Activity 1: Learn about functions through song lyrics

Song lyrics that we listen to are uniquely designed by the writer and are meant to convey meaning to us. What we see is the finished product, but those songs can be broken down into individual parts and actions as well.

The first thing that is important to learn is the difference between functions and arguments.

Functions are instructions in programs that tell the computer to perform a certain task. For example, a function could be:

MakeCake ();

This function is giving the instruction to make a cake. An argument makes a function more specific. For example:

MakeCake (“Chocolate”);

This function with an argument is giving the instruction to make a chocolate cake. Arguments and functions work together all the time in computer code.

Now how do we throw music into the mix? Pick your favorite song and listen to it. What do you notice? Could you break down this song into a list of instructions? Here are some thoughts on functions that could be used to break down a song.

SingChorus ();

Whistle ();

PlayGuitarRiff ();

As you are listening to the song that you chose, write out a list of functions that could break down your song. I’m going to choose one of my favorite songs from Lilo and Stitch, Hawaiian Roller Coaster Ride. Here’s what I came up with:

SingIntro ();

SingIntro ();

StartChordProgression ();

SingFirstVerse ();

SingChorus ();

SingSecondVerse ();

SingThirdVerse ();

SingFirstVerse ();

SingChorus ();

SingBridge ();

SingChorus ();

GuitarRiff ();

SingIntro ();

SingFirstVerse ();

SingChorus ();

SingChorus ();

If you want to listen to the song and make sure I got it right, click here!

Activity 2: Learn about loops through song patterns

Songs tend to have a "recipe" when they are being written. Most songs follow a simple pattern:

First verse

Chorus

Second verse

Chorus

Bridge

Chorus

Look at the functions that you wrote for your song in the first activity. Did anything repeat? How many times did the chorus repeat? Did the singer ever sing the chorus twice in a row? Did they hum or whistle?

In coding, loops are often used when a computer has to do the same thing over and over without change. Let's see if we can adapt that to our song functions.

Repeat Forever

    StartChordProgression ();

Repeat 2X

    SingIntro ();

SingFirstVerse ();

SingChorus ();

SingSecondVerse ();

SingThirdVerse ();

SingFirstVerse ();

SingChorus ();

SingBridge ();

SingChorus ();

GuitarRiff ();

SingIntro ();

SingFirstVerse ();

Repeat 2X

    SingChorus ();

Notice that on the parts that repeated in the song, I added a repeat instead of repeating myself however many times that I needed.

Activity 3: Write an algorithm duet

With a partner such as an adult or sibling, get out a piece of blank paper. In this activity you are going to be taking turns to write a song. You'll have 30 seconds to write one or two lines. The idea is not to write a perfect song, but to quickly get a lot of ideas down on paper. The only rule is that you have to build on the lines that the previous person wrote, keeping the message positive. Do about ten rounds so that your song is 10 – 20 lines long.

After you've finished this activity, think back on it. Was it hard? What is fun? What would you do to improve your song?

Coding and song writing are both acts of creativity. Coders and song writers have to come up with new ways to accomplish a task that will keep people keep wanting to use or listen to it.

Activity 4: Code a performance routine and share it with your family

Dance is the perfect way to learn coding because dance steps are just that, step by step! In this activity, you are going to create a dance routine with functions. Some functions that you could use are:

stepLeft ();

stepRight ();

Stomp ();

Clap ();

Pause ();

Snap ();

Using the sheet at the end of this lesson, code your dance and try it out with your family! Here's an example of a dance routine:

Line Number	Dance Step	Code
1	Declare function name, open bracket to start new function	Function CoolDance () {

2	Stomp	Stomp ()
3	Clap	Clap ()
4	Step to the right	stepRight ()
5	Step back	stepBack ()
6	Stomp	Stomp ()
7	Close the bracket to finish the function	}

Now make your own!

Line Number	Dance Step	Code

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