R Operator Precedence and Associativity

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In this article, you'll learn about the precedence and associativity of operators when executing an expression in R.

Operator Precedence

When multiple operators are used in a single expression, we need to know the precedence of these operators to figure out the sequence of operation that will take place.

Precedence defines the order of execution, i.e., which operator gets the higher priority.

Example 1: Operator Precedence in R

```
> 2 + 6 * 5
[1] 32
```

Here, the `*` operator gets higher priority than `+` and hence `2 + 6 * 5` is interpreted as `2 + (6 * 5)`. This order can be changed with the use of parentheses ().

```
> (2 + 6) * 5
[1] 40
```

Operator Associativity

It is possible to have multiple operators of same precedence in an expression. In such case the order of execution is determined through associativity.

The associativity of operators is given in the table above.

We can see that most of them have left to right associativity.

Example 2: Operator Associativity in R

```
> 3 / 4 / 5
[1] 0.15
```

In the above example, `3 / 4 / 5` is evaluated as `(3 / 4) / 5` due to left to right associativity of the `/` operator. However, this order too can be changed using parentheses ().

```
> 3 / (4 / 5)
[1] 3.75
```

Precedence and Associativity of different operators in R from highest to lowest

Operator Precedence in R

Operator	Description	Associativity
^	Exponent	Right to Left
-x, +x	Unary minus, Unary plus	Left to Right
%%	Modulus	Left to Right
*, /	Multiplication, Division	Left to Right
+, –	Addition, Subtraction	Left to Right
<, >, <=, >=, ==, !=	Comparisions	Left to Right
!	Logical NOT	Left to Right
&, &&	Logical AND	Left to Right
|, ||	Logical OR	Left to Right
->, ->>	Rightward assignment	Left to Right
<-, <<-	Leftward assignment	Right to Left
=	Leftward assignment	Right to Left