

Final Term Paper (Spring - 2020)
Cloud Computing

Name: Faisal Karim Afridi

ID #: 13163

Semester: 8th

Date: 25, June, 2020

Time: 6 hours

Total Marks: 50

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: (20)

- a. Explain in detail network and cloud-based storage.

Question No. 2: (20)

- a. Explain in detail web application and multitenant technology.
- b. Explain in detail cloud security threats.

Question No. 3: (10)

- a. Briefly describe following.
 - a. Advantages and disadvantages of cloud computing.
 - b. Collaborative meeting in cloud.

Answer 1): Network: A network is a group of two or more devices that are physically or wirelessly connected to communicate data electronically.

It can range from one single PC sharing out basic services to massive data centers located around the Globe. Regardless of their scope, all networks allow computers or individuals to share information and resources over the network.

Following are some of the purposes that are served by a network:

- Communications such as email, messaging, chat rooms, etc.
- Shared hardware such as input and output devices.
- Shared data and information through shared storage devices.
- Shares software remotely.

Types of Networks: Following are the types of computer networks are:

- **Local Area Network (LAN):** A Local Area Network (LAN) is the type of network that comprises of a relatively small geographic area such as a school, an office, or building.
- **Wide Area Network (WAN):** A Wide Area Network (WAN) is the type of network that comprises of a large scale geographical area. This ensures that computers and users in one location can communicate with computers and users in other locations.
- **Metropolitan Area Network (MAN):** A metropolitan area network (MAN) is similar to a local area network (LAN) but covers an entire city or an entire campus. These type of networks are formed by connecting multiple number of LANs.

Cloud Based Storage: Cloud based storage is a cloud computing model where data is stored on remote servers that are accessible via internet, or “cloud”. It is managed and maintained by the cloud based storage service provider on servers that are built by using virtualization techniques.

Cloud storage delivers a cost-effective, scalable alternative to storing files on on premise hard drives or storage networks. Computer hard drives can only store a finite amount of data. When users run out of storage, they need to transfer files to an external storage device. Traditionally, organizations built and maintained storage area networks (SANs) to archive data and files. SANs are expensive to maintain, however, because as stored data grows, companies have to invest in adding servers and infrastructure to accommodate increased demand.

Answer 2 (Part a): Web Application: It is a client-server application program, stored on a remotely available server that uses web browsers and web technology to perform specific function over the Internet through a browser interface.

Types of Web Application: There are six types of web applications:

- Static Web Applications
- Dynamic Web Applications
- Online Stores or E-Commerce
- Portal Web Applications
- Content Management System (CMS)

Advantages of Web Applications:

- It is able to execute on different types of platforms.
- Data is secure and easy to restore or take backups.
- You can easily update the applications.
- By using a web application, employees can work from anywhere via internet.

Multitenant Technology: The multitenant technology enables multiple users (tenants) to access the same application. Each tenant has its own view of the application that he customizes as a dedicated instance of the software while staying unaware of other tenants.

Multitenant applications ensure the security and privacy of tenants so that they do not have access to data and configuration information that is not their own. Tenants are able to customize features of the application, such as:

- **User Interface:** Tenants can define a specialized “look and feel” for their application interface.
- **Business Process:** Tenants can customize the rules, logic, and workflows of the business processes that are implemented in the application.
- **Data Model:** Tenants can extend the data schema of the application to include, exclude, or rename fields in the application data structures.
- **Access Control:** Tenants can independently control the access rights for users and groups.

Some Common Characteristics of multitenant applications are:

- **Usage and Data Tier Isolation**
- **Application Upgrade**
- **Recovery**
- **Scalability**
- **Metered Usage**
- **Data Security and Privacy**

Answer 2 (Part b): Following are the most common Cloud security threats:

1. **Data breaches.**
2. **Human error.**
3. **Data loss with no backup.**
4. **Insider threats.**
5. **Advanced persistent threats.**
6. **DDoS attacks.**
7. **Insecure APIs.**
8. **Exploits.**
9. **Account hijacking.**

Answer 3(Part a): Advantages of Cloud Based Storage:

- **Cost Effective:** It is way more cheaper than physically buying storage devices.
- **Accessibility:** It can accessed from anywhere around the World via Internet.
- **Recovery:** It is very easy for users to recover your lost data on a cloud than on your PC.
- **Syncing and Updating:** Any updates in the data on cloud is constantly updated and synced.
- **Security:** Data present on cloud is much secure than on PCs.

Disadvantages of Cloud Based Storage:

- **Internet Connectivity:** Without internet connection the data on cloud can't be accessed.
- **Costly:** Frequently uploading and downloading can have additional costs.
- **Customers Support:** Many providers refer you to a knowledge base or FAQs instead of supporting.
- **Hard Drives:** The Idea of shifting to cloud was to eliminate dependency on hard drives but some services providers still use them.
- **Privacy:** Since the data is located at a cloud of unknown location, one can't be sure about the privacy of the data.

Answer 3(Part b): Collaborative meeting in cloud: Cloud collaboration enables people to work simultaneously on documents that are present on cloud, so the user can access files from anywhere with an internet connection.

The start of a cloud collaboration process involves one user creating a file or document and giving access to other members of the team. Anyone who has access can make changes to the document at any time, including when other people are editing or viewing it. Any changes that you make save and sync – so every user sees the same version of the project whenever (and wherever) they view it.