Database Management Systems Quiz-1
27th Nov,2006

State whether true or false and justify for each of the below. Total:10 marks

Set 1

a) Database system can have no data. True / False
Ans: True
Justify: Database system = DBMS + database. The DBMS refers the software layer built over the database. The database is the conceptual schema along with the data which could be empty and could be populated at a later point of time.

b) Self-describing database means that there is an intension to the database. True / False
Ans: True
Justify: The description of the database is called the database schema, also termed as intension. Hence if the database is self-describing, it means that there is an intension.

c) A set of files is also a database. True / False
Ans: False
Justify: A set of files may or may not be a database. If the files contain related data for a specific purpose and whose structure is known, then it forms a database.

Set 2

a) A database can exist without a DBMS. True / False
Ans: True
Justify: The DBMS refers to the software that is used on the database. The database can exist and the DBMS can be created over it to query and access the database. For example, a set of files which is a database can exist independent of the programs that access the files.

b) A change in the intension of the database might not lead to a change in the extension of the database. True / False
Ans: True
Justify: Database schema is also referred to as intension and the state of the database is called the extension. If the datatype of an attribute is changed from varchar to char, then the extension need not change. Similarly if attributes are added, the intension changes while NULL values can be inserted for the new attributes which does not change the extension.

c) A change in the extension of the database might not lead to a change in the intension of the database. True / False
Ans: True
Justify: The state of the database might change in terms of updates to the database (insertions, deletions and updates) but the intension of the database remains the same.

Set 3

a) A DBMS can exist without a database. True / False
Ans: True
Justify: DBMS refers the software programs that access the database system. The same software works for multiple databases independent of the schema and the data of the database.

b) A single database can represent two mini-worlds. True / False
Ans: True
Justify: A single database can represent EVEN two unrelated mini-worlds. At the conceptual level, you might have planets and IIIT students in the database which might seem unrelated. But at the external view level, there might be a relationship of IIIT students reading about certain planets which is not captured in the conceptual level and hence not reflected in the database. Two mini-worlds can be represented in the same database, if at the external view level there is a relationship between them which at later point of time might get represented in the conceptual level.

c) It is possible to have a database in which the data is unrelated. True / False
Ans: True
Justify: If the database is viewed at the external level, as in (b), the data would be related but at the conceptual level, it might seem unrelated. Database is defined as related data at the external level. But still at the conceptual level, it could be unrelated.

Set 4

a) All databases must have at least one schema. True / False
Ans: True
Justify: A database can be queried or accessed only in the presence of a schema. A database thus required atleast one schema.

b) Three schema architecture defines the mapping between schemas. True / False
Ans: False
Justify: The three schema architecture defines about the three levels of database, namely the external, the conceptual and the physical level schema. It does not give the mapping between the schemas. However, there would exist such a mapping.

c) For a given mini-world, there is a unique database. True / False
Ans: False
Justify: A given mini-world can be modeled differently at the conceptual level. While one database captures the relationship between entities in one particular manner, the other database might want to model it differently. Note: a database cannot capture a subset of information about the mini-world. All the entites and their relationship in the mini-world has to be captured in the database.