LOGICAL OPERATORS

CONDITIONAL STATEMENT

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TOPIC OUTLINE

Logical AND

Logical OR

Logical NOT

LOGICAL OPERATORS

LOGICAL OPERATORS

Logical operators are used to perform logical operations on Boolean expressions (i.e., expressions that evaluate to **`True`** or **`False`**). These operators are essential for controlling the flow of a program and making decisions.

LOGICAL AND

AND Truth Table		
a	b	y
0	0	0
0	1	0
1	0	0
1	1	1

The AND **(and)** operator returns true only if **both** operands are **True**.

```
a = True
b = True
if a and b:
    print("both are true")
```

EXERCISE

```
a = 12

if (a > 0) and (a <= 10):

    print("a is in the range of 1 to 10.")

elif (a > 10) and (a <= 20):

    print("a is in the range of 11 to 20.")

elif (a > 20) and (a <= 30):

    print("a is in the range of 21 to 30.")

else:

    print("out of range.")
```

LOGICAL OR

OR Truth Table		
a	b	y
0	0	0
0	1	1
1	0	1
1	1	1

The OR `(or)` operator returns true if **at least one** of the operands is **`True`**.

```
a = True
b = false
if a or b:
   print("at least one is true")
```

EXERCISE

```
weather = "sunny"

if (weather == "rainy") or (weather == "stormy"):

    print("Bring an umbrella or stay indoors!")

elif (weather == "sunny") or (weather == "clear"):

    print("It's a great day to go outside!")

else:

    print("The weather is unpredictable today.")
```

LOGICAL_NOT_

NOT Truth Table	
a	y
0	1
1	0

The NOT `(not)` operator is a unary operator that **negates** the value of its operand. If the operand is **`True`**, it returns **`False`**, and vice versa.

```
a = False

not a # evaluates to True


b = True

not b # evaluates to False
```

EXERCISE

```
a  = 8

if not(a % 2 == 0):

    print(str(a) + " is even")

else:

    print(str(a) + " is odd")
```

LABORATORY