

# Operators

## Agenda

- Arithmetic Operators
- Assignment Operator
- Relational Operators
- Typecasting

Reload if  
you cannot  
hear me.

Next class  
on 28<sup>th</sup>

Python 3

Do not write  
codes in Python 2.

# Arithmetic Operators

$+$     $-$     $\times$     $/$     $\%$

int    $+$    int    $=$    int

int    $+$    float    $\rightarrow$    float  
float    $+$    int    $\rightarrow$    float

float    $+$    float    $\rightarrow$    float

1.0    $+$    2    $=$    3.0  
float   int    $\rightarrow$    float

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$x = 1$

$y = \underline{\underline{-2.0}}$

$x - y$

$\downarrow$

$1 - (-2.0)$   
-   -

$\Rightarrow$

$1 + 2.0 = 3.0$

Integer Division (Floor Division)

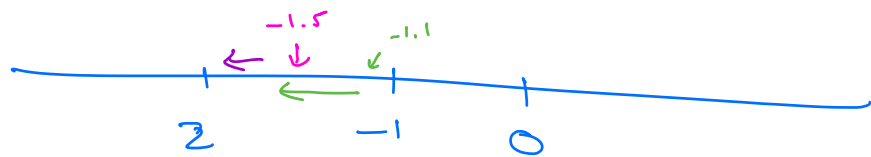
$$\text{floor}(2.6) \rightarrow \lfloor 2.6 \rfloor = \underline{2}$$

Lower integer part

$$\lfloor 3.1 \rfloor = 3$$

$$\lfloor 4.9 \rfloor = 4, \quad \lfloor 5.999999 \rfloor = 5$$

$$\lfloor -1.5 \rfloor = -2$$



$$\lfloor -1.1 \rfloor = -2$$

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$$\lceil 5.1 \rceil \rightarrow \text{ceil}(5.1)$$

↪ 6

$$\frac{a}{0} \rightarrow \text{Not defined}$$

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$$2^{\textcircled{3}} = \underbrace{2 \times 2 \times 2}_{3 \text{ times}} = 8$$

$$4^2 = 4 \times 4 = 16$$

$$10^4 = 10 \times 10 \times 10 \times 10 = 10000$$

$$2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$$

$$10^{*-1} = 10^{-1} = \frac{1}{10} = 0.1$$

$$10^{-2} = \frac{1}{10^2} = 0.01$$

$$10^{-3} = \frac{1}{10^3} = 0.001$$

$$\begin{array}{r} 3 \\ 3 \overline{) 10} \\ \underline{-9} \\ 1 \end{array} \leftarrow \text{Remainder}$$

$$10 \% 3 = 1$$

$$19 \% 4 = 3$$

$$\begin{array}{r} 4 \\ 4 \overline{) 19} \\ \underline{-16} \\ 3 \end{array}$$

$$27 \% 5 = 2$$

$$\begin{array}{r} 5 \\ 5 \overline{) 27} \\ \underline{-25} \\ 2 \end{array}$$

Modulo with -ve numbers

↓

Tricky Concept

→ Advanced Batch

Modulo with decimal numbers

↳ Does not work in other languages

$$\begin{array}{r} 0 \\ 25 \overline{) 5} \\ - 0 \\ \hline 5 \end{array}$$


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BODMAS → Subtraction  
↙ ↘ Brackets open → Division → Multiply → Addition

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$$10 - 4 * 2 + 5 - \underline{6 / 2}$$

↓

$$10 - \underline{4 * 2} + 5 - 3.0$$

$$10 - \underline{8} + 5 - 3.0$$

$$10 - 3 - 3.0$$

$$= 4.0$$


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$$\underline{(11 + 2 - 4)} * * \underline{(11 - 4)}$$

$$= 9 * * 3$$

$$= 9^3$$

$$= 729$$

Break till 10:10 PM

# Relational

→ Always give  
bool result

$5 > 2 \rightarrow \text{True}$

$10 > 3 \rightarrow \text{True}$

$10 > 15 \rightarrow \text{False}$

$5 < 8 \rightarrow \text{True}$

$10 < 2 \rightarrow \text{False}$

$2 \leq 10 \rightarrow \text{T} \rightarrow \begin{matrix} 2 < 10 \\ 2 = 10 \end{matrix}$

$5 \leq 5 \rightarrow \text{T}$

$5 < 5 \rightarrow \text{F}$

$10 \geq 8 \rightarrow \text{T}$

$10 \geq 10 \rightarrow \text{T}$

$10 \geq 12 \rightarrow \text{F}$



$x = 10, \quad y = 10$

$x == y$

$x == 10$

Equality  
operator

$==$

---

True  $\rightarrow$  1

False  $\rightarrow$  0

False  $== 0 \rightarrow$  Yes

True  $== 1 \rightarrow$  Yes

True  $== 0 \rightarrow$  No

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"2"  
str  $==$  2  
int  $\rightarrow$  False

# Doubts

Thank  
You

Next class  $\rightarrow$  2<sup>nd</sup>

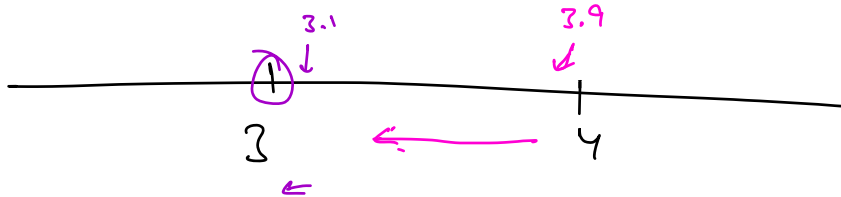
Problem constraints  $\rightarrow$  ignore it

TAs, Community, Nint, Problem Solving  
Session

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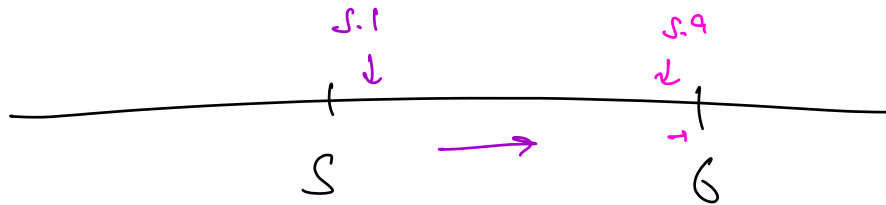
Lower integer

$$\lfloor 3.1 \rfloor = \text{floor}(3.1) = \underline{3}$$



$$\lfloor 3.9 \rfloor = \text{floor}(3.9) = 3$$

$$\lceil 5.1 \rceil = \text{ceil}(5.1) = 6$$



$$\lceil 5.9 \rceil = \text{ceil}(5.9) = 6$$

```
import math
math.floor(3.1)
math.ceil(5.9)
```



Maths  
class

Good  
Night

Thank  
You

Happy Diwali

Next Friday  
2<sup>nd</sup>

```
print(10 - 4 * 2 + 5 - 6 / 2)
```







