In-class exercises - spectrogram reading/interpretation and using Praat

0.) Where to get it?
http://www.fon.hum.uva.nl/praat/
What version?? updated continuously, so get the most recent
but be careful of scripts!

1.) Basics of what the program does
a. Reading files
b. Segmentation of acoustic data, excision
c. Data formats for sound files
d. Recording data: mono/stereo

2.) Object Window
a. Edit
b. Query menu
c. Modify menu
d. Annotate
e. Filtering (basics)

3.) Parameters
a. There is no such thing as a default setting.
   Play around to see what things do!

b. Spectrogram Settings (for viewing spectrogram)
   -Window Length (resolution)
   -Dynamic Range (useful for segmentation)

c. Pitch Settings (pitch)
   -Adjust for your speaker's range, but good to compare
    at same range across speakers.
   -Advanced Settings: useful for certain pitch
    estimations involving segments that influence pitch.

d. Intensity Settings (amplitude)
   -Simply the range, but the resolution is dependent on
    pitch settings; where it only reports an amplitude
    value for period corresponding to lowest pitch in
    range.

e. Formant Settings
   -Window length (resolution)
   -Dynamic Range (how much amplitude a formant should
    have for the algorithm to consider it)
   -General rule (but not always used): 1 formant
    estimated for every 1000 Hz.

4.) Task in-class - measure formants on vowels in recorded sentence:
"He paid all his friends with pudding for helping him move."
[hi peɪd ɔl hɪz fɪɛnz wɪð pʊdɪŋ fɔr hɛlpɪŋ əm muv]
5.) Measurement  
a. Why?  
b. Determine what others have measured before.  
c. Play around with what method will be best for most of your data analysis.  
d. BE CONSISTENT in your measurements.  

6.) What to measure?  
a. Formant measurement  
   - Spectral components of acoustic signal, provide information on place of articulation, manner, etc.  
   - Formants change as the result of: glottalization, breathiness, nasalization, secondary consonantal articulations; i.e. labialization, palatalization, velarization  

b. Duration measurement  
   - Time course of acoustic events in speech including duration of segments, intersegmental duration trading relationships, correlation with formant and pitch calculations.  

c. Pitch measurement  
   - Important for research on stress, tone, intonation  
   - Influenced by segmental factors  

d. Intensity measurement  
   - Not usually a strong cue in stress languages  
   - Important for research on obstruents, but usually involves extracting FFT(LPC) spectra.