Name: _____ **Date:** _____

In computing, the processor manages each piece of information differently, so they are divided into 3 basic types of data:

1. **Strings** that are a series of letters without numbers, e.g. for the computer your name is a string.

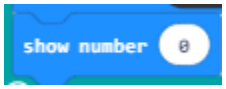
2. The **numbers** that… are any number. For example, for the computer your age and height are numbers

3. **Logic**, that can be either true or false. It is useful when we want our device to choose what to do by itself. For this, we ask questions in our program that are answered either with YES (true) or NO (false). For e.g. Is today Friday?

Unit A

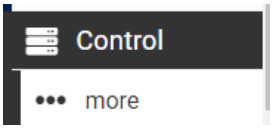
Each micro:bit has its own name and a unique serial number (the series of its construction). We want, when we press button A to show the number of the device on the screen, whereas when we press button B to show its number on the screen.

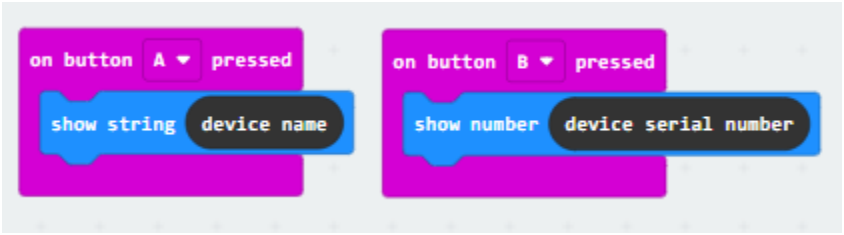
The name of the device is a string, so we use the block you see on the right, to show it on the screen. Note the **quotation marks** in the **oval field**.



The serial number of the device is a number, so we use the block you see on the left, to show it on the screen. Note the **0** in the **oval field**.

To see the name and serial number, do the following two events. You will find the blocks in the **Advanced** – **Control**.





The events (the blocks that start with "**When something happens**…") are used when we don't ask our PC, micro:bit or robot to make decisions. When these descision get more, there is a better way to write the same program.

- *Write the name of the device and the serial number you got.*

Unit B

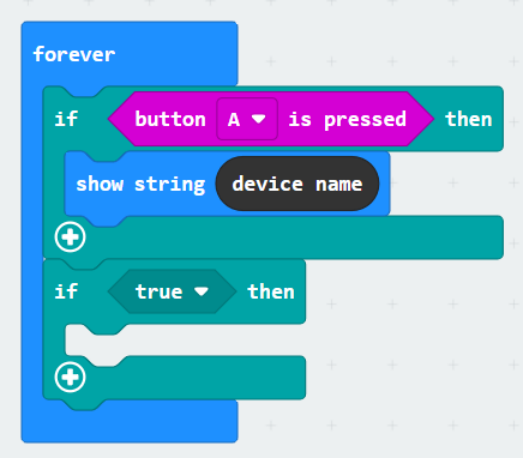
In order our device takes these decisions, there needs to be questions in the program, that are answered either by YES or NO (logic variables)

Instead of

"When I press button A, show the device name"

We always ask the question

"Is button A pressed? **If YES,** then show the device name. **If NO,** then continue to the program".

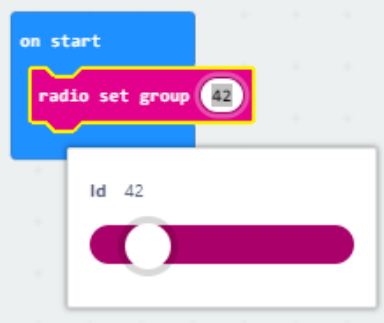


Can you continue the program in the same way so that the serial number of the device is shown when we press B?

Remember to delete the events of exercise A, so only the new code works.

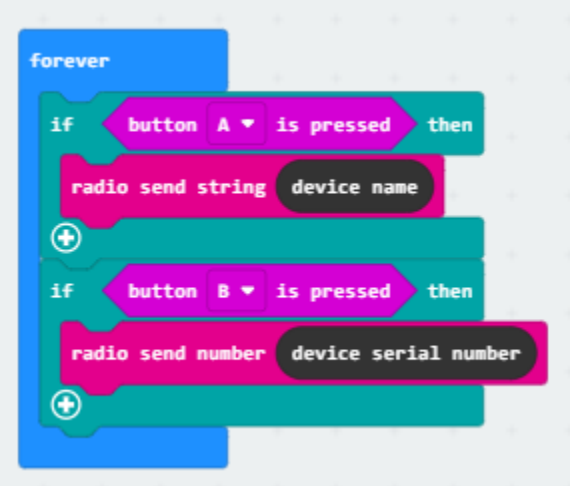
Unit C

Until now we learned to show information on the screen of our device. As you saw in the presentation, micro:bits can connect with each other through radiowaves. The Bluetooth is the communication protocol used.



Write the block you see on the right and decide with the group next to you on the number of group you will communicate with. Use the same number, which has to be different from the other groups. You can choose any number from 0 to 255.

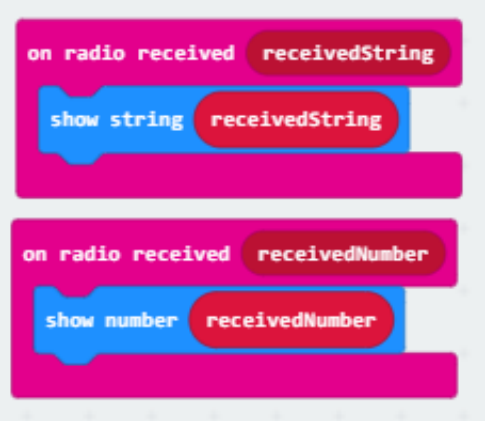
The blocks for the radiowave communication are on the **Radio label**. To send data from our device to the other group, you will **find the proper block for transmitting** every kind of data (string or number).



Change the code of the previous exercise. As you can see on the left picture, you choose which information you want to transmit.

There is one more final step for the communication… the receiving of the information the other group sent to you and how you can see it on your screen.

The two red oval blocks with the words receinvedString and receivedNumber can be dragged in the blocks “Show String” and “Show number” respectively, to show what you received.



When you download the code, press buttons A or B. Note that you need to wait wait for the on-screen message to finish before the next message is received and viewed. Also notice that what you sent is not displayed on your screen, only what you got.

So, now you are ready to send data to your peers! When you press button A send the name and the serial number of your device. When you press B send your names in English, (you can’t transmit other characters)!

Which blocks will you use for these?