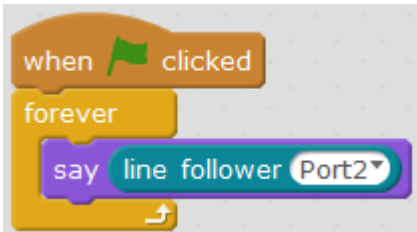


## Value of the line-follower sensor

**Hardware requirements:** mBot

**Implementation:** Online debugging (serial/Bluetooth connection)

### Example programs



### Script description

Please refer to Example 11 Value of the light sensor.

## Knowledge points

### Point 1 Principles of the line-follower sensor

The line-follower sensor is below the robot (see the attached diagram), which consists of two sensors, Sensor 1 and 2, each consisting of an infrared emitter and an infrared receiver (see the attached diagram). As it is often used to keep the robot moving straight, it is called a line-follower sensor. Its detection range is 1 to 2 cm.

The infrared emitter continually emits infrared light during the mBot moving:

If the infrared light is reflected (encountering white or other light color surfaces), **the receiver receives the infrared signal and output the value 1** (now you can see the blue LED on the back of the line-follower sensor is lighted);

if the infrared light is absorbed or cannot be reflected, **the receiver will not receive the infrared signal but output the value 0.**

According to the following table, it can be known that **the value of the line-follower sensor can be four only: 0, 1, 2, and 3.**

|             | Whether the receiver receives the reflected infrared signal |              | Value returned by Sensor 1 | Value returned by Sensor 2 | Represented in binary | Binary to decimal (the value shown on the stage by the sensor) |
|-------------|---|--------------|----------------------------|----------------------------|-----------------------|--|
|             | Sensor1   | Sensor2      |                            |                            |                       |  |
| Situation 1 | Not received  | Not received | 0                          | 0                          | 00                    | 0  |

|             |              |              |   |   |    |   |
|-------------|--------------|--------------|---|---|----|---|
| Situation 2 | Not received | Received     | 0 | 1 | 01 | 1 |
| Situation 3 | Received     | Not received | 1 | 0 | 10 | 2 |
| Situation 4 | Received     | Received     | 1 | 1 | 11 | 3 |

**Point 2 when there is no object in front of the line-follower sensor or the object is far away from the sensor, what value is on the line-follower sensor?**

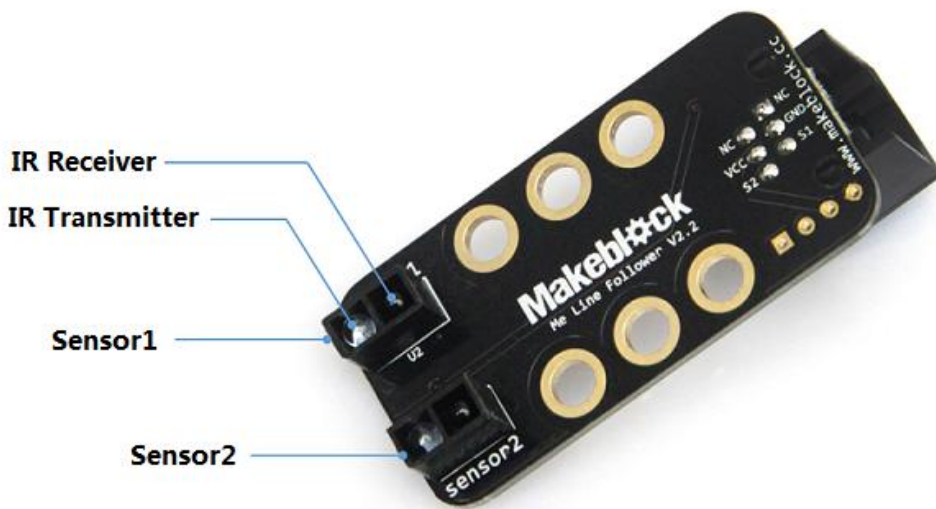
When there is no object or the object is far away from the sensor, the infrared light cannot be reflected or the signal reflected is poor. It is deemed that Sensor 1 and 2 do not receive any infrared signal and the returned value is 0. So according to Situation 1 in the above table, the value of the line-follower sensor should be 0.

**Extended tasks**

Place a black paper and a white paper in front of the line-follower sensor respectively, and watch the reads on the stage as shown by the line-follower sensor.

**Attached – line-follower sensor structure diagram**





## Related resources

Download: [Value of line-follower sensor](#)

Origin: <http://www.mblock.cc/example/value-of-the-line-follower-sensor/>