Introduction to Python

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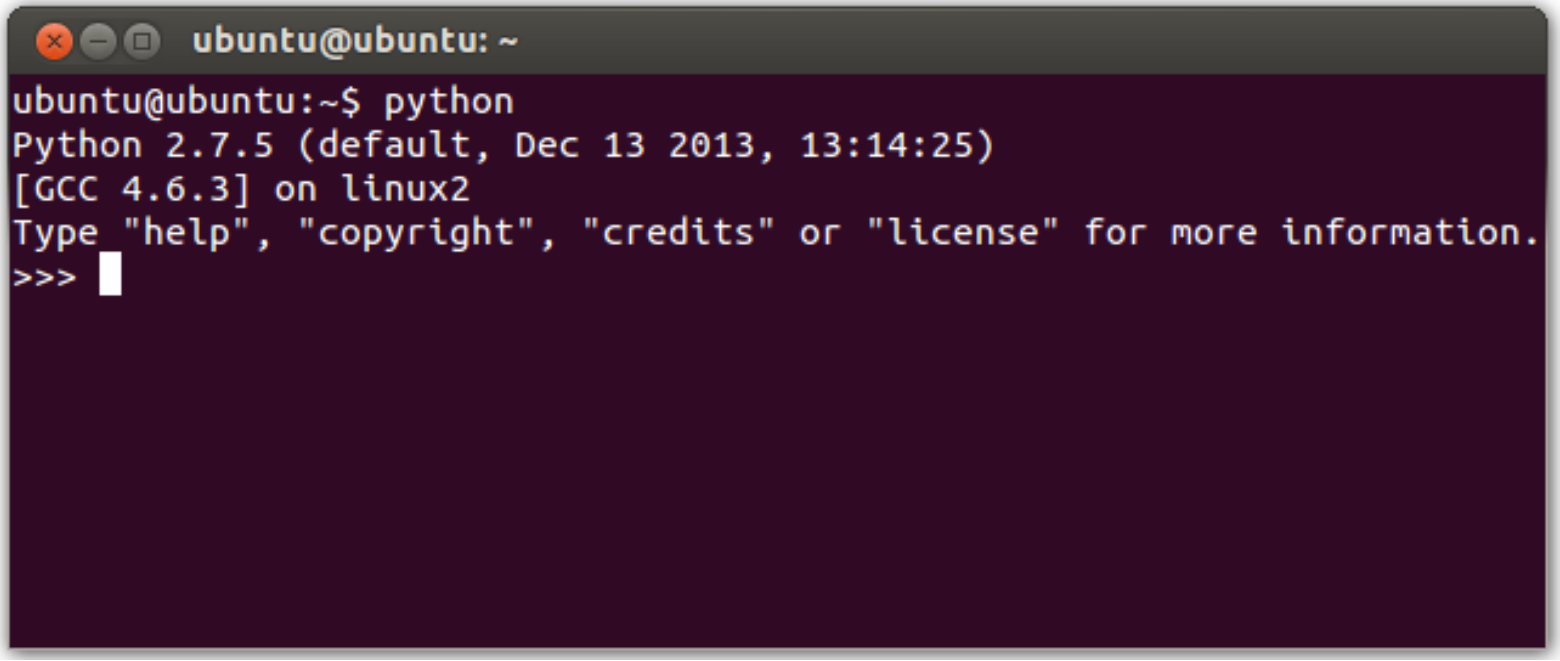
what is python...

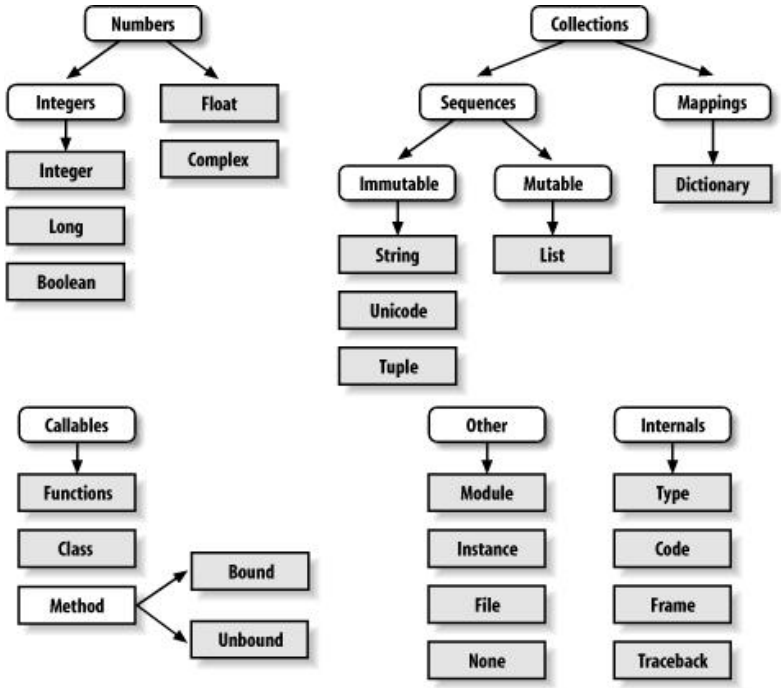
Python is a high-level, interpreted, interactive and object-oriented scripting language. Python is designed to be highly readable..

Environment



Variable Types

- Numbers
- String
- List
- Tuple
- Dictionary



Numbers

- Number data types store numeric values.
- They are immutable data types, means that changing the value of a number data type results in a newly allocated object.

Strings

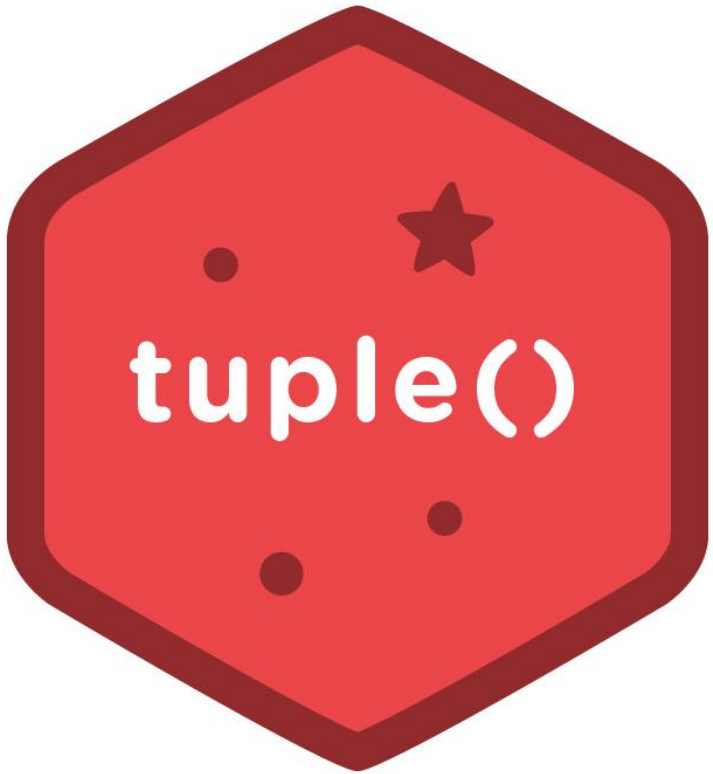
- Strings are amongst the most popular types in Python.
- We can create them simply by enclosing characters in quotes.
- Python treats single quotes the same as double quotes.

Lists

- The most basic data structure in Python is the sequence.
- Each element of a sequence is assigned a number - its position or index.
- The first index is zero, the second index is one, and so forth.

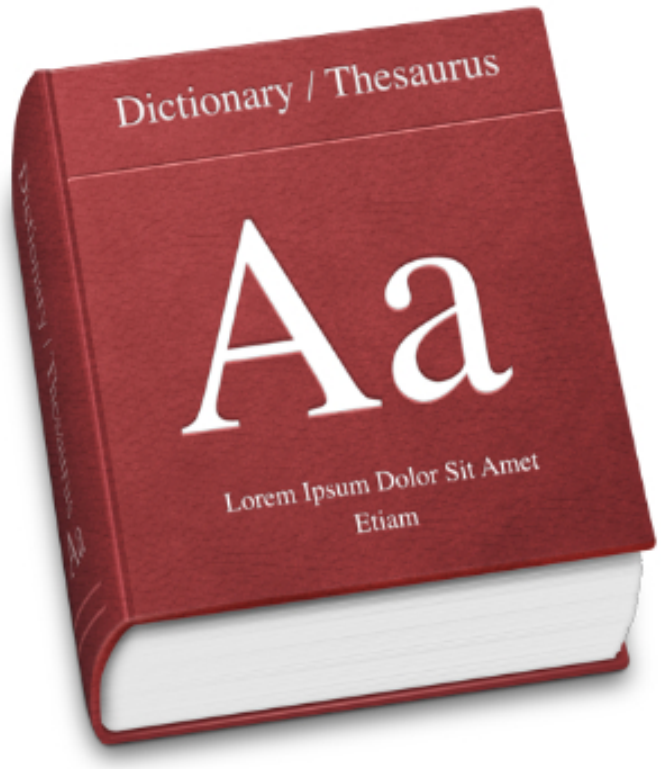
Tuples

- A tuple is a sequence of immutable Python objects.
- Tuples are sequences, just like lists.
- The differences between tuples and lists are :
  - the tuples cannot be changed unlike lists
  - tuples use parentheses, whereas lists use square brackets.



Dictionary

- Each key is separated from its value by a colon (:)
- the items are separated by commas
- the whole thing is enclosed in curly braces.

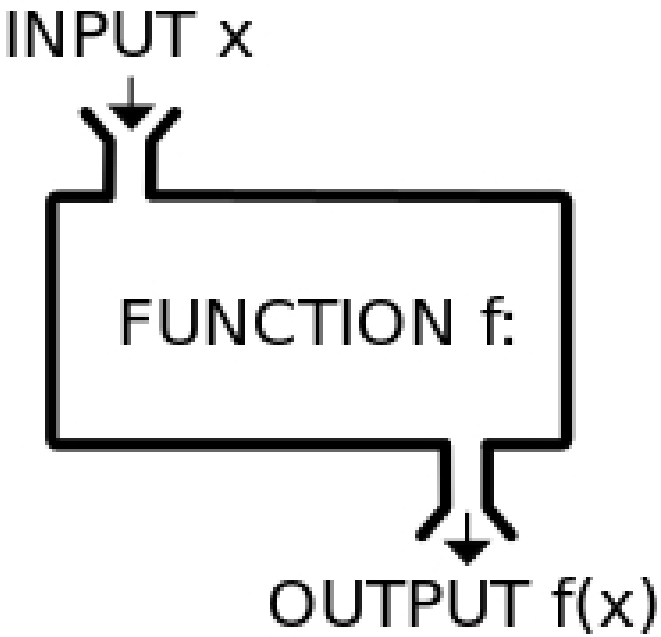


Flow Control

- If-Then-Else
- For
- While
- Exceptions

Functions

- Function blocks begin with the keyword def, followed by the function name and parentheses.
- Any input parameters or arguments should be placed within these parentheses.
- The first statement of a function can be an optional statement - the documentation string of the function or docstring.



Functions

```
def square(x):
    return x * x
```

```
def hello():
    return "Hello"
```

```
def printme( str ):
    "This prints a passed string into this function"
    print str
    return
```

Classes

- The class statement creates a new class definition.
- The name of the class immediately follows the keyword class followed by a colon as follows

Classes

```
class Employee:
    """
    Common base class for all employees
    """
    empCount = 0

    def __init__(self, name, salary):
        self.name = name
        self.salary = salary
        Employee.empCount += 1

    def displayCount(self):
        print "Total Employee %d" % Employee.empCount

    def displayEmployee(self):
        print "Name : ", self.name,  ", Salary: ", self.salary
```

```
emp1 = Employee("Zara", 2000)
```

Garbage Collection

- Python deletes unneeded objects automatically to free the memory space.

Inheritance

- Instead of starting from scratch, you can create a class by deriving it from a preexisting class by listing the parent class in parentheses after the new class name.

Inheritance

```
class SubClassName (ParentClass1[, ParentClass2, ...]):
    """
    Optional class documentation string
    """
    # class_suite
```

Base Overloading Methods

- __init__(self [,args...]) : Constructor (with any optional arguments)
- __del__(self) : Destructor, deletes an object
- __repr__(self) : Evaluatable string representation
- __str__(self) : Printable string representation
- __lt__(self, other):
- __le__(self, other):
- __eq__(self, other):
- __ne__(self, other):
- __gt__(self, other):
- __ge__(self, other):
  These are the so-called rich comparison methods,
  and are called for comparison operators in preference to __cmp__() below.

Base Overloading Methods

- __cmp__ (self, x) : Called by comparison operations if rich comparison is not defined.
- __add__(self, other):
- __sub__(self, other):
- __mul__(self, other):
- __floordiv__(self, other):
- __mod__(self, other):
- __divmod__(self, other):
- __pow__(self, other[, modulo]):

Base Overloading Methods

- __lshift__(self, other):
- __rshift__(self, other):
- __and__(self, other):
- __xor__(self, other):
- __or__(self, other):
  These methods are called to implement the binary arithmetic operations +, -, *, //, %, divmod(), pow(), **, <<, >>, &, ^, |

Questions?