Python Programming Basic

Data types

Numbers

In [1]:

```
1 + 1
```

Out[1]:

```
2
```

In [4]:

```
1 * 3
```

Out[4]:

```
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
```

Variable Assignment

In [13]:

```
# Can not start with number or special characters
name_of_var = 2
```

In [14]:

```
x = 2
y = 3
```

In [15]:

```
z = x + y
```

In [16]:

```
z
```

Out[16]:

```
5
```

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"
```

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
```

Lists

In [26]:

```
[1,2,3]
```

Out[26]:

```
[1, 2, 3]
```

In [27]:

```
['hi',1,[1,2]]
```

Out[27]:

```
['hi', 1, [1, 2]]
```

In [28]:

```
my_list = ['a','b','c']
```

In [29]:

```
my_list.append('d')
```

In [30]:

```
my_list
```

Out[30]:

```
['a', 'b', 'c', 'd']
```

In [31]:

```
my_list[0]
```

Out[31]:

```
'a'
```

In [32]:

```
my_list[1]
```

Out[32]:

```
'b'
```

In [33]:

```
my_list[1:]
```

Out[33]:

```
['b', 'c', 'd']
```

In [34]:

```
my_list[:1]
```

Out[34]:

```
['a']
```

In [35]:

```
my_list[0] = 'NEW'
```

In [98]:

```
my_list
```

Out[98]:

```
['NEW', 'b', 'c', 'd']
```

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'
```

Dictionaries

In [37]:

```
d = {'key1':'item1','key2':'item2'}
```

In [38]:

```
d
```

Out[38]:

```
{'key1': 'item1', 'key2': 'item2'}
```

In [39]:

```
d['key1']
```

Out[39]:

```
'item1'
```

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
```

if,elif, 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
```

In [60]:

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

```
middle
```

for Loops

In [61]:

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

In [62]:

```
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
```

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
```

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]
```

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]
```

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
```

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>>
```

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]
```

methods

In [111]:

```
st = 'hello my name is Sam'
```

In [112]:

```
st.lower()
```

Out[112]:

```
'hello my name is sam'
```

In [113]:

```
st.upper()
```

Out[113]:

```
'HELLO MY NAME IS SAM'
```

In [103]:

```
st.split()
```

Out[103]:

```
['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'
```

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]
```

In [109]:

```
'x' in [1,2,3]
```

Out[109]:

```
False
```

In [110]:

```
'x' in ['x','y','z']
```

Out[110]:

```
True
```

Great Job!