CSYE 6225: Network Structure & Cloud Computing Course
Assignment # 2

Below is a set of Linux commands related to networking, local network statistics, and packet analysis. Please execute them, take screenshots, and compile a full report demonstrating your understanding of these commands and their resulting outputs. Note that you may need to install certain tools via a package manager.

1. Basic Network Information

- **View IP address and network interfaces:**
  ip addr show
- **Display network interfaces and their status:**
  ip link show
- **Show routing table:**
  ip route show
- **Get information about DNS servers:**
  cat /etc/resolv.conf

2. Network Statistics

- **Display network statistics (bytes received/sent, errors, etc.):**
  netstat -i
- **View detailed statistics of TCP/UDP connections:**
  netstat -s
- **Show network interfaces' statistics:**
  ifstat

3. Packet Analysis

- **Monitor real-time traffic on an interface:**
  tcpdump -i eth0 (*Replace eth0 with your network interface name*).
- **Capture packets with a filter (e.g., HTTP traffic):**
  tcpdump -i eth0 port 80
- **Display network traffic in a human-readable format:**
  iftop

4. Network Troubleshooting

- **Ping a host to check connectivity:**
  ping <hostname_or_ip>
- **Traceroute to determine the path to a host:**
  traceroute <hostname_or_ip>
- **Check for open ports and services:**
  nmap <hostname_or_ip>

- **Resolve DNS for a hostname:**
  nslookup <hostname>
- **Display network connections and listening ports:**
  ss -tuln

5. Advanced Packet Analysis

- **Capture and analyze packets in a file:**
  tcpdump -i eth0 -w capture.pcap
- *Analyze the capture file with Wireshark or tcpdump:*
  tcpdump -r capture.pcap

Submission: Please submit the PDF, including all screenshots, via Canvas. Name the file using your last name.

Grading: No late assignments are accepted.

- 10 for complete including all commands.
- 5 for any missing command.
- 0 for non submission.

End of assignment # 2