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| <b>Mission 14 Assignment</b>  | <b>Name:</b>   |
| <b>Pre-Mission Preparation</b>  |  |
| This mission will use CodeBot's speaker to play music. What do you remember about CodeBot's sound code?   | <p>Answers will vary. Possible answers:</p> <ul style="list-style-type: none"> <li>• <code>spkr.pitch()</code></li> <li>• <code>spkr.off()</code></li> <li>• If <code>sound_on</code>:<br/><code>spkr.pitch(440)</code></li> </ul> |
| <b>Mission 14 Checks</b>  |  |
| Objective #1<br>In previous missions, CodeBot played only 1 or 2 notes. In this mission, what data structure do you use to keep track of several notes? | Dictionary of note letters and their frequencies   |
| Objective #2<br>What variables do you need to add?  | <code>tempo = 150</code><br><code>beat_duration = 60 / tempo</code>  |
| What is the code for the beginning of the loop to play each note in the song?   | <code>for note in notes:</code><br><code>  f = freqs[note]</code>  |
| Objective #3<br>How do you convert a string to a list?  | <code>notes = text.split()</code>  |
| Objective #4<br>Paste the text of "old_man_song.txt":   | <code>G E G G E G A G F E D E F</code>   |
| Objective #5<br>What is the default mode of <code>open()</code>   | <code>read-only</code>   |
| What code is needed when you are done with a file?  | <code>f.close()</code>   |
| What function is used to get data from the file?  | <code>f.read()</code>  |
| Objective #6<br>What is the code you added to the program for creating a new file and putting data in it?   | <ol style="list-style-type: none"> <li><code>f = open('my_song.txt', 'w')</code></li> <li><code>f.write('C D E C C D E C D F G E F G')</code></li> <li><code>f.close()</code></li> </ol>   |
| Objective #7<br>What is a list of lists called?   | Matrix, or multidimensional list   |
| How did you change the for loop to use a target list for your song?   | <code>for note, beats in song:</code><br>(could also add the change: <code>beats * beat_duration</code> )  |
| Objective #8<br>What changes did you make to the for loop when the beats are strings?   | <p>Defined a function to play the song, with the song as parameter</p> <p>Convert the string beats to an integer: <code>int(str_beats)</code></p> <p>Called function</p>   |

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| <p>Objective #9<br/>What code returns a list of strings from a file?</p>  | <p><code>f.readlines()</code></p>  |
| <p>What two lines of code are needed to change a list of strings into a list of lists?</p>                                      | <pre>note_beat = line.split(',') song.append(note_beat)</pre>  |
| <p>Objective #10<br/>What changes did you make to your program to make it a jukebox that plays a song after a button press?</p> | <p>Answers will vary. Possible answers:</p> <ul style="list-style-type: none"> <li>• Added a <code>song_files</code> list</li> <li>• Added a function to decode the song (parameter)</li> <li>• Built a <code>song_list</code> list by appending decoded songs</li> <li>• Added a <code>while True:</code> loop with a <code>if</code> statement for a button press</li> <li>• Added code to play the current song, and increment the index for the next song</li> </ul> |
| <p><b>Post-Mission Reflection</b></p>   |  |
| <p>This mission introduced a lot of new concepts and code. What do you find most useful?</p>                                    | <p>Answers will vary</p>   |
| <p>What new concepts or code do you find confusing, or need more practice with?</p>   | <p>Answers will vary</p>   |