

Chris Grimes

CS 35201

Lab 1

1) Find the IP address of your computer (ipconfig, ifconfig)

```
Command Prompt
Microsoft Windows [Version 10.0.18363.657]
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C:\Users\Christopher> ipconfig

Windows IP Configuration

Ethernet adapter Ethernet 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::d58a:8a6d:ea8b:dc23%2
    IPv4 Address. . . . . : 192.168.1.9
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

Wireless LAN adapter Wi-Fi:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 3:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Ethernet adapter Ethernet 3:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Ethernet adapter Ethernet 4:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

C:\Users\Christopher>
```

2) Find the IP address of wasp.cs.kent.edu (ping, tracerote)

```
Command Prompt
For Setclassid and Setclassid6, if no Classid is specified, then the Classid is removed.

Examples:
> ipconfig           ... Show information
> ipconfig /all      ... Show detailed information
> ipconfig /renew     ... renew all adapters
> ipconfig /renew <I> ... renew any connection that has its
                        ... name starting with <I>
> ipconfig /release <Con> ... release all matching connections,
                        ... eg. "Wired Ethernet Connection 1" or
                        ... "Wired Ethernet Connection 2"
> ipconfig /allcompartments ... Show information about all
                        ... compartments
> ipconfig /allcompartments /all ... Show detailed information about all
                        ... compartments

C:\Users\Christopher> ping wasp.cs.kent.edu

Pinging wasp.cs.kent.edu [131.123.35.17] with 32 bytes of data:
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=41ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40

Ping statistics for 131.123.35.17:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 38ms, Maximum = 41ms, Average = 39ms

C:\Users\Christopher>
```

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3) Find the GPS of the IP addresses found

- You can use <https://www.textmagic.com/free-tools/ip-address-geo-location-tool> or other similar sites

The screenshot shows the IP Location Finder website. The main content area displays geolocation data for the IP address 131.123.35.17. The data is organized into three sections: IP2Location (Product: DB6, updated on 2020-2-1), ipinfo.io (Product: API, real-time), and DB-IP (Product: Full, 2020-2-1). Each section contains a table with columns for IP Address, Country, Region, City, ISP, Organization, Latitude, and Longitude.

IP Address	Country	Region	City
131.123.35.17	United States of America	Ohio	Kent

ISP	Organization	Latitude	Longitude
Kent State University	Not Available	41.1471	-81.3625

IP Address	Country	Region	City
131.123.35.17	United States	Ohio	Kent

ISP	Organization	Latitude	Longitude
Kent State University	Kent State University (kent.edu)	41.1537	-81.3579

IP Address	Country	Region	City
131.123.35.17	United States	Ohio	Kent

ISP	Organization	Latitude	Longitude
Kent State University	Kent State University	41.1467	-81.3424

The right sidebar contains various tools and links, including 'Verify Email Address', 'Proxy Check', 'Subnet Calculator', 'Who is Hosting a Website', 'Alexa Traffic Rank Checker', 'Domain Age Checker', 'Reverse DNS Lookup', 'HTTP Server Header Check', 'POPULAR ARTICLES', 'BLOG CATEGORIES', and 'ADVERTISEMENT'.

4) Measure the delay (RTT) from your computer to wasp.cs.kent.edu (ping, traceroute)

The screenshot shows a Windows Command Prompt window. The user has entered the command 'ping wasp.cs.kent.edu'. The output shows four successful replies with a 0% loss. The user then enters the command 'tracert wasp.cs.kent.edu'. The output shows the path from the user's computer to wasp.cs.kent.edu, including the IP addresses of the hops and the time taken for each hop.

```
C:\Users\Christopher> ping wasp.cs.kent.edu

Pinging wasp.cs.kent.edu [131.123.35.17] with 32 bytes of data:
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=41ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40

Ping statistics for 131.123.35.17:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 38ms, Maximum = 41ms, Average = 39ms

C:\Users\Christopher> traceroute wasp.cs.kent.edu
'traceroute' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Christopher> tracert wasp.cs.kent.edu
'tracert' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Christopher> tracert wasp.cs.kent.edu

Tracing route to wasp.cs.kent.edu [131.123.35.17]
over a maximum of 30 hops:
  0  <1 ms <1 ms <1 ms READYSHARE [192.168.1.1]
  1  9 ms 9 ms 8 ms 142.254.150.241
  2  29 ms 40 ms 31 ms 24.166.185.213
  3  16 ms 14 ms 14 ms be22.pltsohae01r.midwest.rn.com [24.33.103.66]
  4  18 ms 21 ms 21 ms be25.clnkops01r.midwest.rn.com [65.29.1.28]
  5  28 ms 30 ms 30 ms bu-ether5.chcillacdbw-bcrw01bone.rn.com [66.109.6.68]
  6  24 ms 30 ms 31 ms 66.109.5.136
  7  23 ms 26 ms 23 ms 66.109.5.225
  8  24 ms 24 ms 24 ms ae-2.0004.rtsu3.sqch.net.internet2.edu [64.57.20.53]
  9  32 ms 33 ms 32 ms et-9-1-5.1100.rtsu.clev.net.internet2.edu [64.57.29.173]
 10  24 ms 35 ms 35 ms 64.57.29.174
 11  34 ms 34 ms 34 ms clev-r5-et-8-1-0s100.core.oar.net [199.218.20.93]
 12  41 ms 36 ms 38 ms akrg-r5-et-0-1-0s100.core.oar.net [199.218.39.177]
 13  37 ms 37 ms 38 ms 199.10.164.115
 14  * * * Request timed out.
 15  * * * Request timed out.
 16  * * * Request timed out.
 17  38 ms 38 ms 39 ms swe2041.core.kent.edu [131.123.2.30]
 18  38 ms 37 ms 37 ms mcs2-g00-math.gate.kent.edu [131.123.254.130]
 19  38 ms 37 ms 38 ms wasp.cs.kent.edu [131.123.35.17]

Trace complete.

C:\Users\Christopher>
```

5) Collect 100 samples of round-trip times

- ```
C:\Users\Christopher>ping -n 100 wasp.cs.kent.edu
Microsoft Windows [Version 10.0.18363.67]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Christopher>ping -n 100 wasp.cs.kent.edu

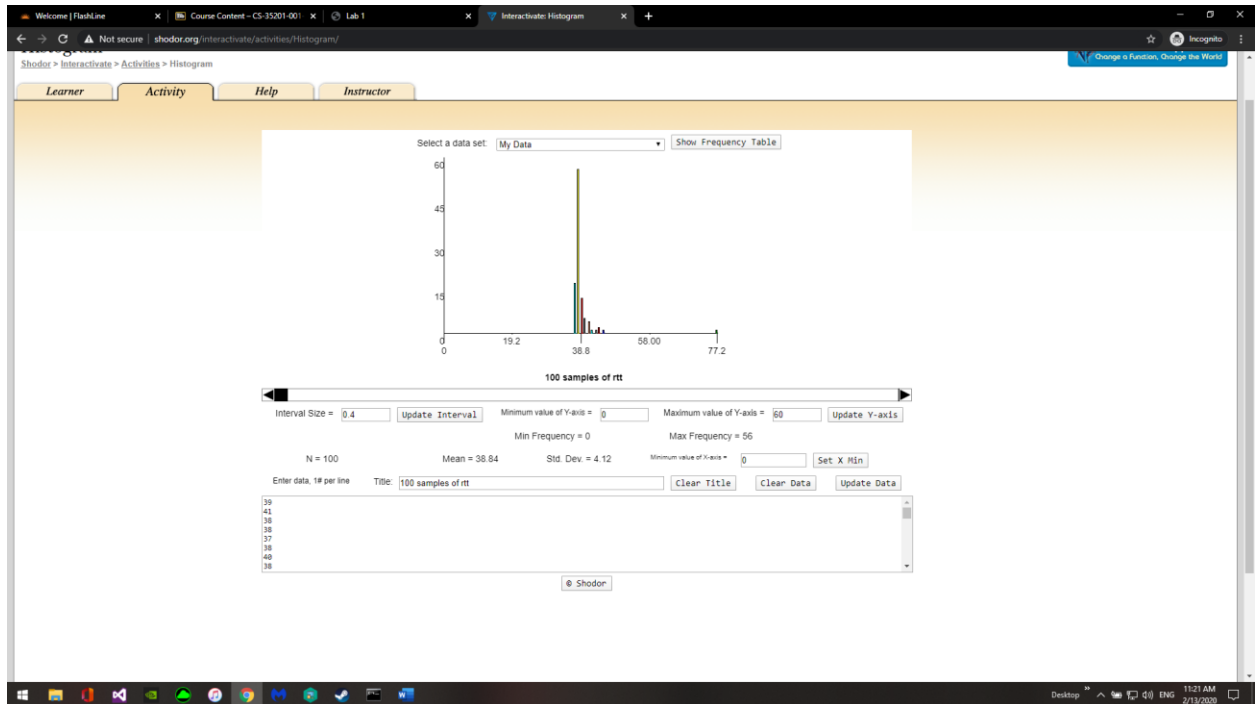
Pinging wasp.cs.kent.edu [131.123.35.17] with 32 bytes of data:
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=41ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=41ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
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Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
```

```

C:\Users\kash\Desktop> netstat -n 100 www.kent.edu.4
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=77ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=44ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=41ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
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Reply from 131.123.35.17: bytes=32 time=41ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
Reply from 131.123.35.17: bytes=32 time=41ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=38ms TTL=40
Reply from 131.123.35.17: bytes=32 time=41ms TTL=40
Reply from 131.123.35.17: bytes=32 time=58ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=37ms TTL=40
Reply from 131.123.35.17: bytes=32 time=39ms TTL=40
Reply from 131.123.35.17: bytes=32 time=41ms TTL=40
Reply from 131.123.35.17: bytes=32 time=40ms TTL=40

ping statistics for 131.123.35.17:
 Packets: Sent = 100, Received = 100, Lost = 0 (0% loss),
 Approximate round trip times in milli-seconds:
 Minimum = 37ms, Maximum = 77ms, Average = 39ms

```



- b. What do you observe? Normal distribution or something else?

It's not a normal distribution as that would have many values to the left and the right of the peak. This distribution has one very large peak and then most of the other entries are to the right of the peak.

- c. Calculate the mean and variance of the round-trip times

Mean: 38.84ms

Variance: The variance between the max and min is  $77-37=40$ ms

- d. Suggest an appropriate time-out based on the mean and variance

An appropriate time-out would be 60ms. This would allow most of the pings to finish while preventing too long of a wait on the outliers.