CGI: Common Gateway Interface

1. What is a web server?

2. What are IP address, domain name and port?

To understand the concept of CGI, let us see what happens when we click a hyper link to browse a particular web page or URL.

- Your browser contacts the HTTP web server and demands for the URL, i.e., filename.

- Web Server parses the URL and looks for the filename. If it finds that file then sends it back to the browser, otherwise sends an error message indicating that you requested a wrong file.

- Web browser takes response from web server and displays either the received file or error message.

However, it is possible to set up the HTTP server so that whenever a file in a certain directory is requested that file is not sent back; instead it is executed as a program, and whatever that program outputs is sent back for your browser to display. This function is called the Common Gateway Interface or CGI and the programs are called CGI scripts. These CGI programs can be written in Python, PERL, PHP, Java, C or C++ program, etc.

Python comes with a simple web server built in. Let's create a simple HTML page and serve it using your local Python HTTP server.

```
<!DOCTYPE HTML>
<html>
<head>
     <title>My Index Page</title>
</head>
<body>
<h1>Welcome to IT102</h1>
<a href="/cgi-bin/page1.py">dynamic page</a>
</body>
</html>
```

Create a directory named 'www' and save the file as index.html that directory.

(Windows OS): Open command prompt, navigate to the www directory and issue the following command to start the HTTP server:

```
python -m http.server --cgi 8000
```

If you get an error that python is not a recognize program, issue the following command, assuming Python is installed in C:\Python34 on your computer:

```
PATH=%PATH%;C:\Python34
```

Open a browser and navigate to http://localhost:8000 or http://127.0.0.1:8000

Create a 'cgi-bin' directory under the 'www' directory.

Create the following dynamic web page in python and save it as page1.py:

```python
import cgi
import cgitb
cgitb.enable()
print ("Content-type: text/html\n\n")
formFields = cgi.FieldStorage()
userName = formFields.getfirst('userName', '')
print ("<html>")
print ("<head>")
print ("<title>Python page 1</title>")
print ("</head>")
print ("<body>")
if (userName is not ''):
    print ("<h1>Hello, " + userName + "</h1>")
print ("<form method='post' action='page1.py'>")
print ("Enter your name:")
print ("<input type='text' name='userName'>")
print ("</form>")
print ("</body>")
print ("</html>")
```

Using your browser go to http://localhost:8000/cgi-bin/page1.py or http://127.0.0.1:8000/cgi-bin/page1.py

Fill in a name and submit. See if the python web page worked to display the dynamic content.

Homework

1. Create a new dynamic web page (page2.py) that displays a drop-down (HTML SELECT) of colors, asks the user to select his/her favorite color and then changes the page background to the selected color.

2. Create a link to page2.py from index.html