LOGICAL OPERATORS

CONDITIONAL STATEMENT

prepared by:

Gyro A. Madrona
Electronics Engineer

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