The American University in Cairo		
Department of Computer Science and Engineering		
CSCE 3611 – Digital Signal Processing		
Prof. Dr. Hossam Abdelmunim	Project [20%]	Spring 2022
Released April 23rd, and due by end of May 10th, 2022		

Part (1):-

Write a computer program to implement the continuous time convolution. Your program must have the following:-

1- Select the input signal x(t).
2- Select the impulse response function h(t).
3- Visualize x(t), h(t) and y(t) where y(t) = x(t) * h(t).

Part (2):-

Write a computer program to implement the discrete time convolution. Your program must have the following:-

1- Select the input signal x[n].
2- Select the impulse response function h[n].
3- Visualize x[n], h[n] and y[n] where y[n] = x[n] * h[n].

Part (3):-

Write a computer program to implement the filter effect using the discrete time Fourier transform. Your program must have the following:-

1- Select the input signal x[n].
2- Select the filter type as well as its parameters.
3- Visualize x[n], h[n] and y[n] where y[n] = x[n] * h[n].

Important: You need to write a neat report for each part with the following contents:

- Problem definition and importance (1 Page).
- Methods and Algorithms (2-3 Pages).
- Experimental Results (samples of your trails) and discussions. Ten testing cases are required for each part.
- Appendix with codes.
- Students are allowed to work in groups of three students each. This is optional.

Warnings: (0) Using ready-made libraries for convolution, FT, or filtering is prohibited. (1) Plagiarism is prohibited. (2) Assignments with no reports and or no presentations will not be graded.