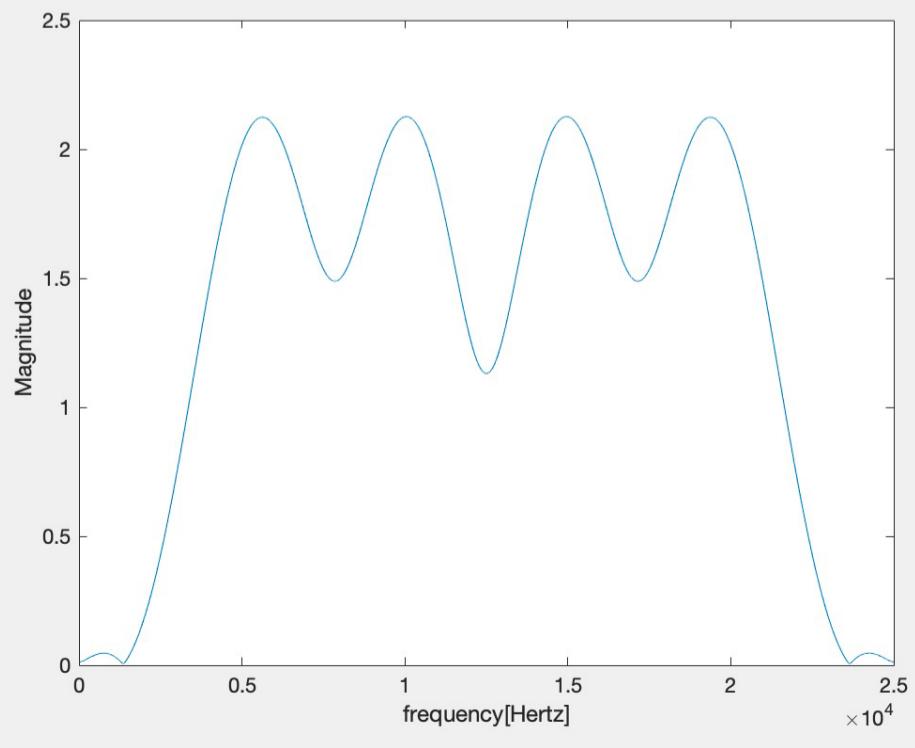
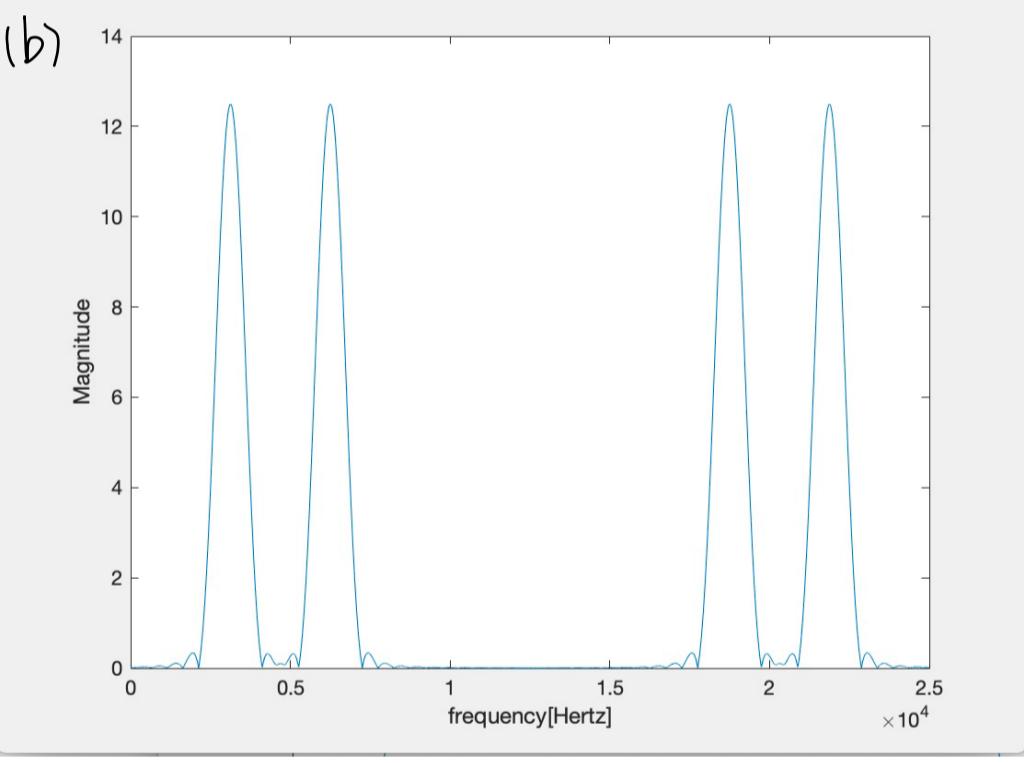
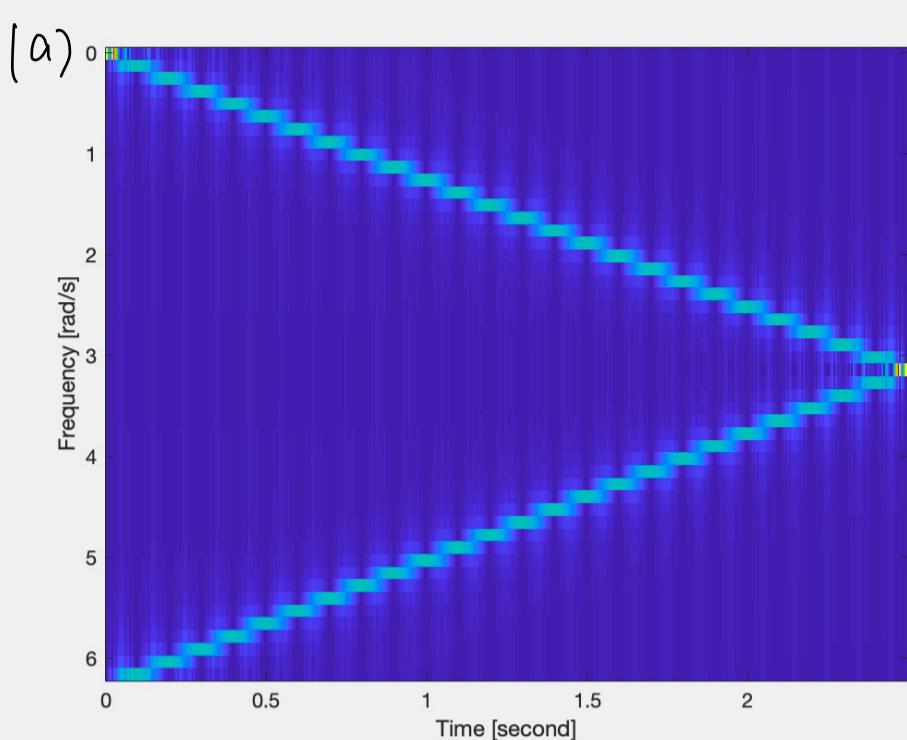


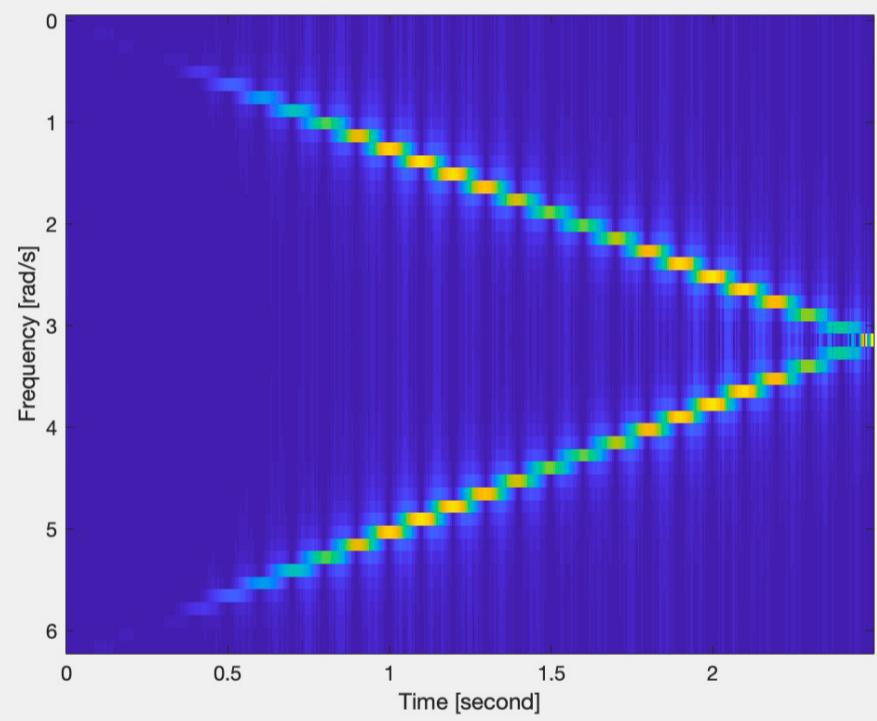
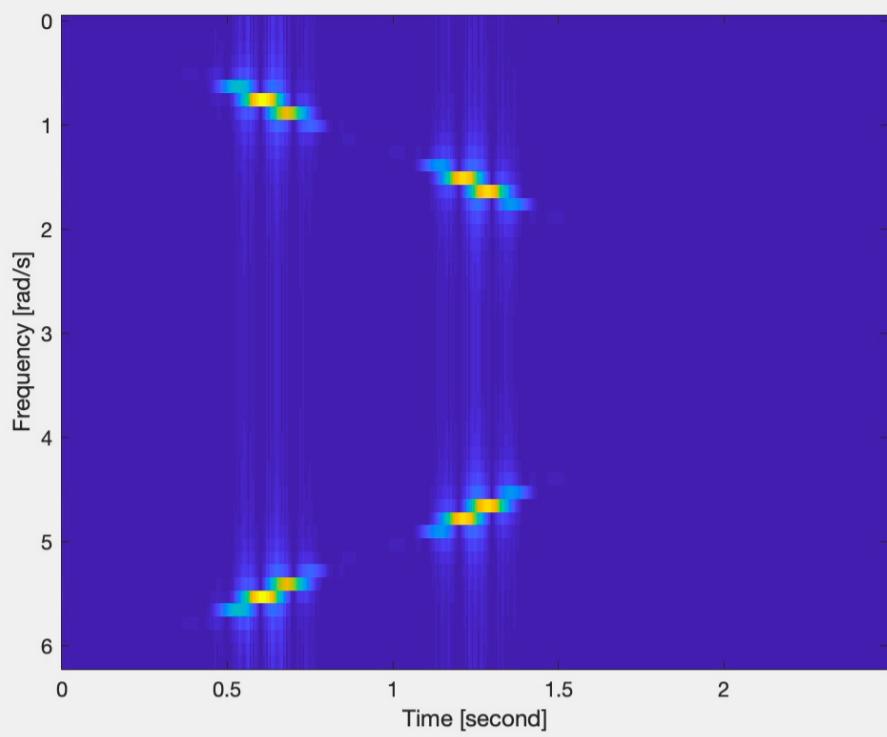
Name : Wenxuan Wang

Q1 : Six hours.

Q2

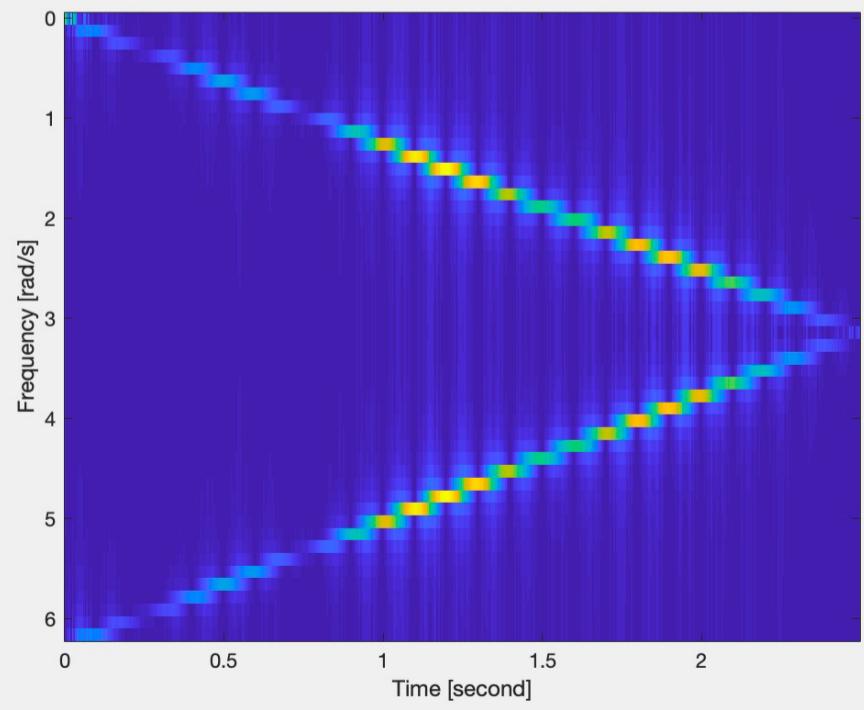
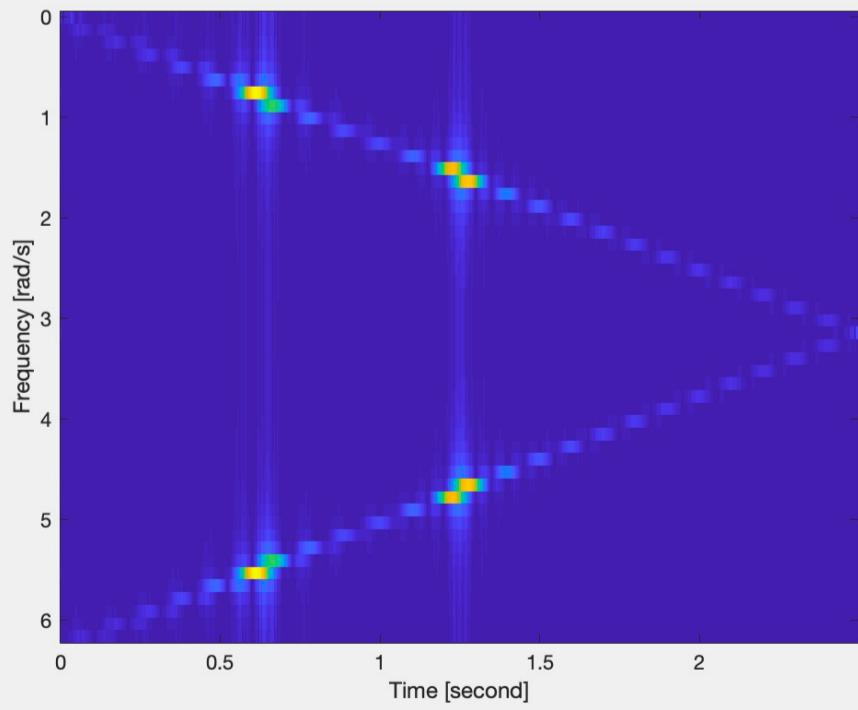
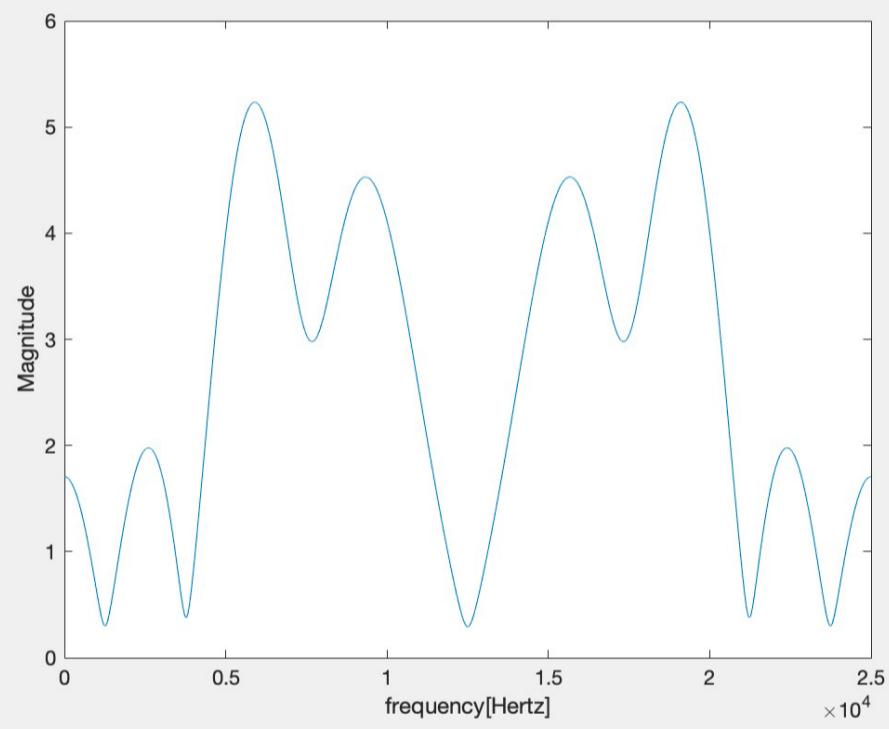
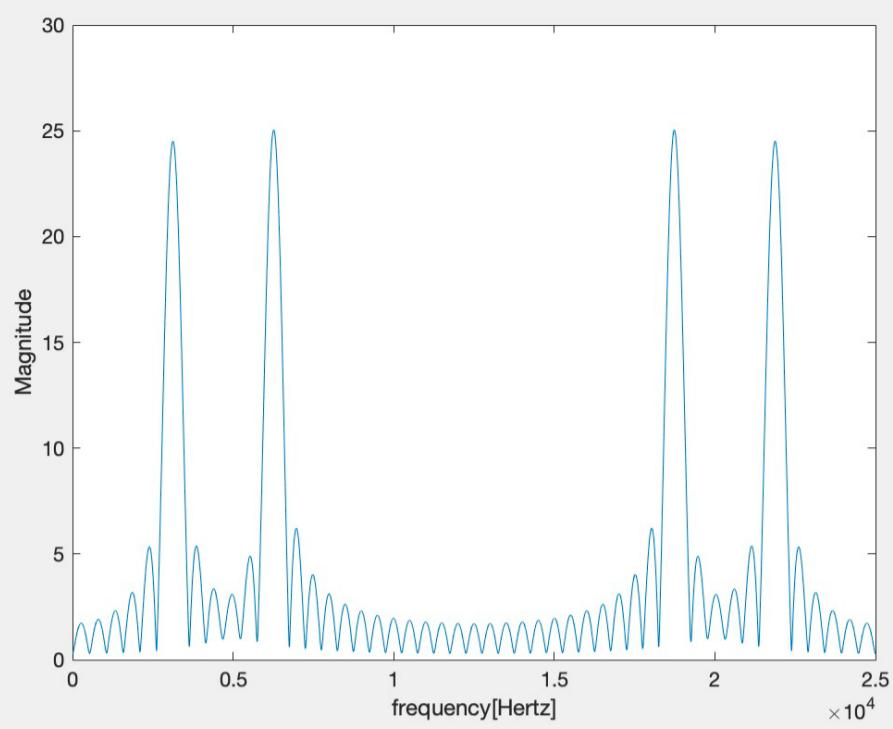


(c)



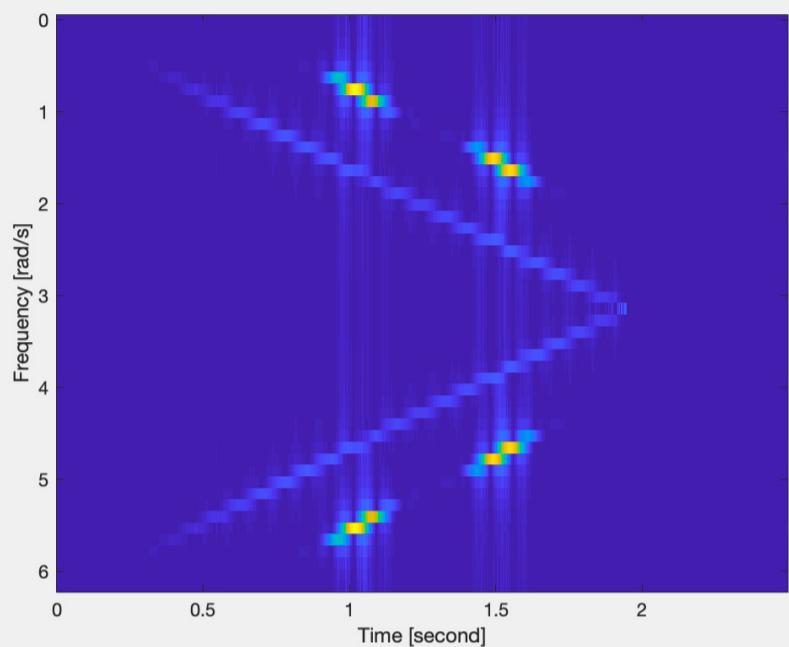
(d) While using `soundsc(z1)`, Z can hear that the processed sound seemed more be pressed. So the wider W_1 or W_2 can filter high frequency signal.

(e)



(f) I think that Hann window is better than rectangular window, because it can reduce leakage. However, Hann window makes the main lobe wider, and makes the frequency resolving ability worse.

(g)

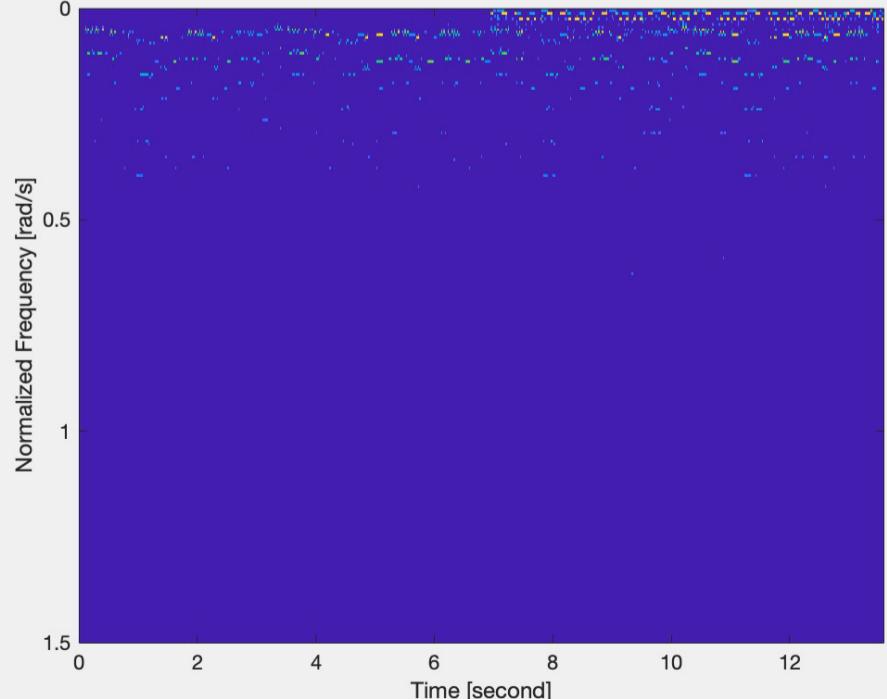
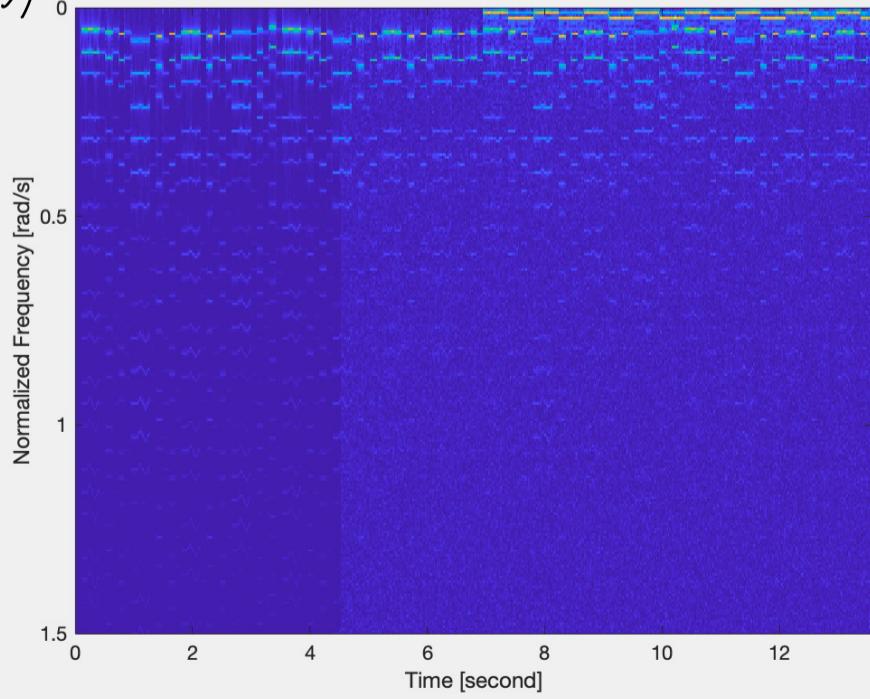


(h) It sounds like that two sounds are played together.
A Delay is between g_1 and g_2 .

Q3

(a)
 $y\text{STFT}(:,m) = x\text{STFT}(:,m); \quad \text{\% modified!}$
 $y\text{STFT}(y\text{STFT}<15) = 0;$

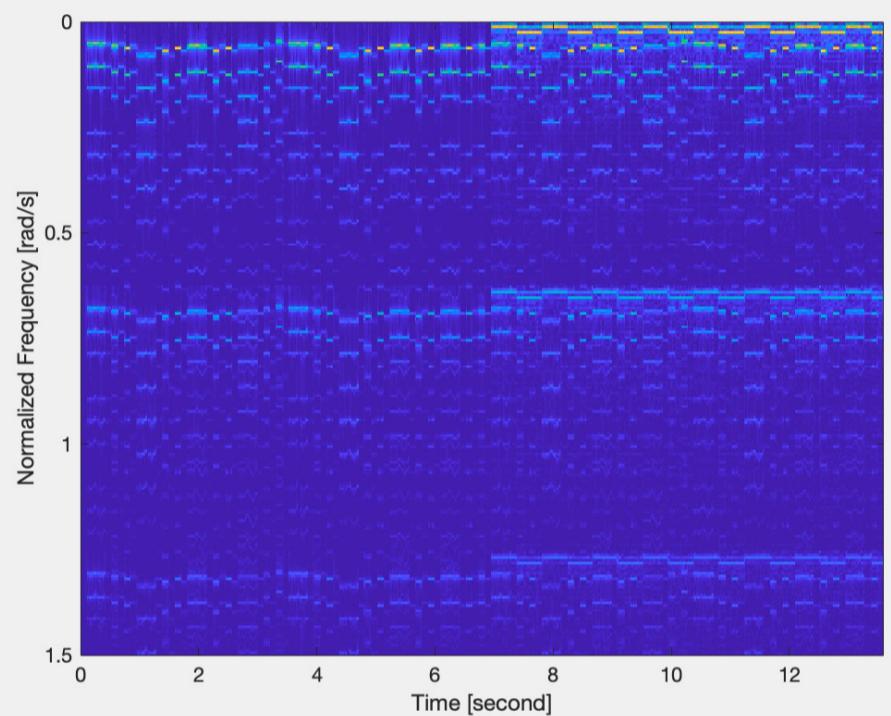
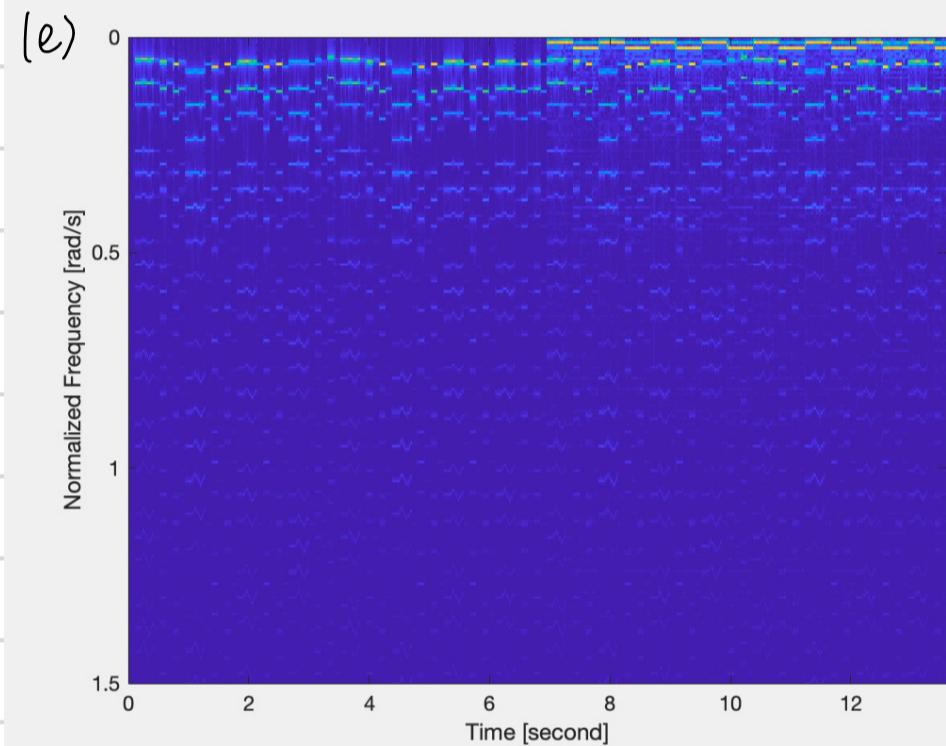
(b)



(c) System 1 removes the noise in the music signal.

(d)

```
% ***** PERFORM PROCESSING HERE AND ASSIGN ySTFT *****
for k = 1:W
    if k <= 100
        ySTFT(k,m) = 0.5 * xSTFT(k,m);
    else
        ySTFT(k,m) = 0.5 * ySTFT(k-100,m) + 0.5 * xSTFT(k,m);
    end
end
% *****
```



(f) $Y[m, k] = \frac{1}{2} (Y[m-100, k] + X[m, k])$

So System 2 makes out the average of $Y[m-100, k]$ and $X[m, k]$. In other words, m is discrete time (in the equation). And system 2 makes out the average of the STFT of some signal which's discrete time is m and $m-100$.