



Instructions:

- Answer all questions. 75 minutes for answering questions and 15 minutes for scanning and uploading.

1. Answer the questions considering the following scenario -

"Best-East University cafeteria is currently in need of creating a database for their food items and customer profiling. Currently they sell supreme quality tea, coffee, and snacks. To increase the sale, the cafeteria owner wants to run a loyalty program to it's customers so that they can not only track the sales but also send promotional offers. There are two types of staffs - manager and sales person."

- (a) Identify entities and essential attributes of entities. [2]
- (b) Populate realistic test data into table/s. [2]
- (c) Normalize the database upto 3rd Normal Form. [6]

(Note: You are allowed to have necessary assumptions.)

Answer:

Date: _____

Ans to the Q no-1

a)

Customer	
PK	CID
	Name
	Phone
	Amount

Transaction	
	TPrice
	Amount
	FID

Food	
	FID (PK)
	Name
	Price

Staffs	
PK	SID
	Name
	Salary
	Designation
	Manager ID
Fk	CID

Offers	
PK	ID
	Name
	Price
Fk	FID

b) Food

1	Pizza	\$95
2	coffee	\$38
3	patties	\$15

Customer

1	Asif	153	14
2	Kamal	520	18
3	Jamal	990	29

Staff

1	Rahim	2000	mgr	Null	Null
2	Karim	3000	sales	1	Null
3	Tina	9000	sales P	1	Null

Offer

1	tea	18	12
2	coffee	25	22
3	patties	35	33

P.T.O

Date: _____

c)

customer	Food	Offers	Staffs
----------	------	--------	--------

3NF

Offer ID	Price
----------	-------

Food	Name	Price
------	------	-------

Customer ID	Amount
-------------	--------

Staff ID	Salary	Designation	Customer ID
----------	--------	-------------	-------------

2. (a) Discuss the issues of Relational Database. [5]

Answer: The relational database is not suitable for the highly connected data because it does not store the relationship between data elements. Relational Database have a fixed schema, but it does not adapt well to the changes in the database. Therefore, database administrators and developers cannot bring changes in the database as their requirements. These schema changes are time-consuming cause many problems during the project. Some of the modern applications work fine using Relational Database within their limits, but they start to show their limitation as they start to handle highly connected data. Some of the Relational Database issues are:

- 1) When several tables in a database utilize queries for joining, it creates chaos in the database. Moreover, it takes a higher response time.
- 2) Scalability is very expensive in a relational database and very difficult to handle.
- 3) There is so much complexity if data does not fit in the SQL server.
- 4) Queries run time is not fast enough in Relational Database. It could impact the data model and quality.
- 5) Frequent changes in the database are not supported as the schemas are fixed in RDBMS.

So, the above are the discussion of Relation Database.

(b) Briefly, discuss the advantages of NoSQL

[5]

Answer: When it comes to handle big data, real time web applications and cloud computing there are many advantages of NoSQL database. These databases were created to avoid the limitations of the SQL database. NoSQL databases are more independent, scalable, efficient. The advantages are:

- 1) NoSQL has the right data models like key-value stores, graph databases, column databases, which allow us to solve modern problems of data.
- 2) NoSQL can handle big data or large quantities of unstructured and semi-structured data.
- 3) NoSQL offers efficient horizontal scaling architecture, which allows more users for websites and applications.
- 4) NoSQL has no predefined schemas, so it is more comfortable to use and adjustable.
- 5) It is very cheaper to manage.
- 6) NoSQL databases are open source, which means low cost for developing and sharing software.
- 7) In NoSQL, the Object is easy to use and adjustable.

These are the brief discussion of the advantages of NoSQL.

3. Compare Data Administrator and Database Administrator functions.

[10]

Answer: Comparison between Data Administrator and Database Administrator functions are given below:
Data Administrator may include the one in-charge of handling all the data which are in the form of documents, audio, video or other media. On the other hand, Database Administrator is solely responsible for handling the database of the employee details or company details and bank details in banks. Database Administration is a logical design and Database Administration is a physical design/operational.

Database Administration Functions:

- 1) Helps in Installing/updating Database Management System.
- 2) It has necessary in selection of software and hardware.
- 3) It helps in tuning database performance.
- 4) Improving data security, privacy and integrity
- 5) Helps in data backup and recovery.
- 6) Analyze data volume and space requirements.

Data Administration Functions:

- 1) It helps in establishing politics such as data usage, security and authorization and data flows in and out of the organization.
- 2) It specifies data standards across databases
- 3) Helping the application by identifying data resources in the organization.
- 4) Data across departments can be shared through it.
- 5) It helps increasing the return of an organization's investment.
- 6) Conduct data definition session with users.

The above is the comparison between Data Administration and Database Administration Functions.

-: Good Luck! :-