Play-It-Again

Activity Overview

The students create a melody, or song, based on their interest and skill level in music.

Learning Objectives

Students will be able to:

- Change tone values to create “song” or jingle
- Use delay within a function

Files/Materials Needed:

- Computer
- Engineering journal
- LillyPad ProtoSnap Plus
- Micro-B USB Cable
- Maestro.ino

Code Vocabulary

- #define – a C component that assigns a name to a constant value before the program is compiled
- BPM – Beats Per Minute is the meter of the a song

Syntax

- #define variableName value
- Beep function – this function allows the buzzer to work with simple commands. The function has three parameters: the pin used, the frequency of the note being played, and the duration o playing that note – beep (pin, frequency, time);

Lesson Instructions

“Sew” What: The Hook

Discuss these questions:

- When would a musical alert or notification be needed?
- What type of jobs should have an auditory alert rather than a physical alert (like the vibe board)?
- What type of patterns/songs can be used to alert users?

Present new information

Today we will be working with another output. This is a small buzzer for the LilyPad system which creates tones based on the different frequency of notes. The component is loud enough to hear inside a pocket but not obtrusively loud.

The Play-it-Again sketch in this lesson is similar to the RGB sketch as it uses a function to get the component to work.

Apply Skills in Coding: A Guided Practice

1. Have students open and run maestro.ino sketch.
2. Review the parts of code.

The void beep() function tells the computer which pin to use: ("buzzer", the frequency of the note to be played, and duration).

Duration: rather than writing a "delay" action after each note, the beep function includes instructions (line 97 to 100) to turn on and off the buzzer. Notice line 90, it tells us, in parentheses (use the buzzer, the frequency of the note, and duration to play the note).

3. Ask students to reopen file "maestro" and have them code the Suspense Sting "Da da dumm!" which the students may be familiar with from the DreamWorks Animation's "Croods."
4. Tell students to save the file with the format mentioned in the vibe lesson.

Choose a good name for your file (such as "maestro xx v1"), and click on the "Save" button to complete the process. You can use your initials and version number. This will help in later projects. I.e. maestro_dv_v1

Assess Learning through Challenge

- Create your own song
- Recreate your favorite song
- Create a warning sound
- Add any other components to the code

Simple Songs

These songs were formatted for the Maestro sketch for WearTec from public licenses of Nokia RTTL Ringtones found at: https://github.com/granadaxronos/120-SONG_NOKIA_RTTTL_RINGTONE_PLAYER_FOR_ARDUINO_UNO/blob/master/RTTTL_PLAYER/songs.h#L27

Explanation of RTTTL ringtones can be found on Wikipedia at: https://en.wikipedia.org/wiki/Ring_Tone_Transfer_Language