**Class 01**

* **Linux Namespace**
  1. User Space
  2. Kernel Space
* **Socket Binding**

Socket binding is the process of binding a socket to a network address within the system and an address is the combination of an IP address and a port number When a socket is bound the server can accept client connections

* **Host Namesapce**
* **Network Namesapce**
* **File Namespace**
* **OSI Model**

-The OSI Model (Open Systems Interconnection Model) is a conceptual framework used to describe the functions of a networking system.

## 7 Layers of the OSI Model

1. **Physical Layer** - Transmit raw bit stream over the physical Medium
2. **Data Link Layer** - Defines the format of data on the Network and provide physical address
3. **Network Layer** - Provide Logical Address & path selection
4. **Transport Layer** - Provide end to end connection
5. **Session Layer** - Provide Dialog control between Host
6. **Presentation Layer** - Handle data encryption and decryption
7. **Application Layer** - Provide a user interface where application can access the network services

* **ARP**

-The address resolution protocol (arp) is a protocol used by the Internet Protocol (IP), specifically IPv4, to map IP network addresses to the hardware addresses used by a data link protocol.

All OSs in an IPv4 network keep an ARP cache. When the host requests a MAC address to send a packet to another host in the LAN, it checks its ARP cache to check that the MAC address translation already presents.

* **Route Table**
* In computer networking a routing table, or routing information base (RIB), is a data table stored in a router or a network host that lists the routes to particular network destinations, and in some cases, metrics (distances) associated with those routes. The routing table contains information about the topology of the network immediately around it.
* **CIDR**
* Classless inter-domain routing (CIDR) is a set of Internet protocol (IP) standards that is used to create unique identifiers for networks and individual devices. The IP addresses allow particular information packets to be sent to specific computers.
* **IP Address**
* An Internet Protocol address (IP address) is a numerical label assigned to each device connected to a computer network that uses the Internet Protocol for communication. An IP address serves two main functions: host or network interface identification and location addressing. There are 2 types of IP version available in the world IPV4 is 32bit number which almost occupies & new IPV6 is 128 bit.
* **Network Interface**
* A network interface is the point of interconnection between a computer and a private or public network. A network interface is generally a network interface card (NIC), but does not have to have a physical form. Instead, the network interface can be implemented in software.
* **Loopback Interface**
* The loopback interface (127.0.0.1 for IPv4 and ::1 for IPv6) is not a physical device but a piece of software simulating a network interface. The loopback interface is commonly used in **test environments.**
* **MTU**
* In computer networking, the maximum transmission unit (MTU) is the size of the largest protocol data unit (PDU) that can be communicated in a single network layer transaction. The MTU relates to, but is not identical to the maximum frame size that can be transported on the data link layer. Larger MTU is associated with reduced overhead. Smaller MTU values can reduce network delay.
* **DNS**
* DNS : The Domain Name System (DNS) is the phonebook of the Internet. Humans access information online through domain names, like nytimes.com or espn.com. Web browsers interact through Internet Protocol (IP) addresses. DNS translates domain names to IP addresses so browsers can load Internet resources.
* DNS Query: A DNS query (also known as a DNS request) is a demand for information sent from a user's computer (DNS client) to a DNS server. In most cases a DNS request is sent, to ask for the IP address associated with a domain name.
* **Some Commands**
* dig
* nslookup
* telnet
* tcpdumps
* nc