**Task 1**

| **Matlab:**    **Manual Convolution:** |
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**Task 2**

| **Given in the file.  Code:**  %Task 2  [A,freq] = audioread("speech.wav");  [B,freq2] = audioread("Large Long Echo Hall.wav");  B2 = B(:,1)  A2 = A(:,1)  Result = conv(B2,A2);  filename = "Beginning\_13.wav"  audiowrite(filename, Result, freq2); |
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**Task 3**

| **Matlab Code:**  **%Task 3**  **% Simulation of an M-point Moving Average Filter**  **% Generate the input signal**  **n = 0:100;**  **s1 = cos(2\*pi\*0.05\*n); % A low frequency sinusoid**  **s2 = cos(2\*pi\*0.47\*n); % A high frequency sinusoid**  **x = s1+s2;**  **% Implementation of the moving average filter**  **M = input('Desired length of the filter = ');**  **num = ones(1,M);**  **y = filter(num,1,x)/M;**  **% Display the input and output signals**  **clf;**  **subplot(2,2,1);**  **plot(n,s1);**  **axis([0, 100, -2, 2]);**  **xlabel('Time index n');**  **ylabel('Amplitude');**  **title('Signal # 1');**  **subplot(2,2,2);**  **plot(n,s2);**  **axis([0, 100, -2, 2]);**  **xlabel('Time index n'); ylabel('Amplitude');**  **title('Signal # 2');**  **subplot(2,2,3);**  **plot(n,x);**  **axis([0, 100, -2, 2]);**  **xlabel('Time index n'); ylabel('Amplitude');**  **title('Input Signal');**  **subplot(2,2,4);**  **plot(n,y);**  **axis([0, 100, -2, 2]);**  **xlabel('Time index n'); ylabel('Amplitude');**  **title('Output Signal');**  **axis;**  **Output: (Input was 3)**    **Is the above system a low pass filter or high pass filter? Explain your answer ?**  I believe this is a high pass filter, as it removes the signal#2 high frequency and brings it closer to the lower frequency and form of signal 1  **After Defining new value for num**  n1=0:M-1;  num=(-1).^n1.\*ones(1,M); |
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