Bootcamp 134 | Python

Course 16 | Network

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Content

Networking Basics

- What is Networking?
- Common Network Terminology
- Basic Networking Concepts

Networking Basics | What is Networking?

- Definition
  - Connecting devices to share data and resources.
- Importance
  - Everyday applications (e.g., web browsing, emails, file sharing).
- Components
  - Servers, clients, routers, switches, and protocols.

Networking Basics | Common Network Terminology

- IP Address
  - Unique identifier for devices on a network.
- MAC Address
  - Hardware-based address of network interfaces.
- LAN/WAN
  - Local Area Network vs. Wide Area Network.
- Packet
  - Basic unit of data transmitted over a network.

Networking Basics | Basic Networking Concepts

- Ping
  - Test connectivity between devices.
- Traceroute/Tracepath
  - Visualize the route of data packets.
- IP Configuration (Check network configuration)
  - ipconfig (Windows)
  - ifconfig (Linux/Mac) Netstat: View active network connections and ports.
- Nslookup
  - Query DNS servers to resolve hostnames.

Protocols and Concepts

- HTTP/HTTPS
- RESTful APIs
- TCP/IP
- DNS (Domain Name System)
- Load Balancing

Protocols and Concepts | HTTP/HTTPS

- Purpose
  - Communication between web browsers and servers.
- Methods
  - GET, POST, PUT, DELETE.
- Status Codes
  - 200 (OK), 404 (Not Found), etc.

Protocols and Concepts | RESTful APIs

- TCP: Reliable data transmission with acknowledgment.
- IP: Addressing and routing packets between devices.
- Subnetting and CIDR (brief introduction).

Protocols and Concepts | TCP/IP

- TCP: Reliable data transmission with acknowledgment.
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Protocols and Concepts | DNS (Domain Name System)

- Function: Resolving domain names to IP addresses.
- Example: How "google.com" translates to an IP address

Protocols and Concepts | Load Balancing

- Definition: Distributing traffic across multiple servers.

Hands-On Practice

- Networking Commands
- Network Exploration Activity
- Basic Router Configuration

Hands-On Practice | Networking Commands

- ping
  - Test connection to a public domain (e.g., ping google.com).
- tracert (Windows) / traceroute (Linux)
  - Trace the route to a domain.
- ipconfig/ifconfig
  - View local IP configuration.
- nslookup
  - Resolve a domain name (e.g., nslookup yahoo.com).
- netstat
  - Show open connections and listening ports.

Hands-On Practice | Network Exploration Activity

- Identify the IP of a laptop or phone using ipconfig/ifconfig.
- Use ping and traceroute to test connectivity and visualize paths.
- Explore local network topology:
  - Map out devices connected to a home router.
  - Identify shared/private IP ranges (e.g., 192.168.x.x).

Hands-On Practice | Basic Router Configuration

- Access router settings via a browser (default gateway IP).
- Explain default credentials and basic settings.

Any question?

Next course

- Why Linux?
- Installing Linux
- Linux File System Overview
- Basic Linux Commands
- Introduction to Package Managers