A practical introduction to acoustic phonetics
day 5: Scripting PRAAT

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Scripts

- A way of automating repetitive tasks, such as taking F_0 measurements for all intonation marks in (all) your TextGrids
- Think of writing macros in other applications
- Scripts are plain text files: this means that they can be created and maintained with any program capable of editing text, as well as PRAAT's built-in script editor
- Essential reading: the Scripting tutorial in the manual (under Help → Scripting tutorial); also the Formulas tutorial

Interacting with scripts

- To create a new script from the PRAAT Object window: Control → New Praat Script
- To open an existing script: Control → Open Praat Script...
- To run a script: Run → Run from the Script editor menu
- To run part of a script: highlight the part you want to execute and do Run → Run Selection from the Script editor menu

Some key elements of scripts

- Commands: instructions to PRAAT to perform certain actions on one or more Objects, or on the Picture window
- Variables: used to store pieces of information (e.g., F_0 values, TextGrid labels)
- Formulas: numerical/string functions used to manipulate the values of variables
- Jumps: used to create conditional statements
- Loops: used to repeat statements

Commands

- Generally correspond to actions available from buttons
- Usually start with a capital
- If you're unsure about the precise formatting of a command and its options, perform it interactively and then paste it into the script editor using Paste history (Ctrl-h)

Variables

- Come in two types:
  1. Numeric variables contain numeric values
  2. String variables contain strings of characters
- All variables must start with lower case letters (otherwise PRAAT will try to interpret them as commands)
- Variable names must not contain spaces or start with ! or ; or #

Numeric variables

- = is the variable assignment operator
- For example, myNumber = 12 stores the numerical value 12 in the variable myNumber
- PRAAT contains a number of predefined mathematical functions that can be used to manipulate the values of numerical variables (cf. section 4 of the Formulas tutorial)
- For example myNewNumber = sin(myNumber) assigns the sine of the value of myNumber to the variable myNewNumber

String variables

- String variables must end in the character $
- String variabe values must be put in double quotes (otherwise PRAAT will assume they are variable names)
- For example, myString$ = "hello" assigns the string hello to the variable myString$
- A set of predefined string functions can be used to manipulated the values of string variables (cf. section 5 of the Formulas tutorial)

Jumps

- Are used to create conditional statements
- Syntax:
  if **condition**

  Any statements included here are carried out only if the **condition** statement is true

  else

  Any statements included here are carried out only if the **condition** statement is false

  endif

Loops

- Are used to carry out the statements they contain more than once
- Three different loop constructs are available in the PRAAT scripting language
  1. For loops: statements included within this type of loop are carried out a fixed number of times
  2. Repeat loops: statements included within this type of loop are carried out until a certain condition is met
  3. While loops: statements included within this type of loop are carried out as long as a certain condition is true

For loops

- Syntax:
  for **variable** from $\mathbf{exp}_1$ to $\mathbf{exp}_2$

  Any statements included here will be executed n times where n represents the number of increments of 1 between $\mathbf{exp}_1$ and $\mathbf{exp}_2$ (inclusive)

  endfor

Performing and accessing acoustic analyses

- The SoundEditor window allows you to perform various form of acoustic analysis (pitch, formant, pulses, spectrums) and to extract information about the results of these interactively
- To perform the same analyses and to extract the same information using a script, you have to generate the corresponding Objects

Performing and accessing acoustic analyses

- To find out what sort of information you can extract from a given Object type, create (or select) it, and check out the options under the Query button

Selecting and deselecting Objects

- select **Object type Name**

  selects Object of type **Object type** with name **Name**

- plus **Object type Name**

  adds Object of type **Object type** with name **Name** to a preexisting selection

- minus **Object type Name**

  deselects Object of type **Object type** with name **Name** from a preexisting selection

Selecting and deselecting Objects

- **var** = selected("**Object type**", **n**)

  assigns the unique ID of the n_{th} Object of type **Object type** to numeric variable **var**

- This allows you to select the object with this ID using select **var**