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MATRIC NUMBER: 17/SCI01/016

COURSE CODE: CSC306

COURSE TITLE: Data Management 1

ASSIGNMENT

TEST  TIME ALLOWED 45MINS

1. Mention five charateristics of a good database.
2. Explain what is meant by saying that a  relationship is “optional”
3. Explain what is meant by saying that an entity set may have “partial participation” in a relationship
4. Differentiate between DDL and DML with examples
5. A University computer laboratory requires a booking system to enable students to book a specific lab computer at a specific time. The students must be enrolled on certain authorized courses. Some of the computers have special facilities and/or additional equipment such as large memory, scanner, speech input etc. Design an ER diagram to model this application and then derive a set of relational tables from the ER diagram, using appropriate choices for the table attributes. Indicate the foreign keys used and for each specify whether a null entry would be allowable.

SOLUTIONS

1.

* Should be able to store all kinds of data that exists in this real world. Since we need to work with all kinds of data and requirements, database should be strong enough to store all kinds of data that is present around us.
* Data and application should be isolated. Because database is a system which gives the platform to store the data, and the data is the one which allows the database to work. Hence there should be clear differentiation between them.
* Database should also support ACID property. i.e.; while performing any transactions like insert, update and delete, database makes sure that the real purpose of the data is not lost. For example, if a student’s address is updated, then it should make sure that there is no duplicate data is created nor there is any data mismatch for that student.
* There should not be any duplication of data in the database. Data should be stored in such a way that it should not be repeated in multiple tables. If repeated, it would be unnecessary waste of DB space and maintaining such data becomes chaos.
* DBMS has a strong query language. Once the database is designed, this helps the user to retrieve and manipulate the data. If a particular user wants to see any specific data, he can apply as many filtering conditions that he wants and pull the data that he needs.

2 .In an optional relationship, any instance of one entity might participate in a relationship with another entity, but this is not compulsory. Important. Meaning it is not important for each entity in a database model to have a relationship with each entity in the database.

1. The participation condition defines whether it is mandatory or optional for an entity to participate in a relationship. The participation of an entity set E in a relationship set R is said to be partial if only some entities in E participate in relationship R. E.g not all customers of a bank collect loans.
2. DDL is Data Definition Language which is used to define data structures. For example: create table, alter table are instructions in SQL.  
   DML is Data Manipulation Language which is used to manipulate data itself. For example: insert, update, delete are instructions in SQL.

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| **DDL** | **DML** |
| It doesn’t have any further classification | It is further classified into Procedural and Non-Procedural DML. |
| It basically defines the column (Attributes) of the table. | It add or update the row of the table. These rows are called as tuple. |
| Basic command present in DDL are CREATE, DROP, RENAME, ALTER etc. | BASIC command present in DML are UPDATE, INSERT, MERGE etc. |

EXAMPLES:

DDL:

* CREATE
* ALTER
* DROP
* TRUNCATE
* AND
* COMMENT

DML:

* SELECT
* INSERT
* UPDATE
* DELETE
* MERGE
* CALL

**Computer**

Computer ID

Computer Type

Availability Status

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5.

**Student**

Matrix No

Student Name

Courses

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Books

Booked By

OFFERS

**Courses**

Course Code

Course Title

Course Lecturer

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Description

One computer is booked by a Student

A student books one computer

A student offers many courses

A course may be offered by zero or more students

|  |  |  |  |
| --- | --- | --- | --- |
| Computer | | | |
| ID\* | Name | Model | Availability Status |
|  |  | Can be null |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Student | | | |
| Matric No\* | Name | Course | Computer ID\*\* |
|  | Can be Null |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Course | | | |
| Course Code\* | Title | Lecturers Name | Students Matric No\*\* |
|  | Can be Null | Can be Null |  |