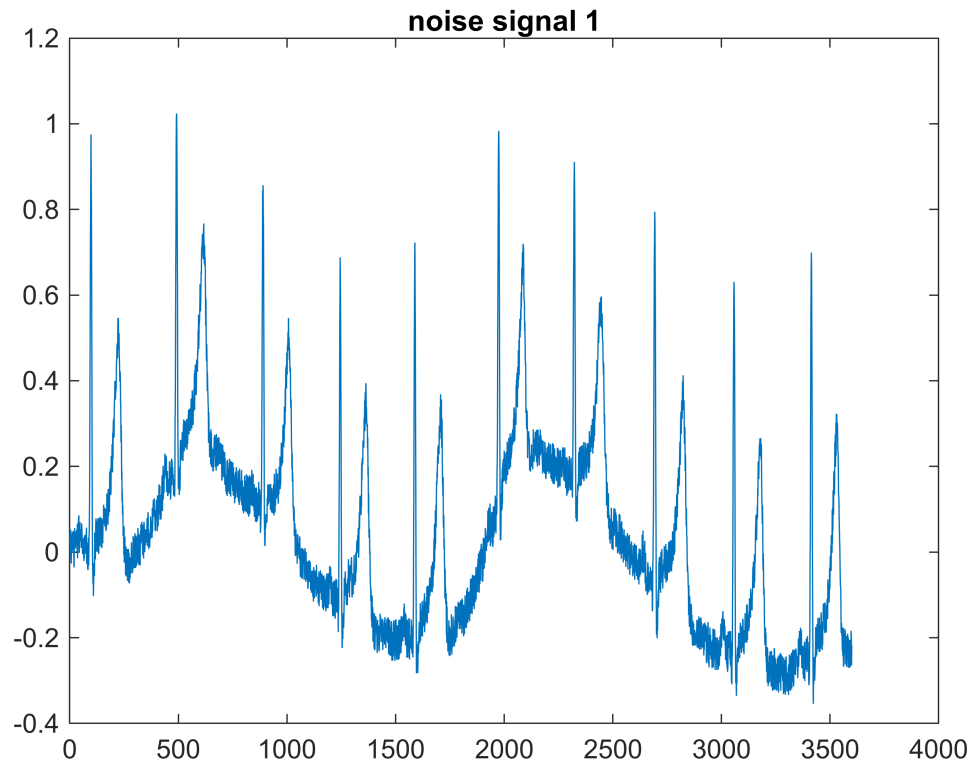


Wavelet Transform to remove noise

understanding our signals

```
plot(ecg_rang_signal)
title('noise signal 1')
```



Decomposing the wave

```
wname = 'sym6';
no_of_decompositions = 5;
[c,l] = wavedec(ecg_rang_signal,no_of_decompositions,wname);
```

Plotting all the decomposed waves

```
decomposed_waves = detcoef(c,l,N);
```

where N is the nth level decomposition

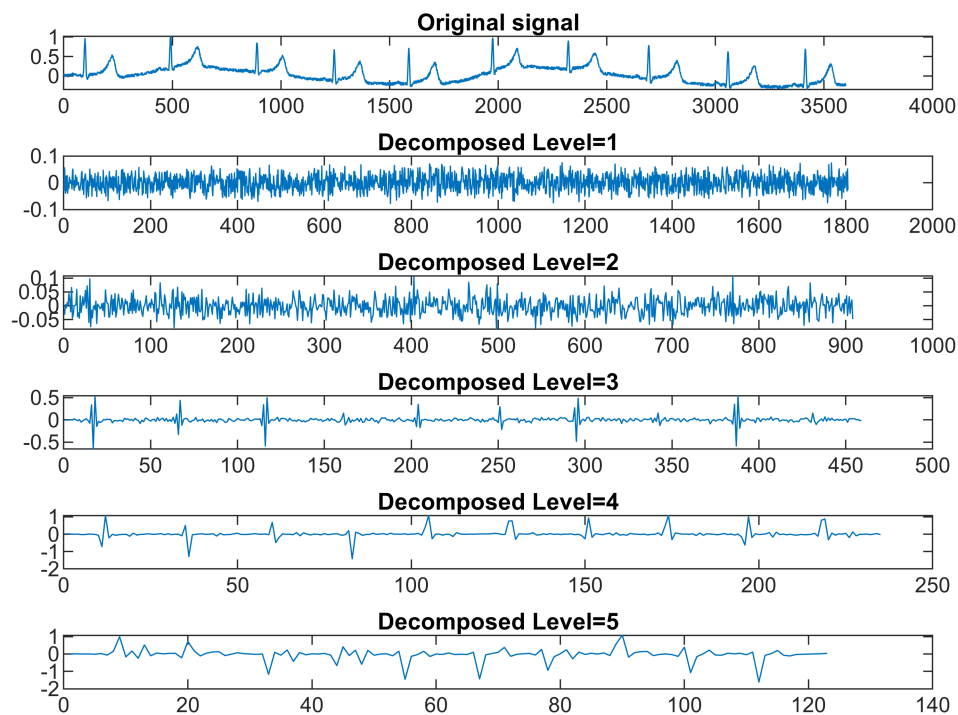
```
clf
subplot(6,1,1)
plot(ecg_rang_signal)
title('Original signal')

for i=1:5
    decomposed_wave = detcoef(c,l,i);
```

```

subplot(6,1,i+1)
plot(decomposed_wave)
title(['Decomposed Level=',num2str(i)])
end

```



Thresholding

by keeping a threshold to retain peak values or sudden changes we remove small values.

```

thresholded_signal =
wden(ecg_rang_signal,'rigrsure','s','sln',no_of_decompositions,wname)

```

```

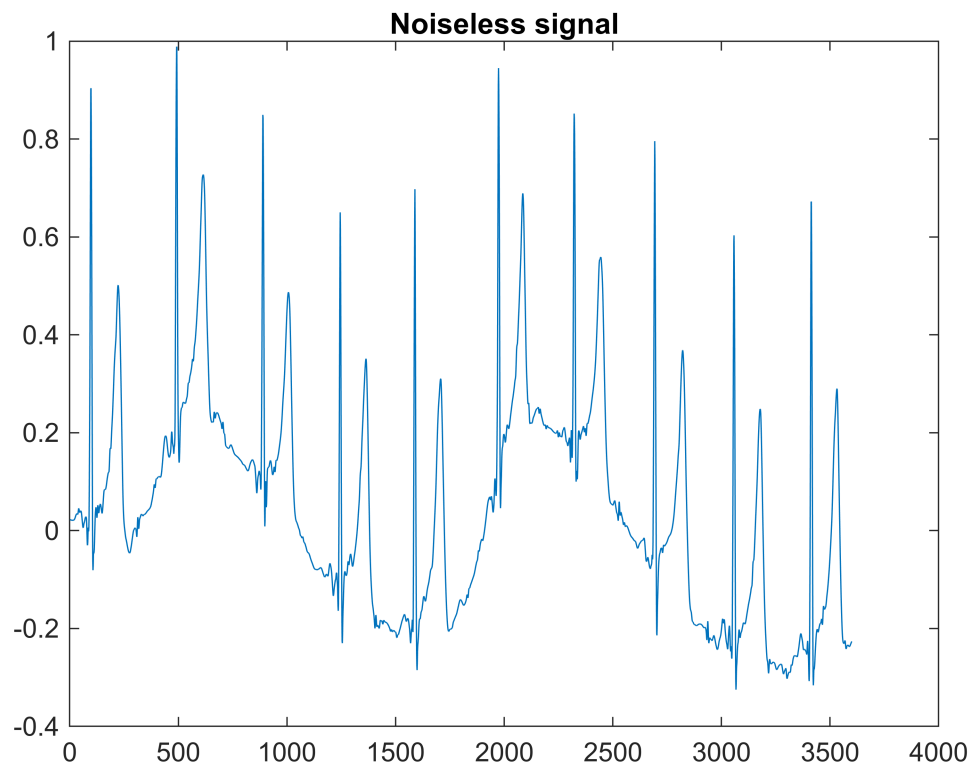
thresholded_signal = 1×3600
    0.0226    0.0224    0.0221    0.0220    0.0218    0.0216    0.0214    0.0213 ...

```

```

clf
plot(thresholded_signal)

```



```
title('Noiseless signal')
```

Comparison

comparing the noisy signal and signal after wavelet analysis.

```
clf
subplot(2,1,1)
plot(ecg_rang_signal)
title('noise signal 1')

subplot(2,1,2)
plot(thresholded_signal)
title('Noiseless signal')
```

