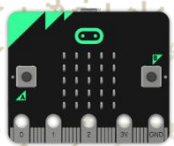


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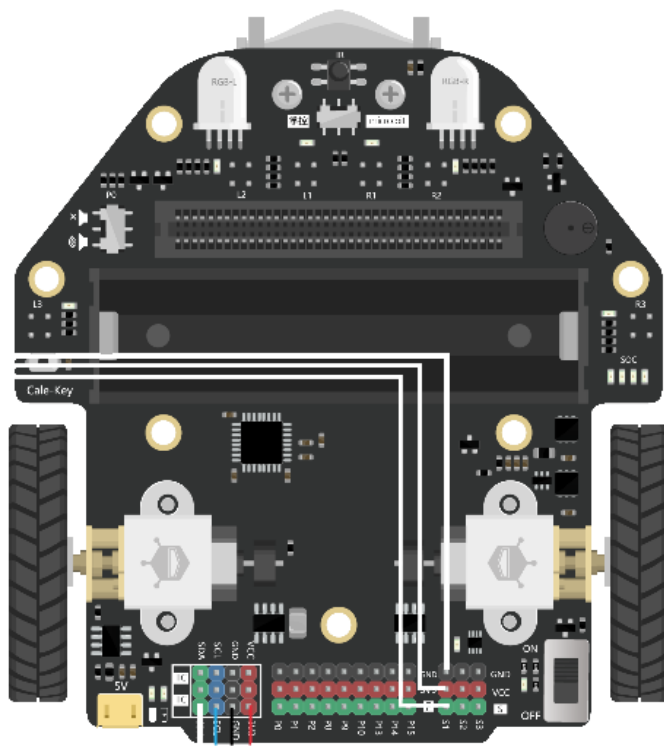
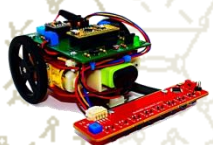
Десен мотор



Пивот завоёв НАДЯСНО

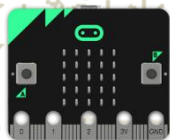


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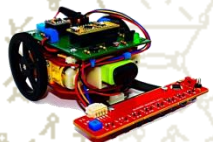


Ляв мотор

Десен мотор



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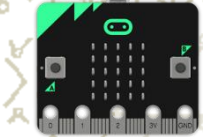
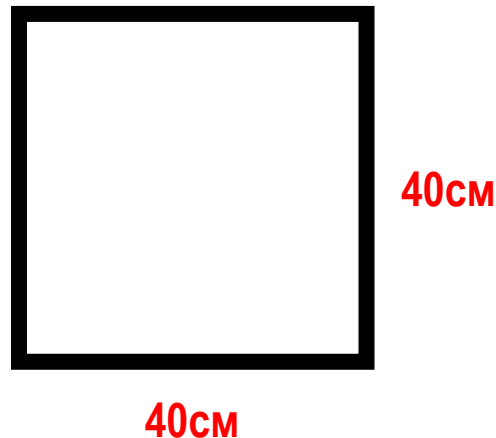


УПРАЖНЕНИЕ

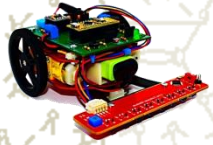


Задача 1

Да се направи проект, който управлява робота и извършва движение по квадрат с размери **40см x 40см**, като се използва движение по тайминги;



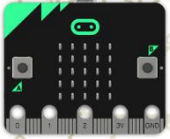
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Задача 2

Да се направи проект, който кара робота да се движи по линия.



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