**Task 2/ Task 4**

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| **Introduction**    **Lab results & Analysis**：  We firstly tried to compare the spectrum of the synthesized sentence with the original signal, as shown in the figure. But we then find that the changes shown in the figure in different cut-off frequencies are too small. So we added 4 cut-off frequencies and use PSD figure to replace the spectrum figure.          From the figure above, we can see that with the LPF cut-off frequency becoming larger, the PSD of the synthesized signal is more similar to the original sound signal, which means that the intelligibility of synthesized sentence is better. Also, we notice that when N = 4, the largest band-width is 3443, which means that when the cut-off frequency is larger than 3443, the output signal may not change too much. So we set one of the cut-off frequency to 3500, and compare it with 6400 cut-off frequency, and we find that the change of PSD figure from 3500 to 6400 is small compared with the changes between other frequencies, which confirms our guessing.    **Lab results & Analysis**：  We use the same method in Task 2 to get the PSD figure.                  When a SSN is added, we can see in the figure that there are more peaks than the original sound signal in PSD figures. | |
| **Experience**  You can write your experience with this project. Any comment and suggestion on this course are also very welcome. | |
| **Score** |  |