1 Assignment Day 1: Numerical expressions

Download the most recent version of Praat. Study from the scripting tutorial in Praat (Help > Scripting tutorial) sections 1 till 3.5.

1.1 Calculating with the computer

In this part you will use Praat's calculator (Praat > Goodies > **Calculator...**). We can use the following mathematical operators "^" (power of), "*" (multiplication), "/" (division), "+" (addition) and "-" (subtraction). There are precedence rules if multiple operators occur in the same expression. Precedence: first calculate what is between parentheses (), then come "^" and unary minus, next follow "*", "/", and last "+", and "-". Terms with operators of the same precedence are in general evaluated from left to right. With these precedence rules we can write 4*3+12 instead of (4*3)+12 because multiplication is done first.

Put parentheses around the following expression in the order of evaluation and check in the Calculator if your answer is correct.

1. 6-5+1
2. 6/3*4
3. 4*6/3
4. 2^3^4
   What is special in the order of evaluation?
5. We must get used to the fact that a number in mathematics is something different from a number in a computer. Some computations in a computer might turn out to be incorrect. For example if you calculate the following expression in the calculator: 34+5e20-5e20 (if you want to write the number $5 \cdot 10^{20}$ you write `5e20`)

1.2 Variables in the scripteditor

1. What will be in the info window if you run the script?

```
a = 2
b = 3
writeInfoLine: "a = ", a, ", b = ", b
```

   Use the real double quote (") and not the fancy ones.

2. What will be in the info window if you run the script?

```
a = 2
b = 3
a = 3
writeInfoLine: "a = ", a, ", b = ", b
```

3. What will be in the info window if you run the script?

```
a = 2
b = 3
a = a * b
writeInfoLine: "a = ", a, ", b = ", b
```

4. Make a little script that first assigns a value to the variables *a* and *b* and next writes the result of the addition of *a* and *b* to the info window. For example if *a* equals 1 and *b* equals 2 it writes `1+2=3` in the info window.

5. As above, give *a* and *b* a value and write the result of the multiplication to the info window.

6. Make a script that (1) creates a tone of 440 Hz of 0.3 s duration and amplitude 0.35 Pa with fade-in and fade-out times of 0.01 s, (2) plays the tone and (3) removes it.

7. Make a script that produces two tones, the second one has a frequency twice the frequency of the first (twice as high in frequency is called an octave). It plays the tones and removes them.

8. A variation on the previous one: use a variable for the frequency such that if you change the value of the variable both tones change their frequency but still the second one is an octave higher.

9. We have several commands to write to the info window: `writeInfo`, `writeInfoLine`, `appendInfo`, `appendInfoLine`. Find out what they have in common and where they differ. If you want to put a tab in your text you can use `tab$`, while `newline$` produces a new line. Are the outputs of

```
appendInfo: "Some text", newline$
```

and

```
appendInfoLine: "Some text"
```

the same?

10. Given the following script:

```
dir$ = "my_data/subdir"
soundfile$ = dir$ + "/" + "sentence_001.wav"
filename$ = soundfile$ - ".wav"
textgridfile$ = filename$ + ".TextGrid"
```

What are the values of the variables `soundfile$` and `textgridfile$` after the script has run? Can you find an alternative to get the same value of `textgridfile$` from the `soundfile$` variable without using the intermediate `filename$` variable?