COMS3200/7201 Assignment 2 Part C

Code Submission Due 8pm, 27 April, 2018

Assignments to be demonstrated in class during your normal Lab session in the week 30 April – 4 May.

Version 1.0 29/3/18 (some slight rearrangement since the "first look" so that reverse DNS is not part of the base spec.)

Version 1.1 17/4/18 – clarified use of DNS libraries, IPv4 specification of DNS server (extension A), all mailservers to be listed (extension B)

Programming assignment: DNS reader: max 100 marks (=50% of assignment 2, parts A,B are 25% each)

Write a program that makes DNS requests and reports the answers.

.

BASE FUNCTIONALITY 50/100

You can hard-code the DNS IP address if you wish. (Note that you can change this IP address from the version handed-in for the demo if needed)

You can find the current DNS server for your windows machine by running

nslookup –all

Other operating systems should have similar commands

Command format is up to you, but you should be able to specify the following:-

Enter a host name, or domain name, and display

The host name

The IPv4 address

The IPv6 address

(reverse DNS is is now part of the extension A)

The only communications libraries you can use are socket libraries which open UDP sockets

You can't use specialised DNS libraries for submitting requests, and you can't use socket library routines that query the name server, such as *gethostbyname.*

You are allowed to use *dnslib* "parse" and "question" functions for preparing the request and analysing the response (although I think you will learn more by coding/decoding the requests/responses yourself).

EXTENDED FUNCTION A : 10/100

Allow the DNS server IPv4 address to be specified

Allow "reverse DNS", i.e. specifying an IPv4 address and getting the hostname

For the demo, it is recommended that the nameserver be set to 130.102.71.160 for reverse DNS.

Note that the "reverse DNS" requests will depend on what records a name server holds, so we will only test ones that the UQ EAIT name server can respond to.

EXTENDED FUNCTION B : 10/100

Also return the hostname and IP addresses of the mailserver(s) associated with the host/domain name. If more than one answer is returned, show all the answers.

EXTENDED FUNCTION C: 10/100

If the requested name is an alias, also display the canonical host name

EXTENDED FUNCTION D: 20/100

Implement a nice GUI that accesses all the above functions. This means it needs to be in a window, use a mouse to enter information, with boxes for entering data, buttons or drop-down menus for selecting options, a "submit" or similar button for starting the search, and a well organised output of information. The program only needs to work on your demo machine (either own laptop or lab PC).

Here are some names that we will test:

eait.uq.edu.au

remote.labs.eait.uq.edu.au

microsoft.com

130.102.79.33 (for extension A, note that this will probably require you to use a name server at UQ)

.

NOTES: The program "nslookup" on windows does these sorts of requests, so you can use this program, make similar requests, and use wireshark to see how the requests are structured as UDP packets containing DNS requests, and what the responses look like.