→ Key components :-

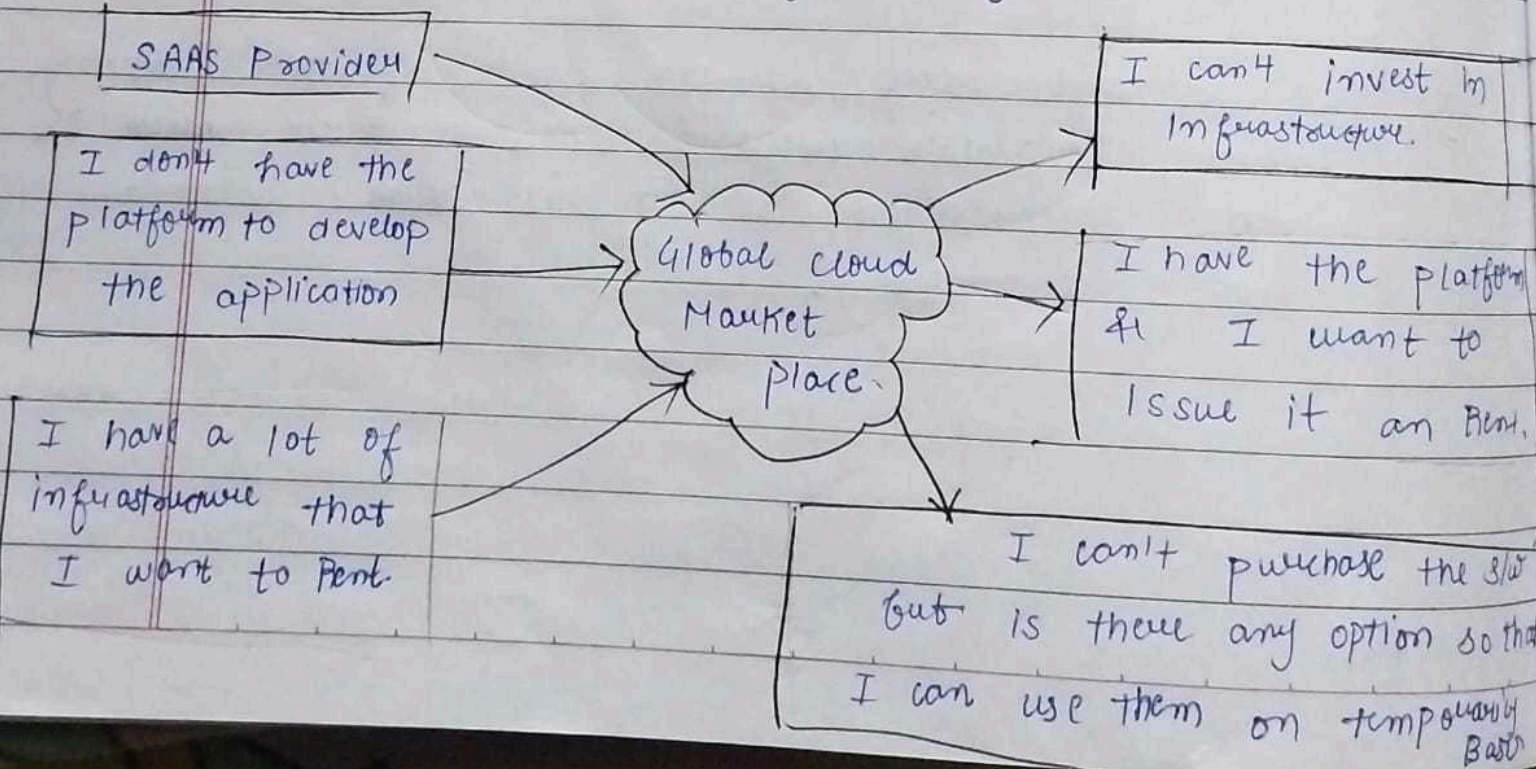
(1) User Autonomy
(2) Automated process
(3) Rapid Resources Provisioning
(4) Scalability.

→ Benefits :-

(1) Flexibility
(2) Cost efficiency
(3) Reduced time to Market.
(4) User Empowerment.

Que 11 = Explain the vision of cloud computing.

Ans = Cloud computing provides the facility to provision virtual h/w runtime environment & services to a person having money.



Que 6 Explain essential characteristics of cloud computing.

Ans The essential characteristics of cloud computing are :-

(1) On - Demand Self - Services :- users can provision & manage resources without human intervention.

(2) Broad N/w Access :- cloud services are accessible over the internet from various devices.

(3) Resources Pooling :- Resources are shared & allocated dynamically among multiple users.

(4) Rapid Elasticity :- Resources can be scaled up or down quickly to meet changing demands.

(5) Measured Services :- users are billed based on actual resources usage.

These characteristics define the core attributes of cloud computing, enabling flexibility, cost-efficient & accessibility over the internet.

Que 5:- Compare various cloud service and provide your inference.

Ans:-

- AWS (Amazon web services):-

Known for its Extensive service catalog, global presence, and strong reliability. Complex pricing and steeper learning curve can be challenges.

- AZURE (Microsoft Azure):-

Integrates well with microsoft products offers robust hybrid solutions, and targets enterprise customers smaller service portfolio compared to AWS.

- GCP (Google cloud platform):-

Excels in data learning, competitive pricing, & a focus on open source. Smaller market share & fewer global regions compared to AWS & Azure.

Ultimately the best cloud providers depends on the specific needs & goals goals of your organization, & many organization use a multicloud or hybrid.

(5) Security & Reliability :- Major cloud providers invest heavily in security measures, certifications, and redundant infrastructure, often providing better security and reliability than on-premises solutions.

(6) Data Management & Analytics :- Cloud platforms offer robust tools for data storage, management, and analytics, enabling businesses to derive insights from large datasets.

(7) Focus on core competencies

(8) Global Reach

(9) Disaster Recovery and Business Continuity.

(10) Easier Maintenance and updates.

Que8 = Define resources sharing in cloud computing. Explain the implementation single tenancy and multi-tenancy types of resource sharing in cloud compiting.

Ans = Resource sharing in cloud-computing refers to the allocation and use of computing resources (such as servers, storage & N/w) among multiple users or tenants. This sharing optimizes resource utilization, allowing multiple users to benefits from the users

Que 7 Explain key reasons behind the Mass Migration to cloud-Based computing.

Ans The mass migration to cloud-computing is driven by :-

(1) cost Efficiency :- cloud computing eliminates the need for upfront hardware investments & allows businesses to pay for resources on a usage basis, reducing overall costs.

(2) Scalability :- cloud services offers the ability to scale resources up or down quickly, accommodating changing workloads & business growth.

(3) Flexibility & Accessibility - cloud services provide flexibility in choosing & accessing computing resources from anywhere with an internet connection, enabling remote work & collaboration.

(4) Innovation & Agility :- cloud platforms offers a wide range of services, tools & technologies, fostering innovation and allowing business to adopt quickly to market changes.

(5) Mobility :-

Cloud computing allows us to easily access all cloud data via mobile.

(6) Services in the pay-per-use model.

(7) unlimited storage capacity.

(8) Data security.

(*) Disadvantages :-

(1) Internet Connectivity :-

As, we know in cloud computing every data (image, audio, videos etc) is stored on the cloud and we access these data through the cloud by using the internet connection. If we don't have good internet internet connectivity, you can not access these data. However, we have no any other way to access data from the cloud.

(2) Vendor lock-in

(3) Limited control

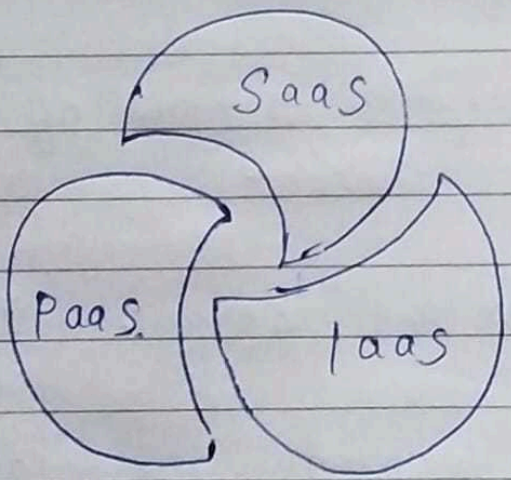
(4) Security.

(2) Platform as a service :-

PaaS cloud computing platform is created for the programmer to develop, test, run, and manage the applications.

(3) Software as a service :-

SaaS is also known as "on-demand software". It is a software in which the applications are hosted by a cloud service providers. Users can access these applications with the help of internet connection and web browsers.



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Que 2: Explain the cloud computing benefits & limitations

(*) Advantages :-

(1) Back-up & Restore data :-

Once the data is stored in the cloud, it is easier to get back-up and restore that data using the cloud.

(2) Improved Collaboration :-

Cloud applications improve collaboration by allowing groups of people to quickly & easily share information in the cloud via shared storage.

(3) Excellent Accessibility :-

Cloud allows us to quickly and Easily access store information anywhere, anytime in the whole world, using an internet connection. An internet cloud infrastructure increases organization productivity and efficiency by ensuring that our data is always accessible.

(4) Low maintenance cost :-

cloud computing reduces both hardware & software maintenance costs for organizations...

→ These all things can be used as long as they are needed by the user, there is no requirement for the upfront commitment.

→ The whole collection of computing system is transformed into a collection of utilities, which can be provisioned and composed together to deploy systems in hours rather than days, with no maintenance costs.

→ The long term vision of a cloud computing is that IT services are traded as utilities in an open market without technological and legal barriers.

Ques 12 Explain services of Internet in cloud computing?

Ans = There are the following 3 types of cloud service models:-

(1) Infrastructure as a service (Iaas):-

Iaas is also known as Hardware as a service (Haas). It is a computing infrastructure managed over the internet. The main advantage of using Iaas is that it help users to avoid the cost and complexity of purchasing and managing the physical servers.

Ans → Bussiness Benefits :-

(1) Cost Efficiency
(2) Scalability
(3) Flexibility
(4) Accessibility
(5) Reliability
(6) Security
(7) Automatic Updates
(8) Competitive updates
(9) Global Reach
(10) Pay-as-per Go Pricing.

→ Technical Benefits :-

(1) Scalability
(2) Flexibility
(3) Rapid Deployment
(4) Resource optimization
(5) Automation
(6) Elasticity
(7) Devops Integration
(8) Data Analytics
(9) Machine Learning & AI
(10) High Availability.

que3 = Explain the evolution of cloud computing and its challenges?

Ans = → cloud computing is all about renting computing services. This idea first came in the 1950's. In making cloud computing what it is today's five technologies played a vital role. These are distributed systems & its peripherals, virtualization, web 2.0, service orientation, and utility computing.

utility computing
service orientation
web 2.0
virtualization
Grid
cluster
Mainframe
Distributed computing.

que4 = List the business and technical benefits of cloud computing.

Implementation :- Users share the underlying infrastructure, but their data and applications are logically separated to prevent interference. virtulization and strong access controls are used to ensure tenant isolation.

Example :- Public cloud services like Aws, Azure, and google cloud, where multiple customers share the same physical servers but are kept separate logically.

In summary, single tenancy offers dedicated resources for each user, while multi tenancy optimize resources usage by allowing multiple users to share the same infrastructure with logical isolation.

Que = Explain in details what is on demand self service in cloud computing.

Ans = On demand self-service is a feature allowing cloud computing users to manage their own virtual resources without interaction with a service provider.

to benefits from the same underlying infrastructure.

→ Single Tenancy :-

Define :- In single tenancy, each user or organization has dedicated & isolated resources, ensuring complete privacy and customization.

Implementation :- Each user gets their own instance of the s/w application, and the underlying infrastructure is not shared. It's like having a seprate physical server for each user, providing maximum control & security.

Example :- A private cloud or a traditional dedicated server hosting model.

→ Multi - Tenancy :-

Define :- In multi - tenancy, multi - users or organization share the same set of resources with logical isolation to maintain privacy and security.

CLOUD COMPUTING

Assignment - 1

Que 1 Explain the cloud Computing concept ?

Ans → Cloud computing is a technology model that allows individuals & organizations to access and use computing resources & services over the internet, often referred to as "the cloud". Instead of owning and maintaining physical hardware and software, users can rent or lease these resources from cloud services providers.

→ The key points / concepts of cloud computing includes :-

(1) On-demand self services :- Cloud users can provides & manage computing resources as needed, typically through a web interface or API without requiring human intervention from the service provider.

(2) Broad network Access

(3) Resource Pooling

(4) Rapid Elasticity