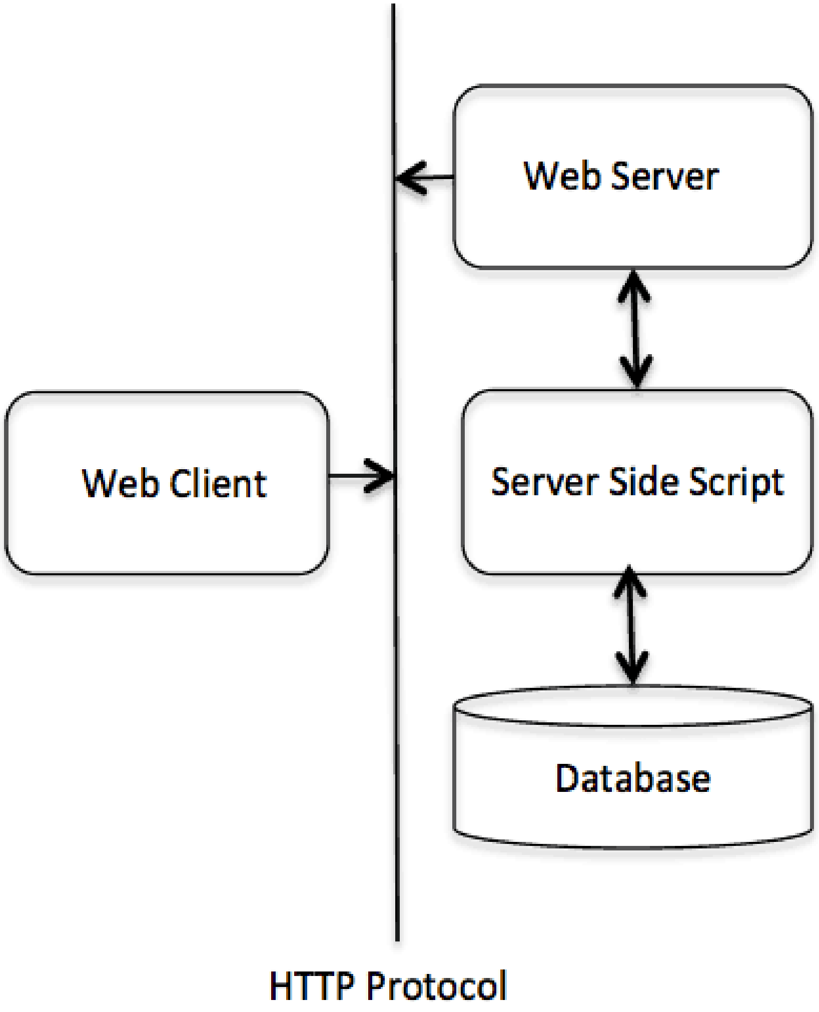
PYTHON CGI SCRIPT

CGI SCRIPTS

- The Common Gateway Interface (CGI) is a set of standards which defines how information is exchanged between the web server and a custom script.
- CGI is the standard for programs to interface with HTTP servers.
- The current version of CGI is CGI/1.1 & CGI/1.2 is under process.

Q: which computer language generally used to write CGI script?

CGI Architecture



When user click a hyper link to browser:

- □ Your browser contacts the HTTP web server.
- □ Web Server parses the URL and looks for the filename.
- □ Web browser takes response from web server and displays either the received file or error message.

Configuring CGI

- Does web server supports CGI ?
- All the CGI programs that is to be executed by the **HTTP server** are kept in a pre-configured directory, this directory is called as CGI directory.

Configuring CGI

Steps to configure Apache for CGI execution:

In httpd.confg file

1. Make sure the LoadModule directive has not been commented.

   On Windows, configured directive may look like this: **LoadModule cgi_module modules/mod_cgi.so**

2. The ScriptAlias directive tells Apache that a particular directory is set aside for CGI programs. Apache will assume that every file in this directory is a CGI program, and will attempt to execute it, when that particular resource is requested by a client.

   The ScriptAlias directive looks like: **ScriptAlias /cgi-bin/ "c:/wamp/cgi-bin/"**

   To use CGI scripts outside of ScriptAlias directories, You will also need to add "ExecCGI" to the "Options" directive. Options directive permits the execution of CGI files from particular directory: **Options Indexes FollowSymLinks ExecCGI**

3. AddHandler directive tells the server to treat all files with the cgi or py extension as CGI programs: **AddHandler cgi-script .cgi .py**

First CGI Program

```
#!C:\Users\RVM\Anaconda3\python.exe // location of python interpreter

print("Content-type:text/html\r\n\r\n")
print("<html>")
print("<head>")
print("<title>Login</title>")
print("</head>")
print("<body>")
print("<h2>Hello World! This is my first CGI program</h2>")
print("</body>")
print("</html>")
```

CGI Environment Variables

Sr. No.	Variable Name & Description
1	**CONTENT_TYPE** The data type of the content. Used when the client is sending attached content to the server. For example, file upload.
2	**CONTENT_LENGTH** The length of the query information. It is available only for POST requests.
3	**HTTP_COOKIE** Returns the set cookies in the form of key & value pair.
4	**HTTP_USER_AGENT** The User-Agent request-header field contains information about the user agent originating the request. It is name of the web browser.
5	**PATH_INFO** The path for the CGI script.
6	**QUERY_STRING** The URL-encoded information that is sent with GET method request.
7	**REMOTE_ADDR** The IP address of the remote host making the request. This is useful logging or for authentication.

CGI Environment Variables

Sr. No.	Variable Name & Description
8	**REMOTE_HOST** The fully qualified name of the host making the request. If this information is not available, then REMOTE_ADDR can be used to get IP address.
9	**REQUEST_METHOD** The method used to make the request. The most common methods are GET and POST.
10	**SCRIPT_FILENAME** The full path to the CGI script.
11	**SCRIPT_NAME** The name of the CGI script.
12	**SERVER_NAME** The server's hostname or IP Address
13	**SERVER_SOFTWARE** The name and version of the software the server is running.

CGI Environment Variables

CGI program to list out all the CGI variables:

```
import os
print("Content-type: text/html\r\n\r\n")
for name, value in os.environ.items():
        print("%s\t= %s <br/>" % (name, value))
```

Passing Information

- Web browser uses two methods GET and POST to pass information to web server.

Passing Information using GET method:

- The GET method sends information using QUERY_STRING.
- It is unsecure method.
- Size of character passing is 1024 characters in a request string.
- It sends the encoded user information appended to the page request.
- The page and the encoded information are separated by the ? character as follows:

http://localhost/python/cgi_example2.py?fn=a&sn=aaaa

Example:

Passing Information

Passing Information using POST method:

- The POST method sends information as a separate message. This message comes into the CGI script in the form of the standard input.
- It is reliable method.
- Example

Passing Information

- Example:

```
<html>
<body>
<form action="cgi_example1.py" method="post">
Enter First Name:
<input type="text" name="fn">
<br>
Enter Surname:
<input type="text" name="sn">
<br>
<input type="submit" value="submit">
</body>
</html>
```

CGI support modules

- Python's standard library consists of two module for CGI support.
- The cgi module defines number of utilities to be used by Python CGI script.
- The cgitb module is a traceback manager for CGI scripts. Normally both modules are imported in a Python script, enabling the traceback feature.

```
import cgi, cgitb
cgitb.enable()
```

FieldStorage Class

- □ FieldStorage class defined by CGI Module.
- □ It is useful to retrieve data from client.
- □ FieldStorage object accessible like dictionary whose keys are the field names.
- □ **FieldStorage attributes:**

  name, filename, value, file, type and headers

FieldStorage Class

FieldStorage methods:

- getvalue(key): Dictionary style get() method, including 'value' lookup.
- getfirst(key): Return the first value received.
- getlist(key): Return list of received values.
- keys(self): Dictionary style keys() method.

Example

```
#!C:/Users/RVM/Anaconda3/python.exe
import cgi, cgitb
form = cgi.FieldStorage() # Create instance of FieldStorage

first_name = form.getvalue('fn') # Get data from fields
sur_name  = form.getvalue('sn')

print("Content-type:text/html\r\n\r\n")
print("<html>")
print("<head>")
print("<title>Hello - Second CGI Program</title>")
print("</head>")
print("<body>")
print("<h2>Hello %s %s</h2>" % (first_name, sur_name))
print("</body>")
print("</html>")
```