Radhika/cs keywords

#DESKTOP🡪

Desktop mainly divided into three parts-

1)Computation

2)Storage

3)Network

#1.COMPUTATION :-

* 1. **CPU**-Central Processing Unit, is the primary component of a computer that performs most of the processing inside. It’s often referred to as the “brain” of the computer because it executes instructions from programs, performs calculations, and manages data.
  2. **GPU**- Graphics Processing Unit, is a specialized processor designed to handle and accelerate graphics rendering and parallel processing tasks. While it primarily processes visual data for tasks like gaming and video playback, modern GPUs are also used for complex computations in fields like artificial intelligence and scientific simulations.
  3. **DPU**- Data Processing Unit, is a specialized processor designed to handle data-intensive tasks and offload data processing from the CPU. Unlike CPUs, which are general-purpose processors, DPUs are optimized for managing and accelerating data-centric operations such as data movement, storage, and network functions.
  4. **TPU** -Tensor Processing Unit, is a type of specialized processor developed by Google specifically for accelerating machine learning tasks. Designed to efficiently perform tensor computations, which are crucial for deep learning algorithms, TPUs offer high performance and efficiency for training and inference in neural networks.

#2. STORAGE:-

**1.primary storage:** it is volatile. Primary memory provides very fast access to data,smaller capacity. E.g.RAM

**2.secondary storage**: it is Non-volatile ,Slower access,larger capacity: .e.g.hard disk,CD

#3.NETWORK:-

**3.1) Local Area Network (LAN):**

A LAN covers a small geographic area, such as a home, office, or campus. It connects devices within this limited area.

**3.2) Wide Area Network (WAN):**

A WAN spans a large geographic area, like multiple cities, countries. WANs can be public, like the internet, or private, like intranet.

**#OPERATING SYSTEM(OS):**

An Operating system is system software that manages computer hardware and software resources and provides common services for computer programs. It act as an intermediary between users and computer hardware

The most commonly used Operating System(OS):-

WINDOWS

MACos

LINUX

#NIC

A network interface card, also known as NIC or network interface controller, is typically a circuit board installed on the computer to connect to the network. It works as an indispensable component for the network connection of computers.

#CLOUD COMPUTING

Cloud computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet ("the cloud"). This allows for faster innovation, flexible resources, and economies of scale.

#BARE METAL SYSTEM

A bare-metal system is a computer system that operates directly on the hardware without the use of an operating system. This means that the software running on the system has direct access to the hardware resources, such as the CPU, memory, and Input/Output devices.

In simpler terms, it’s like running a car without a driver: the engine and other components are working directly, without any intermediary system to manage them..

#BLOCKChain-

Blockchain is a decentralized digital ledger technology that securely records transactions across multiple computers in a way that prevents alteration or tampering. It operates as a chain of blocks, each containing a list of transactions. Once a block is added to the chain, it is difficult to change any information in that block without altering all subsequent blocks, which requires consensus from the network. This makes blockchain a transparent and secure method for managing and verifying transactions. It’s commonly used in cryptocurrencies like Bitcoin but also has applications in various other fields, such as supply chain management, voting systems, and smart contracts. Some famous examples are

#1.ARM

#2.CISC[complex instruction set computer]

It is a closed source like intel and AMD(advanced micro devices).It develop X-86 series under ISA[intruction set arichtecture] in 1978.

#3.RISC[reduced instruction set computer]-

It is a close source like ARM[Adavnce risc machine] .It has specific intruction,very fast and efficient.

#4.RISC-V-

It is based on RISC principles and develop in 2023 and which is a free open source. It also have a project called SHAKTI.

#5.ASIC:-

ASIC stands for Application-Specific integrated circuit. It’s a type of integrated circuit designed for a specific application or function, rather than general puerpose use. For example, an ASIC designed for cryptocurrency mining is specifically built to perform the hashing calculations required for mining.

#VIRTUAL MACHINE

A virtual machine (VM) is a software-based emulation of a physical computer that allows multiple operating systems or instances to run on a single physical machine. VMs provide isolation, encapsulation, and resource efficiency, making them valuable for development, testing, and production environments. They come in two main types: system virtual machines, which emulate entire systems, and process virtual machines, which abstract individual applications. While VMs offer numerous advantages, including flexibility and efficient resource utilization, they also come with performance overhead and management complexity.

#Kernel

The kernel is a computer program at the core of a computer’s operating system and generally has complete control over everything in the system. The kernel is also responsible for preventing and mitigating conflicts between different processes.

#**IP ADDRESS**

An IP address (Internet Protocol address) is a unique string of numbers separated by periods or colons that identifies each device connected to a network. IP addresses serve two primary functions: identifying the host or network interface and providing the location of the host in the network. They are essential for routing internet traffic and ensuring data reaches the correct destination.

#**ISP(INTERNET SERVICE PROVIDER)**

An ISP, or Internet Service Provider, is a company or organization that provides individuals and businesses with access to the internet. ISPs offer various types of internet connections, including:

#**DSL (DIGITAL SUBSCRIBER LINE)**

Uses telephone lines to provide internet access. Cable: Uses cable television lines for internet service. Fiber-optic: Uses fiber-optic cables for high-speed internet access. Satellite: Provides internet access via satellite signals, useful in remote areas. Wireless: Uses radio signals to connect to the internet, which can include both fixed wireless and mobile broadband.

#**DNS(DOMAIN NAME SYSTEM)**

DNS stands for Domain Name System. It functions like a phone book for the internet, translating human-friendly domain names (like [www.example.com](http://www.example.com)) into IP addresses (like 192.0.2.1) that computers use to identify each other on the network.

#**VPN(VIRTUAL PRIVATE NETWORK)**

A VPN, or Virtual Private Network, is a service that creates a secure, encrypted connection over a less secure network, such as the internet. It allows you to access the internet as if you were connected to a private network, providing privacy and security.

When you use a VPN, your internet traffic is routed through a secure server before reaching its destination, adding a layer of privacy and security. However, it’s important to choose a reputable VPN provider to ensure your data is handled securely and your privacy is protected.

#**FRONTEND,BACKEND AND API(APPLICATION PROGRAMMING INTERFACE)**

In web development, the terms frontend, backend, and API refer to different aspects of building and managing applications. Here’s a breakdown of each:

**#1.FRONTEND**

Frontend refers to the client-side of a web application. It encompasses everything that users interact with directly in their web browsers. This includes:

#**2.BACKEND**

Backend refers to the server-side of a web application. It involves everything that happens on the server and is responsible for managing and processing data. Key aspects include:

#**3.API**

API stands for Application Programming Interface. It is a set of rules and protocols that allows different software applications to communicate with each other. APIs can be used to connect Frontend and Backend

Together, these components work to create a complete web application, with the frontend providing the user experience, the backend managing data and logic, and the API facilitating communication between the two.

#**THE 7 LAYERS OF OPI MODEL**:-

Layer 1 ( Physical Layer) – The physical layer is responsible for the physical cable or wireless connection between network nodes.

Layer 2 : (Data-Link-Layer) – The data link layer establishes and terminates a connection between two physically-connected nodes on a network.

Layer 3 : ((Networking Layer) – The network layer has two main functions. One is breaking up segments into network packets, and reassembling the packets on the receiving end.

Layer 4 : (Transport Layer )- The transport layer takes data transferred in the session layer and breaks it into “segments” on the transmitting end.

Layer 5 : (Session Layer )- The session layer creates communication channels, called sessions, between devices.

Layer 6 : (Presentation Layer )- The presentation layer prepares data for the application layer. It defines how two devices should encode, encrypt, and compresses data so it is received correctly on the other end.

Layer 7 : (Application Layer) – The application layer is used by end-user software such as web browsers and email clients.

#**SEMICONDUCOTRS-** Semiconductors, also known as integrated circuits (ICs) or computer chips, are essential components of computers and other electronic devices. #FUNCTION Semiconductors process data, store information, and control electronic devices.

#**Production-** There are many 2-3 companies in the world that manufacture chips .e.g TSMC ,intel , samsung. And the machines used for producing chips is provided by ASML company

#**ARCHITECTURE** X-86 :- intel,AMD CISC :- Intel,AMD RISC :- ARM

#Hypervisor :-

A hypervisor is a software layer that allows multiple virtual machines (VMs) to run on the same physical machine. It’s also known as a virtual machine monitor (VMM)

**(i)Type 1**

Also known as a bare-metal or native hypervisor, this type of hypervisor runs directly on the host’s hardware. It’s more secure and stable than Type 2 hypervisors, and is often used in enterprise data centers and server-based environments. Type 1 hypervisors can implement their own resource allocation strategies for virtual machines (VMs). Examples of Type 1 hypervisors include Microsoft Hyper-V, VMware vSphere, and KVM.

**(ii)Type 2**

Also known as a hosted hypervisor, this type of hypervisor runs on top of an operating system as a software layer or application. Type 2 hypervisors are easier to install, configure, and use than Type 1 hypervisors, and are more user-friendly. However, Type 2 hypervisors are less efficient than Type 1 hypervisors because they negotiate resource allocation with the operating system. Examples of Type 2 hypervisors include VMware Workstation, Oracle VirtualBox, and Parallels Desktop

#Proxy server-

A proxy server is a system or router that provides a gateway between users and the internet. Therefore, it helps prevent cyber attackers from entering a private network. It is a server, referred to as an “intermediary” because it goes between end-users and the web pages they visit online.

#Apache-

Client server – uses httpd(d stands for dameon: continuously runs in background) that creates a pool of child processes or threads to handle requestes. The purpose of the daemon is to respond to network, hardware, or system requests to perform certain tasks.

#Packets-

It’s a small segment of a large message. Data send over computer networks, such as internt, is divided into packets, recombined by client computer

#Load balancer-

It is the method of distributing network traffic eqaully across a pull of resources that support an application.

#Von Neumann architecture and harvard architecture –

The term “von Neumann architecture” has evolved to refer to any stored-program computer in which an instruction fetch and a data operation cannot occur at the same time

**How to make a vm( virtual machine)=**

**1.**make an account on aws.

**2**.select ec2 service.

**3**.inside ec2 make an instance,

**4.**For an instance select an os( operating system),

**5.**make an key pair ( the key pair will automatically be downloaded).

**6.** while making key pair select ppk type ,

**7**.an public ip will be generated,

**8.**launch the instance

**9.**Install an putty ( search on google how to download putty for (the operating system you have chosen) and download it.

**10.**After that open the putty and on ssh option paste the public ip from the instance,

**11**.in the aut option select credentials and browse the key pair you have created in instance,

**12**.Now to download a web server open putty and type :-sudo apt update, after that type :-sudo apt Install apache2,

**13**:- to remove the dollar sign type:- sudo su,

**14**:- after that the next step is to type :-/var/www/html/

**15**.enter the above and on the next line type index.html

**16**.after that type :-rm index.html

**17**.enter the above and type :-vi index.html ( by writing this a new page will appear in which you have to either type html code aur copy paste it from GitHub),

**18**.to run the code type :- control+c ,shift+ ,wq and enter