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| **Experiment 5a** | |
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| **AIM** | To perform filtering of Long Data Sequence using Overlap Add Method. |
| **OBJECTIVE:** | To Develop a function to implement Fast Overlap Add 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. |
| **PROBLEM DEFINITION:** | Take long input sequence x[n] and short length sequence h[n]  Find y[n] = x[n] \* h[n] using FFT based Overlap Add method |
| **RESULT:** | **Input:**  x[n] = { 1 , 2, 3, 4, 5, 6, 1, 1, 1, 1, 1 , 1, 0, 1, 2, 3, 4, 5 }  h[n] = { 1 , 1, 1 } Length M=3  Overlap Add Method For N=8, and M=3, Let L = 6  Then, x 1 [n] = { 1,2,3,4,5,6, 0, 0}  x 2 [n] ={ 1,1,1,1,1,1, 0 ,0 }  x 3 [n] ={ 0, ,1,2,3,4,5,0,0 }  **Output :**  y[n] = { 1, 3, 6, 9, 12, 15, 12, 8, 3, 3, 3, 2, 2, 3, 6, 9, 12, 9, 5 } |
| **Experiment 5b** | |
| **AIM** | To perform filtering of Long Data Sequence using Overlap Save Method |
| **OBJECTIVE:** | To Develop a function to implement Fast 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. |
| **PROBLEM DEFINITION:** | Take long input sequence x[n] and short length sequence h[n]  Find y[n] = x[n] \* h[n] using FFT based Overlap Save method |
| **RESULT:** | **Input:**  x[n] = { 1 , 2, 3, 4, 5, 6, 1, 1, 1, 1, 1 , 1, 0, 1, 2, 3, 4, 5 }  h[n] = { 1 , 1, 1 } Length M = 3  Overlap Save Method : For N = 8, and M = 3 Let L = 6  Then, x 1 [n] ={ 0, 0, 1, 2, 3, 4, 5, 6}  x 2 [n] ={ 5, 6, 1, 1, 1, 1, 1, 1 }  x 3 [n] ={ 1, 1, 0, 1, 2, 3, 4, 5 }  x 4 [n] ={ 4, 5, 0, 0, 0, 0, 0, 0 }  **Output :**  y[n] = { 1, 3, 6, 9, 12, 15, 12, 8, 3, 3, 3, 2, 2, 3, 6, 9, 12, 9, 5 } |
| **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 can not be implemented using IIR filters.  3. The Overlap-Add and Overlap-Save Method is a Block Processing Technique. | |