Assignment 2

Instructions

- Use Matlab/Python to solve the programming problems.
- For your solutions, you need to submit a zipped file on Google classroom with the following:
  - program files (.m) or (.ipynb/.py)with all dependencies.
  - a report (.pdf) with your coding outputs and generated plots. The report should be self-complete with all your assumptions and inferences clearly specified.
- Before submission, please name your zipped file as: "A2_RollNo_Name.zip".
- Codes/reports submitted without a zipped file or without following the naming convention will NOT be checked.

Programming Problems (10 points)

1. (5pts) Consider an LTI system with input $x[n] = u[n-3]$ and the impulse response $h[n] = (0.8)^n u[n-2]$. Determine and plot the signals $x[n]$, $h[n]$ and $y[n]$ for $n = [-10, 10]$.
2. (5 pts) Consider two sequences with

$$x[n] = \begin{cases} 1, & 0 \leq n \leq 4 \\ 0, & otherwise. \end{cases} \tag{1}$$

and

$$h[n] = \begin{cases} \alpha^n, & 0 \leq n \leq 6 \\ 0, & otherwise. \end{cases} \tag{2}$$

Plot $x[n]$ and $h[n]$.

Determine and plot the output $y[n]$ of these two signals for a positive value of $\alpha > 1$.