

Movement Basics

# Introduction

In this lecture we will get acquainted with Kitronik :move motor extension for mocro:bit.

# Necessary:

* Micro:bit controller
* Kitronik :MOVE motor kit
* USB cable
* Micro:bit program or internet link in which to do programming

# Process!

1. First, **connect** the parts of the **:MOVE motor kit**, creating a running robot and add to it **micro:bit controller**.
2. In programm choose **Extensions**.

A screenshot of a computer

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1. Enter “**kitronik**” in the search engine and choose **kitronik-move-motor**

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Now you have new blocks.

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1. Lets create the code to test robot movement with buttons. First we add a block **on button A pressed** from optional **input** and add **move forvard at speed 0** from **MOVE motor ...motors** and specify driving speed **0 – 100**.

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1. Choose block **on button B pressed** from **input** and add **stop** from **MOVE motor ...motors**.

You will get the following code:

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**!** set a reasonable travel speed, because to stop the robot you need to press the B button on the controller, which means you will have to catch the robot first

1. **Download** in micro:bit controller. **Push button A** on controller – robot **start** move. **Press the B button** to **stop** the robot

**Python:**

A screenshot of a computer program

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1. Now try to **rotate** the robot by disassembling the same code, **change** the block **move** to the block **spin.**

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1. Download in micro:bit controller

**Python:**

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1. Now we try to go around thing.
2. For that we need to create **function**. Go to **Advanced – Functions – Make a function** and write the **function name** and push **Done**.

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1. Take block **set turn radius** and set radius on **standard** from **MOVE motor ...motors**, insert it in **function**.
2. Take block **move right**/left **at speed 75** and insert it in **function**.
3. Take block **pause (ms)** and set on **500ms** and insert in **function**.
4. Insert block **stop** in **function**.
5. Create code, who will **call the function**. Take block **on button A pressed** from **Input** and from **Functions** insert **call bigCircle**

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1. **Download** in micro:bit controller and try

Python code:

A screenshot of a computer program

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# Challange:

1. Choose a distance, start from speed 5 and measure how fast it can cover the selected distance with speed 5. Choose the step by which you will increase the speed and measure the same distance at different speeds, each time increasing the speed by the chosen step.
2. Try turns by changing the radius and/or speed, find out what changed, find out how to get the exact desired turn.
3. Insert a marker or pen that is the appropriate size Kitronik :move motor in the robot in a specially designated place and program the code to draw an S or other letter or drawing.

A small yellow and black device with wheels

Description automatically generatedA toy car on a piece of paper

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A screenshot of a computer screen

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Python:

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1. Since the robot has no sensors to determine how many degrees the robot has turned, the only measure is time and speed. By changing these parameters, create code according to the following example, because of which the robot would go around an angular object with sides of equal length.

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Python:

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! The robot's accuracy can also be affected by battery charge, surface variations, slipperiness, debris on tires, motor wear and other factors, so accuracy may vary even from time to time.