

Assignment Mate

A comprehensive compilation of important questions

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Questions and Answers

1. What are the main characteristics of a PaaS.

The main characteristics of a Platform-as-a-Service (PaaS) are:

- **Abstraction:** PaaS abstracts away the underlying infrastructure, allowing developers to focus on writing code rather than managing servers.
- **Rapid Deployment:** PaaS provides rapid deployment capabilities, enabling developers to quickly deploy applications without worrying about infrastructure provisioning.
- **Development Tools:** PaaS provides a set of development tools, including integrated development environments (IDEs), code editors, and version control systems.
- **Scalability:** PaaS provides scalability, allowing applications to automatically scale up or down depending on demand.
- **Managed Services:** PaaS provides managed services, including database management, caching, and authentication.
- **Ease of Use:** PaaS provides an intuitive user interface, making it easy for developers to create and manage applications.

The core components of Google App Engine are:

- **App Engine Modules:** App Engine Modules allow applications to be broken down into smaller, independent components that can be managed separately.
- **Request Handler:** The Request Handler is responsible for receiving and processing requests from users.
- **GAE Datastore:** The GAE Datastore is a NoSQL database that allows applications to store and retrieve data.
- **GAE Version:** The GAE Version is a mechanism for managing multiple versions of an application.
- **Task Queue:** The Task Queue is a system for executing tasks in the background, allowing applications to offload tasks and improve performance.

The fundamental features of the economic and business model behind cloud computing are:

- **Multi-Tenancy:** Cloud computing providers offer multi-tenancy, where a single physical infrastructure is shared among multiple customers.
- **Pricing Models:** Cloud computing providers offer various pricing models, including pay-per-use, subscription-based, and pay-as-you-grow.
- **Self-Service Portal:** Cloud computing providers offer self-service portals, allowing customers to quickly provision and manage resources.
- **Distributed Architecture:** Cloud computing providers use distributed architectures, allowing for scalability and reliability.
- **Economies of Scale:** Cloud computing providers benefit from economies of scale, allowing them to reduce costs and pass the savings on to customers.

Amazon Elastic Compute Cloud (EC2) is a web service that provides resizable computing capacity in the cloud. The basic features of Amazon EC2 are:

- **Virtual Servers:** EC2 provides virtual servers, known as instances, that can be customized to meet specific computing needs.
- **On-Demand Instance Support:** EC2 provides on-demand instance support, allowing customers to quickly create and manage instances.
- **Storage Options:** EC2 provides various storage options, including EBS and S3.
- **Pricing:** EC2 provides a pay-as-you-go pricing model, where customers only pay for the instances and storage they use.

The main security threats for the SaaS cloud delivery model on a public cloud are:

- **Data Breaches:** Data breaches can occur when sensitive data is stored in the cloud, and unauthorized access is gained.
- **Denial of Service (DoS) Attacks:** DoS attacks can occur when an application is targeted with overwhelming traffic, causing it to become unavailable.
- **Malware and Viruses:** Malware and viruses can spread quickly through public clouds, infecting applications and data.
- **Lack of Visibility:** Public clouds can make it difficult to monitor and track security incidents, making it harder to detect and respond to threats.
- **Inadequate Configuration:** Inadequate configuration of cloud services can lead to security vulnerabilities, including misconfigured firewalls and access controls.

Software as a Service (SaaS) is a software delivery model where a third-party provider hosts and manages an application, making it available to customers over the internet. The key characteristics of SaaS include:

- **Multi-Tenancy:** SaaS providers offer multi-tenancy, where a single instance of the application is shared among multiple customers.

- **Rapid Deployment:** SaaS applications can be quickly deployed, reducing the time and effort required for implementation.
- **Scalability:** SaaS applications can be easily scaled up or down to meet changing demand.
- **Access from Anywhere:** SaaS applications can be accessed from anywhere, using any device with an internet connection.
- **Predictable Costs:** SaaS providers often offer predictable costs, where customers pay a fixed monthly fee for the application.

Virtualization on public, private, and hybrid clouds offers benefits such as:

- **Scalability:** Virtualization enables scalability, allowing resources to be easily added or removed as needed.
- **Flexibility:** Virtualization provides flexibility, enabling applications to run on different hypervisors and operating systems.
- **Cost Savings:** Virtualization can reduce costs by improving resource utilization and reducing the need for physical hardware.

However, virtualization on public, private, and hybrid clouds also poses potential problems such as:

- **Compliance Issues:** Virtualization can make it difficult to ensure compliance with regulatory requirements, as data may be stored in multiple locations.
- **Security Risks:** Virtualization can increase security risks, as multiple virtual machines can be running on the same physical host.
- **Over-Commitment of Resources:** Virtualization can lead to over-commitment of resources, where multiple virtual machines are running on the same physical host, leading to performance issues.

Cloud computing helps to reduce the time to market applications and cut down capital expenses in several ways:

- **Quick Provisioning:** Cloud computing enables quick provisioning of resources, reducing the time it takes to deploy an application from weeks or months to minutes or hours.

- **No Upfront Costs:** Cloud computing typically requires no upfront costs, reducing the capital expenses associated with equipment and deployment.
- **Elasticity:** Cloud computing provides elasticity, allowing resources to be easily scaled up or down to meet changing demand, reducing the need for over-provisioning or under-provisioning.

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App Engine currently supports the following development technologies:

- **Python:** App Engine supports Python 2.7 and 3.7.
- **Java:** App Engine supports Java 8 and 11.
- **PHP:** App Engine supports PHP 5.4 and 5.5.
- **Go:** App Engine supports Go 1.11 and 1.12.

Amazon Simple DB and Amazon RDS are both database services offered by Amazon Web Services (AWS). The main differences between the two services are:

- **Data Model:** Amazon Simple DB is a NoSQL key-value store, while Amazon RDS is a relational database service that supports multiple database engines.

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