20IT6301 – Cloud Computing
Home Assignment Questions
2022-23

1. Full Virtualization refers to a virtualization technique where a complete operating system, including its kernel, is run as a software layer, on top of a physical host operating system. This allows multiple guest operating systems to run on the same physical hardware, each isolated from the other and with no access to the host operating system or other guests.

2. Platform as a Service (PaaS) is a cloud computing service model where a provider offers a platform for developers to build, deploy, and run custom applications. This platform includes the necessary infrastructure, operating system, middleware, and tools needed for application development and deployment.

3. Thin clients are lightweight devices that rely on a server to perform most of their processing and storage functions. They are designed to be simple, low-cost devices that can access applications and data stored on a server, using remote desktop protocols or web-based applications.

4. SLA (Service Level Agreement) in cloud computing is a contract between a service provider and a customer that outlines the terms and conditions of the cloud service being offered, including uptime guarantees, response time guarantees, and penalties for non-compliance.

5. Two real-life applications of cloud computing are:

- Online file storage and sharing services like Dropbox, Google Drive, and OneDrive that allow users to store and access their files from any device with an internet connection.

- Software-as-a-Service (SaaS) applications like Salesforce, Microsoft Office 365, and Google Workspace that provide users with access to software applications through the cloud, eliminating the need for local installations.

6. Examples of popular virtualization technology software include VMware, VirtualBox, Hyper-V, KVM, and Xen.

7. The internet is a global network of connected devices and computers, while cloud computing is a delivery model for computing services that provides on-demand access to a shared pool of configurable computing resources over the internet.

8. A data center is a physical facility that houses computing equipment, including servers, storage devices, networking equipment, and other infrastructure components. It is used to provide centralized computing resources to organizations and businesses.

9. Virtualization is the process of creating a virtual version of something, such as an operating system, a server, a storage device, or a network resource. It allows multiple virtual instances to run on a single physical server, improving resource utilization and flexibility.

10. Cloud computing is a delivery model for computing services that provides on-demand access to a shared pool of configurable computing resources over the internet. These resources can include servers, storage, applications, and services that can be rapidly provisioned and scaled as needed.

11. Examples of popular cloud names of SaaS, PaaS, and IaaS include:

- SaaS: Salesforce, Google Workspace, Dropbox

- PaaS: Heroku, Microsoft Azure, Google App Engine

- IaaS: Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform

12. The purpose of migrating to the cloud is to leverage the benefits of cloud computing, such as cost savings, scalability, flexibility, and on-demand access to resources. Cloud migration can also help organizations to modernize their IT infrastructure and improve business agility.

13. Bandwidth refers to the amount of data that can be transmitted over a network connection in a given amount of time, usually measured in bits per second (bps).

14. Upstream refers to the direction of data transfer from a client or user to a server or host, while downstream refers to the direction of data transfer from a server or host to a client or user.

15. In upstream and downstream connections, symmetric connection refers to a connection where the bandwidth is the same in both directions, while asymmetric connection refers to a connection where the bandwidth is different in the upstream and downstream directions.

16. Synchronization refers to the process of ensuring that data in two or more systems or devices are consistent and up-to-date. In computing, synchronization is commonly used in file sharing and collaboration applications, where changes made to a file by one user should be reflected in the copies of the file stored on other users' devices.

17. OpenID is an open standard that allows users to authenticate themselves on websites without having to create new usernames and passwords. With OpenID, users can use their existing account with a provider that supports OpenID, such as Google or Yahoo!, to log in to multiple websites.

18. Cloud computing is the delivery of computing services, including servers, storage, databases, software, analytics, and more, over the internet. Cloud computing allows organizations to access computing resources on demand, and pay only for the resources they use, without having to invest in expensive infrastructure.

19. Three examples of cloud services are:

- Infrastructure as a Service (IaaS): provides virtualized computing resources, such as servers and storage, over the internet.

- Platform as a Service (PaaS): provides a platform for developers to build, deploy, and manage applications without having to worry about the underlying infrastructure.

- Software as a Service (SaaS): provides software applications over the internet, typically on a subscription basis.

20. Benefits of cloud computing include:

- Scalability: allows organizations to scale up or down their computing resources as needed, without having to invest in new hardware.

- Cost savings: eliminates the need for organizations to purchase and maintain expensive hardware, and allows them to pay only for the resources they use.

- Flexibility: allows organizations to access their data and applications from anywhere, as long as they have an internet connection.

- Reliability: cloud providers typically offer high levels of uptime and redundancy, ensuring that data and applications are always available.

21. Python Django is a high-level web framework that allows developers to build web applications quickly and easily. Django is designed to be modular and reusable, and includes a number of built-in features, such as a powerful ORM for interacting with databases, a templating system for rendering HTML, and an admin interface for managing site content.

22. Outages refer to periods of time when a service or system is unavailable or not functioning properly. In the context of cloud computing, outages can occur when a cloud provider experiences a technical issue, such as a hardware failure or network outage, that affects their ability to provide services to customers.

23. Advantages of software as a service (SaaS) include:

- Scalability: allows organizations to scale their software usage up or down as needed, without having to purchase additional licenses or hardware.

- Cost savings: eliminates the need for organizations to purchase and maintain expensive software and hardware, and allows them to pay only for the software they use.

- Accessibility: allows users to access software from anywhere, as long as they have an internet connection.

- Maintenance: cloud providers typically handle software maintenance and upgrades, freeing up IT resources for other tasks.

24. Google Gears was a browser extension that allowed web applications to work offline by storing data locally on users' devices. Google Gears was eventually discontinued, and its functionality was incorporated into other Google products, such as Google Drive and Google Chrome.

25. CRM, or Customer Relationship Management, is a type of software used by organizations to manage interactions with customers, including sales, marketing, and customer service. CRM software typically includes features for tracking customer interactions, managing leads and opportunities, and automating sales and marketing processes.

26. VMware is a software company that provides virtualization technology, including hypervisors and virtualization management software. VMware's products are widely used in data centers and cloud

computing environments to improve hardware utilization and simplify management of virtualized environments.

27. Limitations of cloud computing:

- Dependency on internet connectivity

- Data security and privacy concerns

- Limited control over infrastructure

- Potential for service disruptions or outages

- Compliance and regulatory issues

- Possible vendor lock-in

28. The purpose of XMPP protocol is to enable real-time communication between two or more parties over the internet. It is commonly used for instant messaging, voice and video chat, and other real-time messaging applications.

29. Advantages of Google Big Data Table:

- High scalability

- High availability and reliability

- Ability to handle large volumes of data

- Integration with other Google Cloud Platform services

- Cost-effective pricing model

30. Multi-tenancy is the ability of a single software instance to serve multiple customers or tenants, each with their own isolated data and configuration. In cloud computing, multi-tenancy is often used to increase efficiency and reduce costs.

31. Unique features of Google Apps premier edition:

- Increased storage limits

- Advanced security and compliance features

- 24/7 phone support

- Custom branding and domain settings

- Integrated Google Vault for eDiscovery and legal holds

32. Examples of Type I hypervisors include VMware ESXi, Microsoft Hyper-V, and Citrix XenServer. Examples of Type II hypervisors include Oracle VirtualBox, VMware Workstation, and Parallels Desktop.

33. Software as a Service (SaaS) provides software applications that are hosted and delivered over the internet. Customers can access and use the software through a web browser, without needing to install or maintain any software on their own devices.

34. Pros of virtualization:

- Improved hardware utilization and cost savings

- Increased flexibility and scalability

- Simplified management and deployment

- Improved disaster recovery and high availability

  Cons of virtualization:

- Increased complexity and potential for compatibility issues

- Possible performance overhead and resource contention

- Potential security risks and increased attack surface

35. Applications of data storage include:

- Storing business data and applications

- Backup and disaster recovery

- Archiving and data retention

- Big data analytics

- Content delivery and media streaming

36. APIs, or application programming interfaces, are sets of protocols and tools for building software applications. APIs enable different software systems to communicate and share data with each other.

37. Cons of software plus services include potential issues with data security and privacy, limited control over infrastructure and updates, and dependency on internet connectivity for access to the service.

38. Some Microsoft SQL services include SQL Server, Azure SQL Database, and SQL Server on Azure Virtual Machines.

39. Social networking refers to online platforms and communities where people can connect and communicate with each other, often sharing personal information, interests, and activities.

40. Web applications are software applications that are accessed and used through a web browser, rather than being installed on a user's device. Examples include online shopping websites, social media platforms, and web-based email services.

41. Google Big Table datastore is a NoSQL database that is designed to handle large volumes of data and provide high scalability and availability. It is used by Google internally for many of its services, and is also available to customers as part of the Google Cloud Platform.

42. Hyper-V Live migration is a feature of Microsoft Hyper-V that enables virtual machines to be moved between different physical hosts without any downtime or disruption to the running applications.

43. VMotion is a feature of VMware vSphere that enables virtual machines to be moved between different physical hosts without any downtime or disruption to the running applications.

44. Cloud architecture refers to the design and structure of a cloud computing system, including the hardware and software components, network topology, and data storage and management systems.

45. Major characteristics of cloud computing are:

- On-demand self-service

- Broad network access

- Resource pooling

- Rapid elasticity

- Measured service

46. Salesforce.com is a cloud-based customer relationship management (CRM) software that provides companies with tools for managing sales, customer service, marketing, and more. It allows companies to access their customer data and analytics from anywhere, anytime, and on any device, without the need for local hardware and software.

47. Encryption is the process of converting plaintext or clear text into coded or encrypted text, which is unreadable without the proper decryption key or password. It is used to protect sensitive information from unauthorized access or theft.

48. Hashing is the process of converting data or information into a fixed-size and unique code or hash value, which cannot be reversed or decrypted. It is commonly used in password storage, file verification, and digital signatures.

49. Digital signature is a mathematical technique used to verify the authenticity and integrity of electronic documents, messages, or transactions. It provides a way to ensure that a message or file came from the claimed sender and was not tampered with during transmission.

50. IAM stands for Identity and Access Management. It is a framework of policies and technologies that enables organizations to manage and secure digital identities and user access to IT resources. IAM systems allow organizations to control who has access to what information and systems, and to enforce security policies and compliance requirements.