IT Workshop - Python

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USN - 18BTRSE031

Float datatype

In [2]:

```
F = 10.4
F
```

Out[2]:

```
10.4
```

In [3]:

```
type(F)
```

Out[3]:

```
float
```

Exponential

In [4]:

```
F = 1.2e3
F
```

Out[4]:

```
1200.0
```

Complex Data Type

In [5]:

```
A = 10 + 20j
B = 10 + 20j
```

Complex Data Type Operations

In [6]:

```
# Addition
A + B
```

Out[6]:

```
(20+40j)
```

In [7]:

```
# Subtraction
A - B
```

Out[7]:

```
0j
```

In [8]:

```
# Multiplication
A * B
```

Out[8]:

```
(-300+400j)
```

In [9]:

```
# Divition
A / B
```

Out[9]:

```
(1+0j)
```

Boolean data type

In [10]:

```
a = True
a
```

Out[10]:

```
True
```

In [11]:

```
b = False
b
```

Out[11]:

```
False
```

Boolean Data Type Operations

In [12]:

```
a = True + True
a
```

Out[12]:

```
2
```

In [14]:

```
b = True * 10
b
```

Out[14]:

```
10
```

In [15]:

```
c = True - True
c
```

Out[15]:

```
0
```

In [16]:

```
d = True / True
d
```

Out[16]:

```
1.0
```

In [17]:

```
e = False + False
e
```

Out[17]:

```
0
```

In [18]:

```
f = False * 10
f
```

Out[18]:

```
0
```

In [19]:

```
g = False - False
g
```

Out[19]:

```
0
```

In [20]:

```
h = False / False
h
```

```
---------------------------------------------------------------------
-------
ZeroDivisionError                         Traceback (most recent cal
l last)
<ipython-input-20-59062e365de9> in <module>
----> 1 h = False / False
      2 h

ZeroDivisionError: division by zero
```

In [21]:

```
i = False + True
i
```

Out[21]:

```
1
```

In [22]:

```
j = False - True
j
```

Out[22]:

```
-1
```

In [23]:

```
k = False * True
k
```

Out[23]:

```
0
```

In [24]:

```
l = False / True
l
```

Out[24]:

```
0.0
```

String Data Type

In [26]:

```
S = 'Jain University'
S
```

Out[26]:

```
'Jain University'
```

String Slicing

In [27]:

```
S[1:4]
```

Out[27]:

```
'ain'
```

In [28]:

```
S[2:3]
```

Out[28]:

```
'i'
```

In [29]:

```
S[1:]
```

Out[29]:

```
'ain University'
```

In [30]:

```
S[3:]
```

Out[30]:

```
'n University'
```

In [31]:

```
S[:4]
```

Out[31]:

```
'Jain'
```

In [32]:

```
S[-1]
```

Out[32]:

```
'y'
```

In [33]:

```
S[0:10:2]
```

Out[33]:

```
'Ji nv'
```

In [34]:

```
S[0 : : 3]
```

Out[34]:

```
'Jnnei'
```

In [35]:

```
S[0 : : 2]
```

Out[35]:

```
'Ji nvriy'
```

In [36]:

```
S[0:10:3]
```

Out[36]:

```
'Jnne'
```

In [37]:

```
S * 10
```

Out[37]:

```
'Jain UniversityJain UniversityJain UniversityJain UniversityJain Un
iversityJain UniversityJain UniversityJain UniversityJain University
Jain University'
```

Type Casting - Complex data type

In [38]:

```
complex(10)
```

Out[38]:

```
(10+0j)
```

In [40]:

```
complex('10+2j')
```

Out[40]:

```
(10+2j)
```

In [41]:

```
complex(10, 25.2)
```

Out[41]:

```
(10+25.2j)
```

In [42]:

```
complex(5)
```

Out[42]:

```
(5+0j)
```

In [43]:

```
complex(5,7)
```

Out[43]:

```
(5+7j)
```

In [44]:

```
complex(10.5)
```

Out[44]:

```
(10.5+0j)
```

In [45]:

```
complex(True)
```

Out[45]:

```
(1+0j)
```

In [46]:

```
complex(False)
```

Out[46]:

```
0j
```

In [47]:

```
complex(,7)
```

```
  File "<ipython-input-47-090513f94eba>", line 1
    complex(,7)
            ^
SyntaxError: invalid syntax
```

In [48]:

```
complex('19')
```

Out[48]:

```
(19+0j)
```

In [49]:

```
complex('10', '25.2')
```

```
---------------------------------------------------------------------
-------
TypeError                                 Traceback (most recent cal
l last)
<ipython-input-49-44ce7d78ae03> in <module>
----> 1 complex('10', '25.2')

TypeError: complex() can't take second arg if first is a string
```

In [50]:

```
complex('True')
```

```
---------------------------------------------------------------------
-------
ValueError                                Traceback (most recent cal
l last)
<ipython-input-50-66c333e15438> in <module>
----> 1 complex('True')

ValueError: complex() arg is a malformed string
```

Type Casting - Float data type

In [51]:

```
float(10+20j)
```

```
---------------------------------------------------------------------
-------
TypeError                                 Traceback (most recent cal
l last)
<ipython-input-51-48f191a7b6f1> in <module>
----> 1 float(10+20j)

TypeError: can't convert complex to float
```

In [52]:

```
float(True)
```

Out[52]:

```
1.0
```

In [53]:

```
float(False)
```

Out[53]:

```
0.0
```

In [54]:

```
float('1111')
```

Out[54]:

```
1111.0
```

In [55]:

```
float(0b111)
```

Out[55]:

```
7.0
```

In [56]:

```
int('10.4')
```

```
---------------------------------------------------------------------
-------
ValueError                                Traceback (most recent cal
l last)
<ipython-input-56-820d0c1a69ff> in <module>
----> 1 int('10.4')

ValueError: invalid literal for int() with base 10: '10.4'
```

Type Casting - Integer data type

In [57]:

```
int(123.33)
```

Out[57]:

```
123
```

In [58]:

```
int(True)
```

Out[58]:

```
1
```

In [59]:

```
int(False)
```

Out[59]:

```
0
```

In [60]:

```
int('10')
```

Out[60]:

```
10
```

In [61]:

```
int('10.4')
```

```
---------------------------------------------------------------------
-------
ValueError                                Traceback (most recent cal
l last)
<ipython-input-61-820d0c1a69ff> in <module>
----> 1 int('10.4')

ValueError: invalid literal for int() with base 10: '10.4'
```

In [62]:

```
int('1111')
```

Out[62]:

```
1111
```

In [63]:

```
int(0b111)
```

Out[63]:

```
7
```

In [64]:

```
int(10+20j)
```

```
---------------------------------------------------------------------
-------
TypeError                                 Traceback (most recent cal
l last)
<ipython-input-64-1d92c7307b83> in <module>
----> 1 int(10+20j)

TypeError: can't convert complex to int
```

Type Casting - String data type

In [65]:

```
str(10+20j)
```

Out[65]:

```
'(10+20j)'
```

In [66]:

```
str(10)
```

Out[66]:

'10'

In [67]:

```
str(12.7)
```

Out[67]:

'12.7'

In [68]:

```
str(True)
```

Out[68]:

'True'

In [69]:

```
str(False)
```

Out[69]:

'False'

In [70]:

```
str('Jain University')
```

Out[70]:

'Jain University'

Type Casting - Boolean data type

In [71]:

```
bool(0)
```

Out[71]:

False

In [72]:

```
bool(1)
```

Out[72]:

True

In [73]:

```
bool(20)
```

Out[73]:

True

In [74]:

```
bool(200)
```

Out[74]:

True

In [75]:

```
bool(0.0)
```

Out[75]:

False

In [76]:

```
bool(0j)
```

Out[76]:

False

In [77]:

```
bool(10+0j)
```

Out[77]:

True

In [78]:

```
bool(0.1)
```

Out[78]:

True

In [79]:

```
bool(0+0j)
```

Out[79]:

False

In [80]:

```
bool(0+1j)
```

Out[80]:

True

In [81]:

```
bool(232.034)
```

Out[81]:

True

In [82]:

```
bool('0j')
```

Out[82]:

True

In [83]:

```
bool('0')
```

Out[83]:

True

In [84]:

```
bool('135')
```

Out[84]:

True

In [85]:

```
bool('')
```

Out[85]:

False

In [86]:

```
bool(' ')
```

Out[86]:

True

Reusability

In [87]:

```
a = 10
```

In [88]:

```
b = 10
```

In [89]:

```
c = 10
```

In [90]:

```
id(a)
```

Out[90]:

```
94630476123744
```

In [91]:

```
id(b)
```

Out[91]:

```
94630476123744
```

In [92]:

```
id(c)
```

Out[92]:

```
94630476123744
```

In [93]:

```
d = 20
```

In [94]:

```
id(d)
```

Out[94]:

```
94630476124064
```

In [95]:

```
b = 20
```

In [96]:

```
id(b)
```

Out[96]:

```
94630476124064
```

In [97]:

```
b is d
```

Out[97]:

```
True
```

In [98]:

```
b = 30
```

In [99]:

```
id(b)
```

Out[99]:

```
94630476124384
```

In [100]:

```
b is d
```

Out[100]:

```
False
```

In [101]:

```
a is c
```

Out[101]:

```
True
```

In [102]:

```
a is b
```

Out[102]:

```
False
```