# Activity 5 : The internet of things (IoT), the birth of an intelligent community...

## Objective of Activity 5

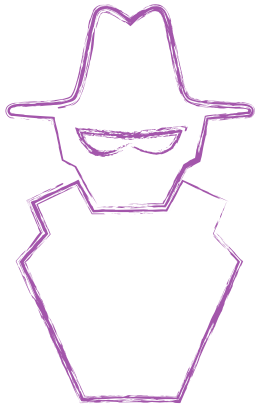
Understand the risks associated with the use of connected objects and find the best ways to protect yourself.

## Targeted soft skills in cybersecurity

resourcefulness, observation and critical thinking

## Please note

All of our activities can be done during class time and inserted into your various curricula.



## Useful glossary for Activity 5

We suggest that you and your students do a short search on the web or directly access the Canadian Centre for Cyber Security's glossary

- Amazon Web Services (AWS)
- Smart Community
- Home Automation
- Connected Object
- Cloud Computing

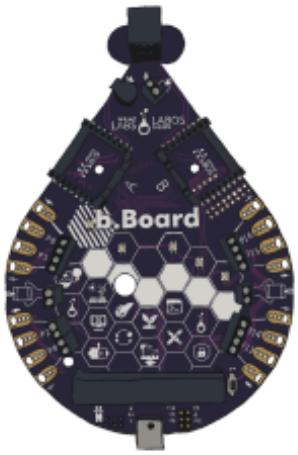
## Before the Activity Begins

Make sure you have the necessary materials and tools on hand before the students arrive. Decide on the best way to distribute the materials. Don't hesitate to ask your students to help out. Why not appoint one or two students to be responsible for preparing the materials before the activity is presented? We suggest teams of 4 or 5 students for this activity.

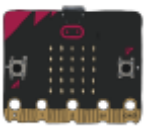
## Materials required from the kit

The kit contains several types of materials that will be used throughout our activities. It is not necessary to have everything available for the students. This is at your discretion. Some teachers may prefer to make only the required materials available to students and others may consider full access to the kit by students. For Activity 5, you will need the following materials:

- 1 micro:bit per team;
- 1 b.Board per team;
- 1 USB cable per team;
- 1 computer with internet access per team.




b.Board

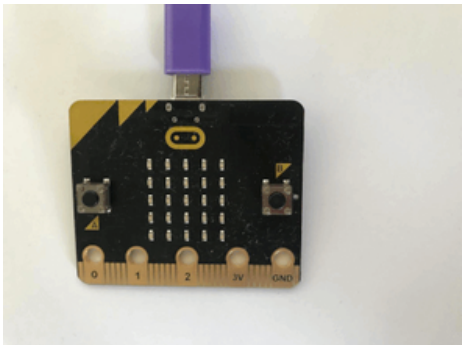


micro:bit
(V1 or V2)

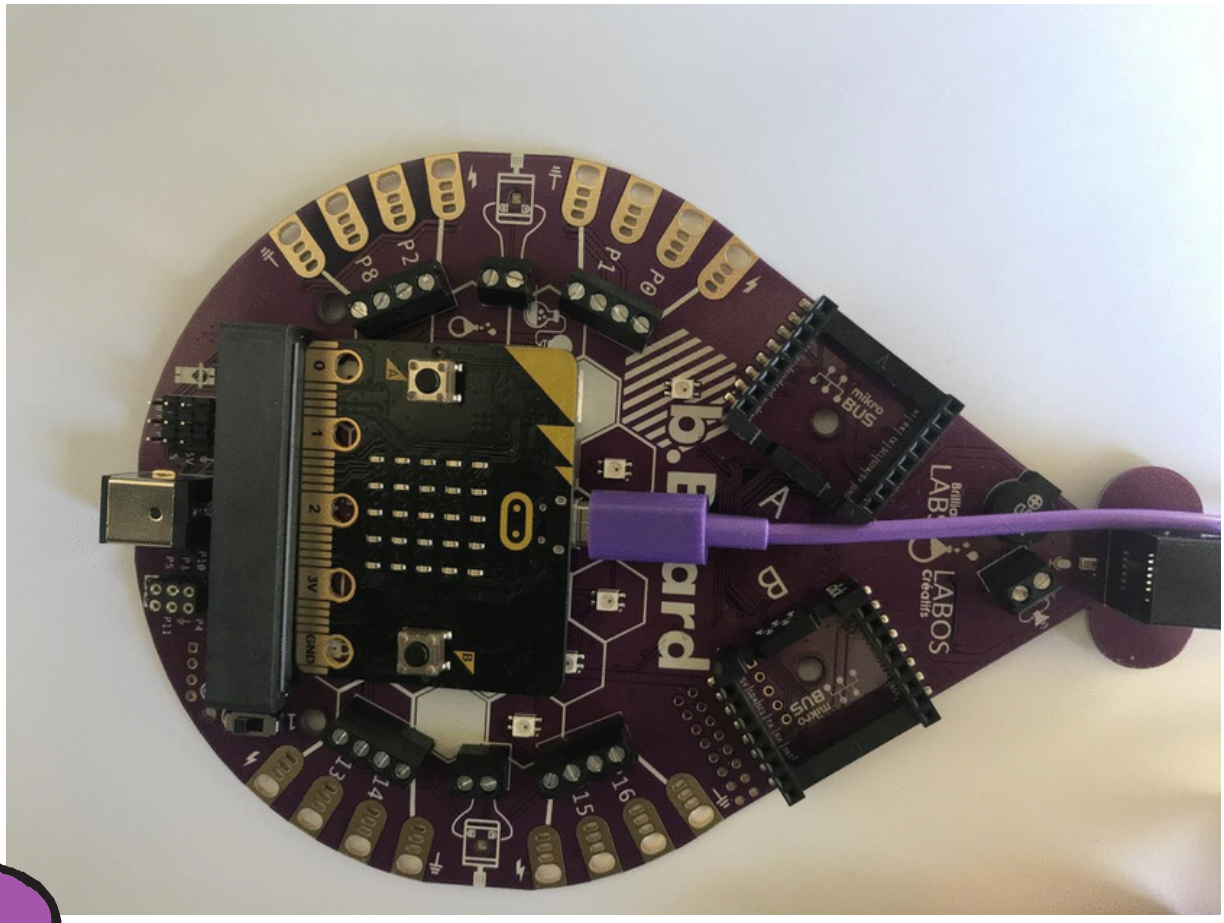
## Part 1 - Activity with the micro:bit: Bluetooth interconnection of micro:bits

This activity will allow students to interconnect the micro:bits together with the 2.4GHz signal.

## Preparation and instructions for connecting the micro:bit and the b.Board to your laptop



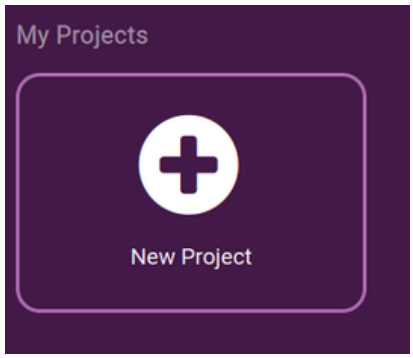
Connect the USB wire to the computer (not an iPad) and the other end of the wire into the micro:bit.



2

Insert the micro:bit into the B.board. Make sure the B.board is connected to the power supply.

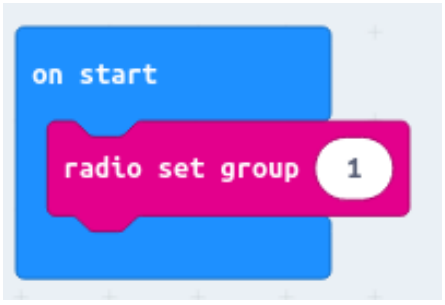
## Let's start Activity 5




Go to https://code.brilliantlabs.ca and start a new project by giving a name to your activity (ie: Activity 5).

1


In the **Radio** section, place the **block radio set group 1** in the Startup block.

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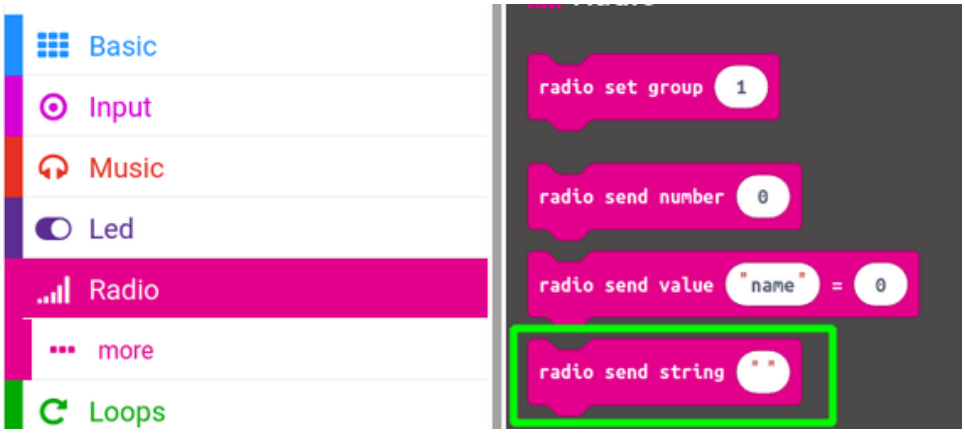
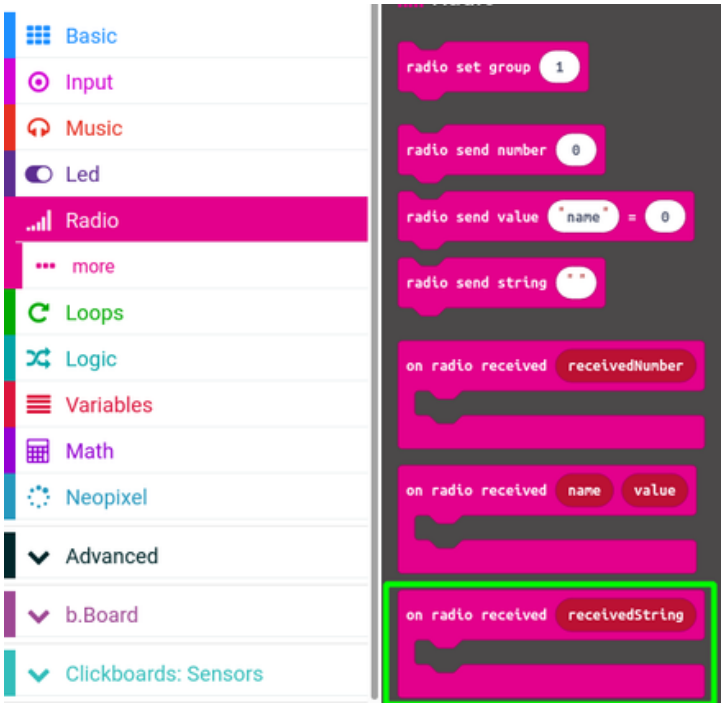
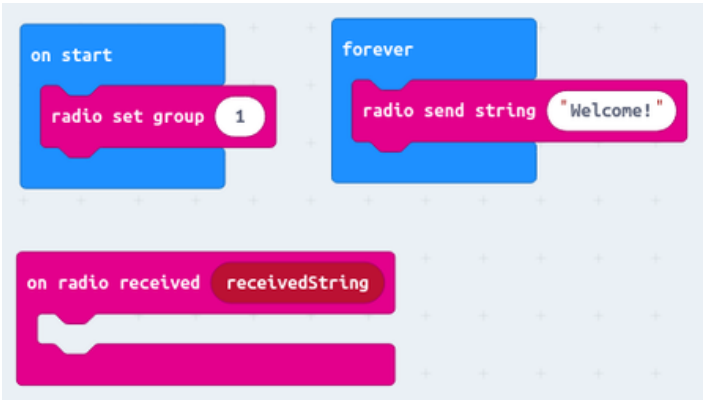


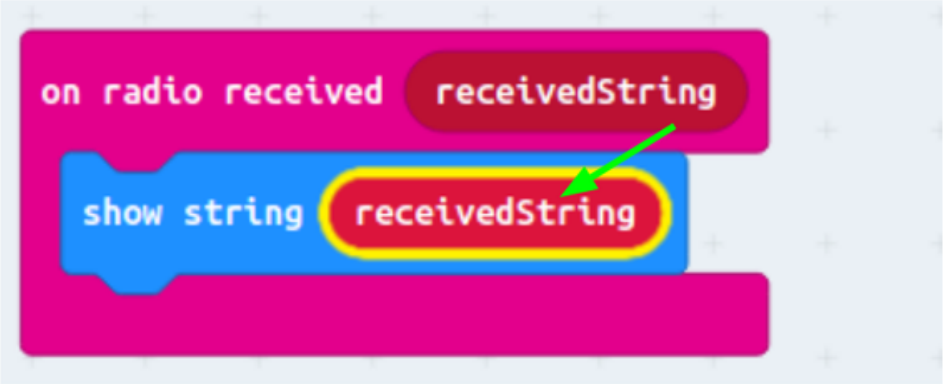

In the **Radio** section place the block **radio send string ""** in the forever block. Change the text to a message of your choice.

3

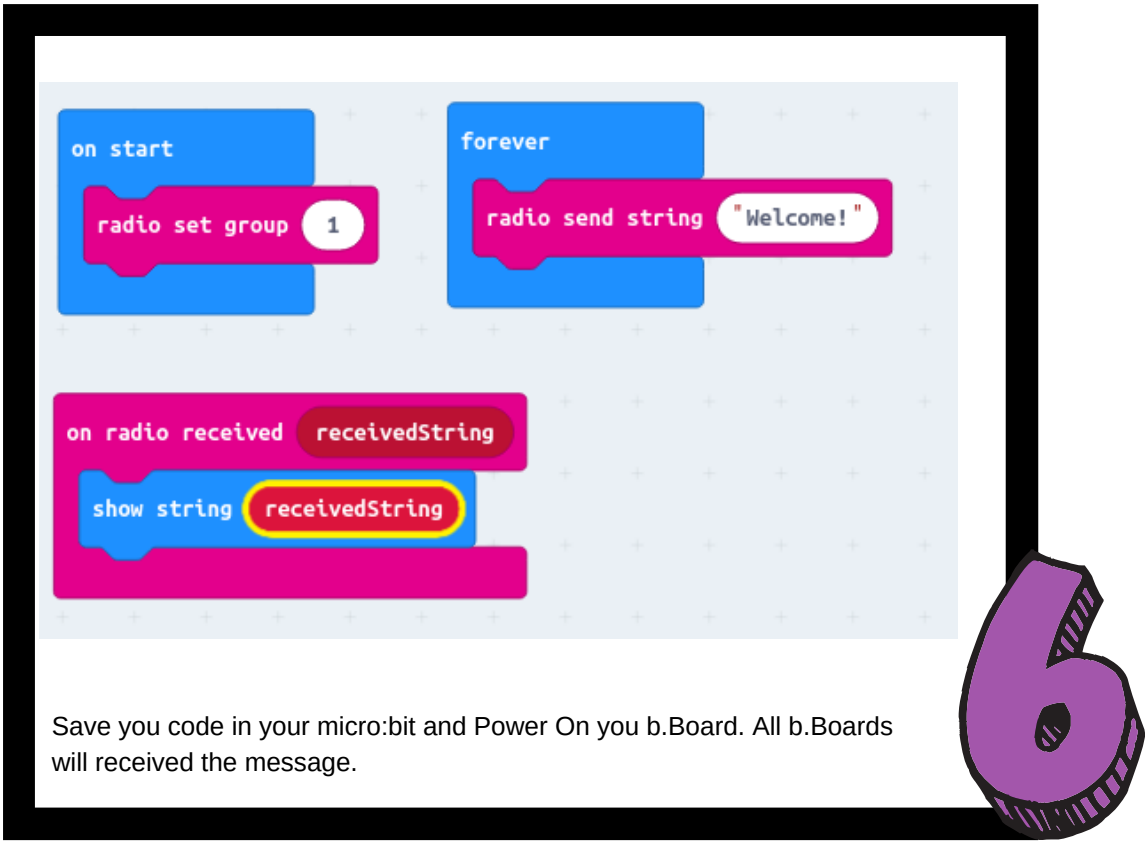



In the **Radio** section place the block **on radio receivedString** on the work plan.






In the **Basic** section bring the block **show string hello** in the block on radio received receivedString and replace the word hello by the variable receivedString. You just have to drag the variable into the block as shown in the following image.




Save you code in your micro:bit and Power On you b.Board. All b.Boards will received the message.

## Explanation

By telling the microbit to listen on channel 1, this will affect all the microbits that will be on the same channel. Subsequently, we transmit a message on channel 1. In this case : Welcome! The next block will receive the signal that has been sent and display it. This will affect all the microbits that are on the same channel. Thus, all students should see the same message scrolling by.

## How to download your code to the micro:bit?

- Please make sure that your micro:bit is connected to your laptop. Please refer to page 4 if necessary.
- Click on Download and save the .hex file to the micro:bit.
- The message is displayed on all b.Boards that are on channel 1.

## Suggestions for going further with your micro:bit

- Try to find and view the source code of your program on the website.
- Try to change the code blocks to add or change the way the program works.
- What could you do to improve security a bit? What happens if you change the number on which the micro:bit listens (radio set group)?
- Can you play a sound when the message is received?

HEX file to download

**End of Part 1**

## Part 2 - Learning about Cyber Security
## When an Amazon failure prevents you from vacuuming

Let students read the article below and take time to have a large group discussion. You may wish to project the article on a large screen or let students read the article from their computers.

Link to article
https://www.bbc.com/news/technology-55087054

## Questions to ask and possible discussion with students after reading these two articles

- What do you remember after reading this article?
- Why do people like connected objects?
- What are the risks of using connected objects?
- What are the advantages of using connected objects?
- What are the disadvantages of using connected objects?

## Suggestions for possible additional activities to do in class

- Write a letter to an adult explaining the importance of being careful with connected objects.
- Make a pamphlet to raise awareness of connected objects and ways to protect yourself.
- Make a poster about tips to use to protect yourself when using the internet of things.
- Make a video about the importance of learning about the risks of using connected objects.
- Make a survey on the number of connected devices in the home.
- Make a vox pop about the use of connected objects in your school.
- Make a podcast about the use of connected objects in our everyday lives.

## Suggested links to learn more and to go further with this activity

*Please note that the links below are from a third party and Brilliant Labs is not responsible for their content or suggested links published by them. We strongly suggest that you take the time to review each of these links before using them and ensure that they are consistent with your values and what you normally use in your classroom with your students.*

- **News article | CBS ;** Cyber crooks increasingly targeting home devises:report
- **YouTube video | Edureka ;** Internet of Things (IoT)|What is IoT Explained | Edureka
- **YouTube Video | What You Need To Know ;** The Internet of Things Security (for 2021)
- **Web site | Bluetooth SIG,** The story behind how Bluetooth technology got its name
- **Infographic | CPA-Chartered Professional Accountants Canada ;** The Internet of Things (IoT) is a booming business
- **Infographic | NCTA, The Internet and Television Association ;** The Growth Of The Internet Of Things
- **Web site | Wikipedia ;** Home automation or Domotics
- **Website | Canada's Center for Digital and Media Literacy, MediaSmarts ;** Cybersecurity Recommended Teachers Resources Website
- **Website | Brilliant Labs ;** Cyber Security Resource Database
- **Website | Canadian Center for Cyber Security, Government of Canada ;** Cybersecurity Glossary

**A moment to think about the activity (We suggest the following questions or create others as needed)**

*You can also create other questions if you deem it necessary.*

- What did we learn from this activity?
- Why is this important?
- Will you still continue to use connected objects?
- What advice would you give to someone who uses connected objects?
- Other questions from the teacher...

**End of Activity 5**