Introduction to the Use of Computers

Networking

Friday 23rd November 2012

This lab session is about some aspects of networking, including the run-time configuration of the Apache web server.

1. This part is about the effect of the `.htaccess` file presented in the lecture slides, which has been installed to control resources under `http://www.doc.gold.ac.uk/~mas01cr/teaching/is50004a/2012-13/lab07/`.

   (a) Visit that URL in your web browser. You should be presented with a request for authentication, titled "Foundation Year". Try using a random username and password (but **not** your Goldsmiths username and password), which should not let you in.

   (b) You will need to supply the username "`lab07`" (no quotes) and the password "`fy04`" (again, no quotes) before the Web Server will let you in; this is caused by the line `Require valid-user` in the example `.htaccess` file.

   (c) Once you supply the right username and password, you will see a directory listing. Compare this behaviour with what you get at the url `http://www.doc.gold.ac.uk/~mas01cr/teaching/is50004a/2012-13/`, which is not controlled by the example `.htaccess` file. This difference in behaviour comes from the `Options +Indexes` line.

   (d) Try to access the resource `http://doc.gold.ac.uk/~mas01cr/teaching/is50004a/2012-13/lab07/.htaccess` – the `.htaccess` file itself. For security reasons, the Web Server will forbid access, but it will do so differently this time: because we have specified a particular `ErrorDocument` for the 403 HTTP status code. Try also accessing a non-existent resource in that directory, and see the difference.

   (e) Finally, use your web browser to access the `lab07.txt` and `lab07.text` resources in that directory. Those two files are identical on the disk of `igor.gold.ac.uk`; are they displayed the same in your browser?

2. This part invites you to create your own `.htaccess` file to control the behaviour of the web server in your personal web space.

   (a) Check that you get a 404 status code ('Not Found') when you access `http://www.doc.gold.ac.uk/~maXXXyy/is50004a/lab07/` in a web browser.

   (b) Create a subdirectory called `lab07` of your `public_html/is50004a` directory on `igor`. Check that, once you have done that, instead of a 404 status code you get a 403 code ('Forbidden') when accessing the same URL.

   (c) Create a `.htaccess` file in the new `lab07` directory, with the contents `Options +Indexes`. Reload the URL once more and observe the difference.

3. This part consists of questions to reinforce and extend the lecture materials.

   (a) There are 2^{32} possible IPv4 addresses, but some of those are not valid as IP addresses on the public Internet. Find how many valid public IP addresses there are, and explain what the non-public ones are used for.

(b) Does IPv6 provide enough address space for the forseeable future?

(c) List the series of network requests that happens when a user uses a web browser to request a single, static web page hosted on a remote server.