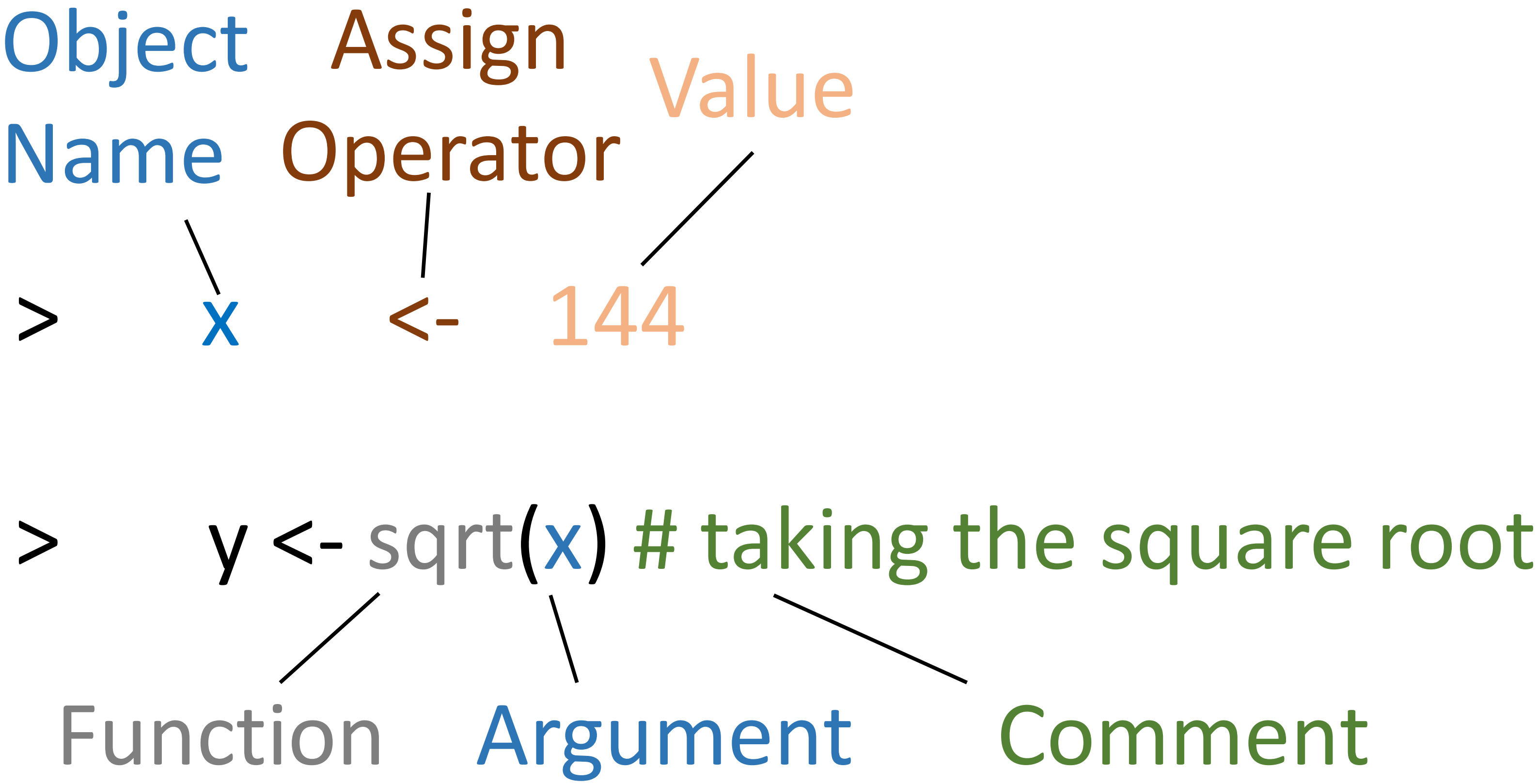
INTRODUCTION TO R PROGRAMMING

R objects and functions



Object Name

Assign Operator

Value

```
>    x    <-   144
```

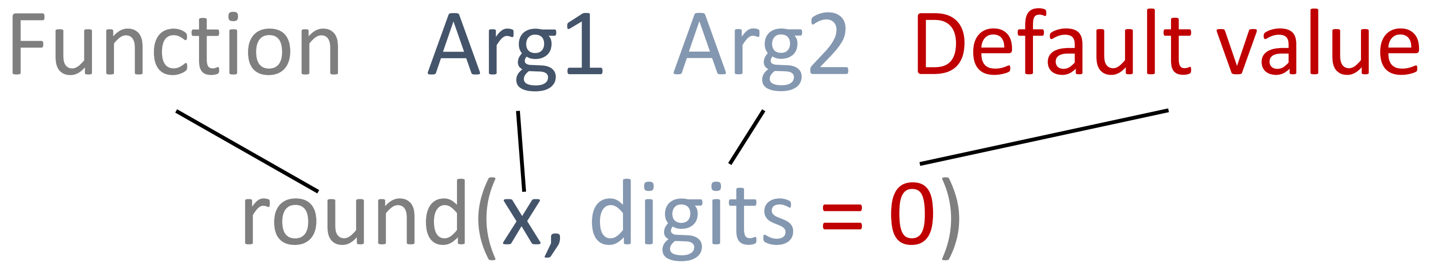
```
>    y <- sqrt(x) # taking the square root
```

Function

Argument

Comment

R objects and functions



Function Arg1 Arg2 Default value

round(x, digits = 0)

```
> round(3.14159)
> round(3.14159, 2)
> round(x = 3.14159, digits = 2)
> round(digits= 2,x = 3.14159)
> round(d = 2, x = 3.14159)
> round(2, 3.14159) ?
```

Vectors

CREATING VECTORS

```
> c(1,4,8,10)          [1] 1 4 8 10
> c(“a”,  “b”, “c” )   [1] “a”  “b”  “c”
> 1:6                  [1] 1 2 3 4 5 6
> seq(1,6)             [1] 1 2 3 4 5 6
> seq(1,6, by = 2)     [1] 1 3 5
```

INFO ON VECTORS

```
length()
str()
class()
typeof()
```

Vectors

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```

CONVERTING BETWEEN DATA TYPES

as.logical()

as.numeric()

as.character()

as.factor()

OTHER DATA STRUCTURES

factor

data.frame

matrix

list

array

Vectors

ACCESSING VECTOR ELEMENTS

my_vect[4] *4th element of my_vect*

my_vect[c(1,3)] *1st and 3rd element*

my_vect[1:5] *elements 1 to 5*

my_vect[my_vect %in% c(1,2,5)] *elements in set c(1,2,5)*

my_vect[my_vect <10] *only the elements less than 10*

CONDITIONAL STATEMENTS

AND	&
OR	|
GREATER (OR EQUAL) THAN	> (>=)
LESS (OR EQUAL) THAN	< (<=)
EQUAL TO	==
NOT EQUAL TO	!=
SEARCH IN VECTOR	%in%

DEALING WITH MISSING DATA

mean(my_vect, na.rm = TRUE)
na.omit(my_vect)
complete.cases(my_vect)

Data.frames

Download data	download.file(url=“http://…”, destfile = “data/table.csv”)
Read a file	read.csv(file=“data/table.csv”)

Check data frame	head()
	View()
	str()

Size	dim()
	nrow()
	ncol()

Content	head()
	tail()

Names	names(), colnames()
	rownames()

Summary	str()
	summary()

Factors

```
year_fct <- factor(c((1990, 1983, 1977, 1998, 1990))
```

Levels: 1977,1983,1990,1998
Values: c(3,2,1,4,3)

number of levels	nlevels()
accessing levels	levels()