

Matlab is recommended. However, it is also allowed if you prefer to use another language to program your project and plot the results (Python, C, Octave, Jupyter Notebook, Java, etc.).

Project Requirement

Each team is required to compose 5-10 seconds of music of your own choice based on the instructions given in Appendix A and accomplish the following tasks:

Required (25 points):

- 1. Plot the time and frequency domain components of the music you created;**
- 2. Explain the output of your graphs according to your design.**
- 3. Plot the spectrogram of the music you created.**

Extra credit (15 points):

- a. Add white Gaussian noise to your music and analyze and plot the output music in both time and frequency domains. Explain the signal to noise ratio of your output music.*
- b. Design a filter to remove noise*
- c. Analyze and plot the music in both time and frequency domain.*

Deadline: 12/1/2019, 11:59pm on Blackboard (Have one member of your team submit the final project report package on Blackboard)

Submission requirement:

- 1. A project report** is required to describe in detail: a) the procedure of your project, b) graph representation of time and frequency domains of your music, c) explanation and analysis of your project results, and d) team member contributions.
- 2. Project program(s)** is required to be included in the report as Appendix. **Comments** of the program are required to include team information, explanation of the objective of each module.
- 3. A readme.txt** is required to instruct a user (who may not have any background in Matlab or the program you chose to use) to run your program and demonstrations.
- 4. All programs, music files, and readme files** are to be submitted along with the project report. Please **compress all files to one zipped file** and upload it to Blackboard project assignment. Make sure you include all files so your results can be reproduced.
- 5. Clearly list each member's contribution** to the project in the project report.