

Exercises for the course  
“An introduction to R”

## Sheet 10

**Exercise 48:** Assign the object returned by `data()` as `dat`. What is the class of `dat`. What are the names of the elements of `dat`? One element is a matrix with name `results`. Denote the column 'Item' of `results` as `s`. Find all elements of `s` which

- contain "men"
- contain "air"
- start with "euro"
- have an 'a', 'c', 'g' or 't' at the fourth position
- contain both "sect" and "pray".

(4 points)

**Exercise 49:** Define a class 'species'. Each object of that class shall have the following three elements: a species *name*, a sample *dna* sequence and a variable which indicates whether the species is *endangered* or not. For simplicity let's use the S3 approach. Objects are created as lists and by setting the `class` attribute. Create a first object and let for simplicity "atcg" be the value of *dna*. Then define the print method for the class. Here is an example how the output of the print command could look like:

```
Species:      Elephant
DNA:          atcg
Endangered:   No
```

Hint: You need tabulators (`\t`) and newlines (`\n`) to produce such an output. (5 points)

**Exercise 50:** Sometimes one needs to deal with a lot of files which are numbered consecutively. Here is some practice. Write a for-loop with 100 cycles. In cycle 67, the integer  $67^2$  is written into the file 'testfile67.txt' using the command `write.table()`. Similarly for other cycles but with 67 replaced by the respective cycle index. Having done that create a vector `vec` consisting of one hundred zeros. Then write a second for-loop with 100 cycles as follows. In cycle 67 the content of 'testfile67.txt' is read into a data frame variable. Extract  $67^2$  from that data frame and store it into `vec[67]`. Similarly for other cycles. In the end the vector `vec` should be equal to  $(1:100)^2$ .

(5 points)