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Experiment 5

AIM:	To perform filtering of Long Data Sequence using Overlap Add Method and Overlap Save Method.
OBJECTIVES:	To Develop a function to implement Fast Overlap Add Algorithm and Overlap Save Algorithm.
PROBLEM DEFINITION:	1. Take long input sequence x[n] and short length sequence h[n]. 2. Find y[n] = x[n] * h[n] using FFT based Overlap Add Algorithm and Overlap Save Algorithm.
INPUT SPECIFICATIONS:	1. Length of first signal L and signal values. 2. Length of impulse response of FIR filter signal M and signal values.

EXPERIMENTATION AND RESULT ANALYSIS:

RESULT:	**Long input sequence x[n]:** [1, 2, 3, 4, 5, 6, 1, 1, 1, 1, 1, 1, 0, 1, 2, 3, 4, 5]
	 Short length sequence h[n]: [1, 1, 1]
	
	 ```PS C:\Users\shah1\Desktop\Sem Folders\Sem VI Subjects\FOSIP> python -u "c:\Users\shah1\Desktop\Sem Folders\Sem VI Subjects\FOSIP\Experiment 5\Codes\exp5.py"```
	 ```Overlap Add Output: [3.0, 3.999999999999999, 6.0, 9.0, 12.0, 7.0, 7.0, 8.0, 3.0, 3.0, 10.0, 7.0, 2.000000000000001, 2.000000000000001, 3.000000000000001, 3.0, 7.0, 12.0, 9.0, 5.0]```
	 ```Overlap Save Output: [1.0, 3.0, 3.0, 7.0, 4.999999999999999, 11.0, 1.0, 2.0, 1.0, 2.0, 1.0, 2.0, -3.044779183806468e-17, 1.0, 1.9999999999999996, 5.0, 4.0, 9.0]```
	 ```PS C:\Users\shah1\Desktop\Sem Folders\Sem VI Subjects\FOSIP>```

CONCLUSION:	1. The Overlap-Add and Overlap-Save Method is an efficient practical way to evaluate the discrete convolution of long input signal x[n] and finite length signal h[n]. 2. The Overlap-Add and Overlap-Save Method can be implemented using FIR filters and cannot be implemented using IIR filters. 3. The Overlap-Add and Overlap-Save Method is a Block

	Processing Technique.