

## Assignment 2

### Part A (Multiple choice Questions)

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Course - MCA  
Subject - Cloud Computing  
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- Ques A1 (d) Scalable & flexible access  
Ques A2 (b) Backup storage  
Ques A3 (b) Distributing data across multiple servers  
Ques A4 (d) Tabular Data model  
Ques A5 (b) By isolating and providing a private network space  
Ques A6 (c) Improved content delivery speed across various regions  
Ques A7 (c) Restricted unauthorized access to resources  
Ques A8 (b) Platform as a Service (PaaS)  
Ques A9 (c) Google Cloud Functions  
Ques A10 (c) Windows Azure.

### Part B (Descriptive Questions)

Ques B1 Cloud storage is a model of data storage where the digital data is stored in logical pools across various servers managed by hosting companies. Two types of cloud storage are file storage & block storage.  
File storage: It organizes and represents data in a hierarchy of files in folders. It is easy to use and manage and is compatible with most applications. An example of filesystem storage in cloud would be Amazon Elastic File Storage (EFS).

Block storage: It breaks up data into blocks and then stores those blocks as separate pieces, each with a unique identifier. It's flexible and offers better performance than file storage. It's ideal for applications like databases or virtual machine file systems. An example of block storage is Amazon Elastic Block Store (ABS).

Ques B2 Vertical scaling: It is also known as "scaling up". It involves adding more resources such as CPU, RAM to an existing server, or replacing the server with a more powerful one. While it's a quick and easy way to improve database performance, it has limits based on maximum capacity of a single server.

Horizontal scaling: Also known as "scaling out", it involves adding more servers to database infrastructure to distribute the load. While it can be more complex to implement, it offers more flexibility and can handle much larger databases by taking advantages of distributed architectures.

B3

### Data Models in Cloud Databases

- ① Relational Databases: Relational databases use a tabular data model with schema defining the data types of each column. They are ideal for structured data and support complex queries. Example: MySQL.
- ② Document-Oriented Data Models: They store data as documents, allowing nested data structures. They are flexible and ideal for semi-structured data. Example: MongoDB.
- ③ Data Models in Cloud Databases:
  - ④ Key-Value stores: They store data as a collection of key-value pairs. They are highly scalable and ideally good for storing session information, user profiles, etc. Example: Redis.
  - ⑤ Graph Databases: They use graph structures to store and query relationships. They are ideal for handling data sets where relationships between data points matter. Example Neo4j.

Ques B4 Roles of Data Security Measures in Cloud Services

- ① Firewalls: They monitor and control incoming & outgoing network traffic based on predetermined security rules.
- ② Intrusion Detection Systems: IDS monitor network traffic for suspicious activities, known threats & sending up alerts when such is detected.
- ③ Virtual Private Networks (VPNs): They extend a private network across a public network, enabling users to send and receive data across shared or public networks if their computing devices were directly connected to the private networks.

Ques B5 Content Delivery Networks (CDNs)

CDNs are a network of servers distributed across the various locations around the globe. They work by caching content on edge servers located close to end-users, reducing the latency of network requests. By serving requests from the nearest location, CDNs can significantly improve the speed and reliability of content delivery. Industries that benefit from CDNs include media & entertainment (for streaming services), online gaming, ecommerce, etc.