Introduction to Python

1. Declaring Variables

In [1]:
```
var1 = 2
var2 = 5.0
var3 = True
var4 = "Machine Learning"
```

In [2]:
```
print("Value of var1 :", var1)
print("Value of var2 :", var2)
print("Value of var3 :", var3)
print("Value of var4 :", var4)
```

```
Value of var1 : 2
Value of var2 : 5.0
Value of var3 : True
Value of var4 : Machine Learning
```

In [3]:
```
type( var1 )
```

Out[3]:
```
int
```

In [4]:
```
type( var2 )
```

Out[4]:
```
float
```

In [5]:
```
type( var3 )
```

Out[5]:
```
bool
```

In [6]:
```
type( var4 )
```

Out[6]:
```
str
```

2 Conditional Statements

In [8]:
```
# Checking a condition if the variable value is more than 1
if var1 > 1:
    print( "Bigger than 1" )
```

```
Bigger than 1
```

In [9]:
```
x = 10
y = 12
# if x is greater than y
if x > y:
    print ("x > y")
# if x is lesser than y
elif x < y:
    print ("x < y")
else:
    print ("x = y")
```

```
x < y
```

In [10]:
```
# Initialize
x = 5
# Assign True if x is more than 10 or assign False using ternary operator
isGreater = True if x > 10 else False
```

In [11]:
```
isGreater
```

Out[11]:
```
False
```

3.Generating Sequence Numbers

In [12]:
```
# Initializing the sequence of numbers starting from 1
# and ending (not including) with 6
numbers = range( 1, 6 )
numbers
```

Out[12]:
```
range(1, 6)
```

In [13]:
```
print(numbers)
```

```
range(1, 6)
```

4.Control Flow Statements

4.1 : For Loop

In [18]:
```
# Iterate through the collection
for i in range(1,6):
    print(i,end = ' ')
```

```
1 2 3 4 5
```

4.2 : While Loop

In [1]:
```
# Initialize the value of 1
i = 1
# check the value of i to check if the loop will be continued or not
while i < 5:
    print(i)
    # Increment the value of i.
    i = i+1
# print after the value of i
print('Done')
```

```
1
2
3
4
Done
```

5 Functions

In [2]:
```
def addElements( a, b ):
    return a + b
```

In [3]:
```
result = addElements( 2, 3 )
result
```

Out[3]:
```
5
```

In [4]:
```
result = addElements( 2.3, 4.5 )
result
```

Out[4]: 6.8

In [5]:
```
result = addElements( "python", "workshop" )
result
```

Out[5]: 'pythonworkshop'

In [6]:
```
def addElements( a, b = 4 ):
    return a + b
```

In [7]:
```
addElements( 2 )
```

Out[7]: 6

In [8]:
```
addElements( 2, 5 )
```

Out[8]: 7

6 Working with Collections

6.1 List

In [8]:
```
## Create an empty list
emptyList = []
```

In [9]:
```
batsmen = ['Rohit', 'Dhawan', 'Kohli', 'Rahane', 'Rayudu', 'Dhoni']
```

In [10]:
```
batsmen[0]
```

Out[10]: 'Rohit'

In [11]:
```
## Slicing an list
batsmen[0:2]
```

Out[11]: ['Rohit', 'Dhawan']

In [12]:
```
## Accessing the last element
batsmen[-1]
```

Out[12]: 'Dhoni'

In [13]:
```
# how many elements in the list
len( batsmen )
```

Out[13]: 6

In [14]:
```
bowlers = ['Bumrah', 'Shami', 'Bhuvi', 'Kuldeep', 'Chahal']
```

In [15]:
```
all_players = batsmen + bowlers
```

In [16]:
```
print(all_players,end='')
```

```
['Rohit', 'Dhawan', 'Kohli', 'Rahane', 'Rayudu', 'Dhoni', 'Bumrah', 'Shami', 'Bhuvi', 'Kuldeep', 'Chahal']
```

In [17]:
```
'Bumrah' in bowlers
```

Out[17]:
```
True
```

In [18]:
```
'Rayudu' in bowlers
```

Out[18]:
```
False
```

In [19]:
```
all_players.index( 'Dhoni' )
```

Out[19]:
```
5
```

In [20]:
```
all_players.reverse()
all_players
```

Out[20]:
```
['Chahal',
 'Kuldeep',
 'Bhuvi',
 'Shami',
 'Bumrah',
 'Dhoni',
 'Rayudu',
 'Rahane',
 'Kohli',
 'Dhawan',
 'Rohit']
```

6.2 Tuples

In [21]:
```
odiDebut = ( 'Kohli', 2008 )
```

In [22]:
```
odiDebut
```

Out[22]:
```
('Kohli', 2008)
```

In [23]:
```
odiDebut[0]
```

Out[23]:
```
'Kohli'
```

In [24]:
```
odiDebut[0]= 'Sachin'
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-24-0148d3ae734d> in <module>
----> 1 odiDebut[0]= 'Sachin'

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

In [25]:
```
tup1[1] = 2009
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-25-9195c07b537c> in <module>
----> 1 tup1[1] = 2009

NameError: name 'tup1' is not defined
```

In [30]:
```
all_players[0]="Sachin"
print(all_players)
```

```
['Sachin', 'Kuldeep', 'Bhuvi', 'Shami', 'Bumrah', 'Dhoni', 'Rayudu', 'Rahane', 'Kohli', 'Dhawan', 'Rohit']
```

In [31]:
```
players = tuple( all_players )
```

In [32]:
```
players
```

Out[32]:
```
('Sachin',
 'Kuldeep',
 'Bhuvi',
 'Shami',
 'Bumrah',
 'Dhoni',
 'Rayudu',
 'Rahane',
 'Kohli',
 'Dhawan',
 'Rohit')
```

In [33]:
```
players[0] ='sachin'
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-33-4bc4db043b4f> in <module>
----> 1 players[0] ='sachin'

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

6.3 Set

In [32]:
```
setOfNumbers = {6,1,1,2,4,5}
```

In [33]:
```
setOfNumbers
```

Out[33]:
```
{1, 2, 4, 5, 6}
```

In [35]:
```
wc2011 = {"Dhoni", "Sehwag", "Tendulkar", "Gambhir", "Kohli", "Raina", "Yuvraj","Yusuf"}
wc2015 = {"Dhoni", "Dhawan", "Rohit", "Rahane", "Kohli", "Raina", "Rayudu", "Jadeja"}
```

In [36]:
```
wc2011.union( wc2015 )
```

Out[36]:
```
{'Dhawan',
 'Dhoni',
 'Gambhir',
 'Jadeja',
 'Kohli',
 'Rahane',
 'Raina',
```

```
 'Rayudu',
 'Rohit',
 'Sehwag',
 'Tendulkar',
 'Yusuf',
 'Yuvraj'}
```

In [37]:
```
wc2011.intersection( wc2015 )
```

Out[37]:
```
{'Dhoni', 'Kohli', 'Raina'}
```

In [38]:
```
wc2015.difference( wc2011 )
```

Out[38]:
```
{'Dhawan', 'Jadeja', 'Rahane', 'Rayudu', 'Rohit'}
```

6.4 Dictionary

In [41]:
```
wcWinners = {
1975: "West Indies",
1979: "West Indies",
1983: "India",
1987: "Australia",
1991: "Pakistan",
1996: "Srilanka",
1999: "Australia",
2003: "Australia",
2007: "Australia",
2011: "India"
}
```

In [42]:
```
wcWinners[1983]
```

Out[42]:
```
'India'
```

In [43]:
```
wcWinners.values()
```

Out[43]:
```
dict_values(['West Indies', 'West Indies', 'India', 'Australia', 'Pakistan', 'Srilanka', 'Australia', 'Australia'
, 'Australia', 'India'])
```

In [44]:
```
set(wcWinners.values())
```

Out[44]:
```
{'Australia', 'India', 'Pakistan', 'Srilanka', 'West Indies'}
```

In [45]:
```
wcWinners[2015] = 'Australia'
```

In [46]:
```
wcWinners
```

Out[46]:
```
{1975: 'West Indies',
 1979: 'West Indies',
 1983: 'India',
 1987: 'Australia',
 1991: 'Pakistan',
 1996: 'Srilanka',
 1999: 'Australia',
 2003: 'Australia',
 2007: 'Australia',
 2011: 'India',
 2015: 'Australia'}
```

7 Dealing with Strings

In [47]:
```
string0 = 'python'
string1 = "machine learning"
```

In [48]:
```
string2 = """This is a
multiline string"""
```

In [49]:
```
# Converting to upper case
string0.upper()
# Similarly string.lower() can be used to convert to lower case.
# string0.lower()
```

Out[49]: 'PYTHON'

In [36]:
```
string22= " Arti,ficial,Intel,ligence,Mach,ine,Learning"
```

In [37]:
```
tokens = string22.split(',')
tokens
```

Out[37]: [' Arti', 'ficial', 'Intel', 'ligence', 'Mach', 'ine', 'Learning']

In [50]:
```
tokens = string1.split(' ')
tokens
```

Out[50]: ['machine', 'learning']

In [ ]:
```

```