▾ Python Data Type & Operation

```
import warnings
warnings.filterwarnings('ignore')
```

▾ I. Python Function( )

```
print('Hello World')
```
```
     Hello World
```

```
print('Hello World', end = '\t')
```
```
     Hello World
```

```
print('Hello', 'World', sep = '-')
```
```
     Hello-World
```

```
koo = 'Data Analytics'

print(koo)
```
```
     Data Analytics
```

```
type(koo)
```
```
     str
```

```
help(print)
```
```
     Help on built-in function print in module builtins:

     print(...)
         print(value, ..., sep=' ', end='\n', file=sys.stdout, flush=False)

         Prints the values to a stream, or to sys.stdout by default.
         Optional keyword arguments:
         file:  a file-like object (stream); defaults to the current sys.stdout.
         sep:   string inserted between values, default a space.
         end:   string appended after the last value, default a newline.
         flush: whether to forcibly flush the stream.
```

II. Python Data Type

1) Numeric

```
type(888)
```

    int

```
type(0o77)
```

    int

```
type(0xff)
```

    int

```
type(0b1001)
```

    int

```
type(3.14)
```

    float

```
type(5e-9)
```

    float

```
type(5e+8)
```

    float

```
type(8 + 9j)
```

    complex

2) String

```
type('A')
```

    str

```
type('Data Analytics')
```

    str

▾ 3) Logical

```
type(True)
```
> bool

```
type(False)
```
> bool

▾ III. 산술연산(Arithmetic Operators)

▾ 1) 사칙연산

```
8 + 9
```
> 17

```
8 - 9
```
> -1

```
8 * 9
```
> 72

```
10 / 3
```
> 3.3333333333333335

```
10 // 3
```
> 3

```
10 % 3
```
> 1

```
9 ** 3
```
> 729

```
pow(9, 2)
```

```
81
```

▼ 2) 절댓값

```
abs(-3)
```

```
3
```

▼ 3) 진법 변환

```
hex(16)
```

```
'0x10'
```

```
oct(8)
```

```
'0o10'
```

```
bin(9)
```

```
'0b1001'
```

▼ 4) 반올림

```
round(24.47)
```

```
24
```

```
round(24.57)
```

```
25
```

```
round(24.57, ndigits = 0)
```

```
25.0
```

```
round(24.57, ndigits = 1)
```

```
24.6
```

```
round(24.57, ndigits = -1)
```

    20.0

```
round(25.47, ndigits = -1)
```

    30.0

```
round(25.478, ndigits = 2)
```

    25.48

▾ IV. 외부 모듈(External Module)

- import math

```
import math
```

```
math.pi
```

    3.141592653589793

```
math.e
```

    2.718281828459045

```
math.ceil(24.99)
```

    25

```
math.floor(24.99)
```

    24

```
math.trunc(24.99)
```

    24

```
math.log(100,10)
```

    2.0

```
math.log10(100)
```

    2.0

```
math.log(100,2)
```

    6.643856189774725

```
math.log2(100)
```

> 6.643856189774724

```
math.log(100)
```

> 4.605170185988092

```
math.pow(9,2)
```

> 81.0

```
math.sqrt(81)
```

> 9.0

```
math.sin(45)
```

> 0.8509035245341184

```
math.cos(45)
```

> 0.5253219888177297

```
math.tan(45)
```

> 1.6197751905438615

▾ V. 할당 연산자(Assignment Operators)

```
koo = 88
print(koo)
```

> 88

▾ 1) +=

```
# koo = koo + 11

koo += 11
print(koo)
```

> 99

▾ 2) -=

```
# koo = koo - 11

koo -= 11
print(koo)
```

88

▾ 3) *=

```
# koo = koo * 10

koo *= 10
print(koo)
```

880

▾ 4) /=

```
# koo = koo / 10

koo /= 10
print(koo)
```

88.0

▾ 5) //=

```
# koo = koo // 10

koo //= 10
print(koo)
```

8.0

▾ 6) %=

```
# koo = koo % 3

koo %= 3
```

```
print(koo)
```

```
    2.0
```

▾ 7) **=

```
# koo = koo ** 2

koo **= 2
print(koo)
```

```
    4.0
```

▾ VI. 비교 연산자(Comparison Operators)

▾ 1) Numeric

```
8 > 9
```

```
    False
```

```
8 < 9
```

```
    True
```

```
8 >= 9
```

```
    False
```

```
8 <= 9
```

```
    True
```

```
8 == 9
```

```
    False
```

```
8 != 9
```

```
    True
```

▾ 2) Character

```
'A' > 'B'
```

```
False
```

```
'A' < 'B'
```

```
True
```

```
'A' == 'B'
```

```
False
```

```
'A' != 'B'
```

```
True
```

```
'팔' > 9
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-73-8dbbd53735b8> in <module>()
----> 1 '팔' > 9

TypeError: '>' not supported between instances of 'str' and 'int'
```

SEARCH STACK OVERFLOW

```
'A' > 9
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-74-41e11a074f7f> in <module>()
----> 1 'A' > 9

TypeError: '>' not supported between instances of 'str' and 'int'
```

SEARCH STACK OVERFLOW

▾ VII. 논리 연산자(Logical Operators)

```
X = True
Y = False
Z = True

print(X, Y, Z)
```

```
True False True
```

▾ 1) AND

```
X and Y
```

```
False
```

▾ 2) OR

```
X or Y
```

```
True
```

▾ 3) NOT

```
not X
```

```
False
```

▾ 4) 괄호 연산자

```
(X and Y) and (Y or Z)
```

```
False
```

▾ VIII. 식별 연산자(Identity Operators)

```
n = 8
m = 9
```

▾ 1) is, is not

```
n is m
```

```
False
```

```
n is not m
```

```
True
```

▾ 2) in, not in

```
'o' in 'koo'
```

```
True
```

```
'J' not in 'koo'
```

```
True
```

```
#
```

```
#
```

```
#
```

The End

```
#
```

```
#
```

```
#
```