CANADA LEARNING CODE

Space Skirmish Marching Song(Star Wars Imperial March)

By: Phuong Diep
Duration: 1 hour

LEVEL	SUBJECTS	PROVINCES / TERRITORIES	TOOL
Grades 4 - 6	Art, Science and Technology	Across Canada	Little Robot Friends

Overview

In this activity, you'll program a Little Robot Friend to sing the chorus and verse of a Space Skirmish Marching Song.

Prep Work

- Download the LRF Blocks App on each computer: http://learn.littlerobotfriends.com/downloads
- Review the complete LRF Blocks file of this project: http://bit.ly/space-skirmish-example
- (Download > Open LRF Blocks app > Select “Projects” > “Import File” > Select file from your downloads folder)
- Print the Solution Sheet: http://bit.ly/space-skirmish-solution
- Print copies of the Music Sheet for each pair of

Key Coding Concepts

- Arrays
- Events
- Functions
- Loops

Terminology

Array

Allows you to store more than just one piece of information

Events

One thing causing another thing to happen i.e. ‘when clicked’ block

Function

learners: http://bit.ly/LRF-music-sheet

- This activity requires computers and Little Robot Friends robots
- **This lesson fits well after the “How To Program Sounds” lesson.

Lesson

Introduction

Music is a very important part of communities and cultures around the world with genres like jazz, rock, pop, and techno reflecting our human emotions and experiences. In many ways, music is a form of language - without the words!

The earliest form of music was clapping and chanting. Afterwards, some of the first instruments were made from things found in nature. For example, sticks were used to drum and flutes were carved from mammoth bones. Today, there are common types of instruments we categorize as wind, string, brass, percussion, and keyboard, but with the invention of new tools and applications we also have robots such as Little Robot Friends that can make music too!

A type of procedure or routine that performs a distinct operation. There are often ‘canned’ functions that exist already like the ‘jump’ block

Loops

Running the same sequence multiple times i.e. repeat or forever blocks

Code Along

1. Launch the LRF Blocks App and open a new project.
2. Explain the different categories in the blocks menu.
3. Show students how to move and connect blocks to create a "script".
4. Give students a few minutes to experiment with the LRF Blocks App and try to control one or more of their robot's sensors.

Activity

This Space Skirmish Marching Song is divided into three parts: chorus A, chorus B, and verse. The chorus is the part of the song that will repeat - it’s the catchiest part! We’ve separated the chorus into part A and B, because only half of the chorus repeats at the end of the song. Let's get started!

Hand out the Space Skirmish Marching Song print-out sheets to each student (or pair).

Use the solution sheet to complete the following steps:

- Create a new project
- Set up Chorus A
- Play Chorus A
- Add sounds to Chorus A
- Add Chorus B
- Add the Verse
- All together!

Assessment

Learning Outcomes

I can program songs in the LRF Blocks App

I can set sensor events to control my robot

I can make functions to organize my code

I can create arrays to hold more information

I can use loops to repeat parts of my script

Success Criteria

I added the correct number of arrays for the chorus and verse

All of my song's sound values match the LRF Music Cheat Sheet

My robot sings the complete song when I tap its head sensor

Extensions

Try to play the song together as a class! Divide the room into three parts (chorus A, B, and verse) and 'conduct' the song by pointing at the group when it is their turn to go.

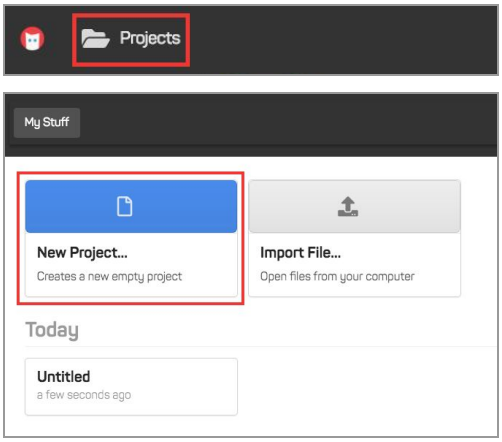
Can students map the chorus and verse to different sensor events?

Can students program their own space-themed song?

Space Skirmish Marching Song

STEP 1: Create a new project

1. Open the LRF Blocks App
2. Plug in your Little Robot Friend
3. Select “Projects” (top)
4. Select “New Project” to get started
5. Clear all the blocks from your editor



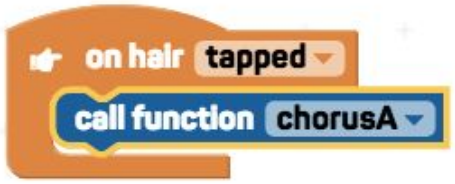
STEP 2: Set up Chorus A

We are going to use the same set of instructions over and over. In programming, we can organize our code and save time by grouping these sets of instructions to make a Function.

1. Create a new function called “chorusA”
2. Make the robot say some sounds
3. Tell the robot which sounds to play - use an array to keep the sounds organized
4. Add a sound (we’ll add the rest later)

STEP 3: Play Chorus A

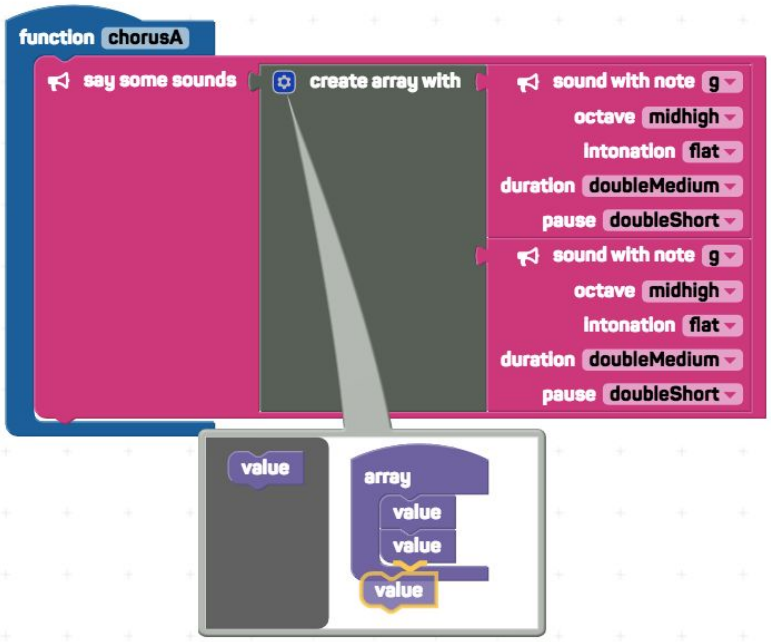
1. **Ask: How does our robot know *when* to start?**
   Add an event - e.g. “on hair tapped”
2. Tell the robot to play chorus A by calling the function (we are saying: “play this thing that exists over here” - The robot knows what to play because we already defined chorusA by adding instructions)
3. Tap your robot’s head sensor to test the script



4. **Reminder: SAVE YOUR PROJECT!** Name it and click on the save icon at the bottom

STEP 4: Add sounds to Chorus A

1. Add room for more items inside of our array (drag over enough space for each note in chorus A)
2. Add another sound block for each note - drag it over into the array
3. Use the handout to add each of the correct sounds (update the note, octave, etc. with the dropdowns)
4. Tap your robot's head sensor to test the script



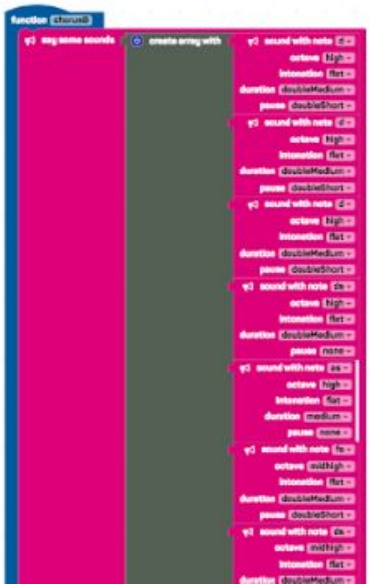
Space Skirmish Marching Song CHORUS A					
Value	**Note**	**Octave**	**Inton.**	**Duration**	**Pause**
Sound 1	g	midhigh	flat	doubleMedium	doubleShort
Sound 2	g	midhigh	flat	doubleMedium	doubleShort
Sound 3	g	midhigh	flat	doubleMedium	doubleShort
Sound 4	ds	midhigh	flat	doubleMedium	none
Sound 5	as	midhigh	flat	medium	none
Sound 6	g	midhigh	flat	doubleMedium	doubleShort
Sound 7	ds	midhigh	flat	doubleMedium	none
Sound 8	as	midhigh	flat	medium	none
Sound 9	g	midhigh	flat	doubleMedium	doubleMedium

5. **Reminder: SAVE YOUR PROJECT!**

STEP 5: Add Chorus B

We'll need to follow the same steps as Chorus A to add Chorus B

1. Create a new function called "chorusB"
2. SHORTCUT: Right click on chorusA > Duplicate
3. Update the name of the duplicate function
4. Update the play sound blocks using the handout for Chorus B
5. Call the chorusB function - add it to your "on hair tapped" event

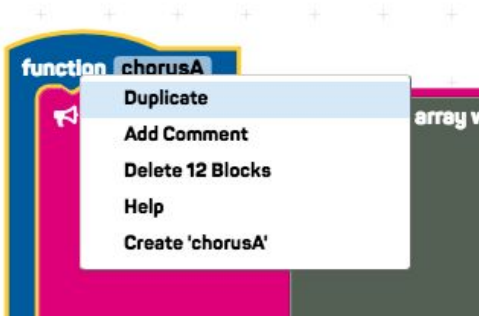


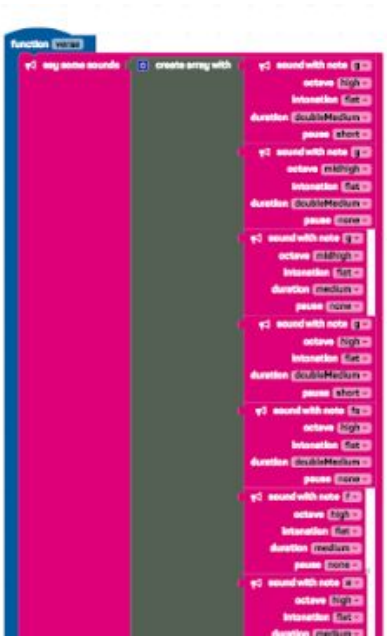
6. **Reminder: SAVE YOUR PROJECT!**

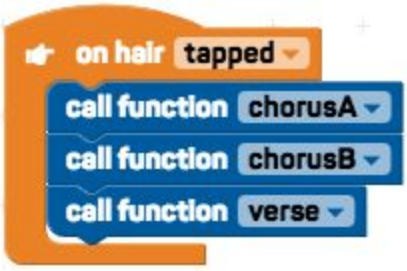
STEP 6: Add the Verse

Same steps as above:

1. Create a new function called "verse"
2. SHORTCUT: Right click on chorusA (or chorusB) > Duplicate
3. Update the name of the duplicate function
4. Update the play sound blocks using the handout for the Verse
5. Call the verse function - add it to your "on hair tapped" event





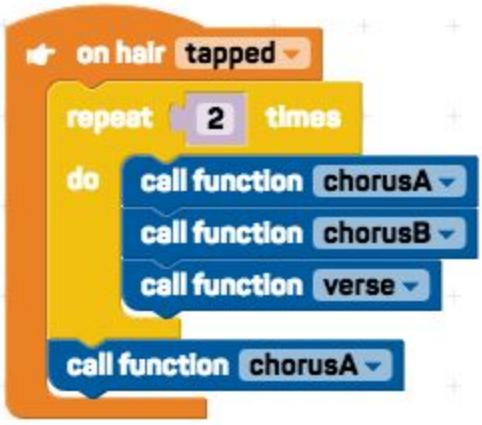


7. **Reminder: SAVE YOUR PROJECT!**

STEP 7: All together!

It's time to organize the song structure. In the song, the chorus (part A & B) and the verse repeat twice before the song ends on chorusA.

1. **Ask: What can we use to make the song repeat more than once?**
   Add a loop! Repeat the main part of the song 2 times.
2. Play Chorus A, Chorus B, and the Verse 2x, then play Chorus A 1x at the end.
3. Tap on your robot's head sensor to play your song!



4. **Reminder: SAVE YOUR PROJECT!**

Space Skirmish Marching Song CHORUS A					
Value	**Note**	**Octave**	**Inton.**	**Duration**	**Pause**
Sound 1	g	midhigh	flat	doubleMedium	doubleShort
Sound 2	g	midhigh	flat	doubleMedium	doubleShort
Sound 3	g	midhigh	flat	doubleMedium	doubleShort
Sound 4	ds	midhigh	flat	doubleMedium	none
Sound 5	as	midhigh	flat	medium	none
Sound 6	g	midhigh	flat	doubleMedium	doubleShort
Sound 7	ds	midhigh	flat	doubleMedium	none
Sound 8	as	midhigh	flat	medium	none
Sound 9	g	midhigh	flat	doubleMedium	doubleMedium

Space Skirmish Marching Song CHORUS B					
Value	**Note**	**Octave**	**Inton.**	**Duration**	**Pause**
Sound 1	d	high	flat	doubleMedium	doubleShort
Sound 2	d	high	flat	doubleMedium	doubleShort
Sound 3	d	high	flat	doubleMedium	doubleShort
Sound 4	ds	high	flat	doubleMedium	none
Sound 5	as	high	flat	medium	none
Sound 6	fs	midhigh	flat	doubleMedium	doubleShort
Sound 7	ds	midhigh	flat	doubleMedium	none
Sound 8	as	high	flat	medium	none
Sound 9	g	midhigh	flat	doubleMedium	doubleMedium

Space Skirmish Marching Song VERSE					
Value	**Note**	**Octave**	**Inton.**	**Duration**	**Pause**
Sound 1	g	high	flat	doubleMedium	short
Sound 2	g	midhigh	flat	doubleMedium	none
Sound 3	g	midhigh	flat	medium	none
Sound 4	g	high	flat	doubleMedium	short
Sound 5	fs	high	flat	doubleMedium	none
Sound 6	f	high	flat	medium	none
Sound 7	e	high	flat	medium	none
Sound 8	ds	high	flat	medium	none
Sound 9	e	high	flat	medium	medium
Sound 10	g	midhigh	flat	medium	short
Sound 11	cs	high	flat	doubleMedium	short
Sound 12	c	high	flat	doubleMedium	none
Sound 13	b	high	flat	medium	none
Sound 14	as	high	flat	medium	none
Sound 15	a	high	flat	medium	none
Sound 16	as	high	flat	medium	medium
Sound 17	ds	midhigh	flat	medium	short
Sound 18	fs	midhigh	flat	doubleMedium	short
Sound 19	ds	midhigh	flat	doubleMedium	none
Sound 20	fs	midhigh	flat	medium	none
Sound 21	as	high	flat	doubleMedium	short
Sound 22	g	midhigh	flat	doubleMedium	none
Sound 23	as	high	flat	medium	none
Sound 24	d	high	flat	long	short