Day 8 - Functions in R

MAHESH DIVAKARAN

1/27/2021

Functions in R

Moving from Scripts to R Function

R function provides two major advantages over the script:

- Functions can work with any input. You can provide diverse input data to the functions.
- The output of the function is an object that allows you to work with the result.

```
source('percentage_fn.R')
```

```
## Enter any fraction
## [1] "NA %"
```

Transforming the Script into R Function

Stracture of the function

function_name = `function`(_input_variable(s)){ staements `return`(_output) }

```
# Creating the function

percentage_fn <- function(frac){
  percentage <- round(frac * 100, digits = 1)
  out <- paste(percentage, "%", sep = " ")
  return(out)
}
```

```
#Calling percentage_fn
percentage_fn(0.3654)
```

```
## [1] "36.5 %"
```

```
#Calling percentage_fn
percentage_fn(.00869)
```

```
## [1] "0.9 %"
```

One more example

```
basic_math <- function(a,b){
  add = a + b
  sub = a - b
```

```
  mul = a * b
  div = a / b
  print(paste("The sum of a and b is ", add ))
  print(paste("The difference of a and b is ",sub))
  print(paste("The product of a and b is ", mul))
  print(paste("The fraction of a and b is",round(div,3)))

}
```

Run the basic_math() function

```
basic_math(4,6)
```

```
## [1] "The sum of a and b is  10"
## [1] "The difference of a and b is  -2"
## [1] "The product of a and b is  24"
## [1] "The fraction of a and b is 0.667"
```

```
basic_math(854,966)
```

```
## [1] "The sum of a and b is  1820"
## [1] "The difference of a and b is  -112"
## [1] "The product of a and b is  824964"
## [1] "The fraction of a and b is 0.884"
```

R Vector Functions

rep(), seq(), all(), any(), c()

```
# 1. R rep() Function

rep(c(0, 0, 7), times = 4)
```

```
##  [1] 0 0 7 0 0 7 0 0 7 0 0 7
```

```
rep(c(2, 4, 2), each = 2)
```

```
## [1] 2 2 4 4 2 2
```

```
# 2. R seq() Function

seq(from = 4.5, to = 3.0, by = -0.5)
```

```
## [1] 4.5 4.0 3.5 3.0
```

```
seq(1,16)
```

```
##  [1]  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16
```

```
seq(10,100,5)
```

```
##  [1]  10  15  20  25  30  35  40  45  50  55  60  65  70  75  80  85  90  95 100
```

```
# 3. R any() Function

a = seq(10,100,5)
a
```

```
##  [1]  10  15  20  25  30  35  40  45  50  55  60  65  70  75  80  85  90  95 100
```

```
any( a > 100)
```

```
## [1] FALSE
```

```
# 4. R all() Function

all(a > 0)
```

```
## [1] TRUE
```

R Numeric Functions

Function Description

abs(x) absolute value
ceiling(x) ceiling(3.475) is 4
sqrt(x) square root
floor(x) floor(3.475) is 3 *log(x) natural logarithm*
trunc(x) trunc(5.99) is 5
round(x, digits=n) round(3.475, digit=2) is 3.48
log10(x) common logarithm
signif(x, digits=n) signif(3.475, digit=2) is 3.5
exp(x) e^x
*cos(x), sin(x), tan(x) also acos(x), cosh(x), acosh(zx) etc