Drones Sports Club

Purpose and structure of a relational DBMS

Types of relationships in relational DBMS

**Dexter’s problem**

Dexter is the secretary of Drones Sporting Club. He is responsible for maintaining the database management system (DBMS) used to store all the details stored by the sports club. Each member of the club is allowed to play one sport.

Currently a flat-file database is used to store all of the details. The structure of the table used in the flat-file database is shown below with some sample data.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **MemberID** | **First** | **Last** | **Age** | **Sport** | **Coach** | **GameDay** | **GameTime** |
| 1 | Wei | Zhang | 16 | Badminton | Dan | Tuesday | 4:30pm |
| 2 | Haziq | Zogby | 17 | Volleyball | Saeid | Monday | 6:00pm |
| 3 | Fang | Wang | 18 | Football | Wen | Friday | 5:00pm |
| 4 | Omar | Tahan | 19 | Badminton | Dan | Tuesday | 4:30pm |
| 5 | Ying | Wang | 20 | Volleyball | Saeid | Monday | 6:00pm |
| 6 | Jana | Haik | 21 | Football | Wen | Friday | 5:00pm |
| 7 | Na | Li | 18 | Badminton | Dan | Tuesday | 4:30pm |
| 8 | Jing | Lu | 19 | Football | Wen | Friday | 5:00pm |
| 9 | Joury | Shadid | 20 | Badminton | Dan | Tuesday | 4:30pm |
| 10 | Sara | Megat | 17 | Football | Wen | Friday | 5:00pm |

**Data redundancy**

The flat-file database currently stores 80 pieces of data (10 records \* 8 fields).

An issue with the flat-file database is that it contains redundant data – the same data is stored in more than one location in the table.

For example, the coach, game day and game time is repeated each time a sport is selected.

**Required**

**1. List** the number of pieces of data stored in the flat-file database.

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**2. Circle** any piece of data that is stored in more than one location in the flat-file database.

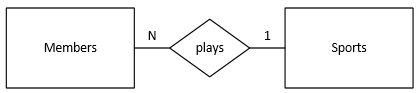
**Relational database**

To reduce data duplication a relational database can be created that splits the data into two tables. The two tables will be tblMembers and tblSports.

These two tables will then be connected using relationships.

**Entity-relationship (ER) diagram**

The relationship between the two tables is shown below.



The ER diagram shows that one sport can be played by many members (N), but members can only play one sport.

**3. Populate** the two tables below so all the data from the flat-file database is stored in one of the related tables.

**Note**: The first record in each table has been completed for you.

tblMembers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **MemberID** | **First** | **Last** | **Age** | **Sport** |
| 1 | Wei | Zhang | 16 | Badminton |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
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|  |  |  |  |  |
|  |  |  |  |  |

tblSports

|  |  |  |  |
| --- | --- | --- | --- |
| **Sport** | **Coach** | **GameDay** | **GameTime** |
| Badminton | Dan | Tuesday | 4:30pm |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**3. List** the number of pieces of data stored in the relational database.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**4. Circle** any value that has been stored in more than one location.

**5. Discuss** why some values are still stored in more than one location.

**6. Complete** a data dictionary for each table.

tblMembers

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data type** | **Field Size**  **(if short text)** | **Other properties** |
| MemberID |  |  |  |
| First |  |  |  |
| Last |  |  |  |
| Age |  |  |  |
| Sport |  |  |  |

tblSports

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data type** | **Field Size**  **(if short text)** | **Other properties** |
| Sport |  |  |  |
| Coach |  |  |  |
| GameDay |  |  |  |
| GameTime |  |  |  |

**7. Create** the relational database using DBMS software including:

* creating both tables
* creating a relationship between tables
* populate the tables with data