CSCE A101, Python
Assignment 2
Upload your file to Blackboard
10 points

Complete the following programming problem. Be sure to use good style and documentation (worth about 10% of the point total; see the ***DocumetationAndStyle.pdf*** file on Blackboard). When complete, please upload a single .py file to Blackboard.

Midi music

In this program, you get to make the computer play a song of your own composition! You may write your own song or play a 'cover' of a song of your choosing. Hopefully you will have some fun with this assignment.

To play Midi notes in Python, you must install a module. We will use the pygame module which can be installed by typing the following into your IDE (be sure to do this ASAP and test the example code to make sure it works for you):

```
pip install pygame
```

It can sometimes be more difficult to get pygame installed on Macs. See the comments in **MidiMusicTemplayte.py** file for some hints to try. If you run into problems, you may want to use the CoEng VDI which is a virtual Windows server available to all students (good to know about this anyway): https://www.uaa.alaska.edu/about/administrative-services/departments/information-technology-services/coeng-vdi.cshtml.

The Midi Player assigns a numerical value to play each note. The table below shows the notes and their numeric values for one octave starting at middle C:

Musical Note	**Numeric Value**
C (middle C)	60
C Sharp	61
D	62
D Sharp	63
E	64
F	65
F sharp	66
G	67
A flat	68
A	69
B flat	70
B	71

Download the sample program from Blackboard, **MidiPlayerTemplate.py**, which demonstrates how to play some notes.

For each note, you must specify the following:

- Note or tone to play. This is the numeric value corresponding to the note using the table above. The value can actually range between 0 and 127, so you can use values below 60 for lower octaves below Middle C, and larger values for higher octaves.
- Duration. The duration is how long to play the note in milliseconds. A duration of 1000 would play the note for one second, while a duration of 250 would play the note for a quarter of a second.
- Velocity or volume. In a metaphor to a piano, the velocity is how hard you hit the key and thus corresponds to the volume of the note. A velocity of 0 is silent while the highest velocity is 127.

Assignment: Write a program to play a beautiful song with at least 10 notes. To prevent duplicate code, place the code to play a note into a **function**. You might name the function something like `play_note`. This function should take a **tuple of length 3** that represents the note to play. Be sure to provide function-level documentation using a docstring (triple quote) as the first statement in your function.

To store your song, put *all* of your notes into a list (so this will be a **list of tuples**) and **loop** through the list of notes, passing each one as an argument to your function.

If you are not musically inclined, then you can use the beginning of Twinkle Twinkle Little Star, which starts with the notes: C, C, G, G, A, A, G (half note), F, F, E, E, D, D, C (half note). See the example code for how to change the instrument to play a different sound.

Bonus (up to 3 points): Modify the example of how to play chords by writing (& documenting) a new function with appropriate parameters. Use the function to play at least 10 chords of varying length.

Please keep your submissions fairly short, < 30 seconds.