

Precedence and Associativity of Operators in Python + Operator Polymorphism

Prof. Sindhu R Pai

PCPS Theory Anchor - 2024
Department of Computer Science and Engineering

Operators



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

$$\rightarrow$$

$$\rightarrow$$
 4 + 15 \rightarrow 19

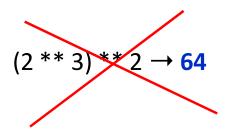
- * has higher precedence than +.
- If the addition is to be performed first, parentheses would be needed.

Operators



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. $2^{**}(3^{**}2) \rightarrow 512$



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

Operator Precedence



Operator	Description
(expressions)	Parenthesized expression
**	Exponentiation
"+x", "-x", "~x"	Positive, negative, bitwise NOT
"*","/","//","%"	Multiplication, division, floor division, remainder
"+", "-"	Addition and subtraction
"<<", ">>"	Shifts
"&"	Bitwise AND
"A"	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

PES UNIVERSITY

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

Department of Computer Science and Engineering

Dr. Shylaja S S, Director, CCBD & CDSAML, PESU

Prof. Sindhu R Pai – sindhurpai@pes.edu

Prof. Gayatri S