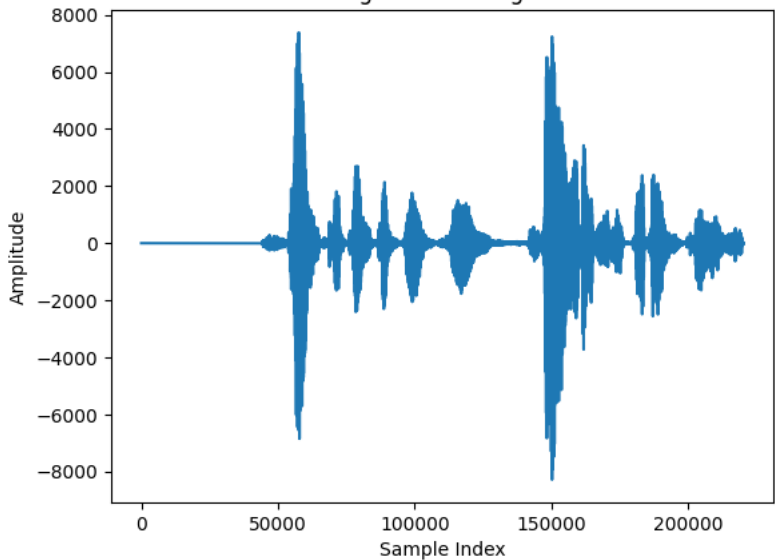


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<b>Experiment 5 (Application)</b>	

<b>PROBLEM DEFINITION:</b>	Filter the Audio Signal Captured in the presence of noise and improve the quality of sound.
<b>ALGORITHM:</b>	<ol style="list-style-type: none"> <li>1. Record Audio in the presence of noise with <math>F_s = 8000</math> Hz <math>\Rightarrow x[n]</math>.</li> <li>2. Play the recorded signal <math>x[n]</math> and observe the quality of sound.</li> <li>3. Design FIR Low Pass Filter using MATLAB filter design Tool. Take <math>F_{pass} = 2000</math>Hz, <math>F_{stop} = 3000</math>Hz, <math>F_s = 8000</math>Hz.</li> <li>4. Filter the audio signal <math>x[n]</math>, i.e. perform Linear Convolution of <math>x[n]</math> and <math>h[n]</math> using either OAM/OSM based on FFT <math>\Rightarrow y[n]</math>.</li> <li>5. Play the filtered signal <math>y[n]</math> and observe the quality of sound.</li> </ol>

### EXPERIMENTATION AND RESULT ANALYSIS:

<b>RESULT:</b>	<p style="text-align: center;">Original Audio Signal</p>  <p>The plot shows the original audio signal with amplitude on the y-axis (ranging from -8000 to 8000) and sample index on the x-axis (ranging from 0 to 200,000). The signal is noisy and has two prominent peaks around sample index 50,000 and 150,000.</p>
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