Pattern and Speech Recognition WS2015-16
Exercise 2

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1 Preparation

1.1 Loading and Plotting in the waveform

1. preparing the environment ..

2 Spectrum Analysis

2.1 A reference plot

[TODO]

2.2 Compute spectrum

2.2.1 windowing

[TODO]

Bonus - From spectrum to mel-cepstrum

[TODO]

```
%sampling frequency (or sample rate) is the number of samples per second%

%samples, sampling rate%
[f,Fs] = audioread('cmu.wav');

%number of samples%
N = length(f);

%length of sound file in seconds%
slength = N/Fs;

%length of sound file in milliseconds%
slengthms = slength*1000;

%linearly spaced vector of size N %
t=linspace(0, slength, N);

figure(1), plot(t,f);
title('complete waveform'), xlabel('time(s) ---> '), ylabel('amplitude');
clc;
```

```
%spectrogram with default values, N samples%
n = 0:1024-1;
w0 = 2*pi/5;
x = sin(w0*n)+10*sin(2*w0*n);
s = spectrogram(x);
spectrogram(x,'yaxis')
```

```
%return area of a triangle%
function [Area] = Area(a,b,c)
s = (a+b+c)/2;
Area = sqrt(s(s-a)*(s-b)*(s-c));
```