Exercices on session *Getting started with R (3/3)*

Matrices

We are going to use a matrix called *occ* to get data on occurrence of species in sites (*1* if the species is present, and *0* if it is absent).

- Create the following matrix and check that we have the structure we want.

```
      Sp1 Sp2 Sp3 Sp4 Sp5
site1   1   0   1   0   1
site2   1   1   1   1   1
site3   1   0   0   0   0
site4   1   0   1   0   1
```

- Calculate the number of species in each site.
- Calculate the number of sites in which each species occurs.
- Transpose the matrix to get the following:

```
    site1 site2 site3 site4
Sp1     1     1     1     1
Sp2     0     1     0     0
Sp3     1     1     0     1
Sp4     0     1     0     0
Sp5     1     1     0     1
```

Lists

- Create the following list:

```
$occurence
      Sp1 Sp2 Sp3 Sp4 Sp5
site1   1   0   1   0   1
site2   1   1   1   1   1
site3   1   0   0   0   0
site4   1   0   1   0   1

$site_state
site1 site2 site3 site4
 "DF"  "GO"  "GO"  "MT"
```

Operators and Functions

- Calculate the square root of 25
- Check that the exponential of the logarithm of 1 is equal to 1. *NB: If you try to do it for another number, you will get an unexpected result due to rounding.*
- Check that 2 is between 0 and 10 (there are different ways to do it)
- Get the absolute value of each element of the following vector *vec*:

```
[1] -4  5  8 -9 -3
```

- Get the range of values in *vec*
- Calculate the basal area of a tree of diameter 25 cm (the basal area is the area of a circle of the diameter of a tree), in m^2

Packages

Install the following packages from CRAN:

- vegan
- questionr

For next time

Download the following data sets here and here here and store them in your raw data folder.