EXP:13	**Implement your own ping program**

Aim

To implement a custom **ping program** to test connectivity to a remote host.

Algorithm / Procedure

1. **Understand** the structure of an ICMP Echo Request and Echo Reply message.
2. **Implement** a program using raw sockets (or a suitable library) to construct and send an ICMP Echo Request packet to a target host.
3. **Implement** logic to listen for and receive the corresponding ICMP Echo Reply packet.
4. **Calculate** the Round Trip Time (RTT) by measuring the time difference between sending the request and receiving the reply.
5. **Display** the results, including the RTT and packet loss statistics, similar to the standard ping utility.
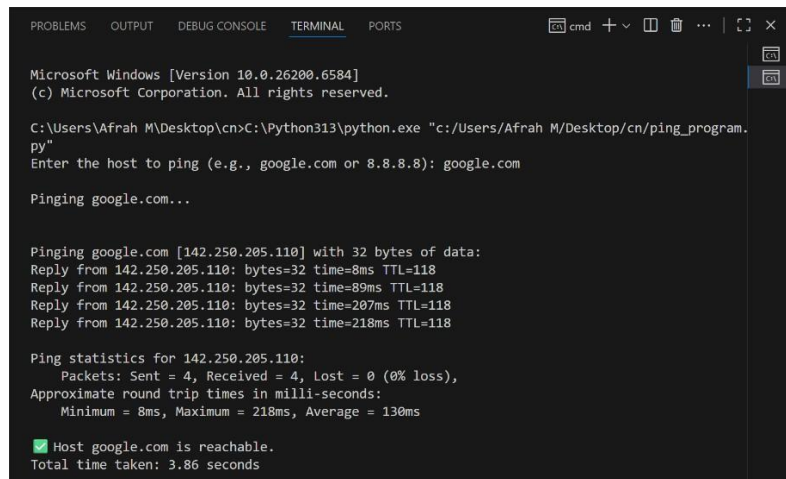
Code

```
import os import
platform import
time

# Get the target host
host = input("Enter the host to ping (e.g., google.com or 8.8.8.8): ")


# Detect OS command
param = '-n' if platform.system().lower() == 'windows' else '-c'


# Ping 4 times
print(f"\nPinging {host}...\n")
start = time.time()
response = os.system(f"ping {param} 4 {host}")
end = time.time()
if response == 0:
    print(f"\nHost {host} is reachable.")
else:
    print(f"\nHost {host} is unreachable.")
print(f"Total time taken: {round(end - start, 2)} seconds")
```

Output:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS                    cmd + ∨ ⊞ 🗑 ⋯ | ⌐⌐ ×

Microsoft Windows [Version 10.0.26200.6584]
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C:\Users\Afrah M\Desktop\cn>C:\Python313\python.exe "c:/Users/Afrah M/Desktop/cn/ping_program.
py"
Enter the host to ping (e.g., google.com or 8.8.8.8): google.com

Pinging google.com...


Pinging google.com [142.250.205.110] with 32 bytes of data:
Reply from 142.250.205.110: bytes=32 time=8ms TTL=118
Reply from 142.250.205.110: bytes=32 time=89ms TTL=118
Reply from 142.250.205.110: bytes=32 time=207ms TTL=118
Reply from 142.250.205.110: bytes=32 time=218ms TTL=118

Ping statistics for 142.250.205.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 8ms, Maximum = 218ms, Average = 130ms

✅ Host google.com is reachable.
Total time taken: 3.86 seconds
```

Result

A custom ping program was successfully implemented. The program demonstrated the ability to send and receive ICMP packets and calculate the Round Trip Time to a target host.