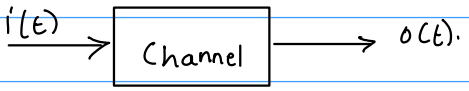
AV814 - Programming / Matlab assignment 1.

In this assignment you will explore channel modelling.
Since it is hard for us to work with actual channels, we will do the following.
We think of channels as functions which map input signals to output signals.



So for the purposes of this assignment, channels are just functions - matlab functions.

(1) Download and view the m-file identity_channel.m for an example.
The input to this function is a signal - but it is a discrete time signal (a sampled version of $i(t)$). The output is also a discrete time signal.
All channels given to you in this assignment take discrete time inputs and produce discrete time outputs.

(2) Can you write a matlab function modelling a channel that acts like an attenuator with a gain of $1/2$? Name this attenuator_channel.m.

(3) Download the file channel_1.p (this is a p-code file which defines a function channel_1). If you want to find the channel_1's response to an input signal, you just have to call channel_1(input) in matlab.
Answer the following questions and justify your answers.
a) Do you think channel_1 can be modelled as a linear system?
b) Do you think channel_1 can be modelled as a time invariant system?
c) Can you find the freq response of channel_1 if you model it as an LTI system?