



# LOGICAL OPERATORS

## CONDITIONAL STATEMENT

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## TOPIC OUTLINE

Logical AND

Logical OR

Logical NOT



# LOGICAL OPERATORS



# LOGICAL OPERATORS

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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

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

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

```
a = True
```

```
b = True
```

```
if a and b:
```

```
    print("both are true")
```



# EXERCISE

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```
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

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

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

```
a = True
```

```
b = false
```

```
if a or b:
```

```
    print("at least one is true")
```



# EXERCISE

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```
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

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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

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```
a = 8

if not(a % 2 == 0):

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

else:

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



# LABORATORY

