

### General variable assignment

Assignment statements:

```
var_name = new_value OR
var_name <- new_value
```

**Variables names:** The variable name must start with a letter and can contain numbers and letters as well as the special characters underscore and period.

**Note:** Contrary to other languages R does not have a command for declaring a variable, but instead a variable is created once a value is assigned to it.

### Arithmetic operators

+	Addition - adds together two values.
-	Subtraction - subtracts one value from another.
*	Multiplication - multiplies two values together.
/	Division - divides one value from the other.
** OR ^	Exponential - to the power of the next value

**Arithmetic operators:** Used to perform common mathematical operations.

**Precedence:** Precedence and associativity are as normal as in maths.

### Access variables of a dataframe

Calling individual variables from a dataframe:

```
dataframe $var_name
```

### Some misc commands

cat()	Prints all of its comma separated arguments (concatenating them).
read.csv()	Reads a csv file (in the same location)
head()	To get a broad overview of the variables that are contained in the dataframe as well as the different variable levels (first 6 rows(?))
summary()	Gives the summary statistics of a variable - min, 1st quartile, median, mean, 3rd quartile, maximum
as.factor()	Convert to categorical variable
barplot()	Creates a barplot for the given table
table()	[TBC]

**Internal help option:** Writing ? in front of the command opens R documentation of the command.

### Vector creation and assignment

Creating a list of numbers manually:

```
vector_name <- c(no1, no2, no3, etc.)
```

Creating a list of numbers in a sequence:

```
vector_name <- seq(start, stop, step)
```

(starts from start and ends at exactly stop at increments of step)

**Vector:** A vector is a 1D set of the same type of object. Most often, a vector will simply be a sequence of numbers.

**Note:** Similarly to variables, a vector is created once a value is assigned to it.

### Comments

Single line comments:

```
# Comment1
code # Comment2
```

**Comments:** Comments are ignored by the computer, they exist simply to make the code easier for people to understand.

### Indexing vectors

Getting 1 index:

```
vec_name[ind ex_no]
```

Getting multiple index in a row:

```
vec_name[start_index: end_index]
```

**Note:** The indexing is 1-based so it starts at 1 instead of 0 like most other programming languages do.

### Basic math functions

log(x)	Natural log of x
exp(x)	Exponential of x
max(x)	Largest element in the set x
min(x)	Smallest element in the set x
sum(x)	Sum all values in x
mean(x)	Mean of x
median(x)	Median of x
round(x,n)	Round x to n decimal places
length(x)	Number of values in x

