



PYTHON FOR COMPUTATIONAL PROBLEM SOLVING

Precedence and Associativity of Operators in
Python + Operator Polymorphism

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Operator Precedence

- Determines the order of evaluation.
- Guarantees the consistent interpretation of expressions.
- Each programming language has its own rules for the order that operators are applied.
- Consider, **4+3*5**

- There are two possible ways in which it can be evaluated

$$4 + 3 * 5 \rightarrow 4 + 15 \rightarrow 19$$

~~$$4 + 3 * 5 \rightarrow 7 * 5 \rightarrow 3$$~~

- * has higher precedence than +.
- If the addition is to be performed first, parentheses would be needed.

Operator Associativity

- Defines the order, it and other operators with the same level of precedence are evaluated.
- The associativity of exponentiation operator is right to left. $2^{**}3^{**}2$ will be evaluated as follows. $2^{**}(3^{**}2) \rightarrow 512$

$$\del{(2^{**}3)^{**}2 \rightarrow 64}$$

Think ! - Is there a way to get the complete details of precedence and associativity of operators using python?



Operator	Description
(expressions...)	Parenthesized expression
**	Exponentiation
"+x", "-x", "~x"	Positive, negative, bitwise NOT
"*", "/", "//", "%"	Multiplication, division, floor division, remainder
"+", "-"	Addition and subtraction
"<<", ">>"	Shifts
"&"	Bitwise AND
"^"	Bitwise XOR
" "	Bitwise OR
"in", "not in", "is", "is not", "<", "<=", ">", ">=", "!=", "=="	Comparisons, including membership tests and identity tests
"not x"	Boolean NOT
"and"	Boolean AND
"or"	Boolean OR

Operator polymorphism

- A type of polymorphism where an operator behaves differently based on the type of the operands.
- Few examples: +, *, &, |, : and etc.
 - + acts as addition operator if the operands are numbers.
 - + acts as concatenation operator if the operand are strings.
 - * works as multiplication operator if the operands are numbers
 - * works as repetition operator if one operand is a string and other operand a non- negative integer
- Demo of operators



THANK YOU

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