

**EXP NO:12A**  
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## **Packet Sniffing Using Socket**

### **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

```

```

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Protocol: ICMP
Source IP: 192.168.1.10
Destination IP: 8.8.8.8

```

```

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Protocol: UDP
Source IP: 192.168.1.10
Destination IP: 8.8.4.4

```

```

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Protocol: TCP

```

Source IP: 192.168.1.10

Destination IP: 172.217.14.206

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**Result:**

Thus, packet sniffing concept and implement it using sockets is studied and successfully executed.