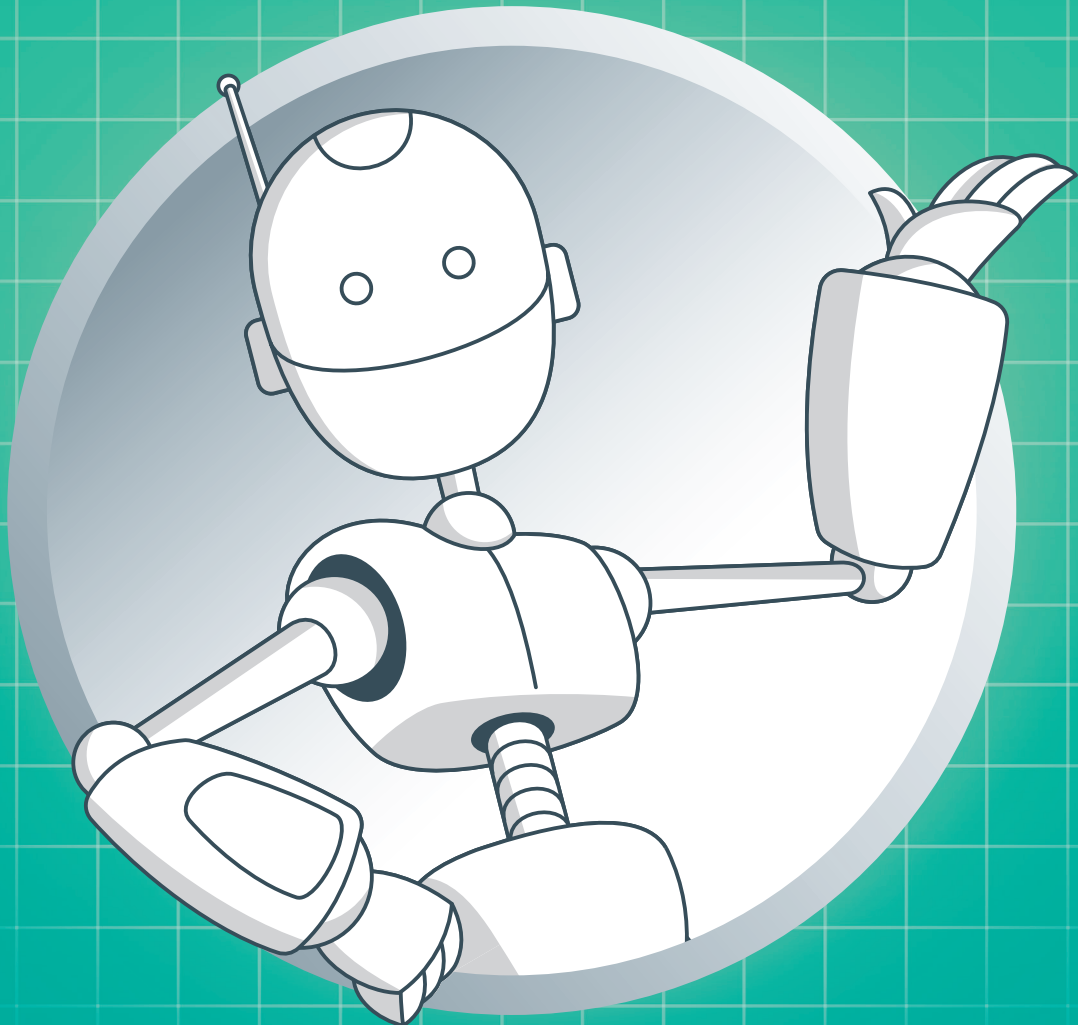


Digital

EV3 2

Kids

ROBOTICS



TASK 1

Robots in everyday life

A robot is a machine that gathers information about its environment and uses that information to follow instructions to do work. There are three steps for this procedure. First, the robot senses its environment, then it processes the information that it receives and finally it acts.

The other day, I saw a fixed robot with a giant robotic arm to help people lift heavy things or do their work faster.



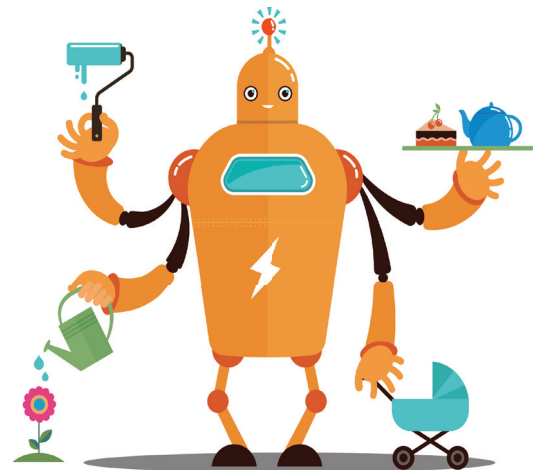
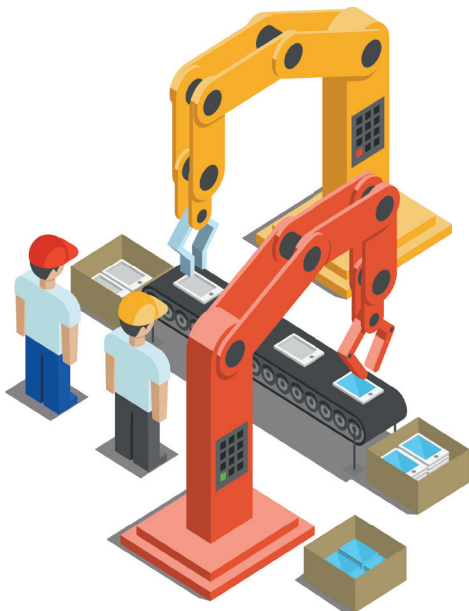
Did you know that there are also robots with wheels? They are better than the fixed ones, because they can move around.

Types of Robots

There are two types of robots: **fixed robots** and **mobile robots**.

Fixed robots are used in factories because they are faster and more powerful. They can easily produce a car faster than humans. Also, they can lift heavy objects.

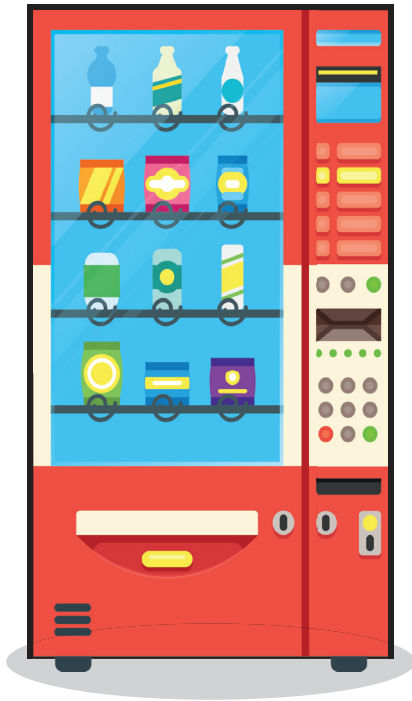
Mobile robots are robots that navigate on land, in the sea and the air. They use motors to control their movement. Humans can control them wirelessly or they can move on their own, using their sensors.



Robots in everyday life

Robots are not like the ones that we see in the movies. We see fixed and mobile robots all around us in everyday life. We use them without even knowing that they are robots!

We can meet robots in the Mall. The automatic doors, the vending machines and ATMs are all kinds of robots.



Can you name some devices that are robots?



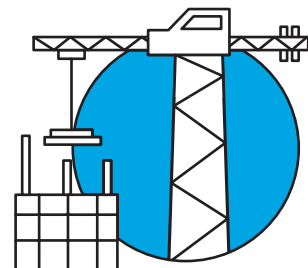
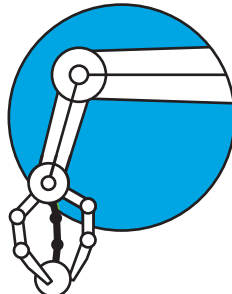
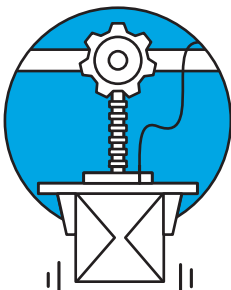
Robots in engineering

Engineers use robotics to solve real world problems. We use robots at **factories**, **hospitals** and in **construction**.

In **factories**, we use robots in order to build any kind of product faster and with more accuracy. They also help us to extract gas from the earth and carry heavy things.

In **hospitals**, doctors use robots to perform surgery. For example, robotic arms are more steady and more accurate than the human hand.

In **constructions**, we use cranes. They can go really high on the sky to build skyscrapers.



Positive and negative impacts of robotics

Robots can affect your daily life in a positive or negative way.

Positive



Robots can perform tasks that most humans could not.



They are very accurate.



Never get tired.



Can be repaired.



Work very fast.

Negative



They can't make choices by themselves.



They need energy to work.



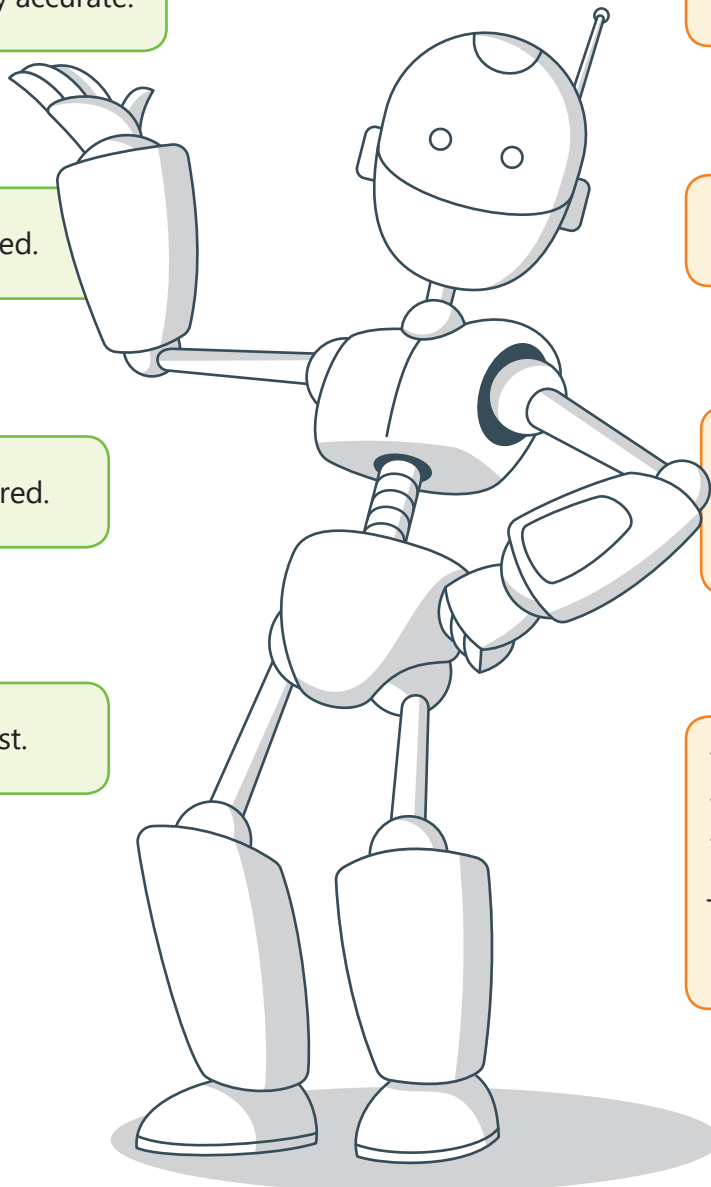
Expensive.



They break down and may not work for days, weeks or even months.



There are some professions which require creative thought and critical judgement which robots are not presently able to do.



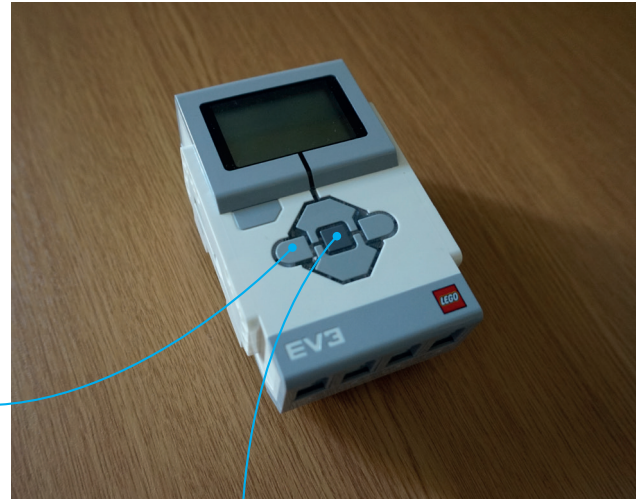
Control the EV3 robot

An example of a mobile robot is the EV3 robot. The EV3 robot has wheels and motors to move just like a car. Also, it has a main unit with a display screen. This main unit is called the brick. In the display of the brick you can change the settings of our robot.

For example, you can:

- > change the name of the robot.
- > choose when it will be in sleep mode.
- > adjust its volume.
- > connect it to a wireless network.

We use the Up, Down, Left and Right buttons to navigate the Brick's menu.

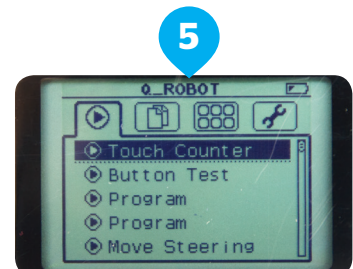


We press the center button to give the "OK" command for our selection.

Let's give your robot the name "Q_ROBOT".

Change the name of the robot:

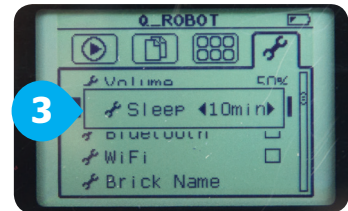
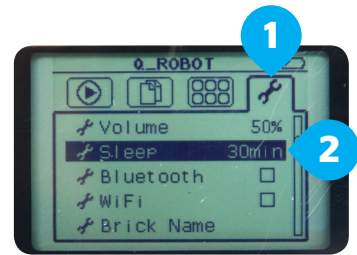
- > Go to the **Settings screen**. 1
- > Select **Brick Name**. 2
- > Type **Q_ROBOT**. 3
- > Select **Enter**. 4
- > The robot's name will appear on the upper part of the screen. 5



Now, let's change the sleep mode setting and make the robot turn off automatically after 10 minutes of doing nothing.

Change the sleep mode of the robot:

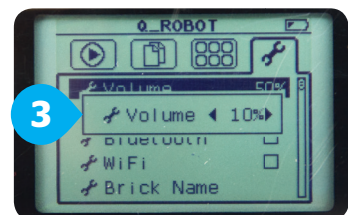
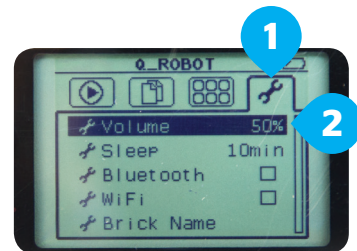
- > Go to the **Settings screen**. ①
- > Select **Sleep**. ②
- > Choose **10 min**. ③



Let's adjust the volume that comes from the robot's speaker. You can make the robot more quiet, choosing 10% volume.

Adjust the volume of the robot:

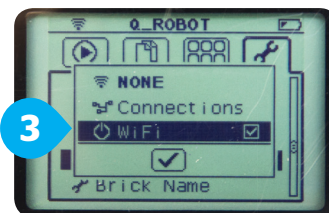
- > Go to the **Settings screen**. ①
- > Select **Volume**. ②
- > Choose **10%**. ③



In addition to the possibility of connecting to the computer using cable, you can connect the robot wirelessly to the computer via a wireless network (WiFi) or Bluetooth.

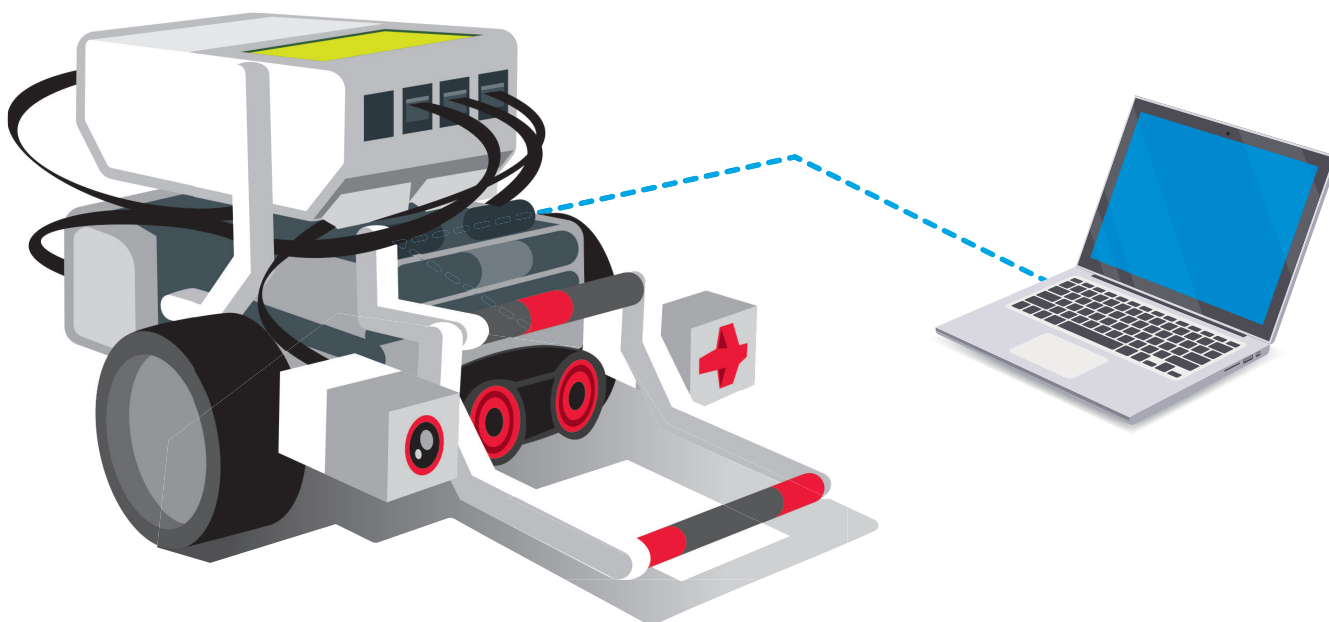
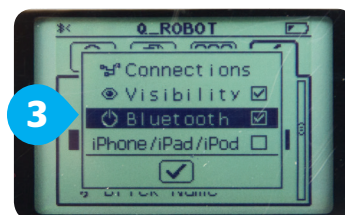
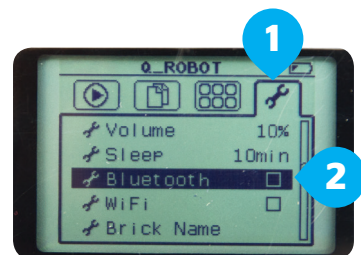
Connect to a wireless network:

- > Go to the **Settings screen**. 1
- > Select **WiFi**. 2
- > Choose **WiFi**. 3



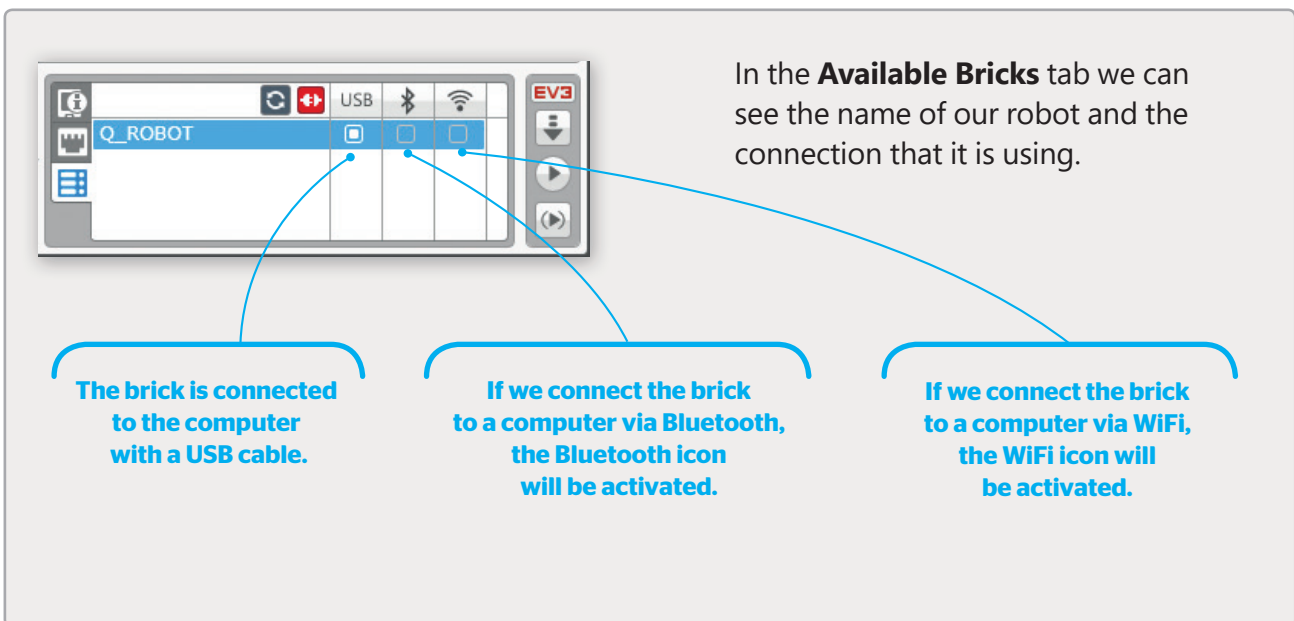
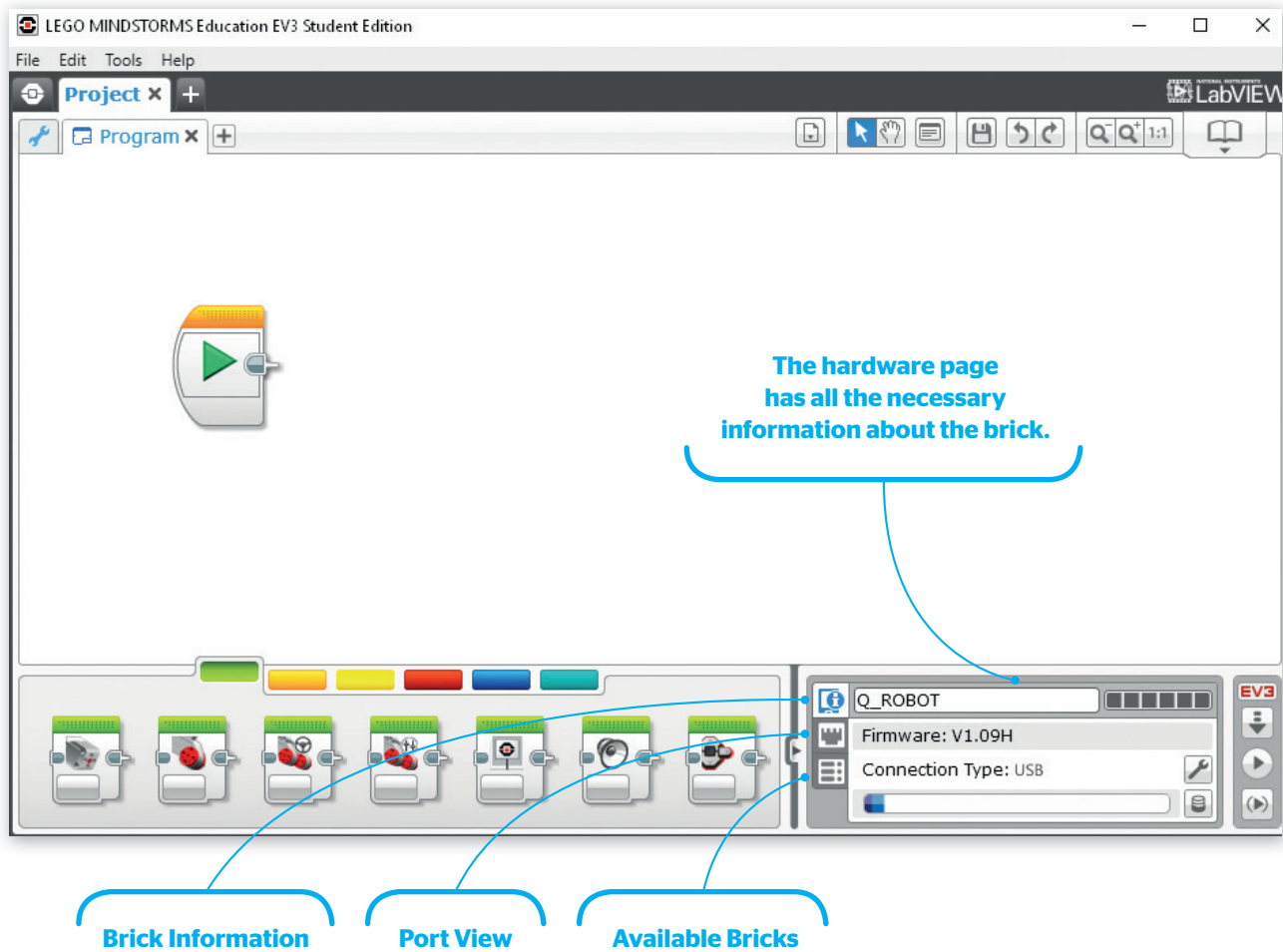
Connect with bluetooth:

- > Go to the **Settings screen**. 1
- > Select **Bluetooth**. 2
- > Choose **Bluetooth**. 3



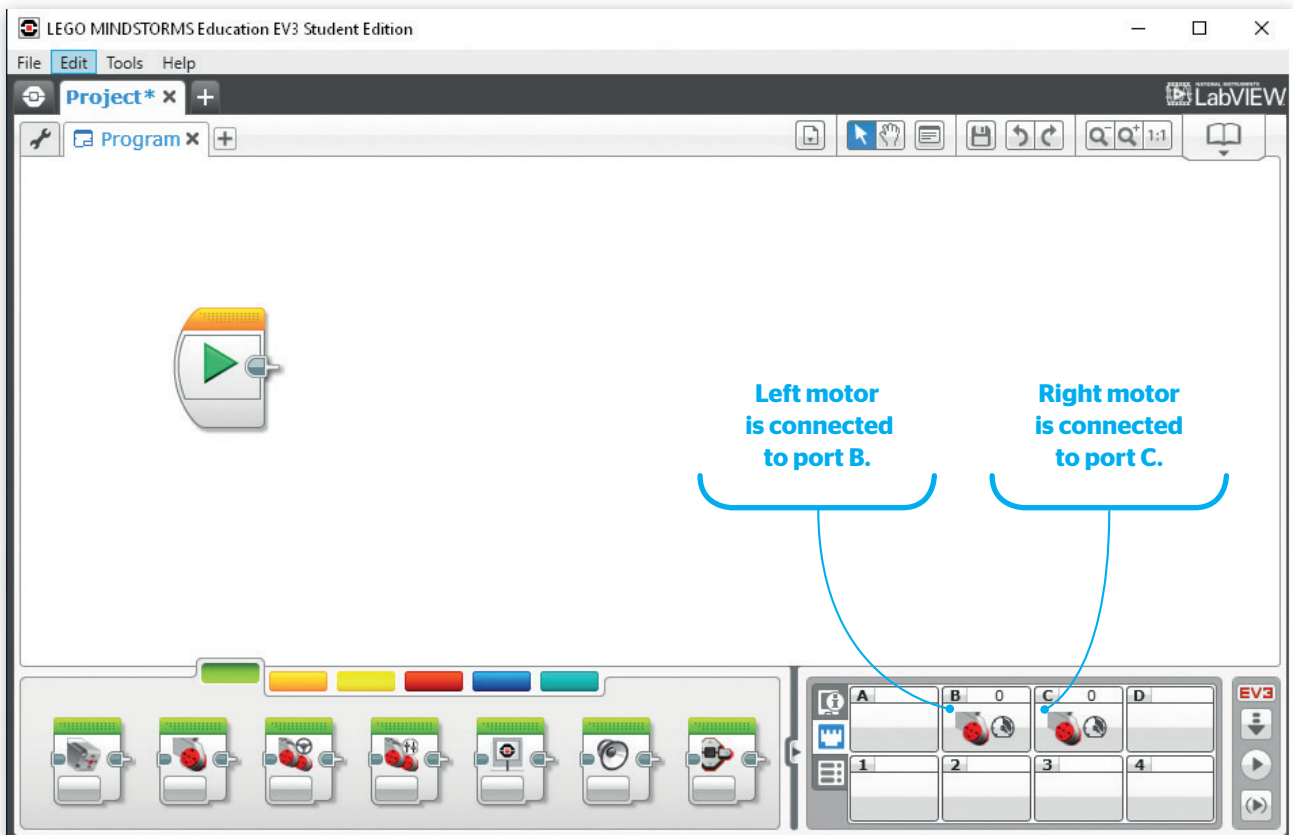
The Mindstorms EV3 program

The EV3 robot can be programmed with the **Mindstorms EV3 programming environment**. When you connect the EV3 brick with the computer, in the hardware page of the main window of the program you can see all the necessary information about the brick.



Connect the motors to the control unit

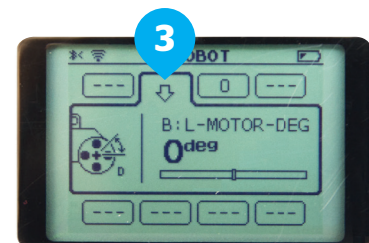
Before you start programming, you have to make sure that all the robot's motors are connected to the brick. This connection can be achieved through ports and wires. In the hardware page, in the Port View tab you can see how the motors are connected with your brick.



You can find the exact same information on the brick's port view.

Brick's port view:

- > Go to the **Brick Apps** screen. 1
- > Select **Port View**. 2
- > Navigate through each motor. 3



hands on!

Are the following sentences **true** or **false**?



1. **Robots** are really usefull in our everyday life.

True **False**

2. We can't use robots **in factories**, because they are really slow.

True **False**

3. A way to control the robot from a distance is **wirelessly**.

True **False**

4. Doctors use robots to have better result **in surgeries**.

True **False**

Match the type of robots whether they have movement or not.



Fixed Robots

Mobile Robots

Drones

Autonomous Car

Cleaning robot

Robotic Arms in factories

ATM



You know how robots affect our life and employment. Now, choose the correct answer:

1. Need energy to work.	Humans <input type="checkbox"/>	Robots <input type="checkbox"/>
2. Need sleep.	Humans <input type="checkbox"/>	Robots <input type="checkbox"/>
3. Get tired after some time.	Humans <input type="checkbox"/>	Robots <input type="checkbox"/>
4. Need parts to repair.	Humans <input type="checkbox"/>	Robots <input type="checkbox"/>
5. Can't make a choice by themselves.	Humans <input type="checkbox"/>	Robots <input type="checkbox"/>



Make the appropriate changes in the EV3 brick's settings so they match the information shown on the following Hardware pages.

The screenshots show the following settings:

- EV3-robot** (Device Name)
- Firmware: V1.09H
- Connection Type: USB
- Port configuration: A 0, B, C, D 0
- Port 1: 1, Port 2: 2, Port 3: 3, Port 4: 4
- Connection Type: USB (selected)