Name - Deepankar Sharma
Course - MCA
Student ID - 233512013
Subject: OMC 201
Advanced DBMS

Part A Multiple Choice Questions

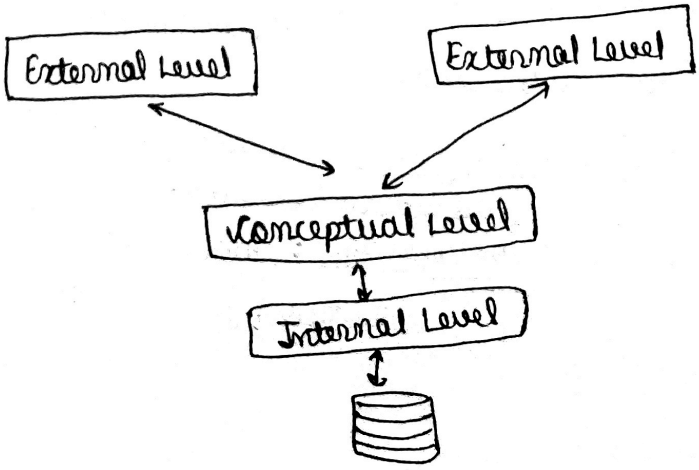
Ques 1) (b) Interrelated
Ques 2) (b) software
Ques 3) (a) rarely changed
Ques 4) (d) instance
Ques 5) (c) user level
Ques 6) (a) level
Ques 7) (d) attribute
Ques 8) (c) degree
Ques 9) (b) data independence
Ques 10) (a) True
Ques 11) (a) casual users
Ques 12) (c) both physical & logical
Ques 13) (b) two or more entities
Ques 14) (d) weak entity
Ques 15) (d) minus
Ques (16) (a) join
Ques 17) (c) integrity
Ques 18) (b) transitive dependency
Ques 19) (c) independent dependency
Ques 20) (a) Project

Part B Subjective Questions

Ques①: Using a Database Management System (DBMS) would be more suitable for the National Insurance Company as it offers several benefits over the File System:

→ Data is stored in a more organized and normalized fashion in DBMS, which minimizes redundancy. This makes it easier and quicker to access and reduces the chances of inconsistencies.
→ A DBMS provide simplified data access - users only need to know the name of relation to access the data.
→ DBMS makes it possible to create multiple views of same data for different users
→ Data is even more secure in a DBMS because you can only interact with database only with authorization.
→ Data can be accessed concurrently by multiple users without interference.
→ Backup and fault tolerance is more optimal in DBMS.

Ques②



The 3 schema architecture is a design approach for databases that divides the data into 3 layers:

→ External schema: The view seen by the user. It allows different views of databases to be created for different users, hiding unnecessary details from them.

→ Conceptual schema: It is the logical schema which is seen by the database admin and describes entire database at logical level.

→ Internal schema; Represents the physical storage of the database and can be seen by users to view how database is stored on the physical memory.

Ques⑤ Actors are the users who request the operations on a database for example retrieving or modifying data. Workers are the Database Management System itself, which processes these request.

These are two categories of actors:

① Primary Users: These users interact directly with the database, for example, submitting queries or entering data.

② Secondary Users: These users receive results from the primary users and use them to create reports or perform analysis.

There is only one category of workers which includes the DBMS and the database itself. The DBMS process the requests made by the actors and the database stores the data.

Ques⑥ Languages & Interfaces available in the DBMS:

① SQL (Structured Query Language): standard language used to communicate with the database, especially the relational dbs.

② DDL (Data Definition Language): language used to define the db structure/schema.

③ DML (Data Manipulation Language): used to manipulate data in the database, for example, inserting, updating or deleting records.

④ DCL (Data control language) : used to ~~manage~~ manage user access and control permissions.

⑤ API ∞ (Application Programming Interface) : databases provide APIs that allow other apps to access and work with databases.

⑥ Graphical User Interfaces (GUIs) : visual elements that provide even easier way to interact with dbs, like PGAdmin4 in postgres.

Ques ⑦ Primary keys are unique identifiers for each record in a database table. Each table should have a primary key associated with it. For example for student table in our university ERP, the student ID would be primary key.

Foreign key are used to link records in different tables. For instance in database of students and records of courses, the student ID in courses is foreign key as it is primary key in Student table.

Superkeys are the sets of ~~are the~~ attributes that can uniquely identify the record, They include primary keys and may also contain other attributes. In student table, a superkey could be studentId & the course.

~~Foreign keys~~

Candidate Keys are the minimal super keys and potential candidate for the primary key. For example, name and rollno can be a candidate key.