

**EXP NO:12.A****Packet Sniffing Using Socket****DATE:9.10.24****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:**

```
C:\Users\Windows\PycharmProjects\pythonProject1\.venv\Scripts\python
Protocol: TCP
Source IP: 3.231.72.45
Destination IP: 192.168.1.38
-----
Protocol: TCP
Source IP: 192.168.1.38
Destination IP: 3.231.72.45
-----
Protocol: Unknown Protocol
Source IP: 192.168.1.38
Destination IP: 224.0.0.22
-----
Protocol: UDP
Source IP: 192.168.1.38
Destination IP: 224.0.0.251
-----
Protocol: UDP
Source IP: 192.168.1.38
Destination IP: 224.0.0.251
-----
Protocol: Unknown Protocol
Source IP: 192.168.1.38
Destination IP: 224.0.0.22
-----
Protocol: UDP
Source IP: 192.168.1.37
Destination IP: 224.0.0.251
-----
Protocol: Unknown Protocol
Source IP: 192.168.1.1
Destination IP: 224.0.0.1
```

**Result:**

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