2 Assignment Day 2: Loops & forms

Study the scripting tutorial sections 3.6, 3.7, 5.1-5.4, 6.1.

1. How many numbers are printed with the following script?

```
start = 2
end = 5
for index from start to end
    appendInfoLine: index
endfor
```

   1. 5
   2. 4
   3. 3
   4. 2

2. With `appendInfoLine` and writeInfoLine we can print/write information to the info window. Use a for-loop construction to write the numbers 1 to 10 to the info window.

3. As above but now use another index variable for the loop. I.e. show that it doesn't matter what loop variable you use.

4. Use a for-loop to print the numbers 10 to 15 to the info window.

5. Every *even* number is a multiple of 2 and can be written as `2*k`, where `k` can be any integer. Write a script with a for-loop that prints all even numbers 2 to 16 in the info window.

6. Every *odd* number can be expressed as `2*k+1`, where `k` is any integer. Use a for-loop to print the numbers 3 to 15 to the info window.

7. Given the following excerpt of a script.

```
form Test form
    positive Frequency_(Hz) 300.0
    natural Number_of_components 2
endform
```

   What variables can be used to process the inputted values?
   1. Frequency en Number_of_components
   2. Frequency_`(Hz)` en Number_of_components
   3. frequency_`(Hz)` en number_of_components
   4. `f`requency en number_of_components

8. As in 2 but use a form to ask for the highest number to print.

9. To test whether a number is even or odd we can use the modulo *operator* (mod). The expression `x mod y` gives the remainder after the division `x/y`. For example, `the result of 12 mod 5` is 2 because after a division of 12 by 5, 2 remains; `1 mod 5 = 1`, because can divide 0 times and 1 remains; `21 mod 5` is 1; `6 mod 3 = 0`; `25 mod 6 = 1`; etc.

   (a) What are `1 mod 2`, `2 mod 2`, `3 mod 2`, `4 mod 2` and `5 mod 2`.

(b) What does it mean if `x` and `y` are integers and `x mod y` returns 0?

10. Use a form to query for a positive integer. Return in the info window the number given and whether it is even or odd. For example given 18, the info window will show the text "`The number 18 is even.`".

11. Use a form to query for integer start and end values and print all integers between the start and the end value that are divisible by 7. For example, if the start value is 25 and the end value is 50 then the numbers 28, 35, 42 en 49 are printed in the info window. Make sure that the end value is larger than the start value, i.e. never trust that the user always does the right thing. You can use `exitScript` in case of "wrong" input.

12. Play a number of tones with frequencies that are multiples of a fundamental frequency. Use a form to query for the number of tones and the fundamental frequency. Play each tone and remove it. For example if the number of tones is 4 and the fundamental is 100 Hz, tones with frequencies 100, 200, 300 and 400 Hz are created, played and removed.
    Warning: the loudspeakers of laptops sometimes have difficulty playing tones with low frequencies. Use a headphone.

13. As above but now synthesize only the uneven harmonics. For example if the number of tones is 4 and the fundamental is 100 Hz, tones with frequencies 100, 300, 500 and 700 Hz are created, played and removed.