CPSC-6576-02: Database Design Admin SQL

Project Name : Book Rental Details

Student Name :

Student ID :

# **Abstract**

# **Introduction**

The main objective of this project is to design and implement database of students’ details and books they rent. This Data model is designed using database diagrams. This project contains key constraints, entity integrity, referential integrity constraints that are implemented on tables. The SQL objects that are created are views, stored procedures, functions, and triggers

# **Problem Statement**

It is an important job for educational institutions to maintain record of books rented by students. If this task is carried out manually, it will be laborious. It is also prone to mistakes and difficult to organize such huge amount of data.

# **Proposed Solution**

To come up with a solution, computers keep track of books rented using database management. It contains information regarding the person (let’s say student) such as name, gender, ID, address, books rented etc. Every time a book is added or deleted; the database will be updated automatically. Thus, it reduces the manual work and avoids mistakes. In this project, we implemented the same mechanism to store data in our database.

# **Modules**:

The following modules are implemented in this project. They are:

**BookRentalDetails** is the database where all the information is stored.

**Student\_UserDetails** contains all the details of students

**Books** shows the books that are rented by students

**GenderInfo** describes the gender of the student

# **Entity – Relationship (ER) Diagram**

Diagram

Description automatically generated with medium confidence

**Figure 1 Entity-Relationship: BookRentalDetails**

The above Entity Relation - Diagram has 3 entities. Such as Student\_UserDetails, Books, GenderInfo. Every entity has its own attributes.

**Student\_UserDetails** entity has the following attributes.

* GSU\_ID
* FullName
* PhysicalAddress
* Gender\_ID

**Books** entity has the following attributes

* GSU\_ID
* BookRented

**GenderInfo** has the following attributes

* Gender\_ID
* Gender

**Relationship between** **Student\_UserDetails and Books**

The two entities Student\_UserDetailsandBooksshare one to many relationships.

**Relationship between** **Student\_UserDetails and GenderInfo**

The two entities Student\_UserDetailsand GenderInfoshare one to many relationships

# **Table**

Normalization is a process of reducing the data redundancy and it also maintains consistency in the database.

3NF should be in 2NF and it should not contain any transitive dependencies.

**Primary key**

|  |  |  |  |
| --- | --- | --- | --- |
| GSU\_ID | FullName | PhysicalAddress | Gender\_ID |
| 1001 | Joe Root | 1st street, Park Forest | 1 |
| 1002 | Ariel Chappel | 3rd Ave, Richton Park | 2 |
| 1003 | Tia Star | 5th street, Chicago Heights | 2 |
| 1004 | Marcus Warne | 7th street, Oak Forest | 1 |
| 1005 | Keri Cook | 9th street, Tinley Park | 3 |

**Table 1 Student\_UserDetails**

**Primary key**

|  |  |
| --- | --- |
| GSU\_ID | BookRented |
| 1001 | Pride and Prejudice |
| 1001 | Gone Girl |
| 1002 | The Alchemist |
| 1002 | The Fault in Our Stars |
| 1003 | Gone Girl |
| 1003 | The Alchemist |
| 1004 | The Song of Achilles |
| 1005 | The Fault in Our Stars |

**Table 2 Books**

**Primary key**

|  |  |
| --- | --- |
| Gender\_ID | Gender |
| 1 | Male |
| 2 | Female |
| 3 | Prefer Not to Say |

**Table 3 GenderDetails**

**The 3NF table consists of three tables:**

Table 1: It contains student details.

Table 2: It has information about the rented books.

Table 3: It contains gender details along with gender ID that acts as primary key**.**