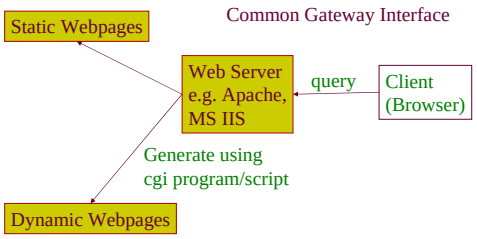
Remote Editing with CGI

Ch. 11 of Library Reference

What is CGI?



Installing CGI Scripts

- Web server must identify CGI programs
  - In Apache
    - put scripts in e.g. `/usr/local/apache/cgi-bin/`
    - Add to httpd.conf
      - ScriptAlias /cgi-bin/ /usr/local/apache/cgi-bin/
    - Can also set for all ~/public_html/
- Add the `#!/usr/local/bin/python` line
- Set file permissions rwxr-xr-x

The Example Task

- Edit document stored on another machine thru web
- Possibly several collaborating authors

Simple CGI Script

```
#!/usr/bin/env python

print 'Content-type: text/plain'
#MIME types: www.iana.org/assignments/media-types
print #  print empty line to end header

print 'Hello, world!'
```

Debugging CGI Scripts

```
#!/usr/bin/env python

import cgitb; cgitb.enable()
print 'Content-type: text/html'
print
print 1 / 0
print 'Hello, world!'
```

cgi Module

- Input from HTML form is key-value pairs (fields)
- cgi module contains a FieldStorage class
- Create an instance of that class and use it as a dictionary

Retrieving a Value

```
form = cgi.FieldStorage()
name = form['name'] # wont work. Try:
name = form['name'].value # or:
name = form.getvalue('name', 'deflt')
name = form.getvalue('name')
                # default is None
```

Hello, you!

```
#!/usr/bin/env python

import cgi
form = cgi.FieldStorage()
name = form.getvalue('name','world')
print 'Content-type: text/plain'
print
print 'Hello, %s!' % name
```

A Simple Form + Script

```
#!/usr/bin/env python
# filename of script: simple3.cgi
import cgi
form = cgi.FieldStorage()

name = form.getvalue('name','world')

# p.t.o
```

```
print """Content-type: text/html

<html>
  <head>
      <title>Greeting Page</title>
  </head>
  <body>
      <h1>Hello, %s!</h1>

      <form action='simple3.cgi'>
      Change name <input type='text' name='name' />
      <input type='submit' />
      </form>
  </body>
</html>
""" % name
```

A Simple Web-Editor

```
#!/usr/bin/env python
# filename of script: webedt.cgi
import cgi
form = cgi.FieldStorage()

text = form.getvalue('text',
  open('file.dat').read())
f = open('file.dat', 'w')
f.write(text)
f.close()
# p.t.o
```

```
print """Content-type: text/html

<html>
  <head>
     <title>A Simple Editor</title>
  </head>
  <body>
     <form action='webedt.cgi' method=POST>
     <textarea rows='10' cols='20'
  name='text'>%s</textarea><br />
     <input type='submit' />
     </form>
  </body>
</html>
""" % text
```

Assignment 1

1. Enhance the web-based editor:
   - Enable user to specify file to edit
   - Add password protection
   - Need 3 files:
     - index.html – user specifies filename here
     - edit.cgi – similar to webedit.cgi + passwd field
     - save.cgi – checks passwd before saving
2. Get input for your shelve address program from a web-based form. Have an option to print all current addresses.

For password

```
import sha
import sys

form = cgi.FieldStorage()

password = form.getvalue('password')
if sha.sha(password).hexdigest() != '884…':
  print 'Invalid Password'
  sys.exit()
```

#see lib ref manual, Ch. 15 for more cryptography

Using ModPython

Apache Configuration (httpd.conf)

```
LoadModule python_module modules/mod_python.so
<Directory /path/to/publisher/directory>
        SetHandler mod_python
        # AddHandler mod_python .py ## must add .py
        PythonHandler mod_python.publisher
        PythonDebug On
        <Files ~ "\.(gif|html|jpg|png)$">
                SetHandler default-handler
        </Files>
</Directory>
# In .htaccess file in any dir, only internal 3-7 lines.
```


Hello, You! (hello.py, http://.../hello)

```
def index(req, name):
  return """
  <html>
  <head>
      <title>Greeting Page</title>
  </head>
  <body>
      <h1>Hello, %s!</h1>

      <form action='simple3.cgi'>
      Change name <input type='text' name='name' />
      <input type='submit' />
      </form>
  </body>
  </html>
  """ % name
```

Redirecting

```
from mod_python.util import redirect
def index(req):
  redirect(req, 'http://google.com')
```


Cookies

```
# cookies are stored on client computer
from mod_python import Cookie
def index(req):
  c = Cookie.Cookie('name', 'mohan',
     expires=time.time()+300)
  Cookie.add_cookie(req, c)
  d = Cookie.get_cookies(req) #a dictionary
```


Sessions (A Hit Counter Example)

```
from mod_python import Session
def handler(req):
     session = Session.Session(req, timeout=300)
     if session.is_new():
          session['hits'] = 1
     else:
          # session.lock() / unlock()
          session['hits'] += 1
     session.save()
     req.content_type = 'text/plain'
     req.write('Hits: %d\n' % session['hits'])
     return apache.OK
```


ModPython Tips

- Use absolute path names to all files
  - Define a PREFIX variable in some common location and define all path names relative to that.
- Try full-url specifications instead of relative urls when things are not working right.
- Make a writable directory by apache user:

```
import os
PREFIX = '/home/user1/public_html/'
def mkApacheDir():
   os.mkdir(PREFIX+'writable')
```

- Make parent dir writable by 'all', run the script by typing the appropriate url in a browser and then quickly remove the extra write permissions.

Assignment 2 (in mod_python)

1. Make a shopping cart
2. Give user a choice of 5 items to buy.
3. User can visit page any number of times and select items.
4. Finally user presses 'Buy' button.
5. User is shown a page displaying his items.