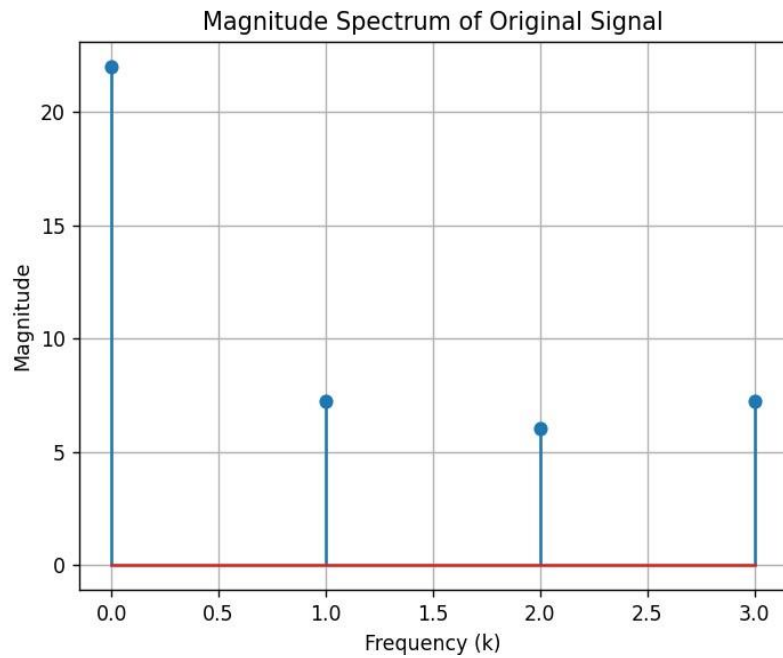


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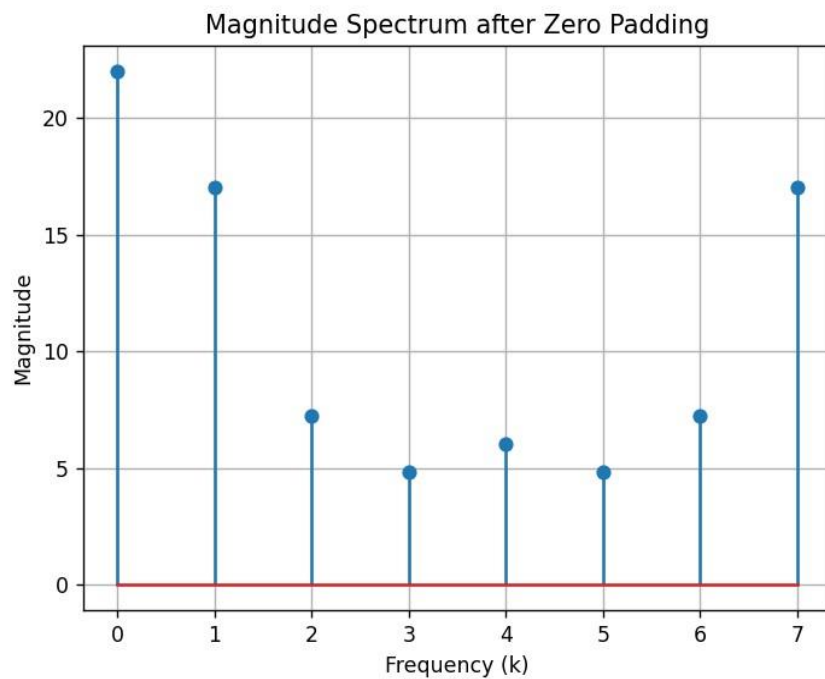
Experiment 3	
AIM:	The aim of this experiment is to study magnitude spectrum of the DT signal.
OBJECTIVE:	<ol style="list-style-type: none"> 1. Develop a function to perform DFT of N point signal 2. Calculate DFT of a DT signal and Plot Spectrum of Signal. 3. Calculate the effect of zero padding on magnitude spectrum
INPUT SEQUENCE	<ol style="list-style-type: none"> 1. Length of first Signal N 2. DT Signal values
PROBLEM DEFINITION:	<p>(1) Take any four-point sequence $x[n]$. Find DFT $X[k]$. Plot Magnitude Spectrum.</p> <p>(2) Append the input signal by four zeros. Find DFT and plot Magnitude Spectrum Give your conclusion.</p> <p>(3) Expand the input signal by inserting alternate zero. Find DFT and plot Magnitude Spectrum</p>
RESULT:	<p>Case-1: To find DFT of 4 point sequence Input: $x[n] = \{1, 5, 7, 9\}$</p> <p>Magnitude $X[k] = \{22, 7.33, 6.13, 7.44\}$</p>



Case 2: To find DFT of Zero padded signal

Input: $x[k]$: {1,5,7,9,0,0,0,0}

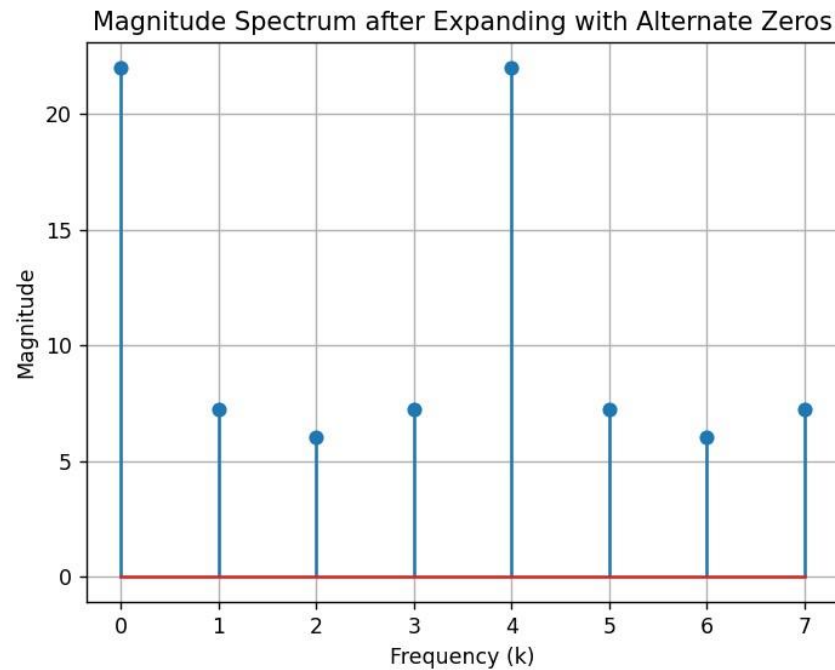
Magnitude $|X[k]|$: {22.1, 17.18, 7.33, 5, 6.13, 4.87, 7.18, 17.18}



Case 3: To find DFT of expanded signal

Input: $x[k]$: {1,0,5,0,7,0,9,0}

Magnitude $|X[k]|$: {22, 7.23, 6, 7.18, 22, 7.18, 6, 7.23}



CONCLUSION:

1. DFT converts sequence from Time Domain to Frequency Domain
2. DFT Converts N samples from time domain to N coefficients in frequency domain
3. Frequency domain coefficients are separated by $w = 2\pi/N$