

Exercise 1.

```
z5379852@vx8:/tmp_amd/reed/export/reed/4/z5379852/Desktop$ 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: 172.67.219.46
Name:   www.koala.com.au
Address: 104.21.45.210

z5379852@vx8:/tmp_amd/reed/export/reed/4/z5379852/Desktop$ 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.
```

1.IP address: 172.67.219.46 and 104.21.45.210

Reason: Easy to check and maintain

2.name: localhost

special as this ip address is not exist

Exercise 2.

(1) www.unsw.edu.au

```
z5379852@vx8:/tmp_amd/reed/export/reed/4/z5379852/Desktop$ ping www.unsw.edu.au
PING cdn.prod65.unsw.adobecqms.net (18.67.93.113) 56(84) bytes of data:
64 bytes from server-18-67-93-113.syd62.r.cloudfront.net (18.67.93.113): icmp_seq=1 ttl=244 time=1.66 ms
64 bytes from server-18-67-93-113.syd62.r.cloudfront.net (18.67.93.113): icmp_seq=2 ttl=244 time=1.63 ms
64 bytes from server-18-67-93-113.syd62.r.cloudfront.net (18.67.93.113): icmp_seq=3 ttl=244 time=1.65 ms
```

(2) www.getfittest.com.au

```
z5379852@vx8:/tmp_amd/reed/export/reed/4/z5379852/Desktop$ ping www.getfittest.com.au
ping: unknown host www.getfittest.com.au
```

(3) www.mit.edu

```
z5379852@vx8:/tmp_amd/reed/export/reed/4/z5379852/Desktop$ ping www.mit.edu
PING e9566.dsca.akamaiedge.net (104.74.47.237) 56(84) bytes of data:
64 bytes from a104-74-47-237.deploy.static.akamaitechnologies.com (104.74.47.237): icmp_seq=1 ttl=56 time=1.37 ms
64 bytes from a104-74-47-237.deploy.static.akamaitechnologies.com (104.74.47.237): icmp_seq=2 ttl=56 time=1.36 ms
64 bytes from a104-74-47-237.deploy.static.akamaitechnologies.com (104.74.47.237): icmp_seq=3 ttl=56 time=1.34 ms
```

(4) www.intel.com.au

```
z5379852@vx8:/tmp_amd/reed/export/reed/4/z5379852/Desktop$ ping www.intel.com.au
PING e19235.dsca.akamaiedge.net (104.98.21.56) 56(84) bytes of data:
64 bytes from a104-98-21-56.deploy.static.akamaitechnologies.com (104.98.21.56): icmp_seq=1 ttl=56 time=1.43 ms
64 bytes from a104-98-21-56.deploy.static.akamaitechnologies.com (104.98.21.56): icmp_seq=2 ttl=56 time=1.37 ms
64 bytes from a104-98-21-56.deploy.static.akamaitechnologies.com (104.98.21.56): icmp_seq=3 ttl=56 time=1.33 ms
```

(5)www.tgp.com.au

```
z5379852@vx8:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ping www.tgp.com.au
PING tgp.com.au (180.92.194.157) 56(84) bytes of data.
64 bytes from ernie.domainhostingshop.net (180.92.194.157): icmp_seq=1 ttl=49 time=6.01 ms
64 bytes from ernie.domainhostingshop.net (180.92.194.157): icmp_seq=2 ttl=49 time=6.11 ms
64 bytes from ernie.domainhostingshop.net (180.92.194.157): icmp_seq=3 ttl=49 time=6.06 ms
```

(6)www.hola.hp

```
z5379852@vx8:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ping www.hola.hp
ping: unknown host www.hola.hp
-
```

(7)www.amazon.com

```
z5379852@vx8:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ping www.amazon.com
PING d3ag4hukkh62yn.cloudfront.net (18.67.91.221) 56(84) bytes of data.
64 bytes from server-18-67-91-221.syd62.r.cloudfront.net (18.67.91.221): icmp_seq=1 ttl=244 time=1.51 ms
64 bytes from server-18-67-91-221.syd62.r.cloudfront.net (18.67.91.221): icmp_seq=2 ttl=244 time=1.54 ms
64 bytes from server-18-67-91-221.syd62.r.cloudfront.net (18.67.91.221): icmp_seq=3 ttl=244 time=1.50 ms
```

(8)www.tsinghua.edu.cn

```
z5379852@vx8:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ping www.tsinghua.edu.cn
ping: unknown host www.tsinghua.edu.cn
-
```

(9)www.krimlin.ru

```
z5379852@vx8:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ping www.krimlin.ru
ping: unknown host www.krimlin.ru
```

(10)8.8.8.8

```
z5379852@vx8:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=115 time=1.77 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=115 time=1.77 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=115 time=1.78 ms
```

Of the above 10 hosts, hosts 2, 6, 8, and 9 are inaccessible. Among them, hosts 2 and 6 are inaccessible through browsers, while hosts 8 and 9 are accessible. This indicates that the former does not exist or has been logged out, and the latter may be inaccessible due to security restrictions.

Exercise 3.

```
z5379852@vx8:/tmp_and/reed/export/reed/4/z5379852/Desktop$ traceroute www.columbia.edu
traceroute to www.columbia.edu (128.59.105.24), 30 hops max, 60 byte packets
 1 cseout1-server.cse.unsw.edu.au (129.94.242.251) 0.107 ms 0.062 ms 0.06 ms
 2 129.94.39.17 (129.94.39.17) 0.572 ms 0.369 ms 0.595 ms
 3 onbushc1-10-1354.gu.unsw.edu.au (145.171.255.253) 1.796 ms 1.959 ms 2.043 ms
 4 libor1-10-5.gu.unsw.edu.au (145.171.255.185) 1.157 ms onbri-10-5.gu.unsw.edu.au (145.171.255.185) 1.283 ms onbri-10-5.gu.unsw.edu.au (145.171.255.187) 1.242 ms
 5 unswbr1-te-1-5.gu.unsw.edu.au (145.171.255.101) 1.132 ms 1.180 ms 1.216 ms
 6 130.44.5.0 (130.44.5.0) 1.363 ms 1.396 ms 1.379 ms
 7 et-1-1-0-pel.nsp.nsw.aarnet.net.au (113.137.15.4) 1.856 ms 1.575 ms 1.53 ms
 8 at-0-0-2-bdr1.gwa.aarnet.net.au (113.137.14.137) 71.704 ms 71.598 ms 71.688 ms
 9 130.44.228.5 (130.44.228.5) 185.870 ms 185.830 ms 185.829 ms
10 fourhndedge-0-0-0-0-4079.core2.salt.net.internet2.edu (163.253.1.113) 236.446 ms 236.435 ms 236.035 ms
11 fourhndedge-0-0-0-0-4079.core2.salt.net.internet2.edu (163.253.1.132) 237.889 ms 237.876 ms fourhndedge-0-0-0-0-4079.core2.denv.net.internet2.edu (163.253.1.160) 237.489 ms
12 fourhndedge-0-0-0-0-4079.core2.denv.net.internet2.edu (163.253.1.176) 238.255 ms fourhndedge-0-0-0-0-4079.core2.kans.net.internet2.edu (163.253.1.253) 234.379 ms fourhndedge-0-0-0-0-4079.core2.denv.net.internet2.edu (163.253.1.170) 235.896 ms
13 fourhndedge-0-0-0-0-4079.core2.kans.net.internet2.edu (163.253.1.243) 237.224 ms fourhndedge-0-0-0-0-4079.core2.chic.net.internet2.edu (163.253.1.26) 236.183 ms fourhndedge-0-0-0-0-4079.core2.kans.net.internet2.edu (163.253.1.24) 236.675 ms
14 fourhndedge-0-0-0-0-4079.core2.chic.net.internet2.edu (163.253.1.244) 237.271 ms 236.359 ms fourhndedge-0-0-0-0-4079.core2.chic.net.internet2.edu (163.253.1.27) 236.881 ms
15 fourhndedge-0-0-0-0-4079.core2.eph.net.internet2.edu (163.253.2.15) 237.620 ms 236.269 ms 236.202 ms
16 fourhndedge-0-0-0-0-4079.core2.clev.net.internet2.edu (163.253.2.16) 236.579 ms 236.325 ms 236.256 ms
17 buf-9208-12-CLEV.ngsnet.net (139.109.11.53) 237.548 ms 237.810 ms 237.8 ms
18 ny-95al-buf-9208.ngsnet.net (139.109.7.213) 241.405 ms 241.375 ms 241.442 ms
19 ny-95al-ny-95al.ngsnet.net (139.109.7.206) 247.104 ms 247.053 ms 247.003 ms
20 ny-95al-ny-95al.ngsnet.net (139.109.7.201) 246.483 ms 246.404 ms 246.405 ms
21 columbia-ny-9208.ngsnet.net (139.109.4.14) 246.481 ms 246.430 ms 246.454 ms
22 columbia-ny-9208.ngsnet.net (139.109.4.14) 246.481 ms 246.430 ms 246.454 ms
23 columbia-ny-9208.ngsnet.net (139.109.4.14) 246.481 ms 246.430 ms 246.454 ms
24 columbia-ny-9208.ngsnet.net (139.109.4.14) 246.481 ms 246.430 ms 246.454 ms
25 columbia-ny-9208.ngsnet.net (139.109.4.14) 246.481 ms 246.430 ms 246.454 ms
26 columbia-ny-9208.ngsnet.net (139.109.4.14) 246.481 ms 246.430 ms 246.454 ms
27 columbia-ny-9208.ngsnet.net (139.109.4.14) 246.481 ms 246.430 ms 246.454 ms
28 columbia-ny-9208.ngsnet.net (139.109.4.14) 246.481 ms 246.430 ms 246.454 ms
29 columbia-ny-9208.ngsnet.net (139.109.4.14) 246.481 ms 246.430 ms 246.454 ms
30 columbia-ny-9208.ngsnet.net (139.109.4.14) 246.481 ms 246.430 ms 246.454 ms
```

1. 23 routers, part of the UNSW network :5,cross the Pacific Ocean :8-9 routers.

```
z5379852@v2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ traceroute www.ucla.edu
traceroute to www.ucla.edu (13.226.241.120), 30 hops max, 60 byte packets
 1 cserouter1-server.cse.unsw.edu.au (129.34.242.251) 0.064 ms 0.070 ms 0.05
 2 ms
 3 129.34.39.17 (129.34.39.17) 0.987 ms 0.989 ms 0.959 ms
 4 onbudhed1-v1-3154.gu.unsw.edu.au (149.171.253.35) 1.738 ms 1.683 ms libudh
 5 ex1-v1-3154.gu.unsw.edu.au (149.171.253.34) 1.758 ms
 6 libor1-po-5.gu.unsw.edu.au (149.171.255.165) 1.154 ms libor1-po-6.gu.unsw.e
 7 du.au (149.171.255.201) 1.132 ms libor1-po-5.gu.unsw.edu.au (149.171.255.165)
 1.144 ms
 8 unswbr1-te-2-13.gu.unsw.edu.au (149.171.255.105) 1.268 ms 1.202 ms 1.238
 9 ms
 10 138.44.5.0 (138.44.5.0) 1.287 ms 1.523 ms 1.462 ms
 11 et-0-3-0.pe1.aixd.nsw.aarnet.net.au (113.197.15.153) 1.877 ms 1.770 ms 1.
 12 776 ms
 13 xe-0-2-4.bdr1.a.sjc.aarnet.net.au (202.158.134.162) 155.817 ms 155.804 ms
 155.786 ms
 14 xe-0-0-54-0.w01.snj.sca04.us.bb.gin.ntt.net (129.250.132.249) 156.748 ms 15
 6.771 ms 156.716 ms
 15 ae-3-r24.snj.sca04.us.bb.gin.ntt.net (129.250.2.49) 157.242 ms 158.195 ms *
 16 ae-3-r25.lsanca07.us.bb.gin.ntt.net (129.250.4.151) 158.945 ms 158.940 ms
 151.056 ms
 17 ae-2-r00.lsanca07.us.bb.gin.ntt.net (129.250.3.238) 155.847 ms ae-2-r01.lsa
 18 nca07.us.bb.gin.ntt.net (129.250.4.107) 157.115 ms ae-2-r00.lsanca07.us.bb.gin.
 19 ntt.net (129.250.3.238) 157.107 ms
 20 ae-3-asecon.lsanca07.us.bb.gin.ntt.net (129.250.201.30) 156.299 ms ae-1-ama
 21 zon.lsanca07.us.bb.gin.ntt.net (128.241.14.218) 156.176 ms 156.115 ms
 15
 16 ***
 17 150.222.101.76 (150.222.101.76) 157.752 ms 15.230.186.113 (15.230.186.113)
 157.384 ms 150.222.101.44 (150.222.101.44) 157.346 ms
 18 150.222.232.47 (150.222.232.47) 155.721 ms 150.222.232.39 (150.222.232.39)
 157.068 ms 150.222.232.45 (150.222.232.45) 157.000 ms
 19 ***
 20 ***
 21 ***
 22 ***
 23 server-13-226-241-120.lax50.r.cloudfront.net (13.226.241.120) 156.820 ms 1
 56.827 ms 155.532 ms
```

```
z5379852@v2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ traceroute www.u-tokyo
o.ac.jp
traceroute to www.u-tokyo.ac.jp (210.152.243.234), 30 hops max, 60 byte packets
 1 cserouter1-server.cse.unsw.edu.au (129.34.242.251) 0.068 ms 0.048 ms 0.04
 5 ms
 2 129.34.39.17 (129.34.39.17) 0.997 ms 0.929 ms 0.905 ms
 3 onbudhed1-v1-3154.gu.unsw.edu.au (149.171.253.35) 1.471 ms libudhed1-v1-315
 4 .gu.unsw.edu.au (149.171.253.34) 1.568 ms onbudhed1-v1-3154.gu.unsw.edu.au (14
 5 .171.253.35) 1.557 ms
 6 onbor1-po-6.gu.unsw.edu.au (149.171.255.169) 1.188 ms libor1-po-5.gu.unsw.e
 7 du.au (149.171.255.165) 1.133 ms libor1-po-6.gu.unsw.edu.au (149.171.255.201)
 1.232 ms
 8 unswbr1-te-2-13.gu.unsw.edu.au (149.171.255.105) 1.162 ms unswbr1-te-1-9.gu
 9 .unsw.edu.au (149.171.255.101) 1.247 ms 1.138 ms
 10 138.44.5.0 (138.44.5.0) 1.411 ms 1.375 ms 1.376 ms
 11 et-0-3-0.pe1.aixd.nsw.aarnet.net.au (113.197.15.147) 3.267 ms 2.941 ms 3.
 12 149 ms
 13 ge-4-0-0.bb1.a.pao.aarnet.net.au (202.158.134.177) 155.130 ms 155.129 ms
 155.109 ms
 14 paloalto1.iij.net (198.32.176.24) 156.746 ms 156.884 ms 156.739 ms
 15 osk011bb00.iij.net (58.138.84.225) 265.935 ms osk011bb01.iij.net (58.138.84
 16 .225) 266.567 ms osk004ap57.iij.net (58.138.81.78) 266.081 ms
 17 osk004ip57.iij.net (58.138.81.78) 266.766 ms osk004ip57.iij.net (58.138.106
 18 .162) 276.454 ms osk004ip57.iij.net (58.138.81.74) 266.097 ms
 19 210.130.135.130 (210.130.135.130) 279.542 ms 279.490 ms 279.520 ms
 20 124.83.228.58 (124.83.228.58) 286.328 ms 286.199 ms 286.141 ms
 21 124.83.252.178 (124.83.252.178) 282.518 ms 272.753 ms 272.689 ms
 22 156.205.134.26 (156.205.134.26) 272.676 ms 272.676 ms 262.360 ms
 23 ***
 24 ***
 25 ***
 26 ***
 27 ***
 28 ***
 29 ***
 30 ***
```

```
z5379852@v2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ traceroute www.lancas
ter.ac.uk
traceroute to www.lancaster.ac.uk (148.88.65.80), 30 hops max, 60 byte packets
 1 cserouter1-server.cse.unsw.edu.au (129.34.242.251) 0.094 ms 0.066 ms 0.04
 5 ms
 2 129.34.39.17 (129.34.39.17) 0.981 ms 0.974 ms 0.953 ms
 3 onbudhed1-v1-3154.gu.unsw.edu.au (149.171.253.35) 2.027 ms 1.860 ms libudh
 4 and-v1-3154.gu.unsw.edu.au (149.171.253.34) 1.875 ms
 5 onbor1-po-5.gu.unsw.edu.au (149.171.255.197) 1.314 ms libor1-po-5.gu.unsw.e
 6 du.au (149.171.255.165) 1.235 ms onbor1-po-6.gu.unsw.edu.au (149.171.255.169)
 1.242 ms
 7 unswbr1-te-1-9.gu.unsw.edu.au (149.171.255.101) 1.248 ms unswbr1-te-2-13.gu
 8 .unsw.edu.au (149.171.255.105) 1.324 ms unswbr1-te-1-9.gu.unsw.edu.au (149.171.
 9 .255.101) 1.231 ms
 10 138.44.5.0 (138.44.5.0) 3.321 ms 2.397 ms 2.411 ms
 11 et-2-0-5.bdr1.sing.sin.aarnet.net.au (113.197.15.233) 92.788 ms 92.978 ms
 92.955 ms
 12 138.44.226.7 (138.44.226.7) 270.110 ms 270.041 ms 270.004 ms
 13 janet-gw.edl.lon.uk.geant.net (62.40.124.198) 260.125 ms 260.122 ms 260.1
 14 96 ms
 15 ae29.londpg-sbr2.ja.net (146.97.33.2) 260.528 ms 260.580 ms 260.579 ms
 16 ae31.erdis-sbr2.ja.net (146.97.33.22) 264.582 ms 264.537 ms 264.527 ms
 17 ae29.wanckh-sbr2.ja.net (146.97.33.42) 266.311 ms 266.333 ms 266.341 ms
 18 ae25.wanckh-bani.ja.net (146.97.35.50) 266.530 ms 266.402 ms 266.340 ms
 19 lancaster-uni.ja.net (146.97.40.178) 284.035 ms 283.716 ms 283.534 ms
 20 ***
 21 ***
 22 ***
 23 ***
 24 ***
 25 ***
 26 ***
 27 ***
 28 ***
 29 ***
 30 ***
```

2. diverge router:138.44.5.0,more information as followed, the number of hops on each path is not proportional to the physical distance.

```
NetRange: 138.44.0.0 - 138.44.255.255
CIDR: 138.44.0.0/16
NetName: APNIC-ER-138-44-0-0
NetHandle: NET-138-44-0-1
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: 2005-10-08
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://www.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/abu
se-and-spamming
Ref: https://rdap.wirin.net/registry/ip/138.44.0.0
ResourceLink: http://www.apnic.net/whois-search/static/search.html
ResourceLink: whois.apnic.net
```

```

z5379852@v2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ traceroute www.net.princeton.edu
traceroute to www.net.princeton.edu (128.112.128.55), 30 hops max, 60 byte packets
 1 cserouter1-server.cse.unsw.EDU,AU (129.94.242.251) 0.063 ms 0.045 ms 0.041 ms
 2 129.94.39.17 (129.94.39.17) 1.025 ms 1.019 ms 1.015 ms
 3 libudnex1-v1-3154.gw.unsw.edu.au (149.171.253.35) 1.976 ms 1.975 ms libudnex1-v1-3154.gw.unsw.edu.au (149.171.253.34) 1.714 ms
 4 libcr1-po-6.gw.unsw.edu.au (149.171.255.201) 1.315 ms ombcr1-po-6.gw.unsw.edu.au (149.171.255.163) 1.137 ms ombcr1-po-5.gw.unsw.edu.au (149.171.255.197) 1.266 ms
 5 unsvbr1-te-2-13.gw.unsw.edu.au (149.171.255.105) 1.251 ms 1.243 ms 1.242 ms
 6 138.44.5.0 (138.44.5.0) 1.406 ms 1.391 ms 1.374 ms
 7 et-1-1-0.pel.wcap.nsw.aarnet.net.au (113.197.15.4) 1.929 ms 1.825 ms 1.960 ms
 8 et-0_0_2.bdr1.guan.gum.aarnet.net.au (113.197.14.137) 71.625 ms 71.619 ms 71.593 ms
 9 ***
10 ***
11 fourhundredge-0-0-0-21.4079.core1.salt.net.internet2.edu (163.253.1.28) 247.664 ms 247.838 ms fourhundredge-0-0-0-22.4079.core1.salt.net.internet2.edu (163.253.1.30) 246.731 ms
12 fourhundredge-0-0-0-0.4079.core1.denv.net.internet2.edu (163.253.1.170) 247.407 ms 247.370 ms 247.398 ms
13 * fourhundredge-0-0-0-0.4079.core1.kans.net.internet2.edu (163.253.1.243) 248.570 ms 248.540 ms
14 ***
15 ***
16 fourhundredge-0-0-0-0.4079.core2.clev.net.internet2.edu (163.253.2.16) 247.453 ms 246.833 ms 246.805 ms
17 fourhundredge-0-0-0-3.4079.core2.ashb.net.internet2.edu (163.253.1.138) 246.361 ms 246.434 ms 246.386 ms
18 fourhundredge-0-0-0-1.4079.core1.phil.net.internet2.edu (163.253.1.137) 246.202 ms 246.317 ms 246.267 ms
19 163.253.5.9 (163.253.5.9) 246.045 ms 245.839 ms 245.812 ms
20 172.36.130.54 (172.36.130.54) 246.616 ms 246.932 ms 246.869 ms
21 fw-border-87-router.princeton.edu (204.153.48.2) 247.062 ms 247.111 ms 247.056 ms
22 rtr-core-east-router.princeton.edu (128.112.12.9) 247.521 ms 247.703 ms 247.570 ms
23 core-ns-router.princeton.edu (128.112.12.226) 247.708 ms 247.629 ms 247.967 ms
24 www.net.princeton.edu (128.112.128.55) 247.482 ms 247.493 ms 247.324 ms

z5379852@v2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ traceroute www.speedtest.com.sg
traceroute to www.speedtest.com.sg (202.150.221.170), 30 hops max, 60 byte packets
 1 cserouter1-server.cse.unsw.EDU,AU (129.94.242.251) 0.051 ms 0.052 ms 0.040 ms
 2 129.94.39.17 (129.94.39.17) 0.973 ms 0.974 ms 0.882 ms
 3 libudnex1-v1-3154.gw.unsw.edu.au (149.171.253.34) 2.181 ms 1.789 ms 1.795 ms
 4 libcr1-po-5.gw.unsw.edu.au (149.171.255.165) 1.381 ms ombcr1-po-5.gw.unsw.edu.au (149.171.255.201) 1.156 ms libcr1-po-6.gw.unsw.edu.au (149.171.255.201) 1.263 ms
 5 unsvbr1-te-2-13.gw.unsw.edu.au (149.171.255.105) 1.251 ms 1.219 ms unsvbr1-te-1-3.gw.unsw.edu.au (149.171.255.101) 1.303 ms
 6 138.44.5.0 (138.44.5.0) 2.929 ms 2.246 ms 2.189 ms
 7 et-0-3-0.pel.aixd.nsw.aarnet.net.au (113.197.15.153) 1.715 ms 1.776 ms 1.820 ms
 8 xe-0-2-7.bdr1.a.ix.aarnet.net.au (202.158.194.173) 148.118 ms 148.053 ms 148.088 ms
 9 singtel.as7473.amy2ix.coresite.com (206.72.210.63) 147.983 ms 147.990 ms 147.983 ms
10 203.208.171.117 (203.208.171.117) 148.103 ms 203.208.158.29 (203.208.158.29) 317.745 ms 203.208.171.117 (203.208.171.117) 147.969 ms
11 203.208.177.110 (203.208.177.110) 328.586 ms 203.208.172.145 (203.208.172.145) 244.803 ms 203.208.177.110 (203.208.177.110) 331.840 ms
12 203.208.158.17 (203.208.158.17) 327.636 ms 327.583 ms *
13 202.150.221.170 (202.150.221.170) 205.327 ms 213.278 ms 212.571 ms

```

Traceroute Result:

```

traceroute to 129.94.242.121 (129.94.242.121), 30 hops max, 60 byte packets
 1 202.150.221.169 (202.150.221.169) 0.197 ms 0.203 ms 0.216 ms
 2 10.11.34.146 (10.11.34.146) 0.365 ms 0.451 ms 0.526 ms
 3 aarnet.sgix.sg (103.16.102.67) 212.751 ms 212.769 ms 212.784 ms
 4 et-7-3-0.pel.nsw.brwy.aarnet.net.au (113.197.15.232) 214.880 ms 214.889 ms 214.844 ms
 5 138.44.5.1 (138.44.5.1) 215.043 ms 215.024 ms 215.006 ms
 6 libcr1-te-1-5.gw.unsw.edu.au (149.171.255.102) 214.969 ms 214.918 ms 214.937 ms
 7 libudnex1-po-1.gw.unsw.edu.au (149.171.255.166) 212.588 ms 212.671 ms 212.967 ms
 8 ufw1-ae-1-3154.gw.unsw.edu.au (149.171.253.36) 209.907 ms 210.065 ms 210.035 ms
 9 129.94.39.23 (129.94.39.23) 210.180 ms 210.200 ms 210.255 ms

```

tracing path from www.net.princeton.edu to 129.94.242.121 ...

```

traceroute to 129.94.242.121 (129.94.242.121), 30 hops max, 40 byte packets
 1 core-ns-router (128.112.128.2) 1.042 ms 0.747 ms 0.757 ms
 2 rtr-core-east-router.princeton.edu (128.112.12.225) 0.778 ms 0.653 ms 0.645 ms
 3 fw-border-87-router.princeton.edu (128.112.12.10) 1.080 ms 1.213 ms 0.913 ms
 4 rtr-border-87-router.princeton.edu (204.153.48.1) 1.443 ms 1.497 ms 1.378 ms
 5 172.96.130.unassigned.userdns.com (172.96.130.53) 2.923 ms 2.949 ms 2.804 ms
 6 hundredge-0-0-0-30.102.core1.phil.net.internet2.edu (163.253.5.8) 4.234 ms 6.676 ms 5.962 ms
 7 * fourhundredge-0-0-0-2.4079.core2.ashb.net.internet2.edu (163.253.1.136) 64.648 ms 67.188 ms
 8 * fourhundredge-0-0-0-1.4079.core2.clev.net.internet2.edu (163.253.1.139) 66.500 ms 66.195 ms
 9 fourhundredge-0-0-0-2.4079.core2.eqch.net.internet2.edu (163.253.2.17) 66.785 ms 67.247 ms 67.110 ms
10 fourhundredge-0-0-0-2.4079.core2.chic.net.internet2.edu (163.253.2.18) 66.258 ms 65.810 ms 67.468 ms
11 fourhundredge-0-0-0-1.4079.core1.chic.net.internet2.edu (163.253.1.206) 67.020 ms 66.762 ms *
12 * fourhundredge-0-0-0-1.4079.core2.kans.net.internet2.edu (163.253.2.29) 66.862 ms 67.873 ms
13 fourhundredge-0-0-0-1.4079.core2.denv.net.internet2.edu (163.253.1.250) 67.138 ms 66.237 ms 65.166 ms
14 * fourhundredge-0-0-0-3.4079.core2.salt.net.internet2.edu (163.253.1.169) 66.891 ms 65.598 ms
15 fourhundredge-0-0-0-8.4079.core1.losa.net.internet2.edu (163.253.1.114) 65.530 ms 67.017 ms 67.451 ms
16 et-1_1_2.897.bdr1.guan.gum.aarnet.net.au (138.44.228.4) 176.319 ms 176.634 ms 184.002 ms
17 et-5-1-0.pel.brwy.nsw.aarnet.net.au (113.197.15.5) 281.404 ms 246.563 ms 246.734 ms
18 138.44.5.1 (138.44.5.1) 246.587 ms 246.655 ms 246.748 ms
19 libcr1-te-1-5.gw.unsw.edu.au (149.171.253.102) 246.617 ms 246.667 ms 246.698 ms
20 libudnex1-po-1.gw.unsw.edu.au (149.171.255.166) 247.353 ms ombudnex1-po-1.gw.unsw.edu.au (149.171.255.202) 247.258 ms libudnex1-po-1.gw.unsw.edu.au (149.171.255.166) 247.737 ms
21 ufw1-ae-1-3154.gw.unsw.edu.au (149.171.253.36) 247.380 ms 247.315 ms 247.443 ms
22 129.94.39.23 (129.94.39.23) 247.435 ms 247.506 ms 247.835 ms

```

3.IP:202.150.221.170 and 128.112.128.55; the reverse path didn't go through the same routers as the forward path; the same IP addresses exist. This may be related to the security policy of the route.

Exercise 4.

```

z5379852@vx2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ./runping.sh www.uq.edu.au

ping -s 22 -c 50 -i 1 www.uq.edu.au > www.uq.edu.au-p50
ping -s 222 -c 50 -i 1 www.uq.edu.au > www.uq.edu.au-p250
ping -s 472 -c 50 -i 1 www.uq.edu.au > www.uq.edu.au-p500
ping -s 722 -c 50 -i 1 www.uq.edu.au > www.uq.edu.au-p750
ping -s 972 -c 50 -i 1 www.uq.edu.au > www.uq.edu.au-p1000
ping -s 1222 -c 50 -i 1 www.uq.edu.au > www.uq.edu.au-p1250
ping -s 1472 -c 50 -i 1 www.uq.edu.au > www.uq.edu.au-p1500

z5379852@vx2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ./runping.sh www.upm.edu.my

ping -s 22 -c 50 -i 1 www.upm.edu.my > www.upm.edu.my-p50
ping -s 222 -c 50 -i 1 www.upm.edu.my > www.upm.edu.my-p250
ping -s 472 -c 50 -i 1 www.upm.edu.my > www.upm.edu.my-p500
ping -s 722 -c 50 -i 1 www.upm.edu.my > www.upm.edu.my-p750
ping -s 972 -c 50 -i 1 www.upm.edu.my > www.upm.edu.my-p1000
ping -s 1222 -c 50 -i 1 www.upm.edu.my > www.upm.edu.my-p1250
ping -s 1472 -c 50 -i 1 www.upm.edu.my > www.upm.edu.my-p1500

z5379852@vx2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ./runping.sh www.tu-berlin.de

ping -s 22 -c 50 -i 1 www.tu-berlin.de > www.tu-berlin.de-p50
ping -s 222 -c 50 -i 1 www.tu-berlin.de > www.tu-berlin.de-p250
ping -s 472 -c 50 -i 1 www.tu-berlin.de > www.tu-berlin.de-p500
ping -s 722 -c 50 -i 1 www.tu-berlin.de > www.tu-berlin.de-p750
ping -s 972 -c 50 -i 1 www.tu-berlin.de > www.tu-berlin.de-p1000
ping -s 1222 -c 50 -i 1 www.tu-berlin.de > www.tu-berlin.de-p1250
ping -s 1472 -c 50 -i 1 www.tu-berlin.de > www.tu-berlin.de-p1500

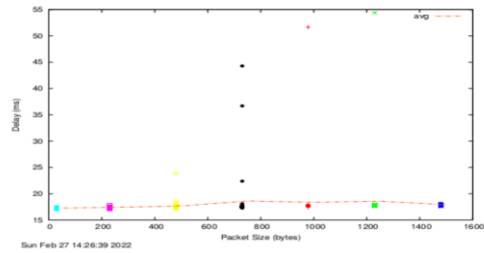
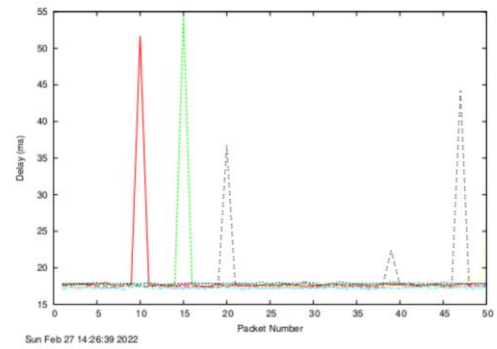
z5379852@vx2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ chmod u+x plot.sh
z5379852@vx2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ./plot.sh www.uq.edu.au-p*
www.uq.edu.au
processing www.uq.edu.au-p1000
1000 18.383 17.486
processing www.uq.edu.au-p1250
1250 18.580 17.602
processing www.uq.edu.au-p1500
1500 17.901 17.667
processing www.uq.edu.au-p250
250 17.422 17.194
processing www.uq.edu.au-p50
50 17.286 17.011
processing www.uq.edu.au-p500
500 17.680 17.284
processing www.uq.edu.au-p750
750 18.625 17.315
ps2pdf www.uq.edu.au_delay.ps
ps2pdf www.uq.edu.au_scatter.ps
z5379852@vx2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ./plot.sh www.upm.edu.my-p*
www.upm.edu.my
processing www.upm.edu.my-p1000
1000 101.858 101.680
processing www.upm.edu.my-p1250
1250 102.062 101.841
processing www.upm.edu.my-p1500
1500 102.400 101.950
processing www.upm.edu.my-p250
250 102.872 101.329
processing www.upm.edu.my-p50
50 101.508 101.204
processing www.upm.edu.my-p500
500 102.211 101.467
processing www.upm.edu.my-p750
750 103.956 101.592
ps2pdf www.upm.edu.my_delay.ps
ps2pdf www.upm.edu.my_scatter.ps
z5379852@vx2:/tmp_and/reed/export/reed/4/z5379852/Desktop$ ./plot.sh www.tu-berlin.de-p*
www.tu-berlin.de
processing www.tu-berlin.de-p1000
1000 278.975 278.859
processing www.tu-berlin.de-p1250
1250 279.053 278.899
processing www.tu-berlin.de-p1500
1500 279.123 279.004
processing www.tu-berlin.de-p250
250 278.678 278.571
processing www.tu-berlin.de-p50
50 278.557 278.438
processing www.tu-berlin.de-p500
500 278.841 278.649
processing www.tu-berlin.de-p750
750 278.847 278.709
ps2pdf www.tu-berlin.de_delay.ps
ps2pdf www.tu-berlin.de_scatter.ps

```

www.uq.edu.au:

www.uq.edu.au_avg.txt

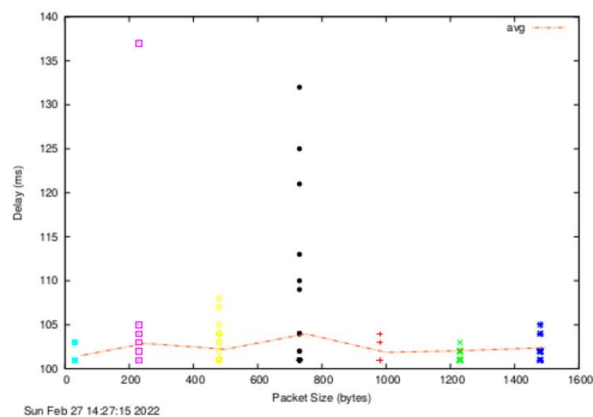
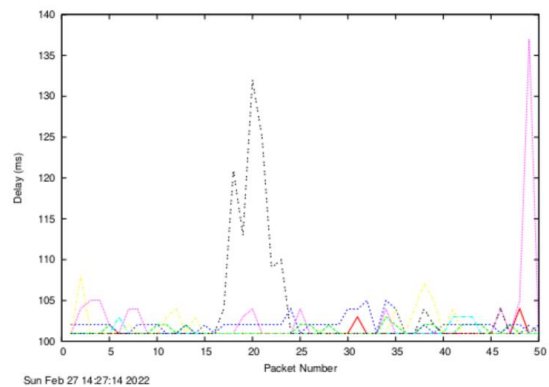
```
50 17.286 17.011
250 17.422 17.194
500 17.680 17.284
750 18.625 17.315
1000 18.383 17.486
1250 18.580 17.602
1500 17.901 17.667
```



www.upm.edu.my:

www.upm.edu.my_avg.txt

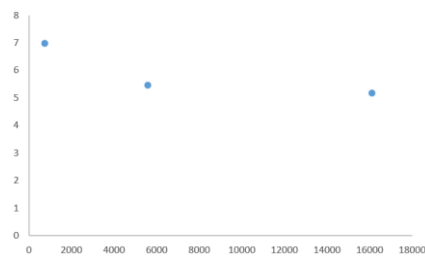
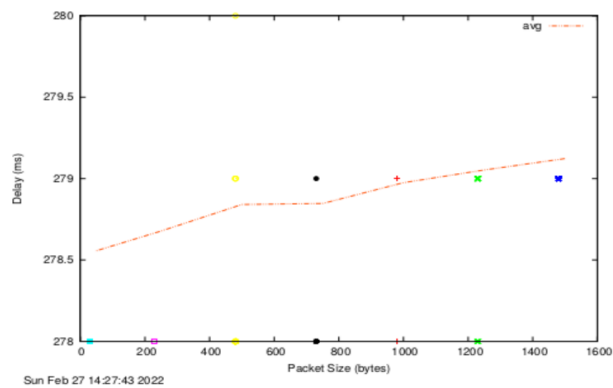
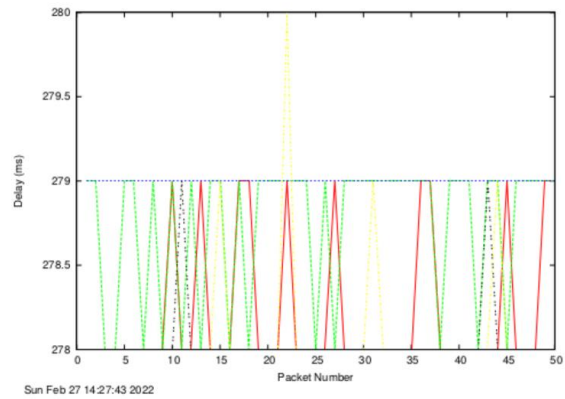
```
50 101.508 101.204
250 102.872 101.329
500 102.211 101.467
750 103.956 101.592
1000 101.858 101.680
1250 102.062 101.841
1500 102.400 101.950
```



www.tu-berlin.de:

www.tu-berlin.de_avg.txt

50	278.557	278.438
250	278.678	278.571
500	278.841	278.649
750	278.847	278.709
1000	278.975	278.859
1250	279.053	278.899
1500	279.123	279.004



- 1.
2. The delay vary over time, because the delay is related to the distance traveled and the number of routes traveled.
3. Transmission delay depends on the packet size while propagation delay, processing delay and queuing delay are not.