Python Tutorial

In [103]:
```
import sys
import keyword
import operator
from datetime import datetime
import os
```

Keywords

Keywords are the reserved words in Python and can't be used as an identifier

In [3]:
```
print(keyword.kwlist) # List all Python Keywords
```

```
['False', 'None', 'True', 'and', 'as', 'assert', 'async', 'await', 'break', 'cl
ass', 'continue', 'def', 'del', 'elif', 'else', 'except', 'finally', 'for', 'fr
om', 'global', 'if', 'import', 'in', 'is', 'lambda', 'nonlocal', 'not', 'or',
'pass', 'raise', 'return', 'try', 'while', 'with', 'yield']
```

In [4]:
```
len(keyword.kwlist) # Python contains 35 keywords
```

Out[4]: 35

Identifiers

An identifier is a name given to entities like class, functions, variables, etc. It helps to differentiate one entity from another.

In [13]:
```
1var = 10 # Identifier can't start with a digit
```

```
  File "<ipython-input-13-37e58aaf2d3b>", line 1
    1var = 10 # Identifier can't start with a digit
     ^
SyntaxError: invalid syntax
```

In [14]:
```
val2@ = 35 # Identifier can't use special symbols
```

```
  File "<ipython-input-14-cfbf60736601>", line 1
    val2@ = 35 # Identifier can't use special symbols
         ^
SyntaxError: invalid syntax
```

In [15]:
```
import = 125 # Keywords can't be used as identifiers
```

```
  File "<ipython-input-15-f7061d4fc9ba>", line 1
    import = 125 # Keywords can't be used as identifiers
           ^
SyntaxError: invalid syntax
```

In [16]:
```
"""
Correct way of defining an identifier
(Identifiers can be a combination of letters in lowercase (a to z) or uppercase
"""

val2 = 10
```

In [17]:
```
val_ = 99
```

Comments in Python

Comments can be used to explain the code for more readabilty.

In [18]:
```
# Single line comment
val1  = 10
```

In [19]:
```
# Multiple
# line
# comment
val1  = 10
```

In [20]:
```
'''
Multiple
line
comment
'''
val1  = 10
```

In [21]:
```
"""
Multiple
line
comment
"""
val1  = 10
```

Statements

Instructions that a Python interpreter can execute.

In [94]:
```
p = 20  #Creates an integer object with value 20 and assigns the variable p to p
q = 20  # Create new reference q which will point to value 20. p & q will be poi
r = q  # variable r will also point to the same location where p & q are pointin
p , type(p), hex(id(p)) # Variable P is pointing to memory location '0x7fff6d71a
```

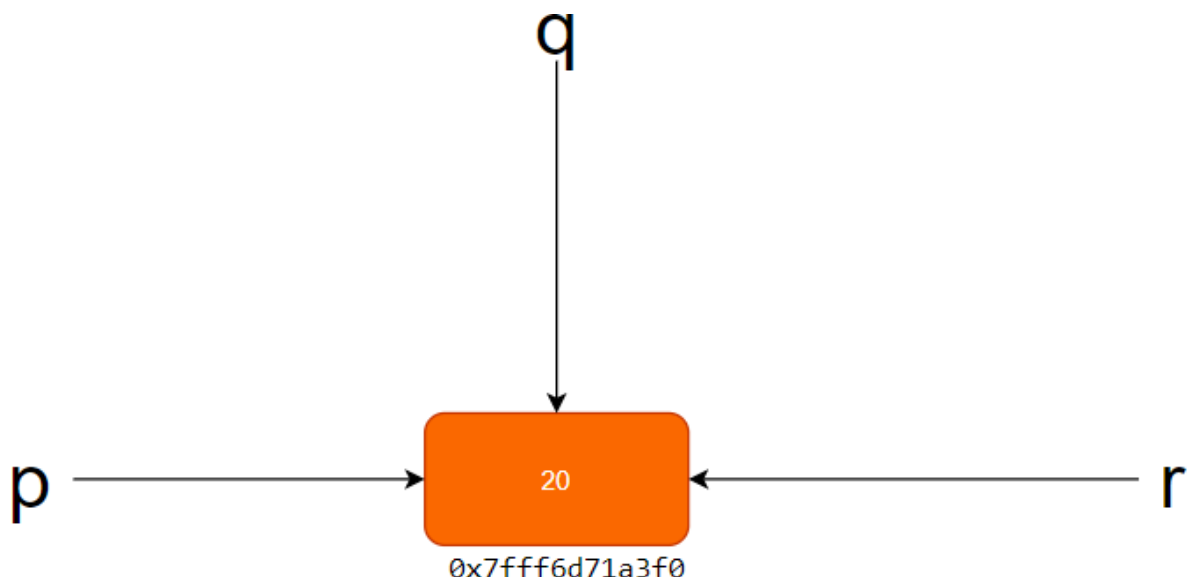
Out[94]: (20, int, '0x7fff6d71a3f0')

In [95]:
```
q , type(q), hex(id(q))
```

Out[95]: (20, int, '0x7fff6d71a3f0')

In [96]:
```
r , type(r), hex(id(r))
```

Out[96]: (20, int, '0x7fff6d71a3f0')



In [146]:
```
p = 20
p = p + 10 # Variable Overwriting
p
```

Out[146]: 30

Variable Assigment

In [100]:
```
intvar = 10 # Integer variable
floatvar = 2.57 # Float Variable
strvar = "Python Language" # String variable

print(intvar)
print(floatvar)
print(strvar)
```

```
10
2.57
Python Language
```

Multiple Assignments

In [102]:
```
intvar , floatvar , strvar = 10,2.57,"Python Language" # Using commas to separat
print(intvar)
print(floatvar)
print(strvar)
```

```
10
2.57
Python Language
```

In [105]:
```
p1 = p2 = p3 = p4 = 44 # All variables pointing to same value
print(p1,p2,p3,p4)
```

```
44 44 44 44
```

Data Types

Numeric

In [135]:
```
val1 = 10  # Integer data type
print(val1)
print(type(val1)) # type of object
print(sys.getsizeof(val1)) # size of integer object in bytes
print(val1, " is Integer?", isinstance(val1, int)) # val1 is an instance of int
```

```
10
<class 'int'>
28
10  is Integer? True
```

In [126]:
```
val2 = 92.78 # Float data type
print(val2)
print(type(val2)) # type of object
print(sys.getsizeof(val2)) # size of float object in bytes
print(val2, " is float?", isinstance(val2, float)) # Val2 is an instance of floa
```

```
92.78
<class 'float'>
24
92.78  is float? True
```

In [136]:
```
val3 = 25 + 10j # Complex data type
print(val3)
print(type(val3)) # type of object
print(sys.getsizeof(val3)) # size of float object in bytes
print(val3, " is complex?", isinstance(val3, complex)) # val3 is an instance of
```

```
(25+10j)
<class 'complex'>
32
(25+10j)  is complex? True
```

In [119]:
```
sys.getsizeof(int()) # size of integer object in bytes
```

Out[119]: 24

In [120]:
```
sys.getsizeof(float())  # size of float object in bytes
```

Out[120]: 24

In [138]:
```
sys.getsizeof(complex()) # size of complex object in bytes
```

Out[138]: 32

Boolean

Boolean data type can have only two possible values **true** or **false**.

In [139]:
```
bool1 = True
```

In [140]:
```
bool2 = False
```

In [143]:
```
print(type(bool1))
```

```
<class 'bool'>
```

In [144]:
```
print(type(bool2))
```

```
<class 'bool'>
```

In [148]:
```
isinstance(bool1, bool)
```

Out[148]: True

In [235]:
```
bool(0)
```

Out[235]: False

In [236]:
```
bool(1)
```

Out[236]: True

In [237]:
```
bool(None)
```

Out[237]: False

In [238]:
```
bool (False)
```

Out[238]: False

Strings

String Creation

In [193]:
```
str1 = "HELLO PYTHON"

print(str1)
```

```
HELLO PYTHON
```

In [194]:
```
mystr = 'Hello World' # Define string using single quotes
print(mystr)
```

```
Hello World
```

In [195]:
```
mystr = "Hello World" # Define string using double quotes
print(mystr)
```

```
Hello World
```

In [196]:
```
mystr = '''Hello
            World '''   # Define string using triple quotes
print(mystr)
```

```
Hello
            World
```

In [197]:
```
mystr = """Hello
           World"""  # Define string using triple quotes
print(mystr)
```

```
Hello
           World
```

In [198]:
```
mystr = ('Happy '
         'Monday '
         'Everyone')
print(mystr)
```

```
Happy Monday Everyone
```

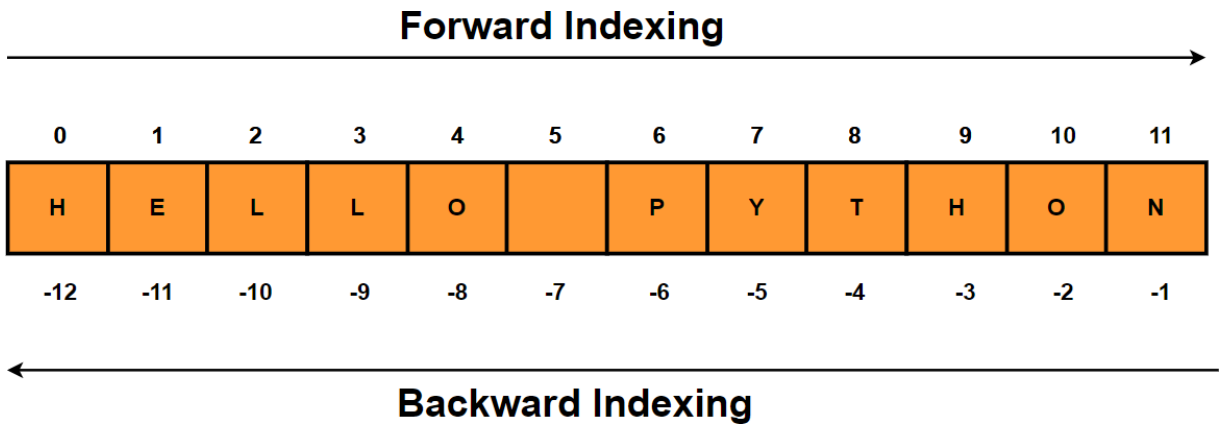
In [199]:
```
mystr2 = 'Woohoo '
mystr2 = mystr2*5
mystr2
```

Out[199]:
```
'Woohoo Woohoo Woohoo Woohoo Woohoo '
```

In [200]:
```
len(mystr2) # Length of string
```

Out[200]:
```
35
```

String Indexing



In [201]:
```
str1
```
Out[201]: 'HELLO PYTHON'

In [202]:
```
str1[0] # First character in string "str1"
```
Out[202]: 'H'

In [203]:
```
str1[len(str1)-1] # Last character in string using len function
```
Out[203]: 'N'

In [204]:
```
str1[-1] # Last character in string
```
Out[204]: 'N'

In [205]:
```
str1[6] #Fetch 7th element of the string
```
Out[205]: 'P'

In [206]:
```
str1[5]
```
Out[206]: ' '

String Slicing

In [207]:
```
str1[0:5] # String slicing - Fetch all characters from 0 to 5 index location exc
```
Out[207]: 'HELLO'

In [208]:
```
str1[6:12] # String slicing - Retreive all characters between 6 - 12 index loc e
```
Out[208]: 'PYTHON'

In [209]:
```
str1[-4:] # Retreive last four characters of the string
```
Out[209]: 'THON'

In [210]:
```
str1[-6:] # Retreive last six characters of the string
```

Out[210]:
```
'PYTHON'
```

In [211]:
```
str1[:4] # Retreive first four characters of the string
```

Out[211]:
```
'HELL'
```

In [212]:
```
str1[:6] # Retreive first six characters of the string
```

Out[212]:
```
'HELLO '
```

Update & Delete String

In [213]:
```
str1
```

Out[213]:
```
'HELLO PYTHON'
```

In [214]:
```
#Strings are immutable which means elements of a string cannot be changed once t
str1[0:5] = 'HOLAA'
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-214-ea670ff3ec72> in <module>
      1 #Strings are immutable which means elements of a string cannot be chang
ed once they have been assigned.
----> 2 str1[0:5] = 'HOLAA'

TypeError: 'str' object does not support item assignment
```

In [215]:
```
del str1 # Delete a string
print(srt1)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-215-7fcc0cc83dcc> in <module>
      1 del str1 # Delete a string
----> 2 print(srt1)

NameError: name 'srt1' is not defined
```

String concatenation

In [216]:
```
# String concatenation
s1 = "Hello"
s2 = "Asif"
s3 = s1 + s2
print(s3)
```

```
HelloAsif
```