

05-04-2025

Agenda

operators

Control flow

User input

strings

Arithmetic operators

Assignment operators

$\rightarrow =$	<u>Example with 1</u>
$+ = \Rightarrow a = a + 1$	
$- = \Rightarrow a = a - 1$	
$/ = \Rightarrow a = a / 1$	
$// = \Rightarrow a = a // 1$	

$\% =$

$\ast\ast =$

$$\begin{aligned} a &= 2 \rightarrow \\ a &= a + 1 \\ a &= 2 + 1 \\ a &= 3 \end{aligned}$$

$\boxed{a += 1}$

$\boxed{a = a + 1}$

P. increment a by 1

$$\begin{aligned} a &= 2 \\ a &= a + 1 \quad / \quad a += 1 \\ a &= 3 \end{aligned}$$

$$\begin{aligned} a &= 10 \quad , \quad 10 \\ a &= a + 10 \\ a &+= 10 \end{aligned}$$

Comparison operator → Boolean

$a=2, b=3$

$==$ Equal

$a == b$

$>$ greater than

↓

$<$ smaller than

Boolean

\geq Greater than or equal to

\leq Smaller than or equal to

\neq Not equal to

$a=2, b=3$

$a=100, b=100$

$a == b \rightarrow \text{false}$

True

$a > b \rightarrow \text{false}$

False

$a < b \rightarrow \text{True}$

False

$a \geq b \rightarrow \text{False}$

True

$a \leq b \rightarrow \text{True}$

True

$a \neq b \rightarrow \text{True}$

False

logical operator

Truth table

True → 1

Binary language

False → 0

[0,1]

00 - ①
11 - ②
01 - ③
10 - ④

Operator	A	B	Answer / output
And	0	0	0
	1	1	1
	0	1	0
	1	0	0

And → True, when both are True else False

Operator	A	B	Answer / output
OR	0	0	0
	1	1	1
	0	1	1
	1	0	1

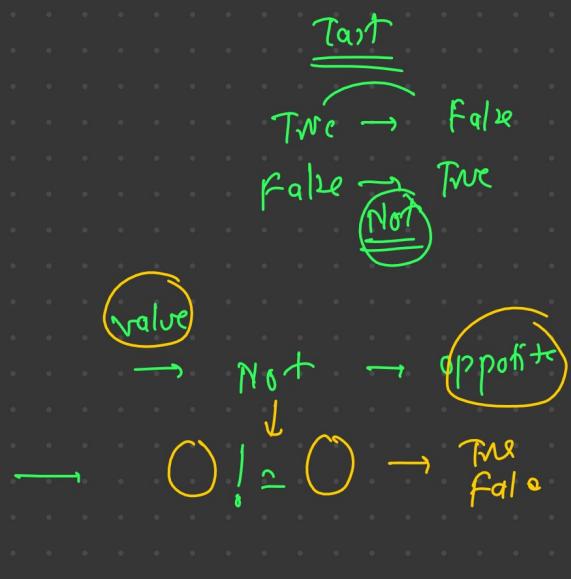
Operator	A	Answer / output
Not	0	1
	1	0

OR → if any one is True, True,
if both are False, False

0,1 → ②

Operator	A	B	Answer / output
XOR	0	0	0
	1	1	0
	0	1	1
	1	0	1

XOR → only when one of
it is true



Prob	XOR	(A)	(B)
Q. find the case where one is say 0 & another 1		1	1
		0	1
		1	0

$$0 \rightarrow 1 \\ 1 \rightarrow 0$$

XOR → only where one is true,
in true other wise false

The diagram illustrates the conversion of a binary number to its decimal equivalent using the bit-wise method. On the left, the binary number Binary number is shown above a green checkmark. An arrow points from this label to the right side of the diagram. The right side shows the binary number 1 0 1 1 being converted. The process involves multiplying each digit by powers of 2 and summing the results. The first row shows the multiplication: 1 4 2 1. The second row shows the addition: 0 1 1. The third row shows the final result: 1 0 0 1. The circled numbers 3 and 1 indicate the carry-over values for each column.

$$\begin{array}{r}
 & 1 & 0 & - & - \\
 & \underline{-} & \underline{-} & \underline{-} & \underline{-} \\
 1 & 0 & 1 & 1 & 1 \\
 - & 0 & 0 & 1 & 0 \\
 \hline
 & 0 & 1 & 1 & 0
 \end{array}$$

$$\sim \begin{array}{r} 0\ 11 \\ \hline 1\ 00 \\ \hline \end{array} \rightarrow \begin{array}{c} 3 \\ 4 \end{array}$$

Logical operator

$$a = 2, b = 3, c = 5, d = 8$$

$\rightarrow \rightarrow (a > b) \text{ and } (c < d) \rightarrow \underline{\text{False}}$
 $\rightarrow (\text{false}) \text{ and } (\text{True})$
 false and True
 $\rightarrow \text{False}$

Control flow → control the executing of code

Conditional Statement

Task →

Buy few items:

— chips ✓

— oranges ✓

— soap ✓



start
(A) → do you have soap?
if you have soap, i want one
Buy X
else
go to the next store →

(B) → do you have fruit?
if yes:
buy → buy
else
move to next store

(C) do you have soap & chip:
if yes
buy → buy, go home
else:
return home

if else

\rightarrow if (condition) :

 do something

\rightarrow else :

 go to next state do otherwise

zoom

name = " "

```
if name == "monal":  
    print("welcome instructor")  
else:  
    print("welcome attendee")
```

① name = "monal"

② if name == "monal":
 print("Welcome instructor")
else:
 print("Welcome attendee")

indentation
 \downarrow
area / block

if condition:

green) tab → 4 space bar



tab / 1 space / 3 space

Syntax

if condition:
 do something

else:
 otherwise

if condition:
 [] []

else:
 [] []

problem statement

if i have to build → calculator

→ add
→ subtract
→ multiply
→ division

if operation-name == "add":
 []

else:

[]

① if
else

② if - ①
elif - ⑥
else - ①

⑥ if
if
if
if

③ if
④ if
if
elif
elif
elif
elif
else
⑤ if
elif
elif
elif
elif
else

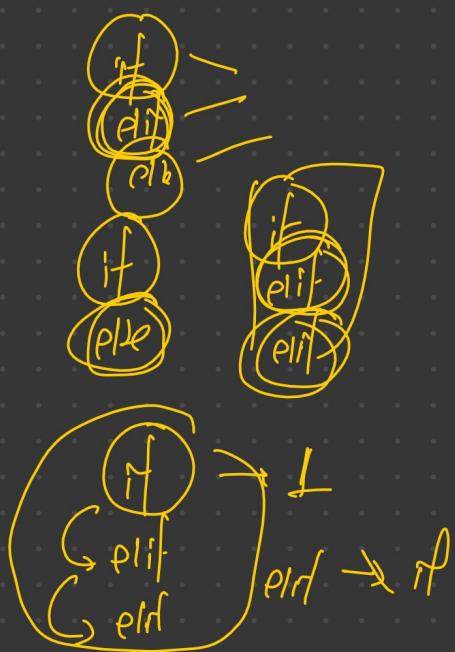
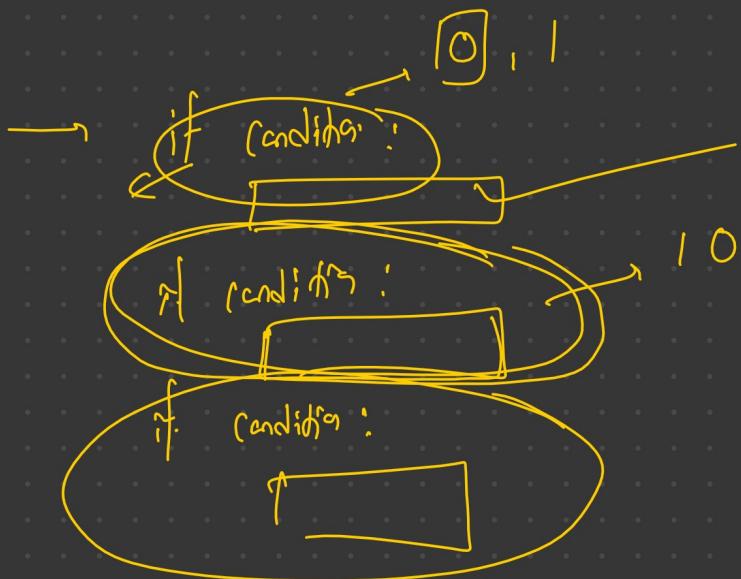
⑦ if
if
if
else
if

↙ "add"
`operation_name = "multiply"`
 if `operation_name == "add":` [True]
 print("We are adding 2 numbers")
 elif `operation_name == "subtract":`
 print("We are subtracting 2 numbers")
 else:
 print("We are not adding anything")

else will run
if all of them is
false



`operation_name = "add"` ↗ True
 → ① if `operation_name == "add":` ① →
 → ② print("add")
 → ② if `operation_name == "subtract":` ② →
 → ③ print("Subtract")
 → ③ if `operation_name == "multiple":` ③ →
 → ④ print("multiply")
 ↙ min ↘ max ③
 ↙ max ①



`else` → ✘
`else` →

$\rightarrow \text{money} = \text{input}()$

$\rightarrow \text{time} = \text{input}()$

assignment

check whether you have money or not,
if you have money,

check if you have > 200
check if time is less than 7

else go to theme park

go home

Consider time
as
[PM]

if you have < 200 :

check if time > 7

go to icecream parlor

else

go to beach

$a = 2$
 $b = 3$

start

Name $\xrightarrow{\text{input}}$

$a = \boxed{\text{input}()}$