Coding Microbits using Python — Reflections

Module 5: Music, Designs & LEDs (Loops)

One of the things that computer are really good at is doing the same thing over and over again without getting tired. In this module students will use loops to compose music, connect headphones/speaker, connect LED's, and designs that repeat.

Module 5: Music, Designs, & LEDs (Loops)
List 3 things you did today that involved loops.

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Loops

for i in range (*number*):
        do _Actions_____.

while (*condition*):
        do _Actions if condition is true_ _____.

for i in range (*start number, end number, increment number*):
        do _Actions_____.

i is a variable that is the index for the loop.

Repeat loops activities

05.2a Heart Beat Activity

Algorithm & Pseudocode -**for i in range()** loop

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05.2b Music Tunes Activity

Algorithm & Pseudocode - **for i in range()** loop

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Modification: add a button B pressed for additional tunes.

05.2c Frere Jacques Song Activity

Algorithm & Pseudocode - **for i in range()** loop

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Musical Notes
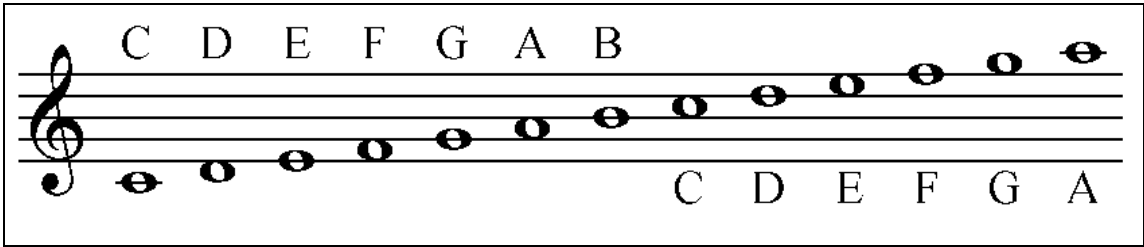
Note values

Modifications for Frere Jacques Song activity. Find another song and add the code and notes to a button B pressed. Create a song of your own and code it.

Algorithm & Pseudocode

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05.2d European Siren Activity

Algorithm & Pseudocode - **while (*condition*)** loop

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05.23e External LED Activity

Algorithm & Pseudocode - **for i in range()** loop

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How do you add & program LEDs? _____

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05.2g Counting Numbers Activity

Algorithm & Pseudocode - **for i in range(*start, end, increment*) loop**

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Modifications: Count by a different number than 1. Count backwards.

Why do some coders just use "i" for the index variable?

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What are different ways to increment a variable?

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05.3 Project: Loopy Entertainment and Innovation!

In this project you will plan, design, and create an entertaining microbit program that uses loops. It should use at least different 3 loops. It should use sound, display, and/or motion in a way that is central to the project. It should also use a maker elements as part of the design and construction.
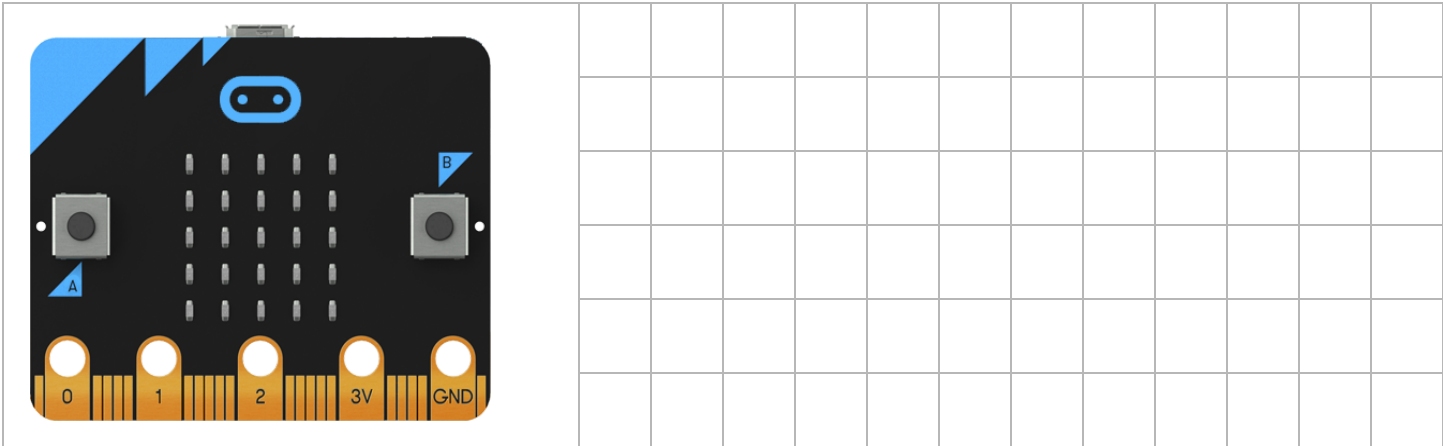
Brainstorm Ideas _____

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Project: _____

Description: _____

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Microbit Project Sketch:

Entertainment Loopy Sketches

Loopy Entertainment Algorithm & Pseudocode:

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Materials Needed: _____

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Coding Plan: _____

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Photos:

Notes & Reflections

How did you decide with you decide on your loopy entertainment?

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What was something that was surprising to you in the creation of your project?

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How well did your prototype work? _____

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Describe a difficult point in designing your loopy entertainment and how you resolved it:

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What feedback did you get from your beta testers?

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What did you change to improve your loop demo? _____

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Assessment Rubric

Competency scores

Competency	4	3	2	1
Loops	At least 3 different loops are implemented in a meaningful way.	At least 2 loops are implemented in a meaningful way.	At least 1 loop is implemented in a meaningful way.	No variables are implemented.
Variables (parameters)	All variable names are unique and clearly describe what information values the variables hold.	The majority of variable names are unique and clearly describe what information values the variables hold.	Few variable names are unique or clearly describe what information values the variables hold.	None of the variable names clearly describe what information values the variables hold.
Sound, Display, & Motion	Uses sound, display, and motion in a way that is integral to the program.	Uses only two of the required elements in a way that is integral to the program.	Uses only one of the required elements in a way that is integral to the program.	None of the required elements are used.
Micro:bit Program	micro:bit program: 1) Uses loops in a way that is integral to the program 2) Compiles and runs as intended 3) Meaningful comments in code	micro:bit program lacks 1 of the required elements.	micro:bit program lacks 2 of the required elements.	micro:bit program lacks 3 or more of the required elements.
Collaboration Reflection	Reflection piece includes: 1) Brainstorming ideas 2) Construction 3) Programming 4) Beta testing	Reflection piece lacks 1 of the required elements.	Reflection piece lacks 2 of the required elements.	Reflection piece lacks 3 of the required elements.

Notes

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