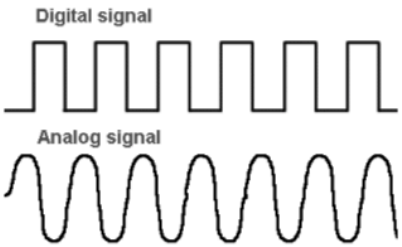
Mission 5: Micro Musician

Intro and Discussion Points:
Computers and music go great together! This project brings together coding, electronics, and music. The CodeX has a built-in speaker, and there are lots of built-in tunes to play, so this is a short and sweet project to begin expanding students' view of the possible ways they can use coding.

You might ask students: "Where is the speaker on the CodeX?" Cool sounds can be made just by sending electrical pulses (binary 1's and 0's) to the speaker under software control. Code *really* rocks!

Type of Input Device	Examples	Type of Data Read
Analog Sensor	Flex sensor, Pressure sensor, Photocell	Range of values, e.g. • 0-255 • 0-1023
Digital Sensor	Push Button	• 0 or 1 • On or Off • True or False • High or Low



CodeX Lesson Plans

UNIT 1 : Getting Started	**MISSION 5: Micro Musician**	**# DAYS:** 1
UNIT GOALS: Students will learn the basics of Python.	**ADDITIONAL MATERIALS:** ● batteries	**VOCABULARY:** ● **Mechanical waves** ● **Amplifier** ● **mp3**

FOCUS CSTA STANDARDS: 1B-CS-01, 1B-CS-02, 1B-CS-03, 2-AP-16, 1B-IC-18

LEARNING TARGETS:
- I can make the CodeX play music through the speaker or headphones
- I can add comments to my code to make it readable by all

SUCCESS CRITERIA:
- ❑ Play some of the CodeX's built-in songs
- ❑ Add comments to the code

KEY CONCEPTS:
- You can "import" new code modules that have fantastic capabilities (like music) with python's `import` statement.
- Batteries can make your CodeX portable.

DISCUSS REAL WORLD APPLICATIONS:
Computer controlled music sequences are very common. You can probably think of many more instances where computer-controlled tones are used for entertainment, alarms and alert messages, etc.

- Musical gift cards
- Ringtones
- Drum Machines
- Keyboard Synthesizers

ASSESSMENT STRATEGIES:
Remix suggestions (set aside 0.5-1 period to complete):
- Try different songs from the CodeX's repertoire
- Add "winning" and "losing" songs to the prior mission's remix game
- **2.16 Unplugged** - students should demonstrate that they can load a program on the CodeX and run it off batteries.

TEACHER NOTES:
Always refer to **Answer Keys by Mission** if you get stuck. All coding solutions are available, in alphabetical order.

Students may want to add their own sounds to the CodeX. Instructions for adding sounds is part of the Mission 5 Remix. See the slide decks "Analog and DigitalSound" and "Adding Audio Files" in the **Mission 5 Remix** folder.