**WEEK 2:**

Virtual networking refers to the use of software-based technologies to create, manage, and optimize computer networks. It is an essential component of modern IT infrastructure and plays a crucial role in various domains, including data centers, cloud computing, and enterprise networks.

**HTTP Methods:**

These are commands used in HTTP requests to specify the desired action to be performed on a given resource. GET, POST, PUT, DELETE, and others dictate how a server should process a request.

Hashing Mechanisms:

Hashing involves converting data into a fixed-size string of characters using a hash function. It's a one-way process, making it challenging to reverse-engineer the original data from the hash. Different algorithms like MD5, SHA-1, SHA-256, etc., have varying levels of security and are used for different purposes.

Rubberduck Debugging:

A debugging technique where a programmer explains their code to an inanimate object (like a rubber duck). This process often helps in identifying issues or bugs by articulating the code step-by-step.

Robots.txt:

A text file is placed in the root directory of a website to communicate with web crawlers or robots about which areas of the site should not be processed or scanned.

Sitemap.xml:

A file that lists the URLs for a site's pages, along with additional metadata about each URL. It assists search engines in crawling and indexing a site more intelligently.

SEO (Search Engine Optimization):

Techniques and strategies used to optimize websites to rank higher in search engine results. This involves various tactics, including content optimization, keyword research, link building, and improving user experience.

Assignments:

**IP Addresses:**

Unique identifiers are assigned to devices on a network. They facilitate communication between devices within a network or across the internet.

IP Types (IPv4 and IPv6):

IPv4 is the older addressing scheme with 32-bit addresses, while IPv6 is the newer scheme using 128-bit addresses. IPv6 was introduced to address the exhaustion of IPv4 addresses.

IP Routing (Classful and CIDR):

Classful routing divides IP addresses into classes (Class A, B, C) based on the leading bits. CIDR, on the other hand, allows for more flexible allocation of IP addresses without strictly adhering to class boundaries.

CIDR - Subnets, Subnet Masks, Gateways, Broadcast Addresses:

CIDR allows the division of IP addresses into smaller, more manageable subnets. Subnetting involves creating smaller networks within a larger network, each with its own subnet mask, gateway, and broadcast address.