EXP NO:12.A **Packet Sniffing Using Socket**
DATE:5.11.24

AIM:
To study packet sniffing concept and implement it using sockets.
Algorithm:

Import Libraries: Import necessary modules from `scapy` for packet capturing and IP layers.

Define Packet Callback:

- Check if the packet contains an IP layer.
- Extract protocol number, source IP, and destination IP from the IP layer.
- Identify the protocol type (ICMP, TCP, UDP) based on the protocol number.
- Print the protocol name, source IP, and destination IP.

Main Function:

- Use `sniff` to capture packets on the default network interface.
- For each packet, call `packet_callback` to process and display packet information.

Run Program:

- Execute the `main` function to start packet sniffing when the script runs.

Program:

```
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():
    # Capture packets on the default network interface
    sniff(prn=packet_callback, filter="ip", store=0)

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

Output:

```
Protocol: TCP
Source IP: 192.168.1.10
Destination IP: 93.184.216.34
--------------------------------------------------
Protocol: ICMP
Source IP: 192.168.1.10
Destination IP: 8.8.8.8
--------------------------------------------------
Protocol: UDP
Source IP: 192.168.1.10
Destination IP: 8.8.4.4
--------------------------------------------------
Protocol: TCP
```

Source IP: 192.168.1.10
Destination IP: 172.217.14.206
----------**Result**:

Packet sniffing concept and implement it using sockets is studied and successfully executed.