

Day - 05

Date - 09/09/2025

7. Bitwise operators.

& - Bitwise AND

| - Bitwise OR

~ - Bitwise NOT

>> - ^{Right} Shift Right

<< - ^{Left} Shift Left

^ - Bitwise XOR

2^3 2^2 2^1 2^0

1 bit, 0, 1

2 bit, 0, 1, 2, 3

3 bit, 0, 1, 2, 3, 4, 5

4 bit, 0, 1, 2, 3, 4, 5, 6, 7

8 4 2 1

1 1 1 0
8 + 4 + 2 + 0 = 14

1. Bitwise AND \rightarrow &

Ex: $a = 5$

$b = 4$

print(a & b) # 4

0 1 0 1

0 1 0 0

0 1 0 0

} Both True

2. Bitwise OR \rightarrow |

Ex: $a = 5$

$b = 4$

print(a | b) # 5

0 1 0 1

0 1 0 0

0 1 0 1

} Any one True

3. Bitwise NOT

Ex: $a = 5$

print(~a) # -6

0 1 0 1

$\sim a = -(a+1) = -(5+1) = -6$

4. Bitwise XOR \rightarrow ^

Ex: $a = 5$

$b = 3$

print(a ^ b) # 6

0 1 0 1

0 0 1 1

0 1 1 0

} Both Same - 0

__/_/_

5) Left Shift - \ll

Ex: $a = 5$

$a \ll 2 \# 10$

0101

0101 $\xrightarrow{8+2=}$ 10

6) Right Shift - \gg

Ex: $a = 5$

$a \gg 1 \# 2$

0101

0101 $\rightarrow 2$