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EXPERIMENT NO. 1

Aim :- Introduction and Overview of Cloud Computing.

Theory :-

Definition of Cloud Computing :-

Cloud computing refers to the delivery of applications and services over a distributed network using virtualized resources. It operates through common internet protocols and networking standards, with the key feature being the abstraction of physical system details from users. Two primary cloud types based on deployment and service models are distinguished. Deployment models include public, private, community, and hybrid clouds, while service models comprise software as a service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS).

Characteristics of Cloud Computing :-

1. Scalability : Cloud Computing caters to specific needs of the customer. Its inherent scalability allows you to effortlessly adjust resources like shortage and processing power based on your fluctuating demands. No more overspending on underutilized infrastructure or scrambling for resources during the peak periods.

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2. Resource Pooling : The Cloud Computing operates on a shared resource model, where multiple users tap into a vast pool of infrastructure. This translates to significant cost savings for you, eliminating the need for upfront investments in hardware, software and also maintenance. You only pay for what you use, making it a highly-budget friendly solution.

3. Virtualization : Cloud Computing providers use virtualization technology to abstract the underlying hardware resources and provide them as logical resources to users.

4. Security Measures : Cloud service providers store encrypted data of users and provide additional security features such as user authentication and security against breaches and other potential threats.

NIST Cloud Computing Model :

Cloud Computing, as defined by the National Institute of Standards and Technology (NIST), is a paradigm that facilitates ubiquitous and convenient, and on-demand network access to a shared pool of configurable computing resources.

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Different models of Cloud Computing service models

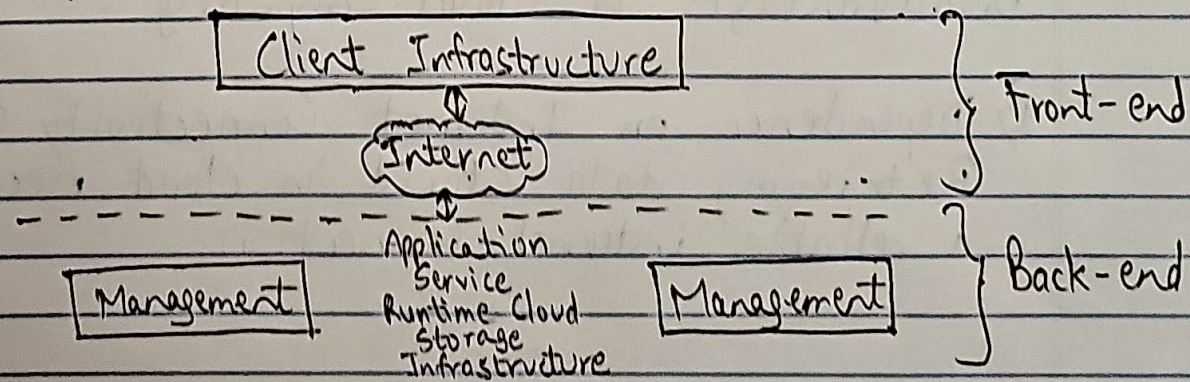
IaaS - IaaS provides virtualized computing resources over the internet.
PaaS - PaaS offers platform for developing and deployment of applications.
SaaS - SaaS delivers software applications online, accessible through a web browser.

Explanation of architecture of cloud computing with suitable diagram:-

Cloud computing is a transformative paradigm allowing organizations to store and access information globally through the internet.

Key - components :-

1) Front End : The client-side interface of the cloud computing system.
2) Back End : The cloud infrastructure managed by the service provider.



Benefits and limitations of Cloud Computing :-

Advantages of Cloud Computing :-

1) Efficient Data Back-up and Restoration :
Cloud storage simplifies process of backing up and restoring data with help of services.
2) Enhanced Collaboration :
Cloud applications foster collaboration by enabling groups to share information seamlessly through shared storage.
3) Global Accessibility :
Cloud computing provides swift access to stored info world wide.
4) Cost-Efficient Maintenance :
Organizations experience cost savings on hardware and software maintenance.
5) Robust Data Security Measures :
Advanced security features within cloud platforms ensure secure storage and handling of sensitive data.

Disadvantages of Cloud Computing :-

1) Dependence on Internet Connectivity :
Retrieving data stored in cloud necessitates a reliable internet connection.

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2) Vendor Lock-In Challenges :
Transitioning services between different cloud vendors can be complex due to platform variations.

3) Limited User Control :
Cloud infrastructure is managed by providers, limiting user control over functionality and execution.

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