Ex: Write a Matlab® script file that does the following:

i) Loads the sound file for Handel's Messiah into variable `y`.

ii) Shortens `y` to `8000 samples`.

iii) Computes the Fast Fourier Transform (FFT) of `y` and `stores it in yfft`. `(The values in yfft represent frequency content for frequencies 0 to 7999 Hz.)`

iv) Computes the sum of magnitudes squared of `yfft`, saving the result in `pfft`.

v) `Creates an array of frequencies from 0 to 7999 Hz, spaced by 1 Hz.`

vi) Multiplies `yfft` by the following function, saving the result in `yfftsin`:

$$F(f) = \sin\left(\pi \frac{f}{8000}\right)$$

vii) Computes the sum of magnitudes squared of `yfftsin`, saving the result in `pfftsin`.

viii) Multiplies `yfftsin` by the following scaling factor:

$$\sqrt{\frac{pfft}{pfftsin}}$$

ix) Takes the inverse FFT of the modified `yfftsin` and `stores it in yout`.

x) Plays the sound in `yout`, after taking the real part.

Sol'n:
```
i)    load handel
ii)   y = y(1:8000);
iii)  yfft = fft(y);
iv)   pfft = sum(abs(yfft).^2);
v)    f = 0:7999;
vi)   yfftsin = yfft .* sin(pi*f/8000)';
vii)  pfftsin = sum(abs(yfftsin).^2);
viii) yfftsin = yfftsin * sqrt(pfft/pfftsin);
ix)   yout = ifft(ysinfft);
x)    sound(real(yout))
```