This is a README file for the c++ implementation of the sectioned convolution algorithm
Author: 陳彥廷 b09901002
Date: 2024/06/19

=====
DIRECTORY:

input/   Input signal x[n] in .txt format, and some MATLAB code to convert an example sound file (.wav) to .txt for the c++ program to read
output/   The convolution result y[n] in .txt format, and some MATLAB code for the verification of the result
main.cpp   The c++ implementation of the sectioned convolution algorithm
README.txt   The file you are reading
======
HOW TO COMPILE:

g++ -o sectioned_convolution.exe ./main.cpp
======
HOW TO RUN:

./sectioned_convolution

The result will be a .txt file in /output

======
Implementation details:
1. This program implements the overlap-add sectioned convolution described in the lectures.
2. The FFT is implemented by the Cooley-Tukey algorithm for demonstration purpose, thereby requiring the section length L to be a integer power of 2.
3. The section length is chosen so that the number of points P in FFT is 8 * (the smallest power of 2 >= length(h)), which is a rough estimation of the optimal L.