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Bitwise operators used to perform the operation on binary digits [bits]

& -> bitwise and

x y x & y

0 1 0

1 0 0

 $0 \ 0 \ 0$

1 1 1

x=0b1010

y = 0b1100

z=x&v

print(z) #8

-> bitwise or

x y x | y

0 1 1

1 0 1

0 0 0

1 1 1

x = 0b1010

v = 0b1100

 $z=x \mid x$

print(z) #1

^ -> bitwise x-or

 $x y x \wedge y$

0 1

 $1 \quad 0 \quad 1$

0 0 0

1 1 0

Note: When both bits are same then it will return 0 otherwise it will return 1.

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```
x=0b1010
y=0b1100
z=x^y
print(z) #6
    ---> left shift operator
<<
    ----> right shift operator
>>
                                       1
x=0b1010
                  0
                       0
x<<2
                                 0
                                            0
                  0
                       0
                           32
                       64
                                16
                           32+8
                                            0
                 •0
                                 0
                                                      0
                                       1
x=0b1010
                                       0
x>>2
                  0
                                                      0
                                            0
                       64
                           32
                                16
                                       8
                                                 2
                                                      0
                                             4
```

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