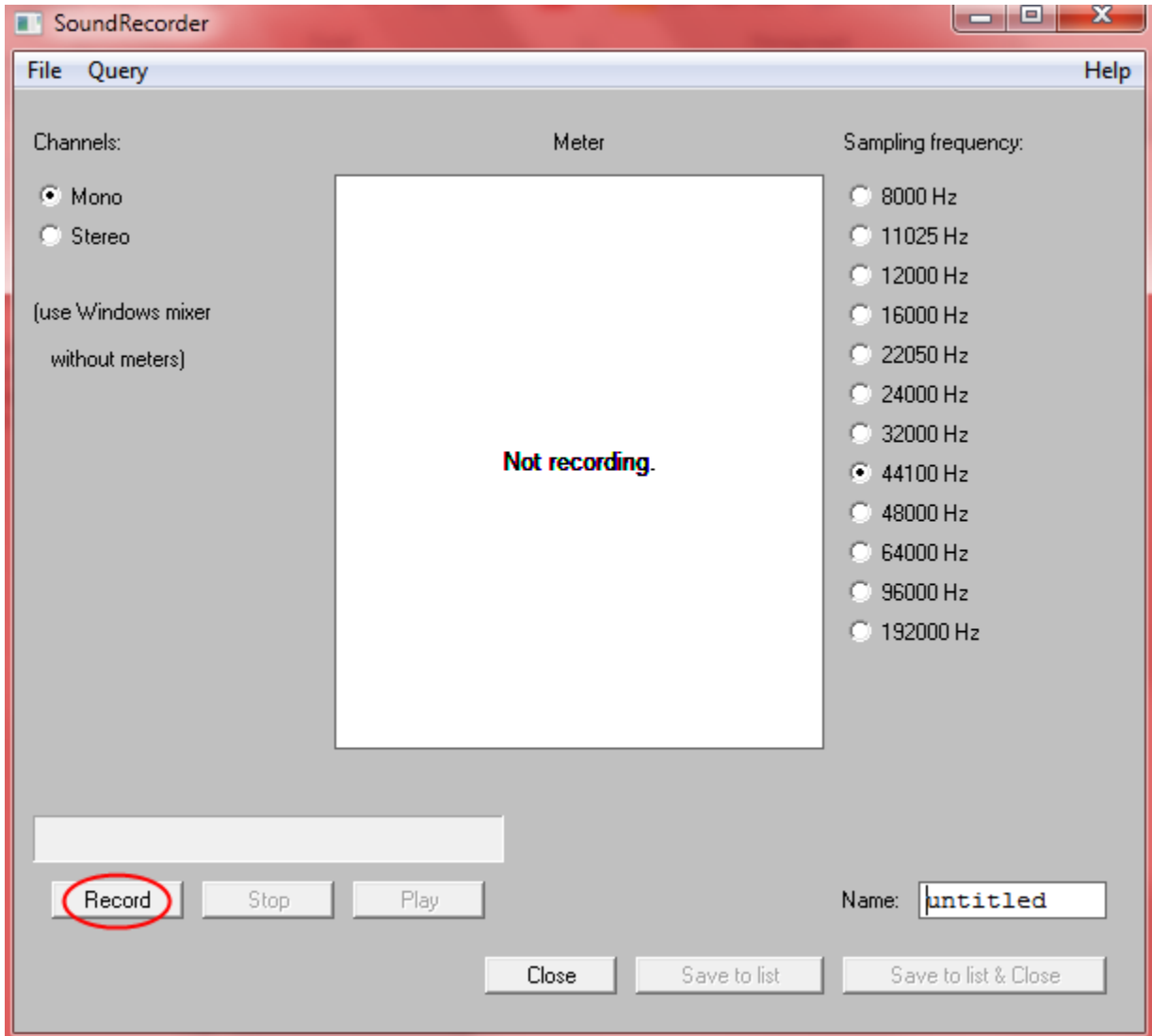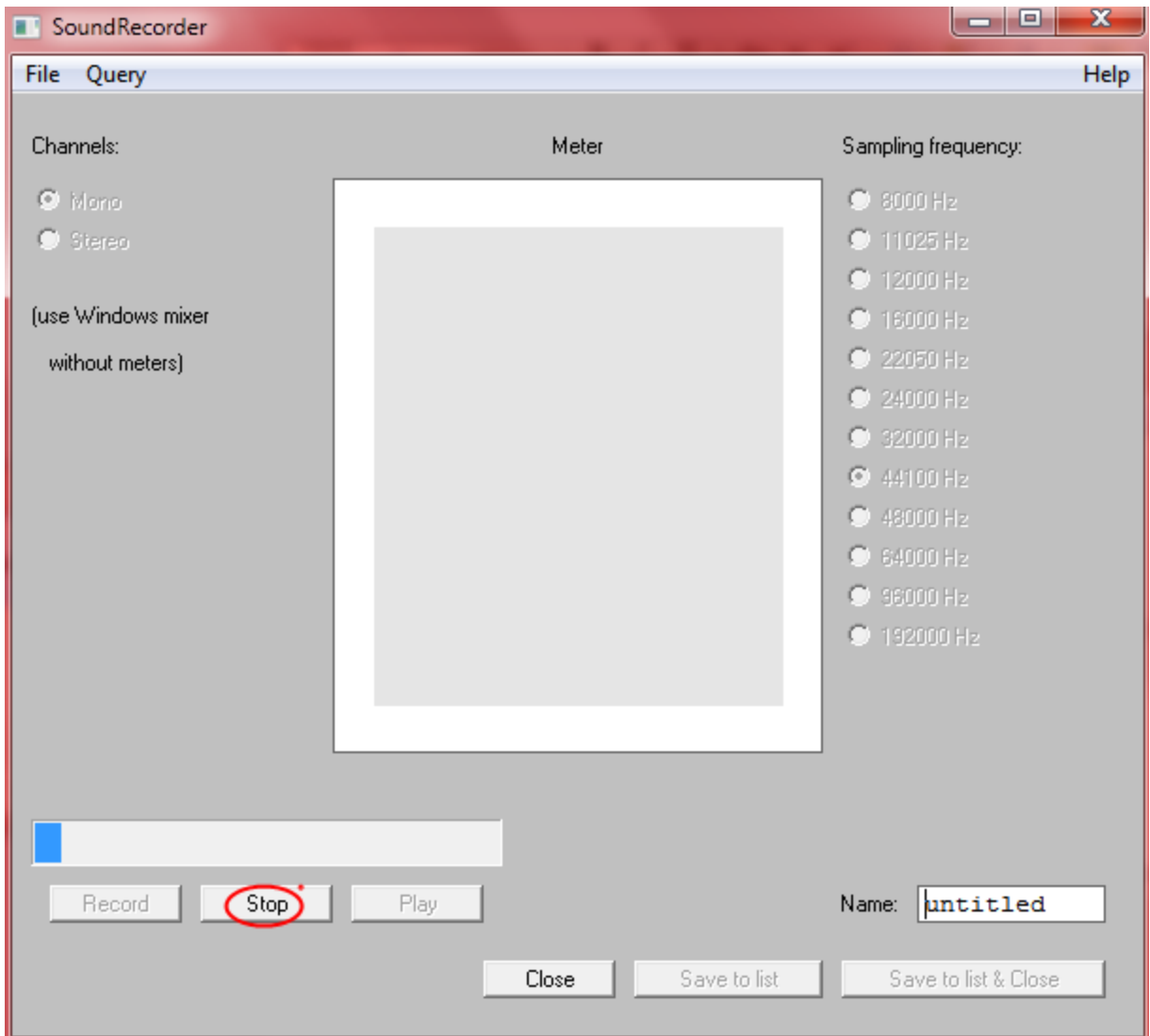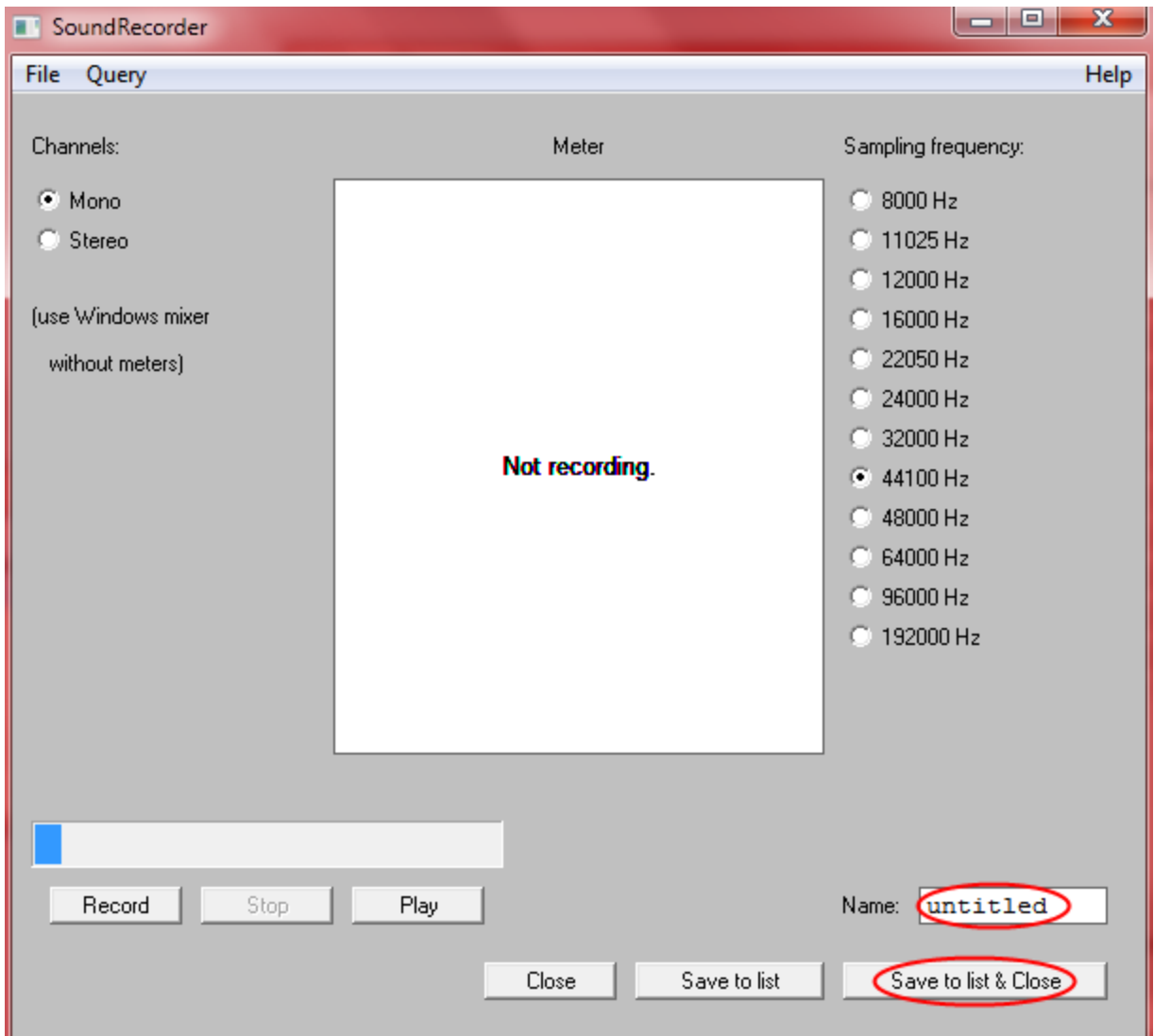**Vocoder Tutorial**

1. Open up **Praat**.
2. Press **Ctrl+R** (or **Command+R**) to record a new sound. This box should pop up:
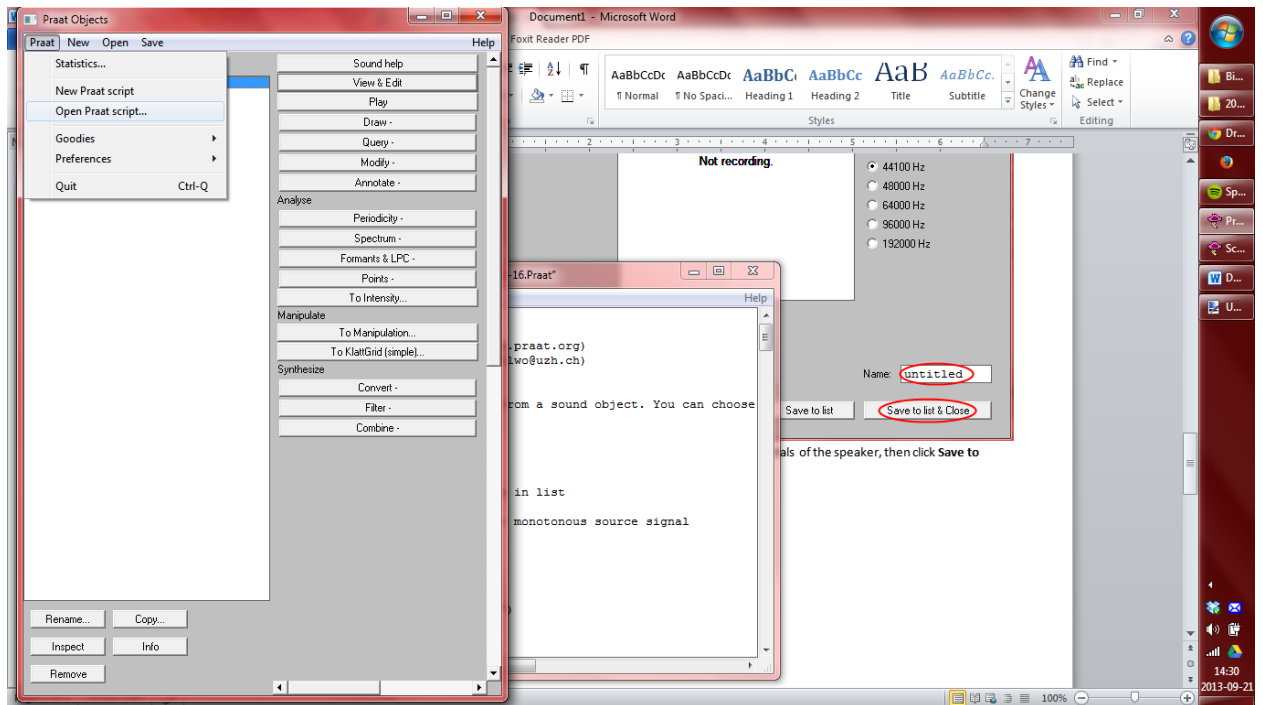

3. Keep all the settings on the default. Press the **Record** button (circled above) to start recording.

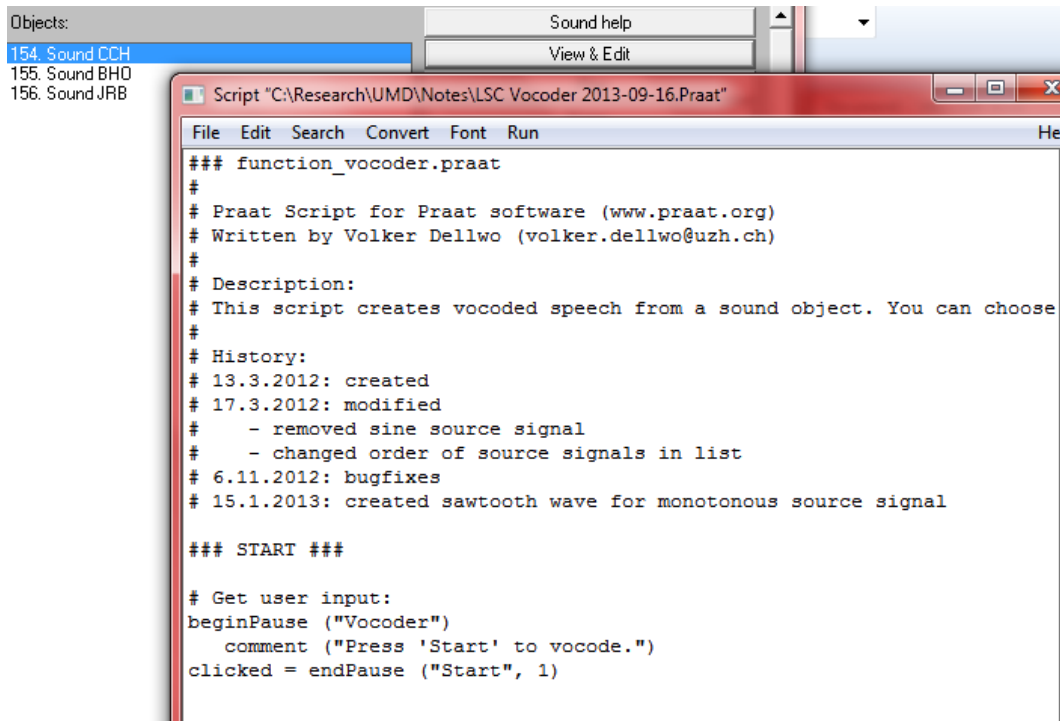4. Press the **Stop** button (circled above) to stop recording.

5. Give a **name** to the file by replacing "untitled" with the initials of the speaker (or just keep it untitled and keep track of which kid recorded which file), then click **Save to list & Close**.

6. You'll now have a file in the file list (to the left of all the buttons) that is called "Sound [Initials]".

7. Next, once per time you have Praat open, you'll have to open the script that lets you vocode. Go to the "Praat" menu and click on "Open Praat script…"
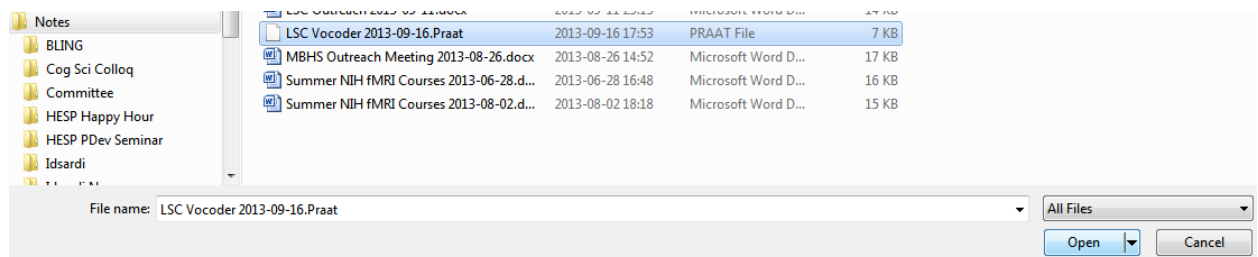
8. Navigate to the directory where you saved the file "LSC Vocoder 2013-09-21.Praat" and click "Open".

```
### function_vocoder.praat
#
# Praat Script for Praat software (www.praat.org)
# Written by Volker Dellwo (volker.dellwo@uzh.ch)
#
# Description:
# This script creates vocoded speech from a sound object. You can choose
#
# History:
# 13.3.2012: created
# 17.3.2012: modified
#     - removed sine source signal
#     - changed order of source signals in list
# 6.11.2012: bugfixes
# 15.1.2013: created sawtooth wave for monotonous source signal

### START ###

# Get user input:
beginPause ("Vocoder")
    comment ("Press 'Start' to vocode.")
clicked = endPause ("Start", 1)
```

9. Make sure the file that you want to vocode (so, the Sound file with the current speaker's initials) is highlighted in the Objects menu.
10. Click back on the Script window (the ones with all the weird dashes in it) and press **Ctrl+R** (or **Command+R**).
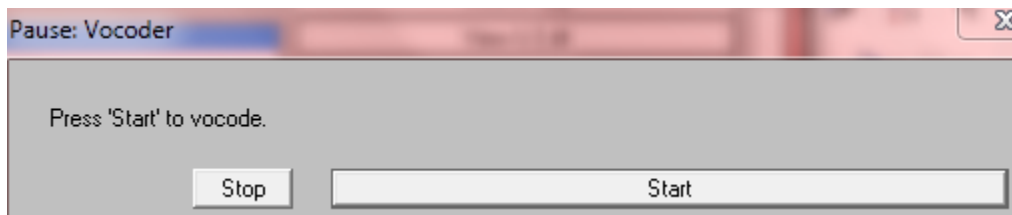
11. Press the **Start** button.
12. After some files are created and destroyed in the Objects list, the vocoded file should play automatically!

What is vocoding? Speech, like all sounds, has timing (duration), pitch (frequency), and loudness (intensity) information. Vocoded speech has all of the timing and loudness cues of normal speech, but makes the pitch cues much less informative. This makes it sometimes hard to make out unless you know what you said in the first place – and it sounds kind of creepy and robotic, too. Vocoded speech approximates the speech information that is available to people with a cochlear implant, which is a device implanted inside the inner ear of profoundly deaf people that allows them to hear. Still, people with a cochlear implant can understand much speech, particularly if the implantation happened in childhood, despite the relative lack of pitch cues. Many UMD researchers, particularly in the Hearing and Speech Sciences department, examine the perception of speech in people with cochlear implants.

Notes: This activity is generally very successful, particularly because of its interactivity. Kids usually find it easier to understand the vocoded speech than adults do, so they like showing off being "smarter" than their parents. If you have a group come up to do the activity, it can work for one member of the group to say a sentence and the rest of the group to hear the vocoded version of that sentence.