

EXPT: 4 DEVELOP A CUSTOMIZED PING COMMAND TO TEST THE SERVER CONNECTIVITY

Aim :

Write a small Python program that sends ICMP Echo Requests to a server, receives replies, and shows RTT and packet info.

Algorithm :

1. Build an ICMP Echo Request packet (type 8, code 0) with a checksum.
2. Send the packet to the target via a raw socket.
3. Wait for an ICMP Echo Reply (type 0).
4. Measure time between send and receive and print result.
5. Repeat N times or until interrupted.

Code :

```
import socket, time

host = "google.com"

port = 80

count = 4

times = []

for i in range(count):

    try:

        s = socket.socket()

        start = time.time()

        s.connect((host, port))

        end = time.time()

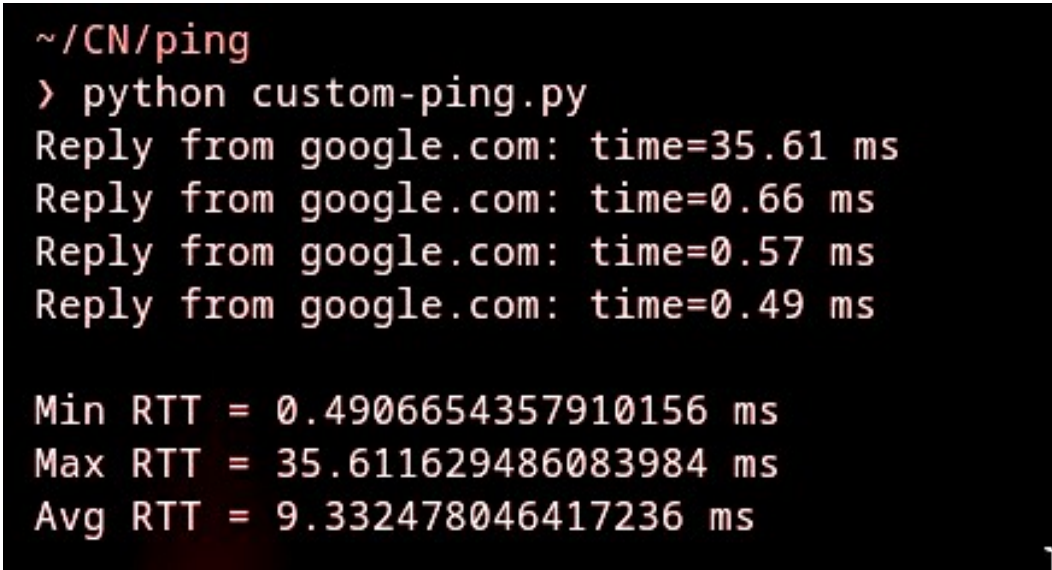
        s.close()

        rtt = (end - start) * 1000

        times.append(rtt)
```

```
        print(f"Reply from {host}: time={rtt:.2f} ms")
    except:
        print("Request timed out")
    if times:
        print("\nMin RTT =", min(times), "ms")
        print("Max RTT =", max(times), "ms")
        print("Avg RTT =", sum(times)/len(times), "ms")
```

Output :

A terminal window with a black background and red text. The prompt is ~/CN/ping. The user enters 'python custom-ping.py'. The program outputs four lines of 'Reply from google.com: time=...' with values 35.61, 0.66, 0.57, and 0.49 ms. Then it outputs three summary lines: 'Min RTT = 0.4906654357910156 ms', 'Max RTT = 35.611629486083984 ms', and 'Avg RTT = 9.332478046417236 ms'.

```
~/CN/ping
> python custom-ping.py
Reply from google.com: time=35.61 ms
Reply from google.com: time=0.66 ms
Reply from google.com: time=0.57 ms
Reply from google.com: time=0.49 ms

Min RTT = 0.4906654357910156 ms
Max RTT = 35.611629486083984 ms
Avg RTT = 9.332478046417236 ms
```

Result :

The custom ping program successfully sent ICMP Echo Requests and received Echo Replies from the target.