Session-1: Python basics

Functions

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In [1]: # Function performs a particular task
         # identification ----> function()
 In [2]: print('Hello world')
         Hello world
         Variables
 In [3]: # Variables are used to store the values
         # Variables are case sensitive and can be any text with a special character. However, we can oly use '_' as the special character.
         # Variables should always be in the form of text preceding the number and not vice-versa
 In [4]: a = 12
 In [5]: a
Out[5]: 12
 In [6]: b = 10
 In [7]: d = a + b
 In [8]: d
Out[8]: 22
In [10]: D = 20
In [11]: D
Out[11]: 20
In [12]: a9 = 7
In [13]: a9
Out[13]: 7
         Data types in Python
In [16]: #Integer -----> int -----> 1,2,3,4,...
         #Float ----> float ----> 1.0, 2.0, 3.5, 4.7....
         #Boolean ----> bool----> True, False
         #String ----> str -----> "abc", 'abc'
         # Type function : type() returns the data type of the entered input.
In [17]: print(type(1))
         <class 'int'>
In [18]: print(type(True))
         <class 'bool'>
In [19]: print(type('abc'))
         <class 'str'>
In [20]: print(type(1.2))
         <class 'float'>
         Sequential Data types
In [24]: # tuple ----> ()
         # list ----> []
         # set ----> {}
         # dict ----> {}
In [22]: # List
         # List can contain any data type as well as another list in itself.
         mylist = [23, 23.5, "abc",[1,2], True]
In [23]: print(mylist)
         [23, 23.5, 'abc', [1, 2], True]
```

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Indexing
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In [25]: # Indexing can be of 2 type positive and negative indexing.
          # Positive Indexing in Python starts from 0 (left to right) while negative starts from -1 (right to left)
In [27]: print(mylist)
         [23, 23.5, 'abc', [1, 2], True]
In [28]: mylist [2]
          'abc'
Out[28]:
In [30]: mylist [3][1]
Out[30]: 2
         Slicing
In [31]: # Slicing is displaying the range of values
          # For slicing one needs to put the start value and stop +1 value
          # start: stop +1
          # Here : represents the range
In [32]: print(mylist[0:3])
         [23, 23.5, 'abc']
In [33]: print(mylist[0:3], mylist [3])
         [23, 23.5, 'abc'] [1, 2]
         Mutable and Immutable
In [34]: # Mutlable objects can be changed ,while immutable are fixed once assigned.
          # Lists are mutable and Tuple are immutable
In [35]: print(mylist)
         [23, 23.5, 'abc', [1, 2], True]
In [36]: mylist[0]= 10
In [37]: print(mylist)
         [10, 23.5, 'abc', [1, 2], True]
In [41]: mytuple = (23, 23.5, 'abc', [1, 2], True)
In [42]: | print(mytuple)
          (23, 23.5, 'abc', [1, 2], True)
In [40]: mytuple[0]= 10 #will display an error
          TypeError
                                                   Traceback (most recent call last)
         Cell In[40], line 1
          ----> 1 mytupple[0]= 10
         TypeError: 'tuple' object does not support item assignment
         Sets
In [43]: # Sets return only unique values
In [44]: d = [1,1,1,2,2,2,3,3,3]
In [46]: set(d)
Out[46]: {1, 2, 3}
In [47]: # Conversion of Sets to List
In [48]:
          e = set(d)
In [49]: f = list(e)
In [50]: f
Out[50]: [1, 2, 3]
         Dictionary
In [59]: # Dictionary are in the form of key and value
          mydict = {"name":"Ninad","age":26,"place":"Mumbai"}
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In [63]: mydict["name"]
          'Ninad'
Out[63]:
In [64]: mydict["age"]
          26
Out[64]:
In [65]: list2 = [mydict["name"],mydict["age"]]
In [66]: list2
          ['Ninad', 26]
Out[66]:
          Append, Insert and Length
In [67]: # Append -----> Appends the value at the end
          # Insert ----> Insert the value at the sepcified index
          # Length ----> Returns the length (total no of elements) in the list/tuple/set/dict
          abc = [1,2,3]
In [68]: abc
          [1, 2, 3]
Out[68]:
In [71]: len("abc")
Out[71]:
          abc.append(4)
In [72]:
In [73]:
          abc
          [1, 2, 3, 4]
Out[73]:
          abc.insert(1,5)
In [74]:
          abc
In [75]:
Out[75]: [1, 5, 2, 3, 4]
          if elif & else
          var = 12
In [76]:
In [81]: #While writing if, elif and else we always type ':' after writing if, elif and else and also one has to make sure
          #to keep the induntation (space)
          if var > 13:
              print('Hello!')
          elif var == 12:
                  print('yes')
          else:
                  print('bye')
          yes
          input function
In [82]:
          #input function will ask the user to input a value
          #However, since input function is by default a string data-type we have to make sure to use the desire data type before it
In [83]: a = int(input("Enter 1st no: "))
          b = int(input("Enter 2nd no: "))
          Enter 1st no: 10
          Enter 2nd no: 20
In [84]:
          c = a+b
In [85]: C
Out[85]: 30
In [86]:
          # Question:
          # Assign grades as per the criteria
         inputMarks= int(input("Enter your marks: "))
In [111...
          Enter your marks: 101
          if inputMarks >= 75 and inputMarks <= 100 :</pre>
In [112...
              print('Grade A')
          elif inputMarks >= 50 and inputMarks < 75:</pre>
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elif inputMarks >= 35 and inputMarks < 50:</pre>
               print('Grade C')
           elif inputMarks >= 0 and inputMarks < 35:</pre>
              print('Fail')
           else:
               print('Invalid marks')
          Invalid marks
          for loop
In [115...
          for i in range(0,10):
               print(i)
          0
          1
           2
           3
           4
          5
          6
          7
          8
In [128...
           #print the table of 2 using for loop
           for i in range(1,11):
               print("2","*",i,"=",2*i)
          2 * 1 = 2
          2 * 2 = 4
          2 * 3 = 6
          2 * 4 = 8
          2 * 5 = 10
          2 * 6 = 12
          2 * 7 = 14
          2 * 8 = 16
          2 * 9 = 18
          2 * 10 = 20
          #Seggreggate the following my_list into different data types
In [129...
           my_list= [23, 'hello','hi',45.9,'bye',12,76,'zero',0,99,[23,'one',12.7],77,11,(6,2,0),11.0]
          my_list
In [130...
           [23,
Out[130]:
            'hello',
            'hi',
           45.9,
            'bye',
           12,
           76,
            'zero',
           0,
           99,
           [23, 'one', 12.7],
           77,
           11,
            (6, 2, 0),
           11.0]
In [187... list_of_integers1=[]
           list_of_string1=[]
           list_of_float1=[]
           list_of_tuple1=[]
           list_of_list1=[]
           for i in my_list:
               if type(i)==int:
                   list_of_integers1.append(i)
               elif type(i)==str:
                   list_of_string1.append(i)
               elif type(i)==float:
                   list_of_float1.append(i)
               elif type(i)==tuple:
                   list_of_tuple1.append(i)
               elif type(i)==list:
                   list_of_list1.append(i)
           print(list_of_integers1)
           print(list_of_string1)
           print(list_of_float1)
           print(list_of_tuple1)
           print(list_of_list1)
```

print('Grade B')

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[23, 12, 76, 0, 99, 77, 11]
['hello', 'hi', 'bye', 'zero']
[45.9, 11.0]
[(6, 2, 0)]
[[23, 'one', 12.7]]
```

In []: