19-09-2024

Training Day -4

Operators: are special symbols or keywords in programming that perform operations on variables and values. They are fundamental to building expressions and performing computations in a program.Like there are 7 Wonders of World, similarly
there are 7 Types of Operators in Python.

Types of Operators in Python.

1. Arithmatic Operators: 7 Operators
+ Addition
- Subtraction
* Multiplication
/ Division
** Exponent
% Remainder/Modulus
// Floor Division

Comments Comments in Python are used to add explanatory notes or documentation to the code. They are ignored by the Python interpreter and have no effect on the execution of the program. Comments improve code readability and help others (and your future self) understand the purpose of the code.

Single Line: Comment: # character
First Kasam: Always write at least 1 comment in the program ie type the purpose of the program. Try to use as much comments as possible.

Multi Line Comment: There is no direct option in python for multiline comment. Now IDE's provides us some shortcut keys to make multiple lines as comments but line by line comments
Pycharm Shortcut key: Cntrl + /

There is a way in Python which is not an official way of making multiline comments but developers use this style frequently.
ie make any set of statments as strings and don't save it in a variable then it can be seen as multiline comments
"""

```
# #New Program
# a=5
# b=2
# r=a/b
# print(r)
# a=5
```

```
# b=2
# r=a//b
# print(r)
# a=5
# b=-2
# r=a//b
# print(r)

# #New Program
# a=5
# b=3
# r=a**b      #a to the power b
# print(r)

# #New Program
# "cetpa"



# #New Program
# a=5
# b=3
# r=a%b      #a remainder b
# print(r)

"""
```

Relational/Conditional Operators: 6 Types: Returns bool value
ie True or False: Generally used to check conditions

```
==     Equals to Compares and check values are equal or not
!=     Not Equals to
>      Greater Than
<      Less Than
>=     Greater Than Equals to
<=     Less Than Equals to
```

.....New Program……..

```
# x=5
# print(x>5)
```

.....New Program……..

```
# pwd=input("Enter the Password: ")     #pwd=vikas123
# print(pwd=="Vikas123")
```

.....New Program……..

```
# a,b=5,7
# r=a==b # print(r)
```

.....New Program……..

```
# a,b=5,5
# r=a>=b
# print(r)
```

Logical Operators: Generally used to check multiple conditions.
and : When both the inputs are True, output is True
or : When at least one of the input is True, output will be True
not : Toggle the output: Input True then output False and vice versa

What are False values in python:

False
0
None
All empty values
Rest all are True values

```
s=""        #Empty String,
u=[]        #Empty List
```

If inputs are not boolean value:

and: if first input is False then output is first input else output will be second input
or: If first input is True then output is first input else output will be second input.

.....New Program……..

```
# user="Vikas"
# pwd="Kalra"
# res=(user=="Vikas" and pwd == "Kalra")  #True and True
# print(res)
```

.....New Program……..

```
# a,b=5,7
# r= a or b      #First input is True output will be first
# print(r)
```

.....New Program……..

```
# a,b="",7
# r= a or b      #First input is False output will be second
# print(r)
```

Bitwise Operators: 6 in numbers: Works on bits
Bits are checked at same position level or index level.

& : and: If both bits are 1, output will be 1
| : or: If at least 1 of the bit is 1, output will be 1
~ : not: Toggle
^ : xor: If both bits are different then output will be 1

<< : shift left with 0 filling:
>> : shift right with upper bit filling
a << b means a will be shifted to left, b times
Shift Left: All the bits will be shifted to left, MSB (Most significant bit ie left most bit) will be discarded and LSB will be filled with 0.

Decimal
00
01
2
9
10
11
19
20
0000 : 0
0001 : 1
0010 : 2
0011 : 3
0100 : 4
0101 : 5
.....New Program……..
a=5 # 0101
b=3 # 0011
r= a & b # 0001 #r=1
print(r)
.....New Program……..# a=5 # 0101
b=3 # 0011
r= a ^ b # 0110 #6
print(r)
All variables in python are of reference type ie when we assign one variable to another variable in python then address of RHS variable is assigned to LHS variable.

Assignment Operators: 1 (Equals to) + 7 (Arithmatic operators) +5 (Bitwise operator) + 1 (walrus)= 14

= Equals to
+= a+=b means a=a+b
-=
*=
/=
= a=b means a=a**b

%=
//= a//=b means a=a//b
&= a&=b means a=a & b
|=
^= a ^= b means a = a ^ b
<<=
>>= a >>= b means a = a >> b
:= Walrus operator: used to assign a value to a variable inside
an expression
.....New Program……..
```
# a=5     #
# b=a
# print(id(a))
# print(id(b))
```
.....New Program……..
```
# a,b=5,7
# a+=b        #a=a+b
# print(a)
```
.....New Program……..
```
# a=5
# a+=1        #a=a+1
# print(a)
```
.....New Program……..
```
# a,b=5,3
# a**=b       #a=a**b
# print(a)
```
.....New Program……..
```
# print(a=5)      #TypeError: 'a' is an invalid keyword argument for print()

# #New Program
# print(a:=5)

# #New Program
# r=(a:=5+5)
# print(r)
```