

# Day7\_Operators

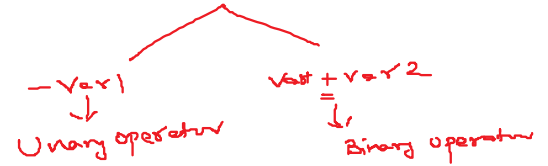
A program is a set of instructions as well as the data

Operator : 1. An operator in python is a symbol or a keyword that performs an operation on the operands or the data members

The various operators present in python are

## 1. Arithmetic Operators

- + --> Addition
- --> Subtraction
- \* --> Multiplication
- // --> Integer Division- Integer Quotient
- / --> Float Division - Float point Quotient
- % --> Modulus - Remainder
- \*\* --> Exponential or power



```

var1 = 10
var2 = 3
print(var1+var2)
print(45+89)
print(var1+47)
    
```

*Handwritten annotations:*  
 - 'var1 = 10' and 'var2 = 3' are labeled as 'expression'.  
 - '+' in 'var1+var2' is labeled as 'operation'.  
 - 'var1+var2' is labeled as 'operator'.  
 - '45+89' is labeled as 'operands'.  
 - 'var1+47' is labeled as 'expression'.  
 - A note says 'Not an expression, there is no operand' pointing to '45+89'.

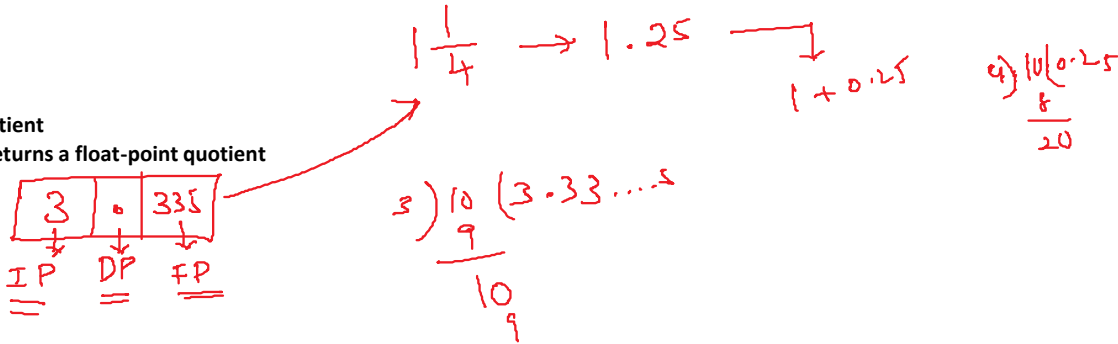
An expression requires at least one operand  
 Ex: var1+var2  
 The above makes an Arithmetic Expression

```

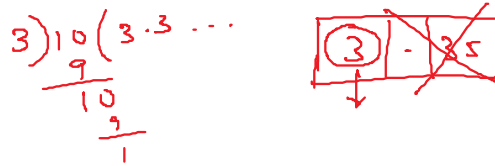
print(var1-var2)
print(-var2)#unary operation

print(var1*var2)
    
```

/ --> Float Division - Float point Quotient  
 This operator perform division and returns a float-point quotient  
 print(var1/var2)  
 #3.3333333333333335



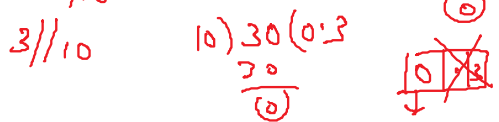
// --> Integer Division- Integer Quotient  
 print(var1//var2)  
 #3



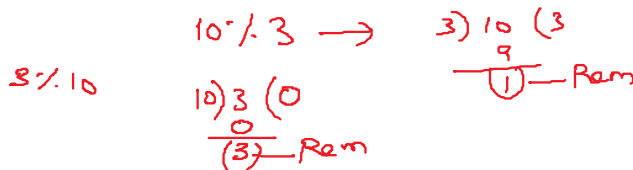
print(var2/var1)  
 #0.3



print(var2//var1)  
 #0



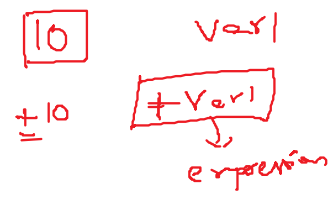
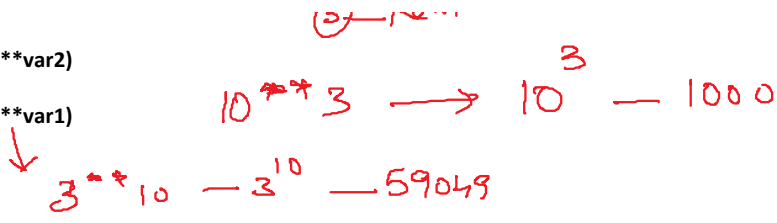
print(var1%var2)  
 #1  
 print(var2%var1)  
 #3



print(var1\*\*var2)  
 #1000



```
print(var1**var2)
#1000
print(var2**var1)
#59049
```



```
print(var1)
```

2. Relational Operators : These help us form relational expressions and return either True or False by comparing the operands or the data members

```
<,>,<=,>=,<=,==,!=
```

```
var1 = 45
var2 = 15
var3 = 45
```

```
print(var1>var2)#True
print(var1>=var2)#True
print(var1>=var3)#True
```

```
print(var1<var2)#False
print(var1<=var2)#False
print(var1<=var3)#True
```

```
print(var1==var2)# is equal to operator
#False
print(var1==var3)# is equal to operator
#True
```

```
print(var1!=var2)#is not equal to operator
#True
print(var1!=var3)
#False
```

Handwritten red note:  $45 \neq 15$

Handwritten red note:  $45 \neq 45$

3. Logical Operators : In python we use keywords as the Logical Operators and they compare the Relational Expressions, they also will return boolean values(True or False)

- and - Logical and : returns True if both the expressions are True, if any one of them is False returns False
- or - Logical or : returns True if any one of the expression is True, if both the expressions are False it returns False
- not - Logical not : returns True for a False expression and False for a True expression

Expr1	Expr2	Expr1 and Expr2	Expr1 or Expr2	not Expr1
False	False	False	False	True
False	True	False	True	True
True	False	False	True	False
True	True	True	True	False

```
var1 = 45
var2 = 15
var3 = 45
```

```
print(var1>var2 and var1>var3)
#False
```

```
print(var1>var2 or var1>var3)
#True
```

```
print(not var1>var2)
#False
```

4. Assignment Operators or Compound Assignment Operators : These are the combination of Arithmetic Operator and the Assignment Operator  
+= --> Add and Assign

operand += operand or a data-member

operand += operand or a data-member

```
var1 = 10  
var2 = 5
```

```
var1 += var2  
print(var1)
```

```
var2 += 9  
print(var2)
```



$$\text{Var1} += \text{Var2}$$

$$\downarrow$$
$$\text{Var1} = \text{Var1} + \text{Var2}$$
$$= 10 + 5$$
$$\text{Var1} = 15$$

$$\text{Var2} += 9$$

$$\downarrow$$
$$\text{Var2} = \text{Var2} + 9$$
$$= 5 + 9$$
$$= 14$$