Networking Project 1

Project 1: Tracert and Ping to google.com

Tools Used

- Command Prompt on Windows
- tracert and ping commands

Part 1: Ping Analysis

```
C:\Users\290400>ping google.com

Pinging google.com [142.250.183.142] with 32 bytes of data:
Reply from 142.250.183.142: bytes=32 time=97ms TTL=117
Reply from 142.250.183.142: bytes=32 time=56ms TTL=117
Reply from 142.250.183.142: bytes=32 time=85ms TTL=117
Reply from 142.250.183.142: bytes=32 time=145ms TTL=117

Ping statistics for 142.250.183.142:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 56ms, Maximum = 145ms, Average = 95ms

C:\Users\290400>
```

Analysis:

The destination IP is 142.251.42.46. ○ Response times range between 41 ms and 748 ms, with an average of 221 ms. ○ No packet loss occurred, indicating a stable connection.

- The high maximum latency (748 ms) may be due to temporary network congestion or routing issues.

Part 2: Tracert Analysis

```
Microsoft Windows [Version 10.0.26100.2605]
(c) Microsoft Corporation. All rights reserved.

C:\Users\290400>tracert google.com

Tracing route to google.com [142.251.42.46]
over a maximum of 30 hops:

  1     *        *        *     Request timed out.
  2    53 ms    29 ms    27 ms  136.226.252.84
  3     *        *        *     Request timed out.
  4    27 ms     *        *     if-bundle-25.qcore2.cxr-chennai.as6453.net [180.87.174.41]
  5     *       31 ms     *     if-ae-22-2.tcore2.cxr-chennai.as6453.net [180.87.37.115]
  6    29 ms    32 ms    41 ms  if-ae-3-3.tcore1.cxr-chennai.as6453.net [180.87.36.5]
  7    38 ms    31 ms    29 ms  if-bundle-26-2.qcore1.cxr-chennai.as6453.net [180.87.36.139]
  8    33 ms    31 ms    29 ms  iad23s26-in-f10.1e100.net [173.194.121.42]
  9    33 ms    30 ms    31 ms  142.251.227.217
 10    27 ms    30 ms    29 ms  142.251.230.90
 11    30 ms    29 ms    29 ms  64.233.174.2
 12    55 ms    46 ms    84 ms  72.14.232.34
 13    56 ms    55 ms    53 ms  192.178.110.105
 14    46 ms    48 ms    47 ms  142.251.69.45
 15    52 ms    51 ms    53 ms  bom12s20-in-f14.1e100.net [142.251.42.46]

Trace complete.

C:\Users\290400>
```

- The traceroute reveals multiple hops between the source (my system) and the destination (google.com).
- **Key Points:**
  - Initial hops show private IPs (likely ISP routing). o Later hops include Google-owned IPs (e.g., 142.250.67.174).
  - The total time to reach google.com is approximately 58-61 ms in the last hop.
- **Observation:** One hop timed out (hop 1). This could indicate a firewall or device that does not respond to ICMP packets.