DSP LAB

Assignment 1

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The Sampling rate for the signal is:- 100Hz

**Aliasing Effect**: - Aliasing is the result of previously absent frequencies being detected in the sampled signal after reconstruction. It results from either too high of frequencies present for a given sample rate or too low of a sample rate for sampling a certain signal. Utilizing a high enough sample rate or low-pass filtering of the signal prior to sampling can help us prevent it.

fmax​< fs/2 condition.

The DFT graph for sampling frequency – 100Hz

A picture containing graphical user interface

Description automatically generated

Figure Sampling frequency of 100Hz

A picture containing graphical user interface

Description automatically generated

Figure The DFT Graph for sampling frequency – 50 Hz

Graphical user interface

Description automatically generated

Figure The DFT Graph for sampling frequency – 2 Hz

It can be clearly observed that the amount of information in the DFT signal drastically decreases as the sampling frequency is decreased, and as a result, when the DFT signal is attempted to be reconverted back to the original signal, there will be overlap and permanent data loss and the signal cannot be constructed back to the original signal.