CANADA LEARNING CODE

micro:bit Camera (Say Code!)

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Duration: 45 minutes

LEVEL	SUBJECTS	PROVINCES / TERRITORIES	TOOL
Age 7+	Technology	Across Canada	micro:bit

Overview

In this beginner project, students will explore micro:bit's camera function. Students can either use the micro:bit app on their device to program micro:bit to take a timed photo or a computer.

Prep Work

- The instructor should have some knowledge of micro:bit
- micro:bit (one per student)
- Computers or a device capable of pairing to micro:bit
- Students should have had some previous experiences with coding (Scratch or Blockly)List
- Students will need to have micro:bit app or computer

Key Coding Concepts

- Algorithms
- Events
- Variable

Terminology

Algorithm: a step-by-step set of operations to be performed to help solve a problem

Events: When one thing causes another thing to happen

Variable - A placeholder for a piece of information that can change

References

MakeCode Reference Guide: https://makecode.microbit.org/

Lesson

Note: this lesson is based on Element14.Com micro:bit tutorials

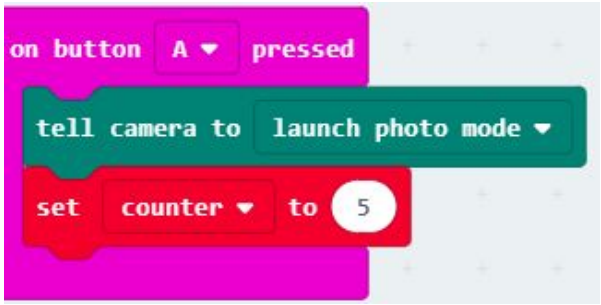
1. Launch micro:bit app or https://makecode.microbit.org and go to create code and start a new project:

2. Under the left-hand commands menu, click 'Input' and find the “on button [A] pressed” block.

3.The micro:bit will take a photo when button “A” is pressed. To enable the camera, select 'Devices' from the left-hand menu, and drag in the block “tell camera to (launch photo mode]”.

4. However, we don’t want the micro:bit to take a photo right away, so we will add in a 5 second delay. This will allow us to get ready for our photo!

To set up a countdown timer, in variable select in a 'set [item] to ___ , and rename [item] to [counter]. Change number to 5.



reference

micro:bit Educators Guide https://www.slideshare.net/Microsofteduk/bbc-microbit-guide-from-hodder-education

The Official BBC micro:bit User Guide (2018) by Garteth Halfacree

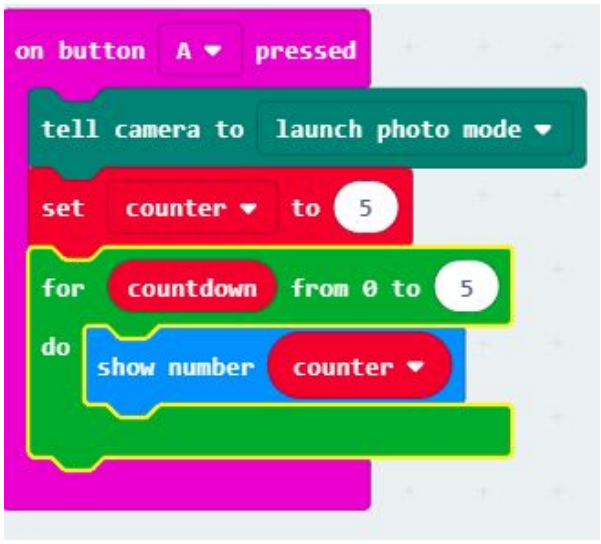
micro:bit Tutorial Series Part 1: Getting Started https://www.youtube.com/watch?v=ZIW_6rxYNBg

micro:bit by BBC - Creative Classroom Tips for Educators https://www.youtube.com/watch?v=pR_AapxVudM

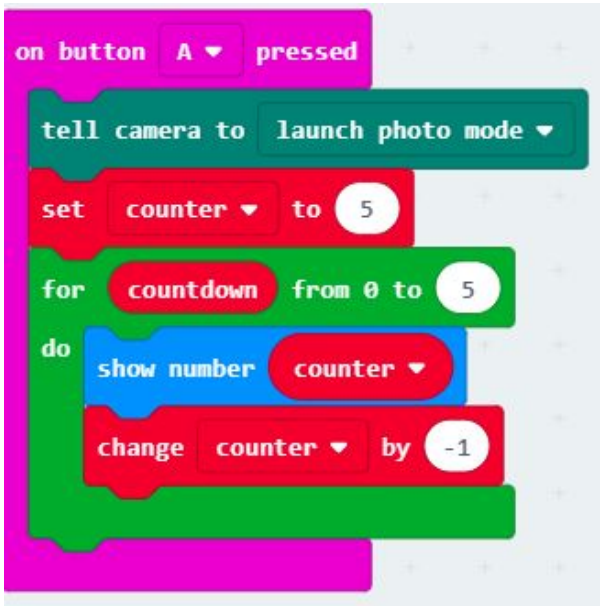
Element14.Com micro:bit tutorials https://www.element14.com/community/community/stem-academy/microbit/blog/2016/06/09/10-bbc-microbit-projects-in-10-days-day-four-camera-time

5. Next we need to tell the timer to start counting down when the A button is pressed. First, get the loops block "'for [index] from 0 to [4] do..'" and attach it to your code.

In this block, the [index] represents the variable being referenced in the code. We will change the index variable to the countdown timer. Also, change the [4] to a [5]. Then add a basic show number block and attach a variable counter block.

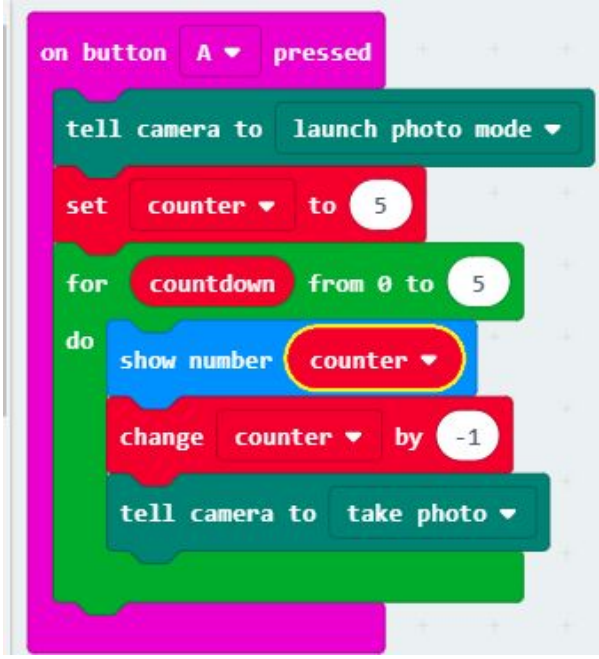


6. Under the variables menu drag a 'change counter' block into the input box change [item] to [counter] and change [1] to [-1], to instruct the timer to count backward from 5.



7. Finally, drag in another 'Tell camera to [take photo]' block from the devices menu, and attach this at the bottom.

This is the final code→



Now hit 'Run' to test out your script on the simulator. When you push the 'A' button the counter should begin counting down from 5 to 0. At zero, the device should take a photo.

Download your program to your BBC micro:bit device to test it out for real. Note: You can access your photos from the BBC micro:bit drive when you attach the device to your computer.

Assessment

Formatively Assess:

Is the student able to independently follow coding instructions?

Does the student have a growth mindset and is able to troubleshoot bugs that may arise?

Is the student able to take risks and create some of their own code?

Extensions

Students can explore the camera function. What else could they do with this function?

Also, now that they know to create a countdown, what other projects could they create and program that could use a countdown function?

As an art extension, students could design their own mirco:bit camera case.