Workshop: Regionalization of Forest Stand Variables
-TCP /IND/3505 -

Lab 01 Pre-Processing of the NFI data

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GOALS

- Install and load required packages
- Defining the workspace
- Import the FSI inventory data from an Excel spreadsheet into R
- Checking the data structure: variables, datatypes, names
- Define a function in R to create the plot boundary geometries and export an ESRI shapefile with plot boundaries

Packages

- Packages are extensions of the R core software
- Packages are collections of R functions, data, compiled code and documentation
- The directory where packages are stored is called the library.
- R comes with a standard set of packages.
- Others are available for download and installation.
- Once installed, they have to be loaded into the session to be used.

Basic data types in R

Vectors

```
a <- c(1,2,5.3,6,-2,4) # numeric vector
b <- c("one","two","three") # character vector
c <- c(TRUE,TRUE,TRUE,FALSE,TRUE,FALSE) #logical vector
```

Matrices

```
# generates 5 x 4 numeric matrix
y<-matrix(1:20, nrow=5,ncol=4)
```

All columns in a matrix must have the same mode(numeric, character, etc.) and the same length.

Dataframes

```
e <- c("red", "white", "red", NA)
```

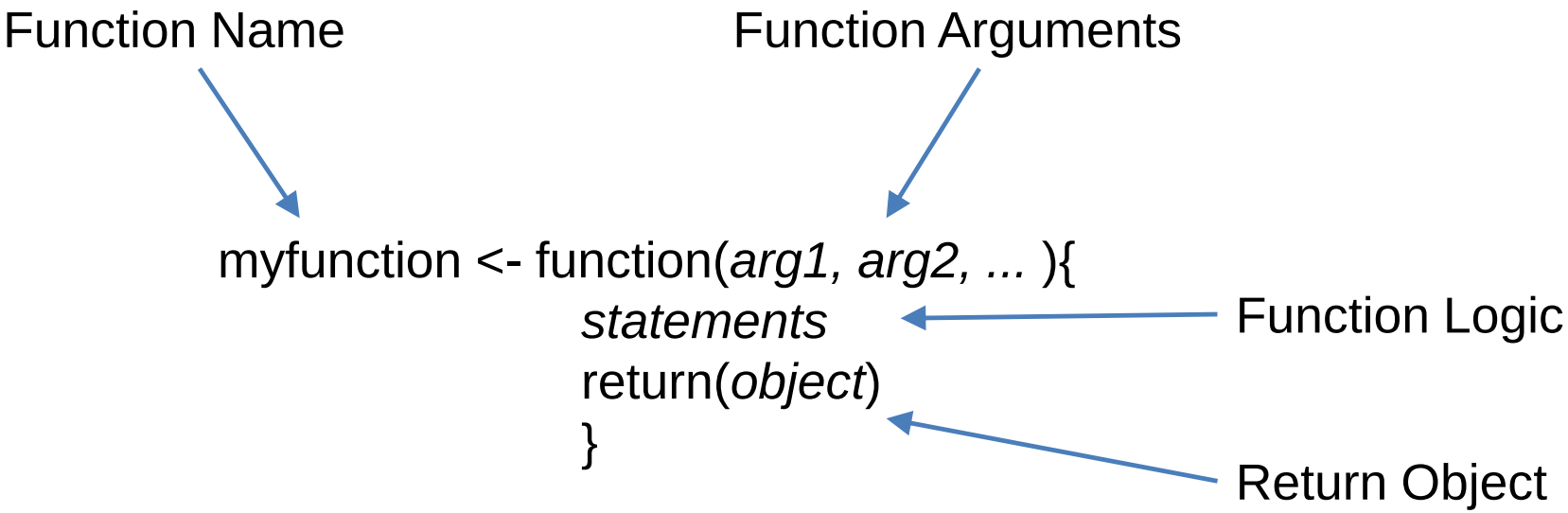
A data frame is more general than a matrix, in that different columns can have different modes (numeric, character, factor, etc.).

Lists

```
# example of a list with 4 components -
# a string, a numeric vector, a matrix, and a scaler
w <- list(name="Fred", mynumbers=a, mymatrix=y, age=5.3)
```

Factors

User defined functions



Why functions?

- Functions are helpful if an operation is repeatedly done
- Functions can be maintained easier then a script
- Functions help structuring and documenting the code