CLOUD COMPUTING MODULE 1

- What is cloud computing?

The term "cloud computing" describes the process of delivering computer services, including as networking, servers, storage, databases, software, analytics, and intelligence, via the internet in order to provide economies of scale, flexible resource options, and quicker innovation. It essentially eliminates the need for physical data centers and servers by enabling customers to access and utilize computing resources from cloud service providers on a demand basis.

- Describe cloud computing deploy model.

Models for deploying cloud computing explain how consumers and organizations can access, manage, and share cloud computing resources. Three primary deployment models are essentially available:

1) Public cloud:

Third-party cloud service providers like Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform own and run the cloud computing resources under a public cloud deployment model. Users can access and use these materials on a pay-per-use basis; they are made available to the public over the internet.

2) Private cloud:

Cloud computing resources are allocated to a single organization under a private cloud deployment model, and they are usually hosted on-site in the data centre of the business.

3) Hybrid Cloud:

Organizations can integrate and operate workloads across different cloud environments by utilizing a hybrid cloud deployment strategy, which contains characteristics of both public and private clouds.

- Describe cloud models

The three primary forms of cloud services are together referred to as "cloud service models."

1) IAAS – Infrastructure as a service
2) PAAS – Platform as a service
3) SAAS – Software as a service

IAAS - Cloud service providers provide virtualized computing resources, such as virtual machines, storage, and networking infrastructure, over the internet under the Infrastructure-as-a-Service (IaaS) concept. While the cloud provider maintains control over the physical hardware, data center facilities, and virtualization layer, customers retain control over the operating systems, applications, and middleware operating on the virtualized infrastructure.

PAAS - Cloud service providers provide a platform under the PaaS model that lets users create, launch, and administer online apps without worrying about the supporting infrastructure. In order to simplify the process of developing and deploying applications, PaaS providers usually include an extensive collection of development tools, frameworks, and services. Customers own the data and apps they place on the platform; the cloud provider looks after the scalability, operating system, middleware, runtime environment, and underlying infrastructure.

SAAS - Under the SaaS model, software application access is provided via the internet by cloud service providers on a subscription basis. Installing, managing, or maintaining the underlying infrastructure, software, or data is not necessary for customers to access the software applications using a web browser or API. Everything is managed by the cloud provider: platform, data, application code, security, upgrades, and infrastructure.

- Components of cloud computing

There are mainly 9 components in cloud computing

1) Application
2) Data
3) Runtime
4) Middle wave
5) Operating system
6) virtualization
7) Storage
8) Server
9) Network

- Advantages and disadvantages of Cloud computing

Advantages

Cost-effectiveness: Pay-as-you-go minimizes initial outlay of funds.
Scalability: The ability to quickly scale up or down resources in response to shifting needs.
Accessibility: Anywhere with an internet connection can access services.
Reliability: High availability and reliability are guaranteed by redundant infrastructure.
Updates automatically: Providers take care of upkeep, making sure systems are current.

Disadvantages

Security issues: Threats of keeping data on unlicensed servers.
Dependency on the internet: The need for internet connectivity.
Less control over the configurations and underlying infrastructure means limited control.
Vendor lock-in: Difficulties in switching between providers as a result of advanced integration.
Potential network-related latency and performance problems are performance issues.