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CEIT-37-601P

R PROGRAMMING

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OPERATORS

Arithmetic Operators

Operator	Name	Example
+	Addition	x <- 5 y <- 10 print(x+y)
		Output: [1] 15
-	Subtraction	x <- 5 y <- 10 print(x-y)
		Output: [1] -5
*	Multiplication	x <- 5 y <- 10 print(x*y)
		Output: [1] 50
/	Division	x <- 5 y <- 10 print(x/y)
		Output: [1] 0.5
%%	Modulus	x <- 5 y <- 10 print(x%%y)
		Output: [1] 5
%/%	Floor Number Division	x <- 5 y <- 10 print(x%/%y)
		Output: [1] 0
^	Exponent	x <- 5 y <- 10 print(x^y)
		Output: [1] 9765625

Relational Operators

Operators	Description	Example
>	Greater than	x <- 5 y <- 10 print(x>y)
		Output: [1] FALSE
<	Less than	x <- 5 y <- 10 print(x<y)
		Output: [1] TRUE
>=	Greater than and equal to	x <- 5 y <- 10 print(x>=y)
		Output: [1] FALSE
<=	Less than and equal to	x <- 5 y <- 10 print(x<=y)
		Output: [1] TRUE
==	Equal to	x <- 5 y <- 10 print(x==y)
		Output: [1] FALSE
!=	Not equal to	x <- 5 y <- 10 print(x!=y)
		Output: [1] TRUE

Logical Operators

Operators	Description
&	**AND (ELEMENT WISE)** The Element-wise Logical AND operator is what it is known as. Each element of the first vector is combined with its corresponding element in the second vector, and if both elements are TRUE, the output is TRUE.

&&	**AND** Logical AND operator - Returns TRUE if both statements are TRUE
!	**NOT** It is called Logical NOT operator. Takes each element of the vector and gives the opposite logical value.
|	**OR (ELEMENT WISE)** The Element-wise Logical OR operator is what it is known as. Each element of the first vector is combined with its corresponding element in the second vector, and if any of the elements are TRUE, the output is TRUE.
||	**OR** Logical OR operator. It returns TRUE if one of the statement is TRUE.

Assignment Operators

Operators	Description
<- or <<-	Called Left Assignment
-> or ->>	Called Right Assignment

Miscellaneous Operators

Operators	Description	Example
:	**Colon Operator** Creates a series of numbers in a sequence	x <- 1:10
%in%	Used to identify if an element belongs to a vector	x %in% y
%*%	Used to multiply a matrix with its transpose.	x <- Matrix1 %*% Matrix2

DATA TYPES

Basic data types in R can be divided into the following types:

- numeric - (10.5, 55, 787)
- integer - (1L, 55L, 100L, where the letter "L" declares this as an integer)
- complex - (9 + 3i, where "i" is the imaginary part)
- character (string) - ("k", "R is exciting", "FALSE", "11.5")
- logical (boolean) - (TRUE or FALSE)

Syntax: Output:
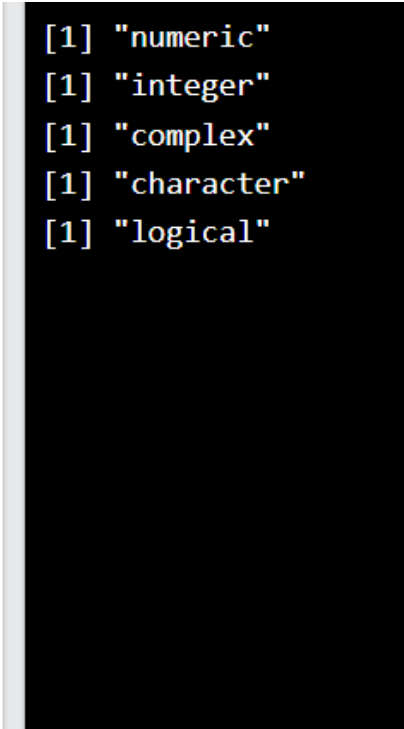
```r
# numeric
x <- 10.5
class(x)

# integer
x <- 1000L
class(x)

# complex
x <- 9i + 3
class(x)

# character/string
x <- "R is exciting"
class(x)

# logical
x <- TRUE
class(x)
```

```
[1] "numeric"
[1] "integer"
[1] "complex"
[1] "character"
[1] "logical"
```

References:

https://intellipaat.com/blog/tutorial/r-programming/operators/https://intellipaat.com/blog/tutorial/r-programming/operators/

https://www.tutorialspoint.com/r/r_operators.htm

https://www.w3schools.com/r/r_operators.asp

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