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Agenda

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History

What is Python?

Python is a general purpose, object-oriented, high level, interpreted language

Created in early 90's by Guido Van Rossum

Simple, portable and powerful

Free Software

Influenced by – **ABC, ALGOL 68, C, Haskell, Icon, Lisp, Modula-3, Perl, Java**

Why learn Python?

Easier to learn than compiled languages like C/C++

Fast development of POC code

Cross Platform

Batteries Included

Great documentation

Strong community support

Application domains

Web and Internet development

Database Access

Desktop GUIs

Scientific and Numeric

Education

Network Programming

Software Development

Games and 3D Graphics

Versions of Python

Python 2.5

Python 2.6

Python 3.0

Why 2.5/2.6 and !3.0

Installing

- Download from www.python.org
- Most GNU/Linux distributions have it already

Editing Python

IDLE

Emacs

Vi/Vim

Whatever editor you want

Python Interpreter

Interactive session

Use of interactive session

Exit python interpreter

- quit()
- Ctrl + D on *NIX
- Ctrl + Z on Windows

Basics

Hello World

```
$ emacs hello_world.py
$ cat hello_world.py
#!/usr/bin/python

print "Hello World"
$ chmod +x hello_world.py
$ ./hello_world.py
Hello World


$ python
Python 2.5.2 (r252:60911, Jan  4 2009, 17:40:26)
[GCC 4.3.2] on linux2
Type "help", "copyright", "credits" or "license" for
more information.
>>> print "Hello World"
Hello World
>>>
```

Indentation

Is very important in Python

No begin/end delimiters

Comments start with #

Data Types

Integer Numbers

Decimal	–	1, 3, 87
Octal	-	01, 022
Hexa	-	0x1, 0x22
Long	-	1L, 456666343L

Floating point

0.0, 400.34, 5e3, 45e5

Complex Numbers [$j = (-1)^{1/2}$]

-1+5j, 5-6j

Strings

```
print “Hello World”       #Correct

print 'Hello World'       #Correct

print “Hello World'       #Wrong

print “””
This is line one
This is line two
This is line three
“””
```

Tuple

Immutable ordered sequence of items

Assigned → a = (1234, 1456, 1212)

Using tuples → can be used as a constant array

Data can be accessed similar to an

array -> a=(132,3232,323)

a[1] or a[2]

Lists

List is a mutable ordered sequence of items (similar to tuple)

Assigned-> a = [121,121212,34367]

Using Lists -> simplest use is as arrays (but again are much more)

Data can be accessed similar to an

array -> a=[132,3232,323]

a[1] or a[2]

Dictionaries

Dictionaries are containers, which store items in a key/value pair(?)

Assigned -> d ={'x':24,'y':33}

Using Dict -> They are used at a lot of places

Data can be accessed by using the

key ->

d['x']

Variables

There is no prior declaration needed

Variables are the references to the allocated memory

Variables can refer to any data type (like Tuple, List,Dictionary, Int, String, Complex)

References are share

List,Dict etc are always shared

Index and slices

String, List, Tuple, etc can be sliced to get a part of them

Index -> similar to array index, it refers to 1 position of data

Slices-> gives the data in the range

Example ->

a=”Velalar College”

a[:3] a[4:11] a[4:] a[-7:] a[:-8] a[:11:2]

Control Flow

print

Print is a simple statement for giving output similar to C's printf function

Can be used to output to Console or a file

Use -> print “Hello World”

input

Use raw_input() to take a string input from the user

Used as
<var> = raw_input(“Enter a String: “)

Input() is used to take a input without specifying the type

If

If is a conditional statement, for simple “If then else“ clause in English

Header lines are always concluded with a “ : “ followed by intended block of statements

Optionally it can be followed by an “else if” clause known as “elif” in python

```
if <condition>:
    Statement 1
    Statement 2
elif <condition>:
    Statements
else:
    statements
```

while

While statement is used for repeatedly executing a block of code till the condition is true, also has an optional else clause

Use wildly for infinite loop

```
While <condition>:
    statements
  else:
            statements
```

for

It is a sequence iterator

It works on Strings, lists, tuples, etc

For <target> in <iterable>:
statements

range

They are used to generate and return integer sequence

Range(5) -> [0,1,2,3,4]

Range(1,5) -> [1,2,3,4]

Range(0,8,2) -> [0,2,4,6]

break

Used to terminate a loop

If nested it terminates the inner most loop

Practically used for conditional loop termination with an if statement

continue

Terminates the current iteration and executes next

Practically used for conditional statements termination with an if statement

Some Helpful Functions

Dir()

Help()

Functions

What are functions?

A Function is a group of statements that execute on request

In Python Functions are Objects

Defining a function ->

def name(parameters):
statement(s)

Return types

Parameters

Types of parameters
    Mandatory Parameters
    Optional parameters

Default values

Be careful when default value is a mutable object

```
def a(x,y=[]):
    y.append(x)
        print y
print a(12)
  print a(34)
```

What just happened here?

Modules

Modules

What are modules?

How to load modules

Effect on namespace

Important modules

- os
    - sys

Q&A

?

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