Lab1

Exercise 1: nslookup

1. Which is the IP address of the website www.koala.com.au? In your opinion, what is the reason of having several IP addresses as an output?

```
wagner % nslookup www.koala.com.au
Server:         129.94.242.2
Address:        129.94.242.2#53

Non-authoritative answer:
Name:   www.koala.com.au
Address: 104.18.61.21
Name:   www.koala.com.au
Address: 104.18.60.21
```

The IP address of the website www.koala.com.au is 104.18.60.21 and 104.18.61.21. As for why there are several IP addresses outputs, this is to achieve load balancing, which aims to optimize resource use, maximize throughput, minimize response time, and avoid overload of any single resource.

2. Find out the name of the IP address 127.0.0.1. What is special about this IP address?

```
wagner % nslookup 127.0.0.1
Server:         129.94.242.2
Address:        129.94.242.2#53

1.0.0.127.in-addr.arpa  name = localhost.
```

This is so-call Loopback Address, which is the IP address of localhost.

Exercise 2: Use ping to test host reachability

Are the following hosts reachable from your machine by using ping:

- www.unsw.edu.au
- www.getfittest.com.au
- www.mit.edu
- www.intel.com.au
- www.tpg.com.au
- www.hola.hp
- www.amazon.com
- www.tsinghua.edu.cn
- www.kremlin.ru
- 8.8.8.8

If you observe that some hosts are not reachable, then can you explain why? Check if the addresses unreachable by the ping command are reachable from the Web browser.

www.unsw.edu.au	reachable
www.getfittest.com.au	unreachable (the host not exist)
www.mit.edu	reachable
www.intel.com.au	reachable
www.tpg.com.au	reachable
www.hola.hp	unreachable (the host not exist)
www.amazon.com	reachable
www.tsinghua.edu.cn	reachable

www.kremlin.ru
Unreachable. The output is time out but it is reachable from the web browser. This is probably because the ping command sends data using the ICMP protocol. ICMP response is disabled or ICMP filtering is enabled on the server

8.8.8.8	reachable

Exercise 3: Use traceroute to understand network topology

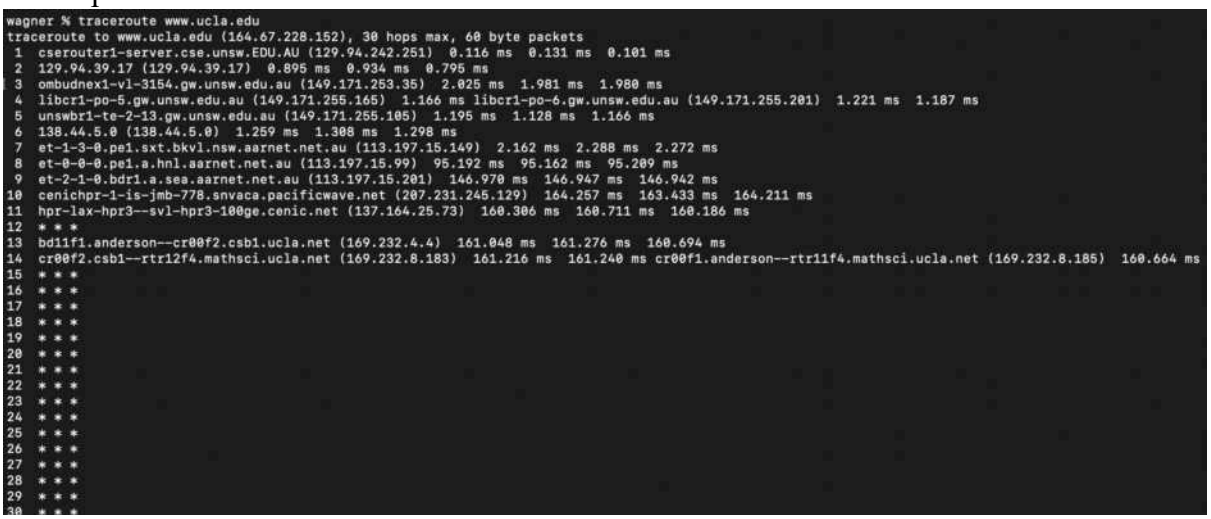
1. Run traceroute on your machine to www.columbia.edu **. How many routers are there between your workstation and** www.columbia.edu **? How many routers along the path are part of the UNSW network? Between which two routers do packets cross the Pacific Ocean? Hint: compare the round trip times from your machine to the routers using ping.**

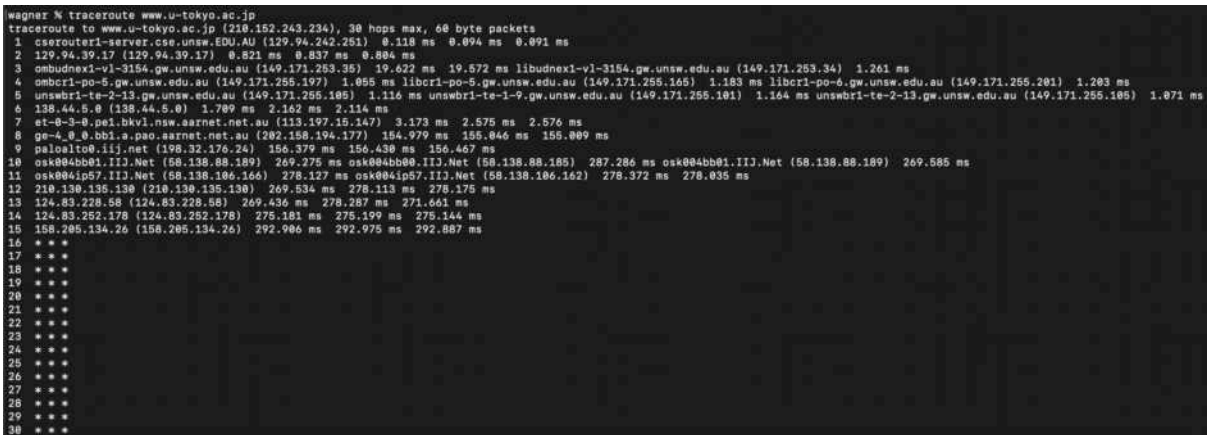
```
wagner % traceroute www.columbia.edu
traceroute to www.columbia.edu (128.59.105.24), 30 hops max, 60 byte packets
 1  cserouter1-server.cse.unsw.EDU.AU (129.94.242.251)  0.114 ms  0.112 ms  0.113 ms
 2  129.94.39.17 (129.94.39.17)  0.855 ms  0.875 ms  0.863 ms
 3  libudnex1-vl-3154.gw.unsw.edu.au (149.171.253.34)  1.452 ms ombudnex1-vl-3154.gw.unsw.edu.au (149
.171.253.35)  1.349 ms libudnex1-vl-3154.gw.unsw.edu.au (149.171.253.34)  1.453 ms
 4  libcr1-po-6.gw.unsw.edu.au (149.171.255.201)  1.074 ms  1.066 ms ombcr1-po-6.gw.unsw.edu.au (149.
171.255.169)  1.110 ms
 5  unswbr1-te-2-13.gw.unsw.edu.au (149.171.255.105)  1.153 ms unswbr1-te-1-9.gw.unsw.edu.au (149.171
.255.101)  1.167 ms  1.065 ms
 6  138.44.5.0 (138.44.5.0)  1.257 ms  1.243 ms  1.258 ms
 7  et-1-3-0.pe1.sxt.bkvl.nsw.aarnet.net.au (113.197.15.149)  2.279 ms  2.143 ms  2.104 ms
 8  et-0-0-0.pe1.a.hnl.aarnet.net.au (113.197.15.99)  95.205 ms  95.090 ms  95.101 ms
 9  et-2-1-0.bdr1.a.sea.aarnet.net.au (113.197.15.201)  146.974 ms  146.955 ms  146.949 ms
10  abilene-1-lo-jmb-706.sttlwa.pacificwave.net (207.231.240.8)  147.089 ms  147.112 ms  147.105 ms
11  ae-1.4079.rtsw.minn.net.internet2.edu (162.252.70.173)  179.854 ms  179.723 ms  179.607 ms
12  ae-1.4079.rtsw.eqch.net.internet2.edu (162.252.70.106)  187.628 ms  187.740 ms  187.858 ms
13  ae-0.4079.rtsw3.eqch.net.internet2.edu (162.252.70.163)  187.817 ms  188.403 ms  188.577 ms
14  ae-1.4079.rtsw.clev.net.internet2.edu (162.252.70.130)  196.145 ms  196.320 ms  197.566 ms
15  buf-9208-I2-CLEV.nysernet.net (199.109.11.33)  200.568 ms  200.515 ms  200.534 ms
16  syr-9208-buf-9208.nysernet.net (199.109.7.193)  205.719 ms  203.693 ms  203.890 ms
17  nyc111-9204-syr-9208.nysernet.net (199.109.7.94)  212.891 ms  212.818 ms  212.727 ms
18  nyc-9208-nyc111-9204.nysernet.net (199.109.7.165)  213.064 ms  213.017 ms  213.036 ms
19  columbia.nyc-9208.nysernet.net (199.109.4.14)  212.978 ms  212.901 ms  213.027 ms
20  cc-core-1-x-nyser32-gw-1.net.columbia.edu (128.59.255.5)  213.232 ms  213.180 ms  213.225 ms
21  cc-conc-1-x-cc-core-1.net.columbia.edu (128.59.255.21)  213.344 ms  213.443 ms  213.465 ms
22  ccnmtl.columbia.edu (128.59.105.24)  213.149 ms  213.208 ms  213.101 ms
```

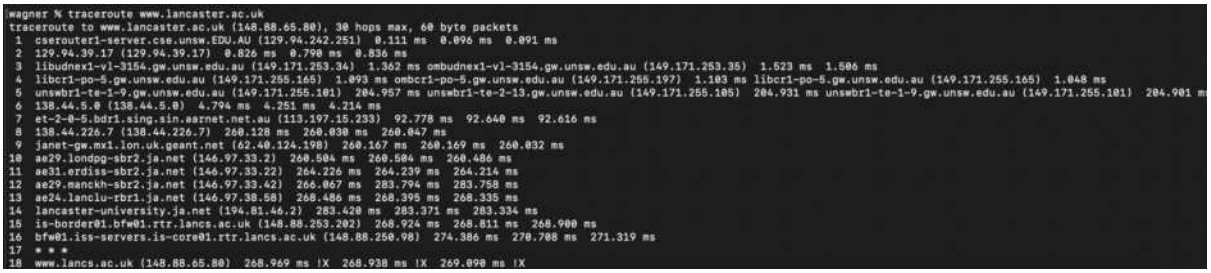
(1) There are 21 routers between my working station and the sever of www.columbia.edu .
(the last one is the destination router)
(2) There are 5 routers that are part of UNSW network.
(3) the 7th (162.252.70.173) router travel across the Pacific Ocean

2. Run traceroute from your machine to the following destinations:
(i) www.ucla.edu **(ii)** www.u-tokyo.ac.jp **and (iii)** www.lancaster.ac.uk **. At which router do the paths from your machine to these three destinations diverge? Find out further details about this router. (HINT: You can find out more about a router by running the Whois command: Whois router-IP-address). Is the number of hops on each path proportional the physical distance? HINT: You can find out the geographical location of a server using the following tool -** http://www.yougetsignal.com/tools/network-location/

the output as follows:







1. The three paths diverge at the 6th router (138.44.5.0). Using whois command to find more detail:

```
wagner % whois 138.44.5.0

#
# ARIN WHOIS data and services are subject to the Terms of Use
# available at: https://www.arin.net/resources/registry/whois/tou/
#
# If you see inaccuracies in the results, please report at
# https://www.arin.net/resources/registry/whois/inaccuracy_reporting/
#
# Copyright 1997-2020, American Registry for Internet Numbers, Ltd.
#


NetRange:       138.44.0.0 - 138.44.255.255
CIDR:           138.44.0.0/16
NetName:        APNIC-ERX-138-44-0-0
NetHandle:      NET-138-44-0-0-1
Parent:         NET138 (NET-138-0-0-0-0)
NetType:        Early Registrations, Transferred to APNIC
OriginAS:
Organization:   Asia Pacific Network Information Centre (APNIC)
RegDate:        2003-12-11
Updated:        2009-10-08
Comment:        This IP address range is not registered in the ARIN database.
Comment:        This range was transferred to the APNIC Whois Database as
Comment:        part of the ERX (Early Registration Transfer) project.
Comment:        For details, refer to the APNIC Whois Database via
Comment:        WHOIS.APNIC.NET or http://wq.apnic.net/apnic-bin/whois.pl
Comment:
Comment:        ** IMPORTANT NOTE: APNIC is the Regional Internet Registry
Comment:        for the Asia Pacific region.  APNIC does not operate networks
Comment:        using this IP address range and is not able to investigate
Comment:        spam or abuse reports relating to these addresses.  For more
Comment:        help, refer to http://www.apnic.net/apnic-info/whois_search2/abuse-and-spamming
Ref:            https://rdap.arin.net/registry/ip/138.44.0.0

ResourceLink:  http://wq.apnic.net/whois-search/static/search.html
ResourceLink:  whois.apnic.net


OrgName:        Asia Pacific Network Information Centre
OrgId:          APNIC
Address:        PO Box 3646
City:           South Brisbane
StateProv:      QLD
PostalCode:     4101
Country:        AU
RegDate:
Updated:        2012-01-24
Ref:            https://rdap.arin.net/registry/entity/APNIC
```

```
ReferralServer:  whois://whois.apnic.net
ResourceLink:  http://wq.apnic.net/whois-search/static/search.html

OrgAbuseHandle: AWC12-ARIN
OrgAbuseName:   APNIC Whois Contact
OrgAbusePhone:  +61 7 3858 3188
OrgAbuseEmail:  search-apnic-not-arin@apnic.net
OrgAbuseRef:    https://rdap.arin.net/registry/entity/AWC12-ARIN

OrgTechHandle: AWC12-ARIN
OrgTechName:   APNIC Whois Contact
OrgTechPhone:  +61 7 3858 3188
OrgTechEmail:  search-apnic-not-arin@apnic.net
OrgTechRef:    https://rdap.arin.net/registry/entity/AWC12-ARIN


#
# ARIN WHOIS data and services are subject to the Terms of Use
# available at: https://www.arin.net/resources/registry/whois/tou/
#
# If you see inaccuracies in the results, please report at
# https://www.arin.net/resources/registry/whois/inaccuracy_reporting/
#
# Copyright 1997-2020, American Registry for Internet Numbers, Ltd.
#



Found a referral to whois.apnic.net.

% [whois.apnic.net]
% Whois data copyright terms    http://www.apnic.net/db/dbcopyright.html

% Information related to '138.44.0.0 - 138.44.255.255'

% Abuse contact for '138.44.0.0 - 138.44.255.255' is 'abuse@aarnet.edu.au'

inetnum:        138.44.0.0 - 138.44.255.255
netname:        AARNET
descr:          Australian Academic and Research Network
descr:          Building 9
descr:          Banks Street
country:        AU
org:            ORG-AAAR1-AP
admin-c:        SM6-AP
tech-c:         ANOC-AP
notify:         irrcontact@aarnet.edu.au
mnt-by:         APNIC-HM
mnt-lower:      MAINT-AARNET-AP
mnt-routes:     MAINT-AARNET-AP
mnt-irt:        IRT-AARNET-AU
status:         ALLOCATED PORTABLE
remarks:        -+-+-+-+-+-+-+-+-+-+-++-+-+-+-+-+-+-+-+-+-+-+-+-+
```

2. The number of hops can only depict the number of routers on a path, which is not related to the physical distance. For example, a hop may travel the whole Pacific Ocean, while there may be multiple routers passed by when I visit a IP address on Melbourne from Sydney.

3. Several servers distributed around the world provide a web interface from which you can perform a traceroute to any other host in the Internet. Here are two examples: (i) http://www.speedtest.com.sg/tr.php and (ii) https://www.telstra.net/cgi-bin/trace . Run traceroute from both these servers towards your machine and in the reverse direction (i.e. From your machine to these servers). You may also try other traceroute servers from the list at www.traceroute.org . What are the IP addresses of the two servers that you have chosen. Does the reverse path go through the same routers as the forward path? If you observe common routers between the forward and the reverse path, do you also observe the same IP addresses? Why or why not?

To do this, using the ifconfig command to get my IP address: (129.94.8.97)

Then get a forward path to these two server:

(1) **http://www.speedtest.com.sg/tr.php**

```
wagner % traceroute speedtest.com.sg
traceroute to speedtest.com.sg (202.150.221.170), 30 hops max, 60 byte packets
 1  cserouter1-server.cse.unsw.EDU.AU (129.94.242.251)  0.130 ms  0.113 ms  0.107 ms
 2  129.94.39.17 (129.94.39.17)  0.840 ms  0.871 ms  0.894 ms
 3  ombudnex1-vl-3154.gw.unsw.edu.au (149.171.253.35)  1.474 ms libudnex1-vl-3154.gw.unsw.edu.au (149
.171.253.34)  1.300 ms ombudnex1-vl-3154.gw.unsw.edu.au (149.171.253.35)  1.291 ms
 4  libcr1-po-6.gw.unsw.edu.au (149.171.255.201)  1.121 ms ombcr1-po-6.gw.unsw.edu.au (149.171.255.16
9)  1.093 ms libcr1-po-5.gw.unsw.edu.au (149.171.255.165)  1.071 ms
 5  unswbr1-te-1-9.gw.unsw.edu.au (149.171.255.101)  1.093 ms  1.118 ms  1.125 ms
 6  138.44.5.0 (138.44.5.0)  1.256 ms  1.299 ms  1.250 ms
 7  et-0-3-0.pe1.alxd.nsw.aarnet.net.au (113.197.15.153)  1.713 ms  1.631 ms  1.645 ms
 8  xe-0-2-7.bdr1.a.lax.aarnet.net.au (202.158.194.173)  147.648 ms  147.627 ms  147.604 ms
 9  singtel.as7473.any2ix.coresite.com (206.72.210.63)  147.619 ms  147.698 ms  147.821 ms
10  203.208.171.117 (203.208.171.117)  147.953 ms  147.993 ms 203.208.182.153 (203.208.182.153)  330.
179 ms
11  203.208.177.110 (203.208.177.110)  328.320 ms  321.125 ms 203.208.182.41 (203.208.182.41)  237.16
5 ms
12  * * 203.208.158.17 (203.208.158.17)  330.115 ms
13  202-150-221-170.rev.ne.com.sg (202.150.221.170)  214.371 ms  212.308 ms 203.208.158.185 (203.208.
158.185)  329.865 ms
```

(2) **https://www.telstra.net/cgi-bin/trace**

```
wagner % traceroute www.telstra.net
traceroute to www.telstra.net (203.50.5.178), 30 hops max, 60 byte packets
 1  cserouter1-server.cse.unsw.EDU.AU (129.94.242.251)  0.164 ms  0.138 ms  0.109 ms
 2  129.94.39.17 (129.94.39.17)  0.879 ms  0.868 ms  0.864 ms
 3  ombudnex1-vl-3154.gw.unsw.edu.au (149.171.253.35)  29.003 ms  29.026 ms  28.977 ms
 4  libcr1-po-5.gw.unsw.edu.au (149.171.255.165)  1.145 ms libcr1-po-6.gw.unsw.edu.au (149.171.255.20
1)  1.124 ms ombcr1-po-6.gw.unsw.edu.au (149.171.255.169)  1.098 ms
 5  unswbr1-te-2-13.gw.unsw.edu.au (149.171.255.105)  1.131 ms  1.140 ms unswbr1-te-1-9.gw.unsw.edu.a
u (149.171.255.101)  1.165 ms
 6  138.44.5.0 (138.44.5.0)  1.253 ms  1.367 ms  1.338 ms
 7  xe-0-0-0.bdr1.rsby.nsw.aarnet.net.au (113.197.15.33)  1.569 ms  1.637 ms  1.564 ms
 8  gigabitethernet3-11.ken37.sydney.telstra.net (139.130.0.77)  2.341 ms  2.509 ms  2.631 ms
 9  bundle-ether13.ken-core10.sydney.telstra.net (203.50.11.94)  3.899 ms bundle-ether2.chw-edge901.s
ydney.telstra.net (203.50.11.103)  2.227 ms  2.259 ms
10  bundle-ether13.chw-core10.sydney.telstra.net (203.50.11.98)  2.473 ms bundle-ether10.win-core10.m
elbourne.telstra.net (203.50.11.123)  13.761 ms  13.260 ms
11  203.50.6.40 (203.50.6.40)  13.908 ms  13.682 ms bundle-ether8.exi-core10.melbourne.telstra.net (2
03.50.11.125)  13.056 ms
12  bundle-ether2.exi-ncprouter101.melbourne.telstra.net (203.50.11.209)  13.019 ms  12.824 ms  13.13
1 ms
13  www.telstra.net (203.50.5.178)  12.443 ms  12.729 ms  12.608 ms
```

Then the reverse path:

(1) **http://www.speedtest.com.sg/tr.php**

```
traceroute to 129.94.242.115 (129.94.242.115), 30 hops max, 60 byte packets
 1  ge2-8.r01.sin01.ne.com.sg (202.150.221.169)  0.164 ms  0.201 ms  0.211 ms
 2  10.15.62.210 (10.15.62.210)  0.223 ms  0.249 ms  0.270 ms
 3  aarnet.sgix.sg (103.16.102.67)  199.594 ms  199.620 ms  199.639 ms
 4  et-7-3-0.pe1.nsw.brwy.aarnet.net.au (113.197.15.232)  228.294 ms  228.175 ms  228.302 ms
 5  138.44.5.1 (138.44.5.1)  209.263 ms  209.210 ms  209.402 ms
 6  libcr1-te-1-5.gw.unsw.edu.au (149.171.255.102)  209.234 ms  209.208 ms  209.314 ms
 7  libudnex1-po-1.gw.unsw.edu.au (149.171.255.166)  213.470 ms ombudnex1-po-1.gw.unsw.edu.au (149.171.255.202)  211.785 m
 8  ufw1-ae-1-3154.gw.unsw.edu.au (149.171.253.36)  200.418 ms  200.361 ms  200.470 ms
 9  129.94.39.23 (129.94.39.23)  210.215 ms  209.991 ms  210.192 ms
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
26  * * *
27  * * *
28  * * *
29  * * *
30  * * *
```

(2) **https://www.telstra.net/cgi-bin/trace**

```
 1  gigabitethernet3-3.exi2.melbourne.telstra.net (203.50.77.53)  0.240 ms  0.203 ms  0.240 ms
 2  bundle-ether3-100.win-core10.melbourne.telstra.net (203.50.80.129)  1.986 ms  1.353 ms  2.239 ms
 3  bundle-ether12.ken-core10.sydney.telstra.net (203.50.11.122)  12.611 ms  12.474 ms  12.983 ms
 4  bundle-ether1.ken-edge901.sydney.telstra.net (203.50.11.95)  11.861 ms  11.848 ms  11.988 ms
 5  aarnet6.lnk.telstra.net (139.130.0.78)  11.608 ms  11.600 ms  11.863 ms
 6  xe-5-2-2.pe1.brwy.nsw.aarnet.net.au (113.197.15.32)  11.858 ms  11.849 ms  11.860 ms
 7  138.44.5.1 (138.44.5.1)  45.341 ms  50.579 ms  27.726 ms
 8  libcr1-te-1-5.gw.unsw.edu.au (149.171.255.102)  11.984 ms  11.973 ms  11.983 ms
 9  ombudnex1-po-1.gw.unsw.edu.au (149.171.255.202)  12.360 ms  12.349 ms  12.236 ms
10  ufw1-ae-1-3154.gw.unsw.edu.au (149.171.253.36)  12.611 ms  12.721 ms  12.736 ms
11  129.94.39.23 (129.94.39.23)  12.858 ms  12.974 ms  12.860 ms
```

By observation, I find that the reverse path may not go through the same routers as the forward path. Because a same website server may have multiple IP addresses. To maintain the load balance, a different IP address may be assigned on the reverse path even though it is the same router. Also, to minimise latency, packet may be transmitted to different router on the way

Exercise 4: Use ping to gain insights into network performance

Chosen location and the direct distance:

```
(i) www.uq.edu.au              distance: 734.3 km
(ii) www.upm.edu.my            distance: 6606.5 km
(iii) www.tu-berlin.de         distance: 16104.8 km
```

1. For each of these locations find the (approximate) physical distance from UNSW using Google Maps and compute the shortest possible time T for a packet to reach that location from UNSW. You should assume that the packet moves (i.e. propagates) at the speed of light, 3×10^8 m/s. Note that the shortest possible time will simply be the distance divided by the propagation speed. Plot a graph where the x-axis represents the distance to each city (i.e. Brisbane, Manila and Berlin), and the y-axis represents the ratio between the minimum delay (i.e. RTT) as measured by the ping program (select the values for 50 byte packets) and the shortest possible time T to reach that city from UNSW. (Note that the y-values are no smaller than 2 since it takes at least 2*T time for any packet to reach the destination from UNSW and get back). Can you think of at least two reasons why the y-axis values that you plot are greater than 2?

The result of script file execution can be found in the attached support file(.pdf , .txt)

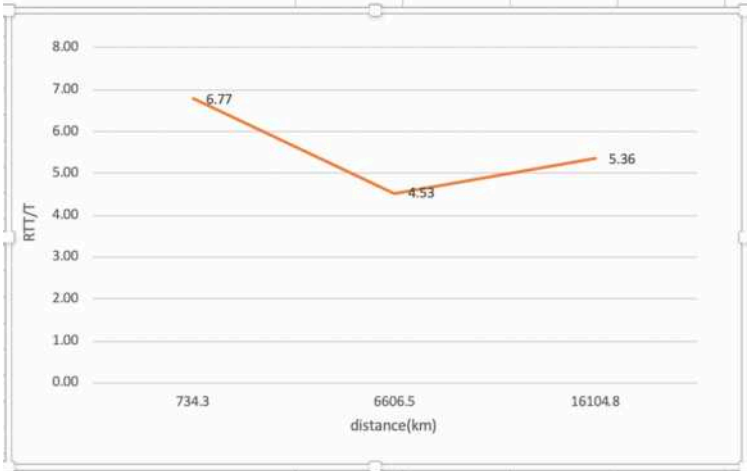
computing the shortest possible time:

$t_i = (734.3 \times 10^3) / (3 \times 10^8) = 0.00244s = 2.44$ ms

$t_{ii} = (6606.5 \times 10^3) / (3 \times 10^8) = 0.02202s = 22.02$ ms

$t_{iii} = (16104.8 \times 10^3) / (3 \times 10^8) = 0.05368s = 53.68$ ms

city	Brisbane	Manila	Berlin
RTT(ms)	16.52	99.85	287.46
shortest possible time (T/ ms)	2.44	22.02	53.68
distance(x)	734.3	6606.5	16104.8
RTT/ T(y)	6.77	4.53	5.36



Here is the plotted picture using Excel. There are a lot of reasons that the ratio greater than 2:
(1) The path is usually not straight. The actual distance is highly greater than ideal situations.
(2) The propagation rate may cannot reach 3×10^8 m/s.
(3) This algorithm overlooks the impact of transmission delay, queueing delay and the processing delay.

2. Is the delay to the destinations constant or does it vary over time? Explain why.

yes, because the status of routers on a path is usually consistently changing. Sometimes, there may be congestions occurs or server shut down. Even the path (the routers on the path) may vary each time we send a packet. All of these issue would influence the delay.

3. Explore where the website for www.epfl.ch is hosted. Is it in Switzerland?

```
grieg % nslookup www.epfl.ch
Server:         129.94.242.2
Address:        129.94.242.2#53

Non-authoritative answer:
www.epfl.ch     canonical name = www.epfl.ch.cdn.cloudflare.net.
Name:   www.epfl.ch.cdn.cloudflare.net
Address: 104.20.229.42
Name:   www.epfl.ch.cdn.cloudflare.net
Address: 104.20.228.42

grieg % whois 104.20.229.42

#
# ARIN WHOIS data and services are subject to the Terms of Use
# available at: https://www.arin.net/resources/registry/whois/tou/
#
# If you see inaccuracies in the results, please report at
# https://www.arin.net/resources/registry/whois/inaccuracy_reporting/
#
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#


NetRange:       104.16.0.0 - 104.31.255.255
CIDR:           104.16.0.0/12
NetName:        CLOUDFLARENET
NetHandle:      NET-104-16-0-0-1
Parent:         NET104 (NET-104-0-0-0-0)
NetType:        Direct Assignment
OriginAS:       AS13335
Organization:   Cloudflare, Inc. (CLOUD14)
RegDate:        2014-03-28
Updated:        2017-02-17
Comment:        All Cloudflare abuse reporting can be done via https://www.cloudflare.com/abuse
Ref:            https://rdap.arin.net/registry/ip/104.16.0.0



OrgName:        Cloudflare, Inc.
OrgId:          CLOUD14
Address:        101 Townsend Street
City:           San Francisco
StateProv:      CA
PostalCode:     94107
Country:        US
RegDate:        2010-07-09
Updated:        2019-09-25
Ref:            https://rdap.arin.net/registry/entity/CLOUD14
```

```
OrgTechHandle: ADMIN2521-ARIN
OrgTechName:   Admin
OrgTechPhone:  +1-650-319-8930
OrgTechEmail:  rir@cloudflare.com
OrgTechRef:    https://rdap.arin.net/registry/entity/ADMIN2521-ARIN

OrgAbuseHandle: ABUSE2916-ARIN
OrgAbuseName:   Abuse
OrgAbusePhone:  +1-650-319-8930
OrgAbuseEmail:  abuse@cloudflare.com
OrgAbuseRef:    https://rdap.arin.net/registry/entity/ABUSE2916-ARIN

OrgNOCHandle: NOC11962-ARIN
OrgNOCName:   NOC
OrgNOCPhone:  +1-650-319-8930
OrgNOCEmail:  noc@cloudflare.com
OrgNOCRef:    https://rdap.arin.net/registry/entity/NOC11962-ARIN

RTechHandle: ADMIN2521-ARIN
RTechName:   Admin
RTechPhone:  +1-650-319-8930
RTechEmail:  rir@cloudflare.com
RTechRef:    https://rdap.arin.net/registry/entity/ADMIN2521-ARIN

RAbuseHandle: ABUSE2916-ARIN
RAbuseName:   Abuse
RAbusePhone:  +1-650-319-8930
RAbuseEmail:  abuse@cloudflare.com
RAbuseRef:    https://rdap.arin.net/registry/entity/ABUSE2916-ARIN

RNOCHandle: NOC11962-ARIN
RNOCName:   NOC
RNOCPhone:  +1-650-319-8930
RNOCEmail:  noc@cloudflare.com
RNOCRef:    https://rdap.arin.net/registry/entity/NOC11962-ARIN


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# https://www.arin.net/resources/registry/whois/inaccuracy_reporting/
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#
```

No, the server located in San Francisco

4. The measured delay (i.e., the delay you can see in the graphs) is composed of propagation delay, transmission delay, processing delay and queuing delay. Which of these delays depend on the packet size and which do not?

Only the transmission delay and processing delay depends on the packet. Propagation delay, and queueing delay depend on other factors. The queueing delay depends on the congestion level of routers and the propagation delay depends on the propagation rate on physical links and distance.