**R exercises**

**Exercise 1**

Write a for loop that iterates over the numbers 1 to 7 and prints the cube of each number using print().

**Exercise 2**

Write a for loop that iterates over the column names of the inbuilt iris dataset and print each one together with the number of characters in the column name in parenthesis. Example output: Sepal.Length (12). Use the following functions print(), paste0() and nchar().

**Exercise 3**

Write a *while* loop that prints out standard random normal numbers (use rnorm()) but stops (breaks) if you get a number bigger than 1.

**Exercise 4**

Using next adapt the loop from the last exercise so that it doesn't print negative numbers.

**Exercise 5**

Using a for loop, simulate the flip of a coin twenty times, keeping track of the individual outcomes (1 = heads, 0 = tails) in a vector that you predefined.

**Exercise 6**

Use a nested for loop (a for loop inside a for loop) that produces the following matrix, preallocate the matrix with NA values.

0 1 2 3 4

1 0 1 2 3

2 1 0 1 2

3 2 1 0 1

4 3 2 1 0

**Exercise 7**

Use a while loop to investigate the number of terms required before the product

1⋅2⋅3⋅4⋅…

reaches above 10 million.

Explanation: which *i* do you need for the product of the first *i* natural integer numbers to exceed 10 million? EG how many terms do you need to exceed 100? 1⋅2⋅3⋅4 = 24, 1⋅2⋅3⋅4⋅5=120 then the answer is 5.

**Exercise 8**

Use a while loop to simulate one stock price path starting at 100 and random normally distributed percentage jumps with mean 0 and standard deviation of 0.01 each period. How long does it take to reach above 150 or below 50?

**Exercise 9**

Implement a simple version of Guess the number game using a while loop. The user should guess a number between 1 and 10, you can use s*can() o*r *readline()* to get user input. The loop should break if the user guesses 5.

**Exercise 10**

Implement a multiplication game. A while loop that gives the user two random numbers from 2 to 12 and asks the user to multiply them. Only exit the loop after five correct answers. Try using as.integer(readline()) instead of scan() this time.

**Exercise 11 Random walker exercise**

A random walker that goes up or down with probability of 0.5. start point=0. Eg the first random walker series can be 0,1,2,1,2,1,2,3,4,5,4,5,4,3,2,1,2, etc. The length of each series must be asked to the user and input by him (see prompt function)

Simulate many random walkers and plot them all in the same graph with different colours.

What's happening?