Mid Semester Assignment (Spring - 2020)
Cloud Computing

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Note: Attempt all Questions. Answers should be in your own words. Plagiarism will not be tolerated, if detected, it will lead to failure.

Question No. 1: (10)

a. Explain essential characteristics of cloud computing.
b. Explain in detail the key properties of cloud computing.

Question No. 2: (10)

a. Explain in detail different service models of cloud computing.
b. Explain in detail different deployment models of cloud computing.

Question No. 3: (10)

a. Explain in detail roles and boundaries in cloud.
b. Explain in detail cloud risk and challenges.

Q 1(a)

Essential Characteristics of cloud computing are:

On demand self-service

Broad network access

Resource Pooling

Rapid Elasticity

Measured Service

1) On demand self-service: On demand self-service means that a consumer can provision the computing potentialities unilaterally such as server time and network storage.

2) Broad network access: Broad network access means that the potentialities are accessible all over the network and it can be accessed by critical procedures, and it is used for promoting different thick and thin client platform such as laptops cellphones etc.

3) Resource Pooling: In resource pooling the computational resources of a provider are pooled to give an aggregate of consumers and it can be utilized by a multi tenancy pattern with various virtual and by physical resources dynamically. Virtual and physical resources are allocated and re allocated in accordance with consumer requirements.

4) Rapid elasticity: Rapid elasticity means that the potentialities could be provisioned elastically and it can also be relinquished. The potentialities that is acquirable for provisioning for often time come out and it can be infinite and can be appropriated in any amount at any time.

5) Measured service: Measured service means that the customers are charged for the service they are using. Measured service is based on the metering concept where customer resource can be monitored and can be controlled by providing transparency for both the consumer and provider of utilized service.

Q1 (b)

The key properties of cloud computing are:

Cloud computing is user centric: It means that when a user is connected to the cloud and whatever is stored in the cloud whether it is data or documents or the applications. The user becomes authorized whatever he is using. When the user accesses the data of his own so the cloud belongs to him.

Task centric: Task centric is based on that what the user want to achieve, rather than any software and hardware or network infrastructure. It means that cloud computing empowers that what the user wants to achieve and what the user want to do.

Cloud computing is powerful: It means that we can connect hundreds of computers together with a cloud. It is impossible to do in a single pc.

Cloud computing is accessible: IT means that user can retrieve the information from the cloud and user can also retrieve more information from multiple repositories. The information can be retrieved by a desktop pc.

Cloud computing is intelligent: cloud computing is intelligent because all the data of computer is stored in a cloud, Data mining and analysis are necessary for cloud to access the data in an intelligent manner.

Cloud computing is programmable: It means that the tasks necessary with cloud computing must be automated. If the data is stored in one single pc in the cloud and then it goes offline so the cloud's programming automatically redistributes the computers data to a new computer in the cloud.

Q#2(a)

Answer: The different service models in cloud computing are:

Infrastructure as a service

Platform as a service

Software as a service

1) Infrastructure as a service: It is that type of infrastructure in which service is given by demand. This service is scalable and it gives the access to physical machines, virtual machines and virtual storage etc. It is usually be used for tenant virtualized environment. For example OP source.

2) Platform as service: Platform of the service is that in which a third party provides and delivers hardware and software tools which provides internet for the users. For example Azure and Rock space.

3) Software as a service: Software as a service is that in which the third party providers host the applications for the user and makes them the availability over the internet. For example Sales force.com, Google.

Q#2(b)

Answer: The deployment models are:

Public cloud

Private cloud

Community cloud

Hybrid cloud

1) Public cloud: Public cloud allows the systems and services to be used. The systems and the services can be easily accessible to general public. In public cloud the data will be less secured.

2) Private cloud: It means that the systems and services are accessible within the organization. In private cloud the security increases because of its private nature.

3) Community cloud: In community cloud the systems and services are used by the group of organization.

4) Hybrid: Hybrid is the mixture of public and private. The activities which are critical can be used by private cloud, and the activities which are non- critical can be used by public cloud.

Q#3(a)

Answer: The roles of cloud computing are:

Cloud provider

Cloud customer

Cloud service

Cloud administrator

1) Cloud provider: It is an organization that provides cloud based on the IT resources available to cloud customers under SLA and guaranteeing required management and the duties of administrative management is to deliver and ensure the on- going operation of cloud.

2) Cloud customer: It means that the individual or the organization signs a formal contract with a cloud provider to use its resources.

3) Cloud service owner: It means that an individual who owns this cloud service legally.

4) Cloud administrator: It is individual or an organization which is responsible for making a cloud which is based on IT resources.

Boundaries of Cloud are:

Organizational boundary

Trust boundary

1) Organizational boundary: Organization boundary is that which is surrounded by a set of IT resources and which is owned and governed by an organization.

2) Trust boundary: Trust Boundary is that which span beyond physical boundaries which represents the IT resources that is trust worthy.

Q3 (b)

Risks of Cloud Computing:

The risk involving cloud computing are:

If the server is slow there might be a chance of server to timeout and the cloud developer might lose a customer.

If the cloud storage get corrupted there is a chance that the stored data might be lost.

There a risk of security breaches if the server is not much secured and maintained, due to which there is a chance of data lost and the server might get hacked.

Challenges of Cloud Computing:

There are many challenges that can be faced during cloud computing:

It requires constant internet connection which means that if there is a shortage in electricity the server might disconnect.

Cloud requires high speed internet connection which means that a low speed internet connection might slow down the server.

As there are limited features on cloud it might be challenging for the developer to add those feature that can satisfy the customer.