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EXPNO:10B

Customized ping command to test the server connectivity without using sockets

Aim:
To study packet sniffing concept and implement it without using raw sockets.

Algorithm:

1. **Define a Packet Callback Function**:
   - ○ Define a function packet_callback(packet) that processes each captured packet. ○ Check if the packet contains an IP layer (IP in packet).
2. **Extract Packet Details**:
   - ○ If the packet contains the IP layer, retrieve the protocol number, source IP, and destination IP from the IP layer (packet[IP]). ○ Initialize protocol_name as an empty string.
3. **Determine Protocol Type**:
   - ○ Use conditional statements to map protocol numbers to protocol names:
     - ■ 1 for ICMP
     - ■ 6 for TCP
     - ■ 17 for UDP
     - ■ Any other protocol number as "Unknown Protocol".
4. **Display Packet Details**:
   - ○ Print the protocol name, source IP, and destination IP for each captured packet.
   - ○ Print a separator line to distinguish between different packets.
5. **Main Function**:
   - ○ Use a try block to handle exceptions.
   - ○ Set the interface name (e.g., "Ethernet" or "Wi-Fi") based on the system's network configuration.
   - ○ Call the sniff function to capture packets on the specified network interface with:
     - ■ iface=interface_name for the interface name.
     - ■ prn=packet_callback to call the callback function for each packet.
     - ■ filter="ip" to capture only IP packets.
     - ■ store=0 to avoid storing packets in memory.

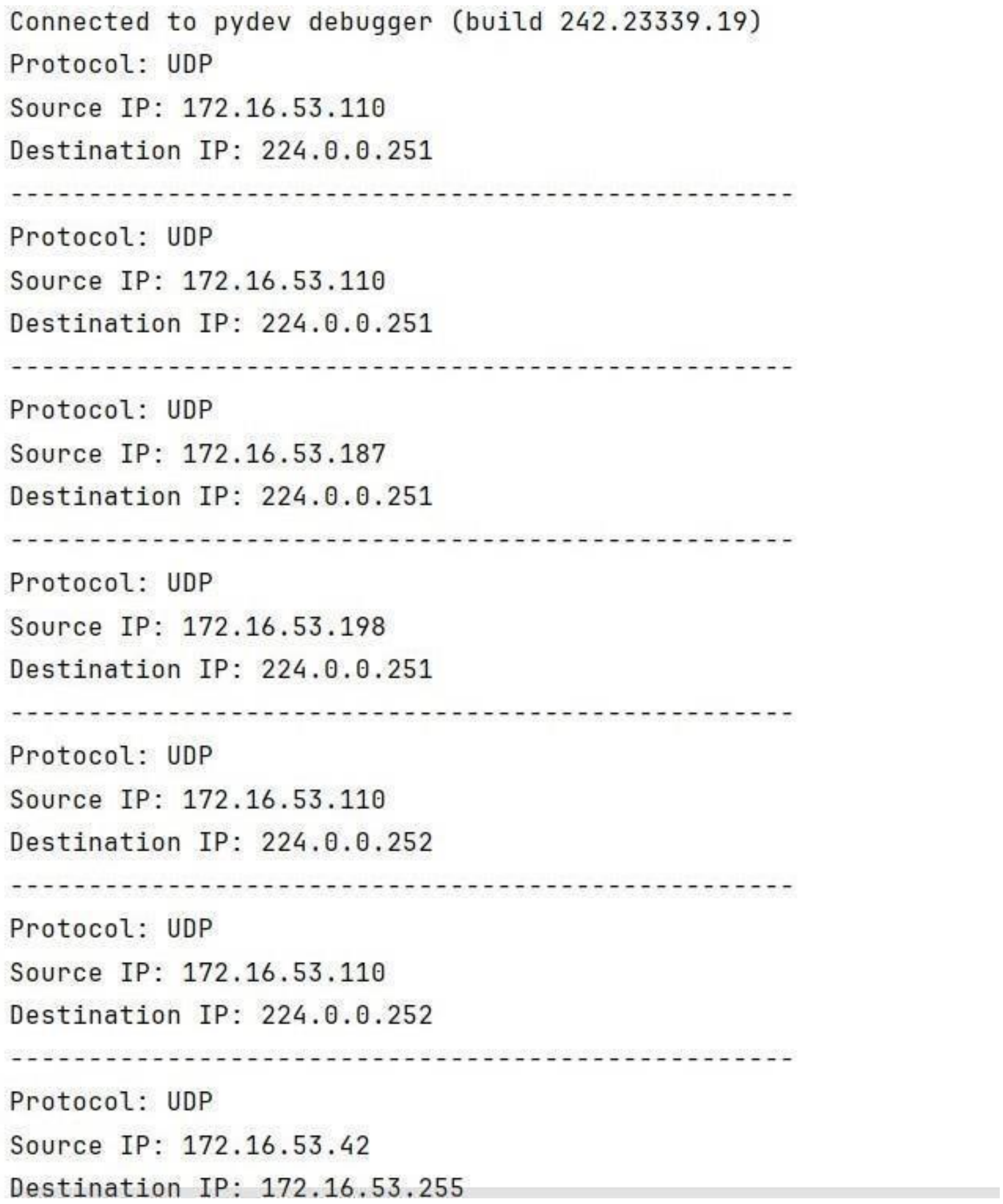
6. **Error Handling**:
    - In the except block, print an error message if an exception occurs, and advise running with elevated privileges or checking the interface name.
7. **Execute the Program**:
    - In the main function, call main() to start the packet-sniffing process.

CODE:

```
from scapy.all import sniff from scapy.layers.inet import
IP, TCP, UDP, ICMP

def packet_callback(packet):
  if IP in packet:
     ip_layer = packet[IP]
     protocol = ip_layer.proto
     src_ip = ip_layer.src dst_ip =
     ip_layer.dst

     # Determine the protocol
     protocol_name = "" if protocol
     == 1:
     protocol_name = "ICMP" elif
     protocol == 6:
     protocol_name = "TCP"  elif
     protocol == 17:
        protocol_name = "UDP"
     else:
        protocol_name = "Unknown Protocol"

     # Print packet details
     print(f"Protocol: {protocol_name}")
     print(f"Source IP: {src_ip}")
     print(f"Destination IP: {dst_ip}")
     print("-" * 50)

def main():
  try:
     # Replace 'Ethernet' with your actual network interface name from ipconfig output
     interface_name = "Ethernet" # or "Wi-Fi" if using wireless
```

```
    # Capture packets on the specified network interface

    sniff(iface=interface_name, prn=packet_callback, filter="ip", store=0) except

  Exception as e:

    print(f"Error: {e}") print("Make sure you are running the script with elevated privileges
    (e.g., sudo) and check the
interface name.")

if __name__ == "__main__":
  main()
```

OUTPUT:



```
Connected to pydev debugger (build 242.23339.19)
Protocol: UDP
Source IP: 172.16.53.110
Destination IP: 224.0.0.251
--------------------------------------------------
Protocol: UDP
Source IP: 172.16.53.110
Destination IP: 224.0.0.251
--------------------------------------------------
Protocol: UDP
Source IP: 172.16.53.187
Destination IP: 224.0.0.251
--------------------------------------------------
Protocol: UDP
Source IP: 172.16.53.198
Destination IP: 224.0.0.251
--------------------------------------------------
Protocol: UDP
Source IP: 172.16.53.110
Destination IP: 224.0.0.252
--------------------------------------------------
Protocol: UDP
Source IP: 172.16.53.110
Destination IP: 224.0.0.252
--------------------------------------------------
Protocol: UDP
Source IP: 172.16.53.42
Destination IP: 172.16.53.255
```

RESULT :

packet sniffing concept and implement it without using raw sockets is studied.