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 → 4 + 15 → **19**

~~4 + 3 * 5 → 7 * 5 → 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) → **512**

(2 ** 3) ** 2 → **64**

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

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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
"^"	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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