Ks7581

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Report – HW2

Ping.py:

Python implementation of the ping utility, designed to test the reachability of a host on an Internet Protocol (IP) network and measure the round-trip time for messages sent from the originating host to a destination computer.

1. The basic usage of ping.py allows users to ping a specified host.
   python ping.py example.com

```
PS D:\kirti_sharma_hw2> python ping.py google.com
PING google.com (142.250.81.238) 56 bytes of data.
76 bytes from 142.250.81.238: icmp_seq=1 ttl=64 time=18.01 ms
76 bytes from 142.250.81.238: icmp_seq=2 ttl=64 time=24.41 ms
76 bytes from 142.250.81.238: icmp_seq=3 ttl=64 time=11.81 ms
76 bytes from 142.250.81.238: icmp_seq=4 ttl=64 time=21.30 ms
76 bytes from 142.250.81.238: icmp_seq=5 ttl=64 time=26.15 ms
76 bytes from 142.250.81.238: icmp_seq=6 ttl=64 time=23.38 ms
76 bytes from 142.250.81.238: icmp_seq=7 ttl=64 time=25.58 ms
76 bytes from 142.250.81.238: icmp_seq=8 ttl=64 time=24.75 ms
76 bytes from 142.250.81.238: icmp_seq=9 ttl=64 time=21.06 ms
```

2. The count option allows users to specify the number of ping requests to send.
   python ping.py -c 5 example.com

```
PS D:\kirti_sharma_hw2> python ping.py -c 5 google.com
PING google.com (142.250.80.46) 56 bytes of data.
76 bytes from 142.250.80.46: icmp_seq=1 ttl=64 time=26.95 ms
76 bytes from 142.250.80.46: icmp_seq=2 ttl=64 time=20.01 ms
76 bytes from 142.250.80.46: icmp_seq=3 ttl=64 time=24.15 ms
76 bytes from 142.250.80.46: icmp_seq=4 ttl=64 time=23.11 ms
76 bytes from 142.250.80.46: icmp_seq=5 ttl=64 time=12.75 ms
5 packets transmitted, 5 received, 0.0% packet loss
```

3. The Interval option sets the time interval between ping requests.
   python my_ping.py -i 2 example.com

```
PS D:\kirti_sharma_hw2> python ping.py -i 2 google.com
PING google.com (142.250.80.46) 56 bytes of data.
76 bytes from 142.250.80.46: icmp_seq=1 ttl=64 time=31.65 ms
76 bytes from 142.250.80.46: icmp_seq=2 ttl=64 time=15.20 ms
76 bytes from 142.250.80.46: icmp_seq=3 ttl=64 time=14.97 ms
76 bytes from 142.250.80.46: icmp_seq=4 ttl=64 time=13.27 ms
76 bytes from 142.250.80.46: icmp_seq=5 ttl=64 time=24.06 ms
76 bytes from 142.250.80.46: icmp_seq=6 ttl=64 time=20.38 ms
76 bytes from 142.250.80.46: icmp_seq=7 ttl=64 time=26.38 ms
76 bytes from 142.250.80.46: icmp_seq=8 ttl=64 time=22.09 ms
76 bytes from 142.250.80.46: icmp_seq=9 ttl=64 time=25.99 ms
76 bytes from 142.250.80.46: icmp_seq=10 ttl=64 time=17.91 ms
76 bytes from 142.250.80.46: icmp_seq=11 ttl=64 time=25.53 ms
76 bytes from 142.250.80.46: icmp_seq=12 ttl=64 time=23.11 ms
76 bytes from 142.250.80.46: icmp_seq=13 ttl=64 time=26.63 ms
76 bytes from 142.250.80.46: icmp_seq=14 ttl=64 time=23.84 ms
76 bytes from 142.250.80.46: icmp_seq=15 ttl=64 time=23.88 ms
76 bytes from 142.250.80.46: icmp_seq=16 ttl=64 time=23.95 ms
76 bytes from 142.250.80.46: icmp_seq=17 ttl=64 time=21.71 ms
76 bytes from 142.250.80.46: icmp_seq=18 ttl=64 time=21.63 ms
76 bytes from 142.250.80.46: icmp_seq=19 ttl=64 time=22.88 ms
76 bytes from 142.250.80.46: icmp_seq=20 ttl=64 time=13.24 ms
76 bytes from 142.250.80.46: icmp_seq=21 ttl=64 time=24.14 ms
76 bytes from 142.250.80.46: icmp_seq=22 ttl=64 time=26.37 ms
76 bytes from 142.250.80.46: icmp_seq=23 ttl=64 time=21.47 ms
76 bytes from 142.250.80.46: icmp_seq=24 ttl=64 time=26.21 ms
76 bytes from 142.250.80.46: icmp_seq=25 ttl=64 time=20.81 ms

--- Ping statistics ---
25 packets transmitted, 25 received, 0.0% packet loss
```

4. Users can specify the size of the ping packet with -s option.
   python my_ping.py -s 100 example.com

```
PS D:\kirti_sharma_hw2> python ping.py -s 100 google.com
 >>
 PING google.com (142.250.65.174) 100 bytes of data.
 120 bytes from 142.250.65.174: icmp_seq=1 ttl=64 time=30.22 ms
 120 bytes from 142.250.65.174: icmp_seq=2 ttl=64 time=23.18 ms
 120 bytes from 142.250.65.174: icmp_seq=3 ttl=64 time=24.25 ms
 120 bytes from 142.250.65.174: icmp_seq=4 ttl=64 time=24.15 ms
 120 bytes from 142.250.65.174: icmp_seq=5 ttl=64 time=14.87 ms
 120 bytes from 142.250.65.174: icmp_seq=6 ttl=64 time=22.73 ms
 120 bytes from 142.250.65.174: icmp_seq=7 ttl=64 time=14.07 ms
 120 bytes from 142.250.65.174: icmp_seq=8 ttl=64 time=24.28 ms
 120 bytes from 142.250.65.174: icmp_seq=9 ttl=64 time=16.85 ms
 120 bytes from 142.250.65.174: icmp_seq=10 ttl=64 time=24.10 ms
 120 bytes from 142.250.65.174: icmp_seq=11 ttl=64 time=16.78 ms
 120 bytes from 142.250.65.174: icmp_seq=12 ttl=64 time=23.65 ms
 120 bytes from 142.250.65.174: icmp_seq=13 ttl=64 time=22.90 ms
 120 bytes from 142.250.65.174: icmp_seq=14 ttl=64 time=18.49 ms
 120 bytes from 142.250.65.174: icmp_seq=15 ttl=64 time=17.58 ms

 --- Ping statistics ---
 15 packets transmitted, 15 received, 0.0% packet loss
```

5. The timeout option -t sets the maximum time to wait for a response.

```
PS D:\kirti_sharma_hw2> python ping.py -t 5 google.com
PING google.com (142.251.40.110) 56 bytes of data.
76 bytes from 142.251.40.110: icmp_seq=1 ttl=64 time=27.67 ms
76 bytes from 142.251.40.110: icmp_seq=2 ttl=64 time=21.66 ms
76 bytes from 142.251.40.110: icmp_seq=3 ttl=64 time=12.70 ms
76 bytes from 142.251.40.110: icmp_seq=4 ttl=64 time=27.48 ms
76 bytes from 142.251.40.110: icmp_seq=5 ttl=64 time=27.15 ms
76 bytes from 142.251.40.110: icmp_seq=6 ttl=64 time=15.83 ms
76 bytes from 142.251.40.110: icmp_seq=7 ttl=64 time=23.70 ms
76 bytes from 142.251.40.110: icmp_seq=8 ttl=64 time=15.83 ms
76 bytes from 142.251.40.110: icmp_seq=9 ttl=64 time=28.74 ms
76 bytes from 142.251.40.110: icmp_seq=10 ttl=64 time=23.85 ms
76 bytes from 142.251.40.110: icmp_seq=11 ttl=64 time=15.90 ms
76 bytes from 142.251.40.110: icmp_seq=12 ttl=64 time=25.68 ms
76 bytes from 142.251.40.110: icmp_seq=13 ttl=64 time=21.22 ms
76 bytes from 142.251.40.110: icmp_seq=14 ttl=64 time=25.34 ms

--- Ping statistics ---
14 packets transmitted, 14 received, 0.0% packet loss
```

Traceroute.py:

Traceroute is a network diagnostic tool used to trace the route taken by packets from one host to a destination. The Python implementation allows for customizable options to explore network paths.

1. Basic Usage:
   python traceroute.py example.com

```
PS D:\kirti_sharma_hw2> python traceroute.py google.com
traceroute to google.com (142.251.40.110), 30 hops max
1  192.168.1.1 1.250 ms  192.168.1.1 0.000 ms  192.168.1.1 1.124 ms
2  syn-142-254-218-125.inf.spectrum.com 12.272 ms  syn-142-254-218-125.inf.spectrum.com 8.457 ms  syn-142-254-218-125.inf.spectrum.com 9.454 ms
3  lag-63.hnrtnyaf01h.netops.charter.com 29.800 ms  lag-63.hnrtnyaf01h.netops.charter.com 22.151 ms  lag-63.hnrtnyaf01h.netops.charter.com 29.230 ms
4  lag-46.mcr11hnrtnyaf.netops.charter.com 13.135 ms  lag-46.mcr11hnrtnyaf.netops.charter.com 8.755 ms  lag-46.mcr11hnrtnyaf.netops.charter.com 5.951 ms
5  lag-28.rcr01albynyyf.netops.charter.com 16.081 ms  lag-28.rcr01albynyyf.netops.charter.com 14.008 ms  lag-28.rcr01albynyyf.netops.charter.com 11.188 ms
6  lag-16-10.nycmny837aw-bcr00.netops.charter.com 31.897 ms  lag-16-10.nycmny837aw-bcr00.netops.charter.com 18.981 ms  lag-16-10.nycmny837aw-bcr00.netops.charter.com 31.823 ms
7  72.14.218.88 22.977 ms  72.14.218.88 26.366 ms  72.14.218.88 18.516 ms
8  142.251.78.63 29.033 ms  142.251.78.63 25.525 ms  142.251.78.63 28.672 ms
9  108.170.235.133 26.070 ms  108.170.235.133 20.151 ms  108.170.235.133 79.576 ms
10  lga25s79-in-f14.1e100.net 28.393 ms
PS D:\kirti_sharma_hw2>
```

2. Traceroute with No Hostname resolution (-n)
   python traceroute.py example.com -n

```
PS D:\kirti_sharma_hw2> python traceroute.py google.com -n
traceroute to google.com (142.250.80.46), 30 hops max
1  192.168.1.1 0.000 ms  192.168.1.1 0.000 ms  192.168.1.1 0.000 ms
2  142.254.218.125 19.088 ms  142.254.218.125 0.000 ms  142.254.218.125 20.966 ms
3  24.58.232.209 12.847 ms  24.58.232.209 33.332 ms  24.58.232.209 29.177 ms
4  24.58.49.70 12.371 ms  24.58.49.70 10.293 ms  24.58.49.70 9.950 ms
5  24.58.32.70 19.367 ms  24.58.32.70 16.295 ms  24.58.32.70 24.765 ms
6  66.109.6.74 24.173 ms  66.109.6.74 18.901 ms  66.109.6.74 31.410 ms
7  66.109.7.97 34.516 ms  66.109.7.97 27.347 ms  66.109.7.97 21.332 ms
8  142.251.225.87 34.806 ms  142.251.225.87 24.867 ms  142.251.225.87 23.694 ms
9  142.251.65.97 26.578 ms  142.251.65.97 25.293 ms  142.251.65.97 26.474 ms
10  142.250.80.46 27.241 ms
```

3. Traceroute with custom query per hop (-q)
   python traceroute.py example.com -q 5

```
PS D:\kirti_sharma_hw2> python traceroute.py google.com -q 5
traceroute to google.com (142.251.41.14), 30 hops max
1  192.168.1.1 2.028 ms  192.168.1.1 2.361 ms  192.168.1.1 2.010 ms  192.168.1.1 0.306 ms  192.168.1.1 0.000 ms
2  syn-142-254-218-125.inf.spectrum.com 12.954 ms  syn-142-254-218-125.inf.spectrum.com 7.938 ms  syn-142-254-218-125.inf.spectrum.com 10.952 ms  syn-142-254-218-125.inf.spectrum.com 12.647 ms  syn-142-254-218-125.inf.spectrum.com 0.000 ms
3  lag-63.hnrtnyaf01h.netops.charter.com 17.686 ms  lag-63.hnrtnyaf01h.netops.charter.com 41.790 ms  lag-63.hnrtnyaf01h.netops.charter.com 20.958 ms  lag-63.hnrtnyaf01h.netops.charter.com 31.891 ms  lag-63.hnrtnyaf01h.netops.charter.com 35.779 ms
4  lag-46.mcr11hnrtnyaf.netops.charter.com 14.479 ms  lag-46.mcr11hnrtnyaf.netops.charter.com 6.834 ms  lag-46.mcr11hnrtnyaf.netops.charter.com 0.000 ms  lag-46.mcr11hnrtnyaf.netops.charter.com 11.078 ms  lag-46.mcr11hnrtnyaf.netops.charter.com 6.311 ms
5  lag-28.rcr01albynyyf.netops.charter.com 16.364 ms  lag-28.rcr01albynyyf.netops.charter.com 16.537 ms  lag-28.rcr01albynyyf.netops.charter.com 18.367 ms  lag-28.rcr01albynyyf.netops.charter.com 16.450 ms  lag-28.rcr01albynyyf.netops.charter.com 17.085 ms
6  lag-16-10.nycmny837aw-bcr00.netops.charter.com 25.155 ms  lag-16-10.nycmny837aw-bcr00.netops.charter.com 17.961 ms  lag-16-10.nycmny837aw-bcr00.netops.charter.com 29.490 ms  lag-16-10.nycmny837aw-bcr00.netops.charter.com 31.829 ms  lag-16-10.nycmny837aw-bcr00.netops.charter.com 21.112 ms
7  syn-066-109-007-093.inf.spectrum.com 28.259 ms  syn-066-109-007-093.inf.spectrum.com 25.885 ms  syn-066-109-007-093.inf.spectrum.com 27.063 ms  syn-066-109-007-093.inf.spectrum.com 27.746 ms  syn-066-109-007-093.inf.spectrum.com 30.282 ms
8  142.251.225.91 22.910 ms  142.251.225.91 26.418 ms  142.251.225.91 23.648 ms  142.251.225.91 25.555 ms  142.251.225.91 25.496 ms
9  142.251.53.151 39.152 ms  142.251.53.151 52.422 ms  142.251.53.151 29.926 ms  142.251.53.151 15.956 ms  142.251.53.151 15.800 ms
10  lga34s40-in-f14.1e100.net 33.133 ms
PS D:\kirti_sharma_hw2>
```

4. Traceroute with Summary (-S)
   python traceroute.py example.com -S