Module 01

Python
Overview

Data Science Developer

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Numbers

```
In [6]: 1 + 1
Out[6]: 2
```

```
In [7]: 1 * 3
Out[7]: 3
```

```
In [8]: 1 / 2
Out[8]: 0.5
```

```
In [9]: 2 ** 4
Out[9]: 16
```

```
In [10]: 4 % 2
Out[10]: 0
```

```
In [11]: 5 % 2
Out[11]: 1
```

```
In [12]: (2 + 3) * (5 + 5)
Out[12]: 50
```

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Variable Assignment

```
In [13]:  # Can not start with number or special characters
          name_of_var = 2

In [3]:   x = 2
          y = 3

In [4]:   z = x + y

In [8]:   z

Out[8]:   5
```

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Strings

```
In [17]: 'single quotes'

Out[17]: 'single quotes'

In [18]: "double quotes"

Out[18]: 'double quotes'

In [19]: " wrap lot's of other quotes"

Out[19]: " wrap lot's of other quotes"
```

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Printing

```
In [20]: x = 'hello'
```

```
In [21]: x
```
```
Out[21]: 'hello'
```

```
In [22]: print(x)
```
```
hello
```

```
In [23]: num = 12
         name = 'Sam'
```

```
In [24]: print('My number is: {one}, and my name is: {two}'.format(one=num,two=name))
```
```
My number is: 12, and my name is: Sam
```

```
In [25]: print('My number is: {}, and my name is: {}'.format(num,name))
```
```
My number is: 12, and my name is: Sam
```

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Lists

```
In [26]: [1,2,3]
Out[26]: [1, 2, 3]
```

```
In [27]: ['hi',1,[1,2]]
Out[27]: ['hi', 1, [1, 2]]
```

```
In [4]: my_list = ['a','b','c']
```

```
In [5]: my_list.append('d')
```

```
In [6]: my_list
Out[6]: ['a', 'b', 'c', 'd']
```

```
In [7]: my_list[0]
Out[7]: 'a'
```

```
In [8]: my_list[1]
Out[8]: 'b'
```

```
In [9]: my_list[1:]
Out[9]: ['b', 'c', 'd']
```

```
In [10]: my_list[1:3]
Out[10]: ['b', 'c']
```

```
In [11]: my_list[0] = 'NEW'
```

```
In [98]: my_list
Out[98]: ['NEW', 'b', 'c', 'd']
```

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Lists

```
In [99]:  nest = [1,2,3,[4,5,['target']]]
```

```
In [100]:  nest[3]
```
Out[100]: [4, 5, ['target']]

```
In [101]:  nest[3][2]
```
Out[101]: ['target']

```
In [102]:  nest[3][2][0]
```
Out[102]: 'target'

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Dictionaries

```
In [37]:  d = {'key1':'item1','key2':'item2'}

In [38]:  d

Out[38]:  {'key1': 'item1', 'key2': 'item2'}

In [39]:  d['key1']

Out[39]:  'item1'
```

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Booleans

```
In [40]:  True

Out[40]:  True


In [41]:  False

Out[41]:  False
```

Tuples

```
In [42]: t = (1,2,3)

In [43]: t[0]
Out[43]: 1

In [44]: t[0] = 'NEW'
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-44-97e4e33b36c2> in <module>()
----> 1 t[0] = 'NEW'

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

Sets

```
In [45]: {1,2,3}

Out[45]: {1, 2, 3}

In [46]: {1,2,3,1,2,1,2,3,3,3,3,2,2,2,1,1,2}

Out[46]: {1, 2, 3}
```

Comparison Operators

```
In [47]: 1 > 2
Out[47]: False

In [48]: 1 < 2
Out[48]: True

In [49]: 1 >= 1
Out[49]: True

In [50]: 1 <= 4
Out[50]: True

In [51]: 1 == 1
Out[51]: True

In [52]: 'hi' == 'bye'
Out[52]: False
```

Logic Operators

```
In [53]: (1 > 2) and (2 < 3)

Out[53]: False


In [54]: (1 > 2) or (2 < 3)

Out[54]: True


In [55]: (1 == 2) or (2 == 3) or (4 == 4)

Out[55]: True
```

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If, elif, and else statements

```
In [56]: if 1 < 2:
             print('Yep!')

         Yep!
```

```
In [57]: if 1 < 2:
             print('yep!')

         yep!
```

```
In [58]: if 1 < 2:
             print('first')
         else:
             print('last')

         first
```

```
In [59]: if 1 > 2:
             print('first')
         else:
             print('last')

         last
```

If, elif, and else statements

```
In [60]: if 1 == 2:
             print('first')
         elif 3 == 3:
             print('middle')
         else:
             print('Last')

middle
```

For Loops

```
In [2]: seq = [1,2,3,4,5]
```

```
In [4]: for item in seq:
            print(item)
```

```
1
2
3
4
5
```

```
In [63]: for item in seq:
             print('Yep')
```

```
Yep
Yep
Yep
Yep
Yep
```

```
In [64]: for jelly in seq:
             print(jelly+jelly)
```

```
2
4
6
8
10
```

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While Loops

```
In [65]: i = 1
         while i < 5:
             print('i is: {}'.format(i))
             i = i+1

         i is: 1
         i is: 2
         i is: 3
         i is: 4
```

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Range()

```
In [66]: range(5)

Out[66]: range(0, 5)


In [67]: for i in range(5):
             print(i)

         0
         1
         2
         3
         4


In [68]: list(range(5))

Out[68]: [0, 1, 2, 3, 4]
```

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List Comprehension

```
In [69]: x = [1,2,3,4]
```

```
In [70]: out = []
         for item in x:
             out.append(item**2)
         print(out)
```

```
[1, 4, 9, 16]
```

```
In [71]: [item**2 for item in x]
```

```
Out[71]: [1, 4, 9, 16]
```

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Functions

```
In [72]: def my_func(param1='default'):
             """
             Docstring goes here.
             """
             print(param1)
```

```
In [73]: my_func
```

```
Out[73]: <function __main__.my_func>
```

```
In [74]: my_func()

         default
```

```
In [75]: my_func('new param')

         new param
```

```
In [76]: my_func(param1='new param')

         new param
```

```
In [77]: def square(x):
             return x**2
```

```
In [78]: out = square(2)
```

```
In [79]: print(out)

         4
```

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Lambda Expressions

```
In [80]: def times2(var):
             return var*2
```

```
In [81]: times2(2)
```

Out[81]: 4

```
In [82]: lambda var: var*2
```

Out[82]: <function __main__.<lambda>>

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Map and Filter

```
In [83]: seq = [1,2,3,4,5]

In [84]: map(times2,seq)
Out[84]: <map at 0x105316748>

In [85]: list(map(times2,seq))
Out[85]: [2, 4, 6, 8, 10]

In [86]: list(map(lambda var: var*2,seq))
Out[86]: [2, 4, 6, 8, 10]

In [87]: filter(lambda item: item%2 == 0,seq)
Out[87]: <filter at 0x105316ac8>

In [88]: list(filter(lambda item: item%2 == 0,seq))
Out[88]: [2, 4]
```

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Methods

```
In [5]: st = 'hello my name is Sam'
```

```
In [6]: st.lower()
```
```
Out[6]: 'hello my name is sam'
```

```
In [10]: st.upper()
```
```
Out[10]: 'HELLO MY NAME IS SAM'
```

```
In [11]: st.split()
```
```
Out[11]: ['hello', 'my', 'name', 'is', 'Sam']
```

```
In [104]: tweet = 'Go Sports! #Sports'
```

```
In [106]: tweet.split('#')
```
```
Out[106]: ['Go Sports! ', 'Sports']
```

```
In [107]: tweet.split('#')[1]
```
```
Out[107]: 'Sports'
```

Methods

```
In [92]: d

Out[92]: {'key1': 'item1', 'key2': 'item2'}

In [93]: d.keys()

Out[93]: dict_keys(['key2', 'key1'])

In [94]: d.items()

Out[94]: dict_items([('key2', 'item2'), ('key1', 'item1')])

In [95]: lst = [1,2,3]

In [96]: lst.pop()

Out[96]: 3

In [108]: lst

Out[108]: [1, 2]
```

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Methods

```
In [109]:  'x' in [1,2,3]

Out[109]:  False


In [110]:  'x' in ['x','y','z']

Out[110]:  True
```

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