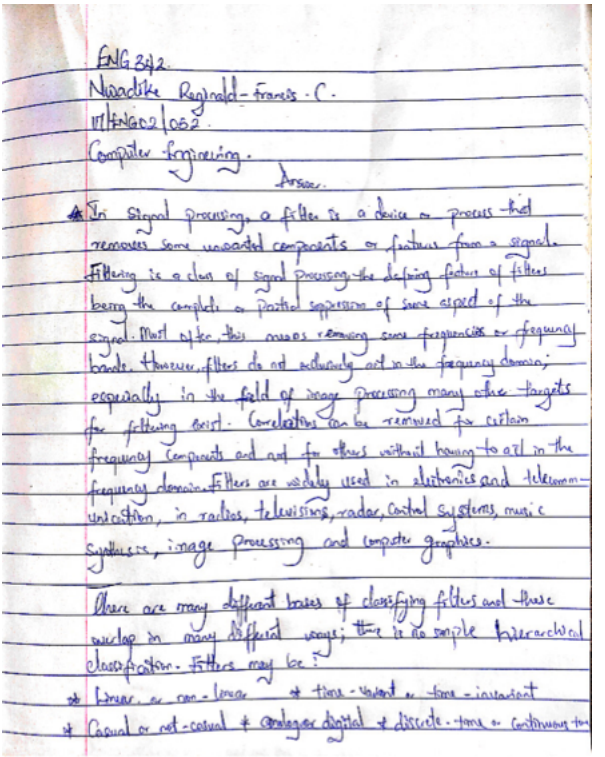
ENG 342 Classwork
Nwadike Reginald-Francis .C
17/ENG02/052
Computer Engineering.

A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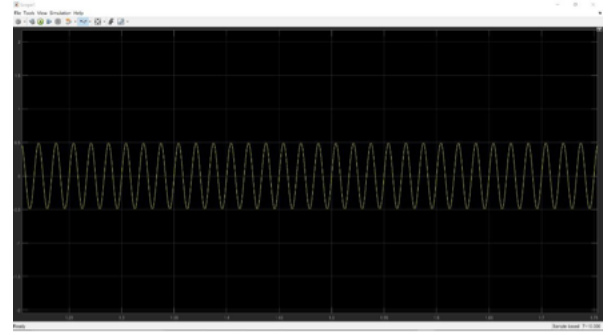
Answer.

In signal processing, a filter is a device or process that removes some unwanted components or features from a signal. Filtering is a class of signal processing the defining feature of filters being the complete or partial suppression of some aspect of the signal. Most often this means removing some frequencies or frequency bands. However, filters do not exclusively act in the frequency domain; especially in the field of image processing many other targets for filtering exist. Correlations can be removed for certain frequency components and not for others without having to act in the frequency domain. Filters are widely used in electronics and telecommunication, in radios, televisions, radar, control systems, music synthesis, image processing and computer graphics.

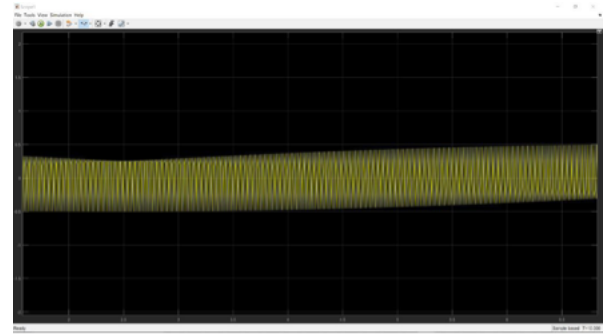
There are many different bases of classifying filters and these overlap in many different ways; there is no simple hierarchical classification. Filters may be:

* Linear, or non-linear * time-variant or time-invariant
* Causal or not-causal * analog or digital * discrete-time or continuous-time

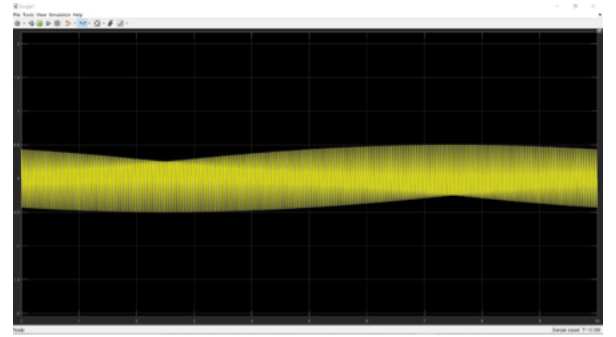
B. A low pass filter of 0.005ohms and 0.01F, with building blocks



C. The Cut-Off Frequency

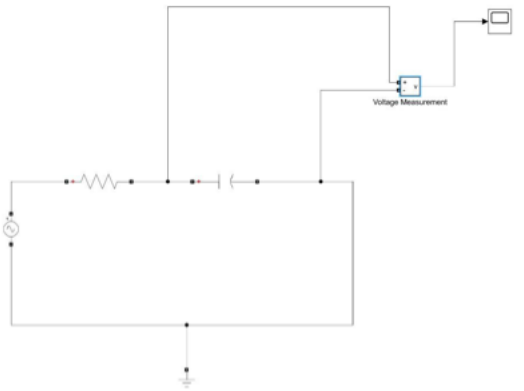


D. The Simulated Design



E. When the signal of 2K ohms is passed through the filter, the following will be obtained.
The transfer function

equation for the circuit is given below as
(1/RC)/(S + 1/RC)
When R= 2,000Ω and C= 0.01F
Transfer Fcn = (1/2000*0.01)/(S + (2000*0.01)) = (0.05)/(s+ 0.05)
therefore:



Observations: Attenuation is the reciprocal of gain, and for this particular signal, the signal is attenuated to 9.266 ohms .