**CSIT 127**

**Laboratory 2 – Introduction to the Internet**

The Internet plays a critical role in our daily lives and your education! It would be safe for me to assume that most of you use the Internet on the daily basis for entertainment, chat with friends and even use it for your studies.

In a nutshell, the Internet is a complex interconnection of devices (computers, phones etc) with computer networks. In the lab, you will see a bunch of computers, all of which are connected together. Look at the back of your computer and locate the wire connected to your Ethernet port. The connector is called an RJ45 (See Figure 1). This is then plugged into a hub/switch along with other computers in a Local Area Network (LAN).

Figure 1: AN RJ 45 connector is conventionally used for wired LAN Ethernet connections

**MAC Address and IP Addresses**

Each machine is identified by a MAC address and two IP addresses (IPv4 and IPv6). The MAC (Media Access Control) address is a number (hexadecimal) that is unique to the computer you are currently working on. The IP (Internet Protocol) address is a number assigned to the machine either manually or dynamically (from the DCHP server). Carry out the following steps to find out the MAC address and IP address (and also other interesting information):

Step-1: Start a DOS prompt. That is, via the Windows task bar, type “cmd” in the search box.

Step-2: In the resulting window, type “ipconfig /all”. Describe what you see.

1. **What is your MAC address, IPv4 and IPv6 address of your machine?**
2. **Name and discuss the purpose of the following service: DHCP and DNS.**
3. **Describe how you would configure an IP address for your machine. Hint: look under “Control Panel”.**

**Ping**

Ping is a program which allows you to send test messages to a given host, asking for a reply. This can be used to test if a host or network are working and can also be used to measure the performance of the internet path between the two hosts. The Ping program is part of the ICMP protocol and has its origins in the very early development of the Internet.

When using the DOS version of ping, you need to give the program the -t option. Remember to use CTRL-C to exit the ping program. Be sure to record all relevant output in your laboratory notebook (eg: commands, responses, etc).

From the DOS command prompt, type ‘ping -t localhost’, what happens? Write down the address you are sending packets to?

1. **What time does ping report? When you exit the ping program it reports the minimum, maximum and average time taken. Record these values in your notebook. Do the time values vary in any way?**

Repeat the above task, but replace “localhost’ with the IPv4 address of your friend’s machine. How long does this take?

1. **Why is it different from the previous cases?**

Record the maximum, minimum and average times as above and compare them. Repeat this experiment by ‘pinging’ each of the following remote computers. Record the maximum, minimum and average time values. In each case, make sure you let ping send (and receive) at least 10 results for each site.

Remote computers:

* [www.google.com](http://www.google.com)
* [www.abc.net.au](http://www.abc.net.au)
* ftp.gnu.org

**What is my IP?**

Go below website

<https://whatismyipaddress.com>

1. **What is your IP address given by the website, screenshot it and compare against your earlier IP address you obtained when you entered the ipconfig/all in MS DOS command. Comment about your observation.**
2. **Do a blacklist check on your above IP address and comment.**

Checkout the below URL as well

<https://www.whatismyip.com/>

1. **Perform an Internet Speed test. Screen captured your result. Write down the difference between Public and Private IP address.**

**Network Tools**

Open your web browser and go to the following location:

<http://network-tools.com/>

<https://www.broadbandsearch.net/network-tools>

This website provides a number of tools for analyzing networks.

* Choose the ping tool and repeat the exercises from earlier ping by entering the web address in the box provided and clicking on ‘submit’.
* Choose the “traceroute” tool and identify the number of hops and the route taken by packets to reach your machine. Compare the route with the person next to you. Is it different? Explain.
* Using the “DNS Records” tool, type [www.uow.edu.au](http://www.uow.edu.au).

1. **What is the name and IPv4 address of the server that manages UoW’s web-site?**
2. **Explore any other 3 tools under the tools and explain the output.**

Submit above ALL observations (screen captures) & answers via Moodle. (Individual submission)