Mid Semester Assignment (Spring - 2020)
Cloud Computing

Name: Muhammad Safeer	**ID #: 13033**

Semester: 8th **Date: 15, April, 2020**
Time: 6 days **Total Marks: 30**
Instructor: M Omer Rauf

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.

Q1 (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.

1(b)

Cloud computing is user centric.

Clouds definitely provide a valuable service to the end user and these are becoming the next personal servers and also computing devices. Users create their environment on cloud services to store their important files and the most important backups, incase if a user loss all his data from the device and he has saved it on the cloud, the user can recover and access his data again.

Task centric.

Task centric is based on that what the user wants to achieve rather than achieving it through any particular software, hardware or network infrastructure. User do not have to buy or install anything before using a cloud computing service.

Powerful.

Powerful means that we can gather many computers to make a single virtual personal computer and work on it with the help of cloud, and can perform tasks which are impossible to do with a single personal computer.

Accessible.

Accessible means that user can retrieve information from cloud and can retrieve from multiple repositories. The data information can be retrieved by a desktop computer. Meanwhile the data which is saved in the cloud can be accessed from anywhere by the user.

Intelligent.

Cloud computing is intelligent because all the data is saved in the cloud. data mining and analysis are necessary for cloud to access the data in intelligent manner.

Programmable.

Programmable mean that the task necessary with cloud computing must automated, if the data is stored in one single personal computer in the cloud and that pc goes offline, so the cloud's programming will automatically redistribute the computers data to a new computer in the same cloud. Which means it is not necessary to have the same computer for accessing the data, it can be accessed from other computers too.

Question no. 2

Part (A)

Explain in detail different service models of cloud computing.

Answer:

Choosing the right model for the business require the knowledge that which model you can use and have a good impact on the business. Cloud service models come in three type;

SaaS (Software as a service)

IaaS (Infrastructure as a service)

PaaS (Platform as a service)

SaaS (Software as a service):

Software as a service is a model which allows to use software application as a service to end users. It give the quick access to cloud based web application without installing any infrastructure. It can be used for free limited time or Licensed paid service.

SaaS is accessible as it does not require hardware which keeps the cost low.

SaaS model is accessible from everywhere that there is internet access, which is great benefit for this.

Signing up for the service to get access to best and Strong computing resources which is the quick process.

For example Google, Facebook, Microsoft service.

IaaS (Infrastructure as a service):

Consumer can get resources within the clouds which are essentials for the business and organization. IaaS can give any computing infrastructure such as storage, server, networking hardware and maintenance along with support.

IaaS cloud provider are used by google compute engine, web amazon service, amazon web service and Microsoft azure.

PaaS (Platform as a service):

PaaS is cloud based service through which different application for business are developed, tested and organized. PaaS simplifies the process of enterprise software development.

PaaS provides a big space for developing and testing application in run time environment.

The whole set of resources given in the form of storage, servers and networking are finely manageable by the company or by the platform provider.

For example Google app engine, AWS elastic beanstalk.

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.

(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