R Notebook

Exercises

Exercise 1.1: Logical operations

Perform a vectorized operation on the two logical vectors `first.logical.vector` and `second.logical.vector` by using the logical `or` operator denoted by `|`.

Can you predict what the resulting vector will be before you run the code?

Solution

Exercise 1.2: Constructing a logical vector

Let's create a numeric vector:

```
second.numeric.vector <-
    c( 6, 3, 1, 9, -2, 0, -7, 5, 8, -1)
```

Construct a logical vector which has the value `TRUE` in the locations where the corresponding element of `second.numeric.vector` is negative.

Solution

Exercise 1.3: Logical functions

Let's start by creating two logical test vectors:

```
## Example 24: Constructing two logical test vectors

first.logical.vector <-
    c(TRUE, TRUE, FALSE, TRUE, FALSE)

second.logical.vector <-
    c(TRUE, FALSE, TRUE, TRUE, FALSE)
```

Here's `second.logical.vector`:

```
second.logical.vector
```

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

What is the result of calling the `all()` function with this vector?

What is the result of calling the `any()` function with this vector?

What is the result of calling the `which()` function with this vector?

Try to figure these out yourself before trying it in R.

Solution

Solutions to the Exercises

Exercise 1.1: Logical operations

Perform a vectorized operation on the two logical vectors `first.logical.vector` and `second.logical.vector` by using the logical `or` operator denoted by `|`.

Can you predict what the resulting vector will be before you run the code?

Solution

```
first.logical.vector | second.logical.vector
```

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

Exercise 1.2: Constructing a logical vector

Let's create a numeric vector:

```
second.numeric.vector <-
    c( 6, 3, 1, 9, -2, 0, -7, 5, 8, -1)
```

Construct a logical vector which has the value `TRUE` in the locations where the corresponding element of `second.numeric.vector` is negative.

Solution

```
second.numeric.vector < 0
```

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

Exercise 1.3: Logical functions

Here's `second.logical.vector`:

```
second.logical.vector
```

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

What is the result of calling the `all()` function with this vector?

What is the result of calling the `any()` function with this vector?

What is the result of calling the `which()` function with this vector?

Try to figure these out yourself before trying it in R:

Solution

Since at least one value in `second.logical.vector` is FALSE, the `all()` function returns FALSE:

```
all( second.logical.vector )
```

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

Since at least one value in `second.logical.vector` is TRUE, the `all()` function returns TRUE:

```
any( second.logical.vector )
```

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

Since `second.logical.vector` has the value TRUE in locations 1, 3, and 4, the `which()` function returns the values 1, 3, and 4:

```
which( second.logical.vector)
```

```
## [1] 1 3 4
```