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| **Topic/Duration** | **Creating Form in Music with fitMedia() and Custom Functions / 1 Class period / 50-55 minutes** |
| **Priority Standards** | **Georgia Music Technology**:   1. [**MSMTC6.CR.2**](https://case.georgiastandards.org/f3b94c72-9c0d-11e8-b85c-3b1a3079ae6e/437e30dc-fc39-11ea-becb-0242ac150004/2042)**-** Select and develop musical ideas for defined purposes and contexts. a. Select melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources. 2. [**MSMTC6.PR.2**](https://case.georgiastandards.org/f3b94c72-9c0d-11e8-b85c-3b1a3079ae6e/62c7d47c-fc0f-11ea-841e-0242ac150004/2016) - Analyze the structure and context of varied musical works (e.g. arrangement, composition, improvisation, mixed-media project, orchestration, sound design) and their effects on the presentation. a. Recognize how context, structural aspects of the music, and digital media/tools inform prepared and improvised performances.   **Foundations of Computer Programming Standards**   1. [**MS-CS-FCP-3.2**](https://case.georgiastandards.org/00fcf0e2-b9c3-11e7-a4ad-47f36833e889/731f5cab-5d1e-46f4-bba0-c26268b93022/565) Develop a working vocabulary of computational thinking including ... algorithms, … abstraction, parallelization. 2. [**MS-CS-FCP-4.5**](https://case.georgiastandards.org/00fcf0e2-b9c3-11e7-a4ad-47f36833e889/a85ce778-24f2-4a67-b169-d2e6862e72c2/573) Implement a simple algorithm in a computer program. |
| **Supporting Standards** | **Foundations of Computer Programming Standards**   1. [**MS-CS-FCP-3**](https://case.georgiastandards.org/00fcf0e2-b9c3-11e7-a4ad-47f36833e889/35695273-4888-4f59-89a5-45ef323b432f/563)Utilize computational thinking to solve problems. 2. [**MS-CS-FCP-6**](https://case.georgiastandards.org/00fcf0e2-b9c3-11e7-a4ad-47f36833e889/baad1ebb-16df-40e5-b8f8-4b62e6310b74/585)Create digital artifacts to address a current issue requiring resolution. |
| **Student Facing Goals** | Students will be able to...   * use the fitMedia() function to create musical form. * organize a song into sections using fitMedia(). |
| **Essential Question & Enduring Understanding** | **What tools can we use in EarSketch to structure the form of a piece of music?**  *fitMedia() functions and Custom Functions can both be used to structure the form of a piece of music. There are benefits to using custom functions over fitMedia() by itself; in addition to reducing the amount of code that you use, fitMedia() allows for more flexibility when changing code/music to make the best possible song.* |
| **Evidence of Learning** | **Formative**: Map out the form of a song with fitMedia() functions. |
| **Materials** | EarSketch  Template EarSketch scripts |
| **Vocabulary** | * **Custom Function:** allows you to write your own functions and avoid repetitive code. * **Parameter:** arguments for a function. * **Form:** The structure of a piece of music. |

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| **Resources** | |
| Link 1: Ableton site song form interactive examples: <https://learningmusic.ableton.com/song-structure/song-structure.html>  Link 2: Example song form: <https://www.youtube.com/watch?v=5NPBIwQyPWE>  **EarSketch script links:**  Link 3: Elaborate Template:  <https://earsketch.gatech.edu/earsketch2/?sharing=yjk-uLdnDvkajarT0JbsBA>  **Evaluation script links:**  Link 4: Custom Function Example Script:  <https://earsketch.gatech.edu/earsketch2/?sharing=fZFa0BAl6QO2ME0HF5C7tA>  Link 5: FitMedia form script:  <https://earsketch.gatech.edu/earsketch2/?sharing=7z-2xO17sG_4sXpM1fAYXw> | EarSketch Curriculum Panel (Links):  Link 6: Custom Functions:  <https://earsketch.gatech.edu/earsketch2/?curriculum=/en/v1/musical-form-and-custom-functions:customfunctions&language=python> |

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| **Teacher Preparation** |
| 1. Review sample code and add in extra comments if needed to help explain the concepts to students. 2. Provide the link for the EarSketch demonstration to the students through Google Classroom/email. The solution script can be found in the notes of the PowerPoint as well. |

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| **Engage / Explore: A Return to Form Time: *10 Minutes*** | |
| **Section Goal:** Students will explore different arrangements of sections of music through songs on the Ableton Learning Music website. | |
| **Student Activities**   * Discuss with your teacher and peers' common song sections (intro, verse, chorus, outro, etc.) * **Listen to one of the four songs on the Ableton site:**    + Bury It - CHURVCHES   + Award Tour - A Tribe Called Quest   + Ni - Ten - Ichi - Ryu - Photek   + I Feel Love - Donna Summer * Think about the form of the song. What differentiates one section from another? How long is each section? Discuss with your partner and class. * Add notes about song form into your notebook and include the definition. | **Teacher Activities**   * Have students review the first section of the Ableton: Learning Music website (Link 1). Discuss common song sections. (Slide 4*)* * Instruct students to choose one of the four songs on the Ableton website to analyze its form. (You can allow students to choose or just assign groups). Conduct a Think-Pair Share. Students should think about the form of the song and discuss with a partner - how song sections differ from one another and how they are organized in a song. Follow up with a class discussion. You may want to play the songs again in the class discussion. Ask students to pay close attention to timing, repetition and variation. Instruct students to record the definition of the word **form** in their notebooks and include some notes they learned from this activity (Slide 5). |
| **Coding Connections: N/A** | |

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| **Explain: Creating form with the fitMedia() function Time: *10 minutes*** | |
| **Section Goal:** Students will demonstrate their understanding of musical form by mapping common song sections to simplified letter substitutes and using fitMedia() to create a song form. | |
| **Student Activities**   * Map common sections of a song to letter substitutes. * View and listen to a simple song: replace verse with Section A and Chorus with Section B, etc., to see how song form is expressed * Learn about the use of fitMedia() in order to create form in EarSketch. | **Teacher Activities**   * Continue to discuss song organization. Ask students to brainstorm how song sections are labeled in Ableton Site vs. other music engagements (in Soundtrap, Music Composition, etc.). * Play the song Complicated by Avril Lavigne (Link 2). Ask students to listen carefully and tell you when song sections change (same rhythm, different melody). Write down the time stamps and name the song sections (verse, chorus, etc., Slide 6). * Explain that in the recording industry, song sections are referred to as intro, verse, chorus, etc. - but when learning musical form - we describe these sections as Section A, Section B, etc. * Demo this with Complicated and change the labels from verse-chorus to A-B-A-B (Slide 7). * Share some examples of songs and have students label sections of these songs. This can be done as a group activity or individually. * Some examples could include: La Bamba, Prayer of the Refugee (contrasting sections), and We are the World. (These are easily recognized ABA songs with contrast). * Instruct students to use fitMedia() and comments to create sections in their EarSketch songs (Slide7). |
| **Coding Connections: N/A** | |

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| **Elaborate: Creating form with fitMedia() Time: *20-25 minutes*** | |
| **Section Goal:** Students will develop their understanding of form by rewriting a script for an ABA song with the use of the fitMedia() function. | |
| **Student Activities**   * Import provided EarSketch template script into your code editor. Rename the script. * Choose drum, bass, and melody samples from the EarSketch Sound Browser. * Replace “sound file name” with chosen sound samples and uncomment the variable name (remove the #). * Review the script to see how it is organized in three sections. Think about how the fitMedia() function allows you to organize the structure of your music in the code editor. * Fill in the arguments for the fitMedia() functions. Replace the sound with instrument variables, track number, and starting and ending measures. (The recommended starting and ending measures are listed in the sample code. You can stagger the starting measure if you prefer). * Complete all the fitMedia() functions for SectionA, SectionB, and the repeated SectionA. Make sure the two SectionA’s are identical. * Run your script and play your song. Can you hear the different sections in your song? | **Teacher Activities**   * Demonstrate what students are going to do in EarSketch with the fitMedia() functions to create an ABA song form. * Give students an EarSketch script template to import into their code editor (Link 3). * Instruct students to replace “sound file name” with a bass, melody, and drum sound sample they want to use from the EarSketch sound browser. * Guide students to uncomment the instrument variable names once sound samples have been added (Slide 9). * Review the script. Ask students to explain the template. Ask students guiding questions – How many sections are in the song? What is the form of the song? Which section is repeated in the song? How can we use the fitMedia() function to create structure in our songs? (You can explain how fitMedia() allows you to organize the structure of the song through tracks and measures). * Tell students to fill in the arguments for the fitMedia() function. Replace the sound with instrument variables, track number, and starting and ending measures. You may want to complete Section As a class and then have the students complete Section B, and Section A again. Remind students that the two Section As should be identical. * Students can stagger the starting measure but should keep ending measures the same. * Students should play their songs once they have completed their code. Ask students if they can hear the different song sections – Does it sound like ABA format? |
| **Coding Connections: N/A** | |

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| **Evaluate: Using fitMedia() versus custom functions Time: *10 minutes*** | |
| **Section Goal**. Students will discuss the multiple ways to organize their songs into sections in EarSketch. | |
| **Student Activities**   * Think about how you can continue to write a song (1-2 minutes) using fitMedia(). Discuss with your class. * Look at the new code your teacher is reviewing. * Compare and contrast the benefits of using custom functions in this new code vs. fitMedia() functions to create form in a piece of music. | **Teacher Activities**   * Ask students how they would continue to use fitMedia() to build their song to one minute or two minutes. * Prompt the students to recognize that they would have to copy and paste a lot of code. * Ask if they have an idea of how they can simplify the process. * Show code with custom functions. Ask students to compare and contrast this code to their current code template in the above section (Links 4-5, Slide 11*).* |
| **Coding Connections: N/A** | |