Python For Web

Part 1: Python, Socket & CGI

by Ugo did.u.go@gmail

June 2012 in HSBxl - Brussels Hackerspace
Plan

Web from a server perspective

Python and using classes

Publish via Sockets

Publish via CGIs
Web vs Internet

Every time you use 'web' for 'internet' or the opposite, an invisible pink unicorn dies

You don't "browse the internet"

You don't need the web for emails
Internet

Interconnected computer networks
Web

Interlinked hypertext documents
The Web = IP + HTTP + URL + HTML

IP : Information transport

HTTP : Communication

URL : Unique reference for each document

HTML : Markup to make stuff look nice
Uniform Resource Locator

http://www.hackerspace.be:80/PythonForWeb

protocol = HTTP
server = www.hackerspace.be
port = 80 (default)
path = /PythonForWeb
HTTP

GET /PythonForWeb HTTP/1.0
Host: hackerspace.be

action = GET / POST / HEAD / PUT / DELETE
path = /PythonForWeb
protocol version = HTTP/1.0
headers
end signal
Let's do some Python
Sockets vs CGIs

**Socket**
- Connecting to the IP protocol
- bind to a port
- low level
- always running
- parse requests

**CGI**
- Common Gateway Interface
- external server
- result = stdout
- runs once / request
- request parsed
Sockets

# client

dest = 'hackerspace.be'
port = 80
msg = 'Hello'

import socket
s = socket.socket()
s.connect((dest, port))
s.send(msg)
print s.recv(1000)

# server

iface = ''
port = 8080
msg = 'Hi from Server'

import socket
s = socket.socket()
s.bind((iface, port))
s.listen(9)
client, addr = s.accept()
client.send(msg)
print client.recv(1000)
CGI

Python's got batteries included

$ python -m CGIHTTPServer

- index.html
- cgi-bin/
  - script.py
Basic CGI script

#!/usr/bin/python

print '''Content-Type: text/html

<html>
  <head>
    <title>Hello from Python</title>
  </head>
  <body>
    <h2>Hello from Python</h2>
  </body>
</html>'''
Basic CGI script

# Enabling the debugger
import cgitb
cgitb.enable()

# Request data
import cgi
form = cgi.FieldStorage()  # instantiate only once!
Local storage

# In a file
content = open('my_file.txt').read()
open('my_file.txt', 'w').write('hello')

# Dump in a format
# Replace 'json' with 'pickle', 'marshal', ...
import json
string_a = json.dumps( {'hello': 'world'} )
print string_a
a = json.loads( string_a )