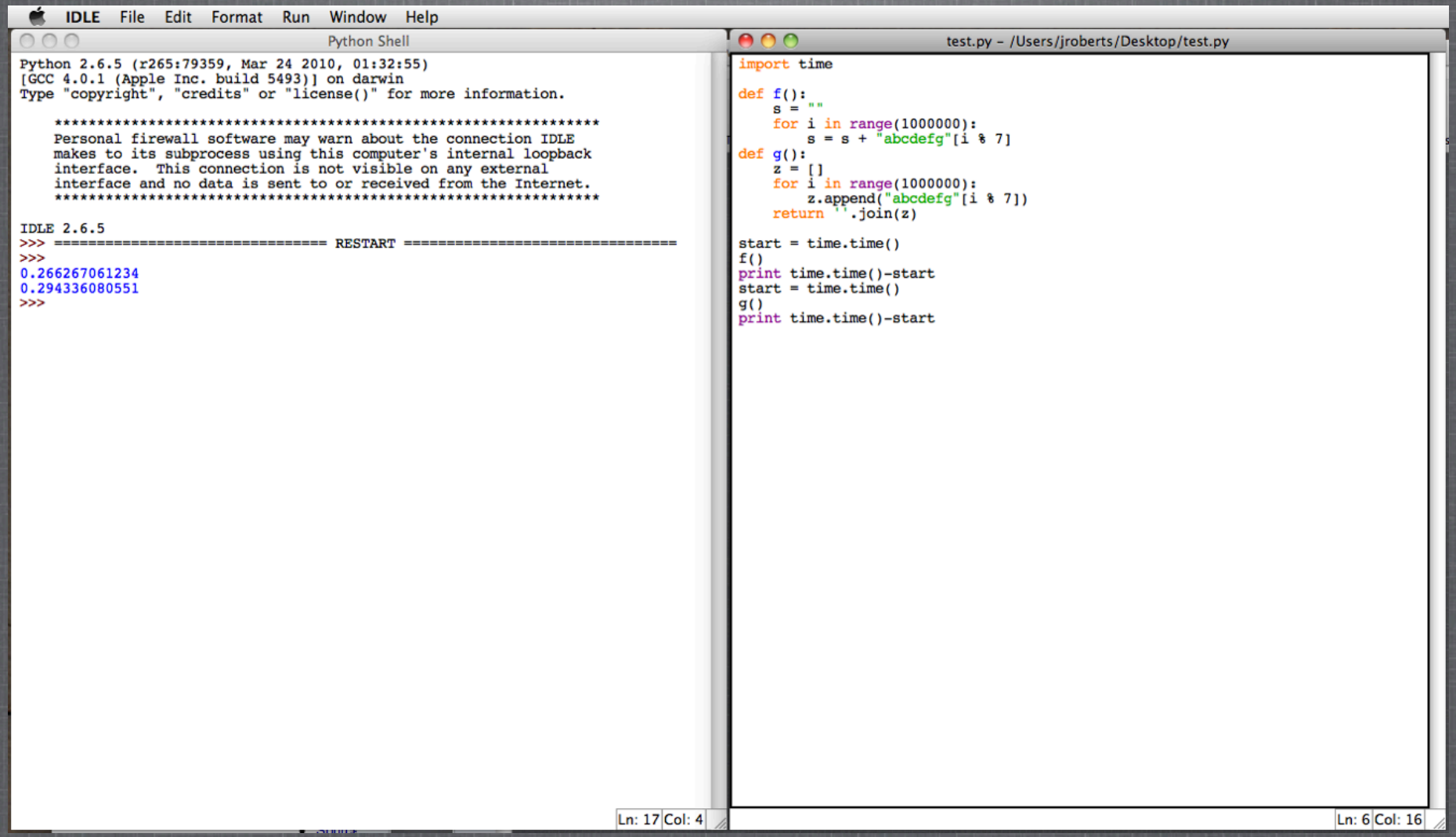
python 101

getting python

http://www.python.org

Docs

IDLE - the python development environment



Docs

Hello World!

python code

```
print()
print('Hello World!')
print('Ultimate answer: ', 27 + 15)
```

output

```
<- blank line
Hello World!
Ultimate answer:  42
```

Docs

string

python code

```
x = 'abcde'
print(x)
```

output

```
abcde
```

Docs

integer

python code

```
i = 2
j = 3
print('integer divide 2/3: ', i/j)
```

output

```
integer divide 2/3:  0
```

Docs

float

python code

```
i = 2.0  #float
j = 3     # integer
print('floating point divide 2.0/3: ', i/j)
```

output

```
floating point divide 2.0/3:  0.666666666667
```

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sequence - string

python code

```
x = 'abcde'
print(x[0])
print(x[-1])
print(x[1:4])
```

python starts counting at zero

output

```
a
e
bcd
```

Docs

sequence - tuple

python code

```
x = (1,2,3,4,5)
print(x[0])
print(x[-1])
print(x[1:4])
```

output

```
1
5
(2, 3, 4)
```

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sequence - list

python code

```
x = [1,2,3,4,5]
print(x[0])
print(x[-1])
print(x[1:4])
```

output

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

Docs

tuple is immutable

python code

```
x = (1,2,3,4,5)
x[0] = 9
```

output

```
Traceback (most recent call last):
  File "/Users/jroberts/Desktop/test.py", line 2, in <module>
    x[0] = 9
TypeError: 'tuple' object does not support item assignment
```

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list is mutable

python code

```
x = [1,2,3,4,5]
x[0] = 9
print(x)
```

output

```
[9, 2, 3, 4, 5]
```

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lists can have mixed types

python code

```
x = [1,2,3,4,5]
x[0] = 'a'
x[1] = (4,5,6)
print(x)
```

output

```
['a', (4, 5, 6), 3, 4, 5]
```

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string % formatting

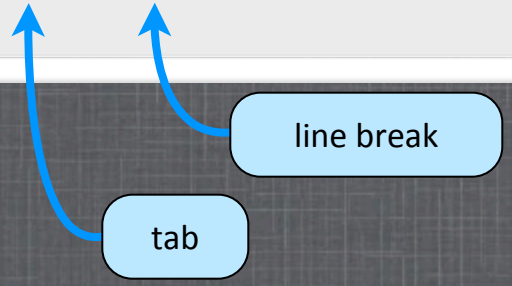
python code

```
answer = 42
pi = 3.141592654
print('the answer is %i and pi is approx. %f' % (answer,pi))
print('the answer is %i and pi is approx. %.2f' % (answer,pi))
print('%i\t%.2f\n' % (answer,pi))
```

output

```
the answer is 42 and pi is approx. 3.141593
the answer is 42 and pi is approx. 3.14
42	3.14

```



Docs

functions()

python code

```
print(float(42))
print(int(5.75))
print(round(5.75))
print(int(round(5.75)))
print(range(5))
```

output

```
42.0
5
6.0
6
[0, 1, 2, 3, 4]
```

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functions from imported libraries

python code

```
import random
numbers = [1,2,3,4,5]
random.shuffle(numbers)
print(numbers)
```

output

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

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methods - functions “attached” to objects

python code

```
names = 'Jon Roberts\tErnie Mross'
print(1, names.split())
print(2, names.split('\t'))
print(3, names.split('\t')[0])
print(4, names.lower().split('\t')[0].split())
```

'\t' is the tab character

output

```
1 ['Jon', 'Roberts', 'Ernie', 'Mross']
2 ['Jon Roberts', 'Ernie Mross']
3 Jon Roberts
4 ['jon', 'roberts']
```

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what if?

python code

```
words = ['one','two','three']
if 'three' in words:
    print('found three')
```

output

```
found three
```

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more if?

python code

```
x = 5
if x >5:
    print('big x')
else:
    print('x is less than or equal to 5')
```

output

```
x is less than or equal to 5
```

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even more if?

python code

```
x = 1
if x == 3:
    print('three')
elif x == 5:
    print('five')
else:
    print('not found')
```

output

```
not found
```

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loops

python code

```
for num in range(4):
    x = num+10
    print(x)
print('done')
```

output

```
10
11
12
13
done
```

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more loops

python code

```
nameList = ['jon','ernie','linda']
for aName in nameList:
    print('aName -> ', aName)
```

output

```
aName ->  jon
aName ->  ernie
aName ->  linda
```

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even more loops

python code

```
done = False ; x = 0
while not done:
   x += 3
   if x>9: done = True
   print(x)
```

output

```
3
6
9
12
```

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reading files

python code

```
infile = open('tabtext.txt', mode='rU')
for aLine in infile:
    print(aLine.split('\t'))
infile.close()
```

output

```
['line 1', 'abc', 'def\n']
['line 2', 'ghi', 'jkl']
```

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more reading files

python code

```
infile = open('tabtext.txt', mode='rU')
for aLine in infile:
    print(aLine.strip().split('\t'))
infile.close()
```

output

```
['line 1', 'abc', 'def']
['line 2', 'ghi', 'jkl']
```

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writing files

python code

```
data = [[1,2],[3,4]]
outfile = open('tabtextout.txt', mode='w')
for subList in data:
    outfile.write('%i\t%i\n' % (subList[0],subList[1]))
outfile.close()
```

'w' for write, 'a' for append

you must close the file to be certain all data are written

output

```
1	2
3	4
```

line breaks

tabs

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