# INPUT

```
[audio_data, Fs] = audioread("test_audio_file.wav");
% [noise_data, Fs2] = audioread("test_noise_file.wav");
```

## Parameters before Filtering

```
len_time = length(audio_data) / Fs
```

```
len_time = 4
```

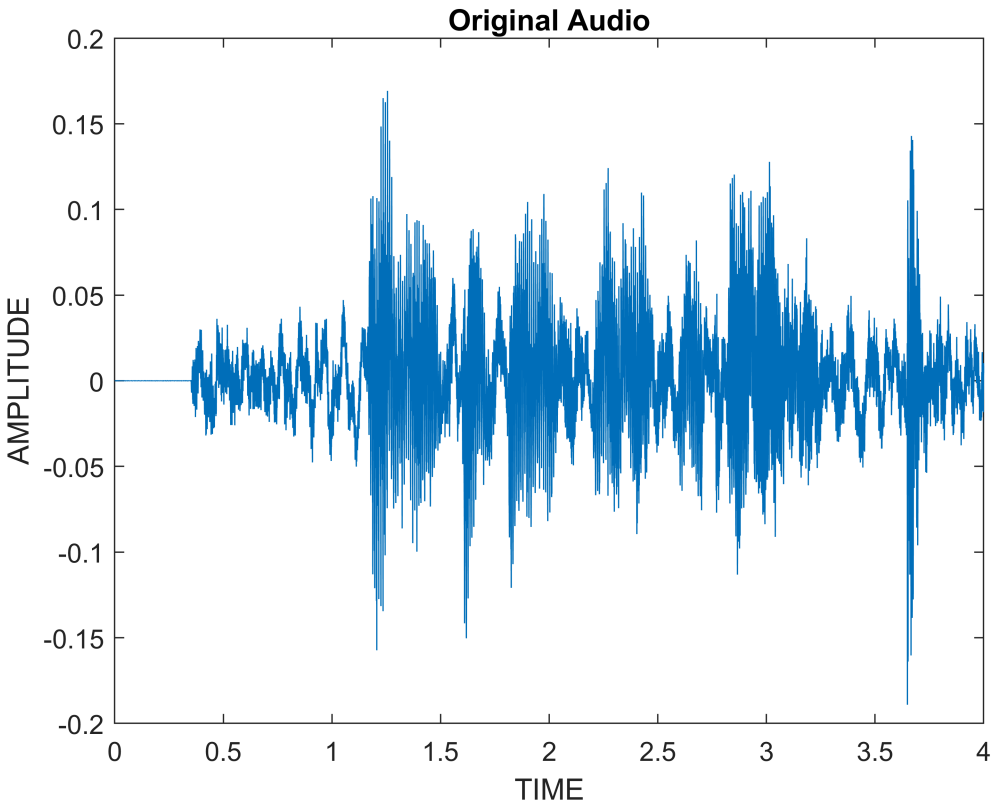
```
data_range = length(audio_data);
time =linspace(0,len_time,data_range);
```

## Audio player (Original)

```
sound(audio_data, Fs, 8);
```

## Plot for amplitude vs Time (Original)

```
figure(1);
plot(time,audio_data);
xlabel("TIME");
ylabel("AMPLITUDE");
title("Original Audio");
hold on
```



```
% plot(time,noise_data);
% hold off
```

## Power and Normarlized_Power

```
% Calculate the power for every 0.1s of the signal:
data_period = 0.1;

% Total No. of the period:
period_number = len_time / data_period;

% Step_number indicates the no. of value per period:
step_number = data_range / period_number;

% loop throught each period:
for i = 1:period_number
    % range_left denotes the beginning value in a period:
    range_left = (i-1)*step_number+1;

    % range_right denotes the ending value in a period:
    range_right = i*step_number;

    % Calculate total power per period(Normalized):
    power_to_test = pow(range_left,range_right,audio_data)/0.1

    % Assume power in silence = 10
    % if power_to_test <10, delete that data:
    if power_to_test <10
        for e = range_left:range_right
            audio_data(e) = 0;
        end
    end
end
```

```
power_to_test = 9.4064e-06
power_to_test = 9.5554e-06
power_to_test = 9.3598e-06
power_to_test = 2.7680
power_to_test = 9.2716
power_to_test = 4.1414
power_to_test = 3.9703
power_to_test = 6.9526
power_to_test = 9.5247
power_to_test = 18.1196
power_to_test = 13.1152
power_to_test = 46.6185
power_to_test = 106.0041
power_to_test = 51.1220
power_to_test = 52.8341
power_to_test = 15.9841
power_to_test = 95.8084
power_to_test = 19.9541
power_to_test = 83.8433
power_to_test = 56.2997
power_to_test = 21.3455
power_to_test = 10.0057
power_to_test = 55.4171
```

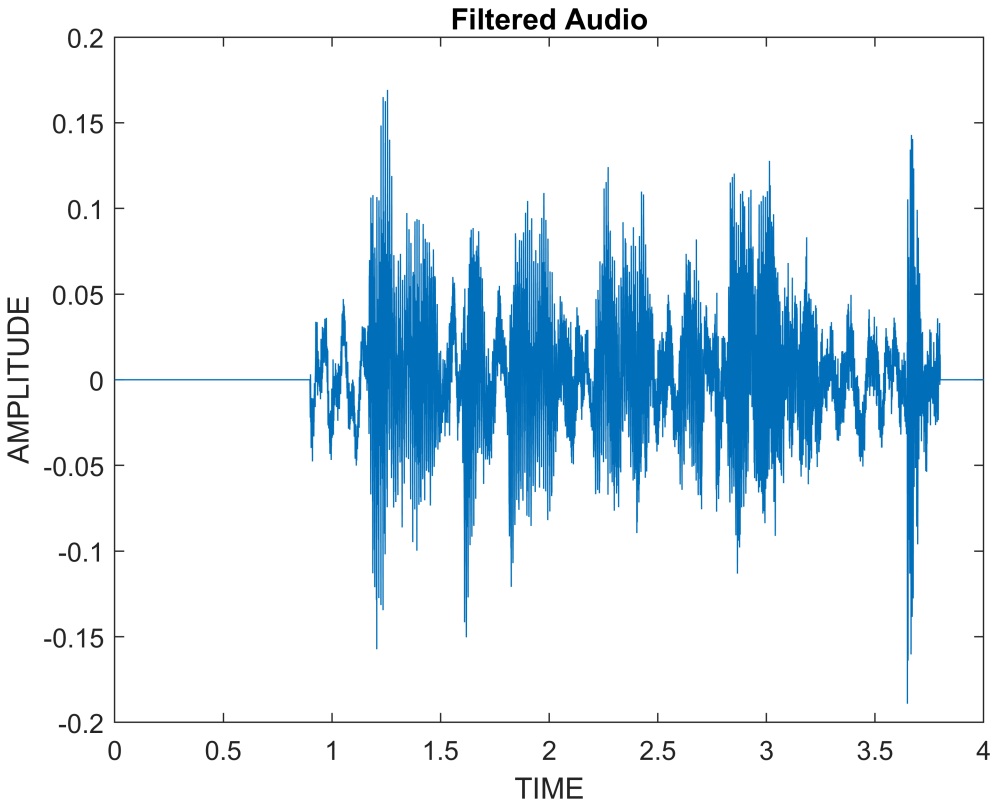
```
power_to_test = 46.2032
power_to_test = 44.0079
power_to_test = 12.5131
power_to_test = 43.3073
power_to_test = 17.9935
power_to_test = 89.3095
power_to_test = 85.4998
power_to_test = 61.6567
power_to_test = 24.0514
power_to_test = 10.7548
power_to_test = 11.6194
power_to_test = 18.5036
power_to_test = 11.3360
power_to_test = 108.6911
power_to_test = 13.8741
power_to_test = 9.9358
power_to_test = 7.8608
```

## Audio player (Filtered)

```
sound(audio_data, Fs, 8);
```

## Plot for amplitude vs time (Filtered)

```
figure(2)
plot(time,audio_data);
xlabel("TIME");
ylabel("AMPLITUDE");
title("Filtered Audio");
hold on
```




## Parameters after Filtering

```
length(audio_data)
```

```
ans = 177200
```

```
new_length = length(audio_data)/2;
audio_data_half = audio_data(1:new_length);
```

```
% The below function is used to calaculate the power
```

```
function [pow] = pow(timeLeft,timeRight,amp)
    pow=0;
    for i = timeLeft:timeRight
        pow = pow + amp(i)^2;
    end
end
```