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

Aim:

To create a basic Python program that sends ICMP Echo Request packets to a server, receives the replies, and displays round-trip time along with packet details.

Algorithm:

1. Create an ICMP Echo Request packet (type 8, code 0) and calculate its checksum.
2. Send this packet to the destination using a raw socket.
3. Wait until an ICMP Echo Reply packet (type 0) arrives.
4. Calculate the time taken from sending to receiving and display it.
5. Repeat the process multiple times or until the user stops it.

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:

```
PS H:\bala> python .\ping.py
Reply from google.com: time=15.04 ms
Reply from google.com: time=6.26 ms
Reply from google.com: time=5.35 ms
Reply from google.com: time=5.41 ms

Min RTT = 5.347251892089844 ms
Max RTT = 15.038251876831055 ms
Avg RTT = 8.014261722564697 ms
PS H:\bala>
```

Result:

The custom ping script worked correctly. It sent ICMP Echo Requests and received replies, showing the round-trip time for each packet sent.