

```
a=6
b=3

a<8 and b<5
True

a=7
b=2
if a%2==0 and b%2==0:
    print("Both numbers are even")
if a%2==0 or b%2==0:
    if a%2==0:
        print("a is even")
    else:
        print("b is even")
else:
    print("both numbers are odd")

b is even

bin(22) #converting decimal number to binary
'0b10110'

int(0b10110)#converting binary to decimal
22

oct(3) #converting decimal to oct
'0o3'

int(0o3)#converting octal to decimal
3

oct(56)
'0o70'

int(0o70)
56

hex(75) #converting decimal to hexadecimal
'0x4b'

int(0x4b) #converting hex to decimal
75

int(0xf)
```

15

SWAPPING

```
x=6
y=8

x=y
y=x

x
y #here we will lose original value x i.e 6

8

x=3
y=4

temp=x
x=y
y=temp
print(x,y) #swaping using 3rd variable

3 4

m=23
n=89

m=m+n
n=m-n
m=m-n
m,n #without using 3rd variable

(23, 89)
```

BITWISE OPERATOR

COMPLIMENT

```
~12 #compliment stores negative value and it will give reverse of the binary number

-13

print(bin(12))

0b1100

print(bin(~0b1100))

-0b1101
```

AND: ONLY WHEN BOTH INPUT ARE HIGH OP IS HIGH OR: ONLY WHEN BOTH IP ARE LOW OP IS LOW

12&13

12

```
print(bin(12))
print(bin(13))
```

```
0b1100
0b1101
```

1&1

1

56|89

121

```
a=78
b=12
if a%3==0 & b%3==0:
    print("Both numbers are divisible by 3")
else:
    print("Any one number may be divisible by 3 or may both are not
divisible by 3")
```

Both numbers are divisible by 3

```
if a%2==0 | b%2==0:
    print("Number is even")
```

Number is even

XOR : IF BOTH IP ARE DIFF THE ONLY WE WILL GET OP HIGH

45^12

33

```
print(bin(45))
print(bin(12))
```

```
0b101101
0b1100
```

BITWISE LEFTSHIFT OPERATOR (<<) IN THIS ONE ZERO WILL BE GAINED AT THE LAST

```
print(bin(10))
print(bin(2))
```

```
0b1010
```

```
0b10
```

```
10<<2
```

```
40
```

```
41<<63
```

```
378158253511045808128
```

BITWISE RIGHTSHIFT OPERATOR (>>) IN THIS WE WILL LOSE THE BITS

```
12>>1 #HERE 12 AND 1 ARE GIVEN SO FROM 12, 1 BIT WILL BE LOST
```

```
6
```

```
45>>3 #HERE 3 BITS WILL BE LOST FROM 45
```

```
5
```

```
import math
```

```
x=math.sqrt(9)
```

```
x
```

```
3.0
```

```
import math as m
```

```
a=m.sqrt(25)
```

```
a
```

```
5.0
```

```
m.floor(2.9) #floor will give the least value (means ignoring the num  
after decimal point)
```

```
2
```

```
m.ceil(2.9) #ceil will give the highest value (resulting the next  
number)
```

```
3
```

```
m.pow(4,2) #here it will give the value of 4 raised to 2
```

```
16.0
```

```
print(m.pi)
```

```
print(m.e)
```

```
3.141592653589793
```

```
2.718281828459045
```

```

from math import sqrt,pow
print(pow(2,3))
print(math.sqrt(16))

8.0
4.0

from math import * #here * means import all func
floor(7.22)

7

```

INPUT()

```

x=input()
y=input()
z=x+y
print(z) #here it will give op as string because input() considers it
to be the string so the op will be concatenated

19
78

1978

p=int(input("Enter the 1st num"))
q=int(input("Enter the 2nd num"))
print(p+q) #here int is given so input() will take it as int and
perform the addition

Enter the 1st num 5
Enter the 2nd num 9

14

ch=input("Enter char")
Enter char python
print(ch)
python
print(ch[3])
h
print(ch[2:6])
thon

```

EVAL()

```
op=eval(input("Enter an expression"))  
print(op)
```

Enter an expression 56+2-1

57

```
var1=int(input("Enter the marks for English: "))  
var2=int(input("Enter the marks for Maths: "))  
var3=int(input("Enter the marks for Science: "))
```

```
if var1>=35 and var2>=35 and var3>=35:  
    print("Pass")  
else:  
    print("Fail")  
if var1<35:  
    print("Fail in English")  
if var2<35:  
    print("Fail in Math")  
if var3<35:  
    print("Fail in Science")
```

Enter the marks for English: 63
Enter the marks for Maths: 23
Enter the marks for Science: 48

Fail
Fail in Math