**Guidelines to Database Design, Test and Implementation**

**I.Design**

**Step 1: Read the project very carefully.**

**Make a list of potential tables.**

* Books
* Colleges
* Universities
* Categories
* Authors
* Publishers
* Orders
* Clerks
* Customers

**Step 2: Refine the list**

-Books

- Categories

-Authors

-Publishers

-Customers

-Orders

-Employees

-Users

**Step 3: Set up the relationships among the tables**

**Note:** *Based on the business rules and common sense*

1. Categories --------🡪 Books: One-To-Many

Example:

Category: Programming

Book1: Advanced C#

Book2: Programming in Java

Book3: Designing and Implementing Web Apps in C#

1. Authors ---------🡪 Books: Many-To-Many

Need another table: AuthorsBooks

1. Publishers --------🡪 Books: One-To-Many
2. Orders ---------🡪 Books: Many-To-Many

Need another table: OrderDetails

1. Customers --------🡪 Orders: One-To-Many
2. Employees --------🡪 Orders: One-To-Many
3. Employees --------🡪 Users: One-To-Many

**Step 4: For each table, specify the column and appropriate data types required.**

**Table Name:** Categories (related to Books)

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *CategoryId* | number | PK |
| CategoryName | String |  |
|  |  |  |
|  |  |  |

**Table Name:** Authors (related to AuthorsBooks)

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *AuthorId* | number | PK |
| FirstName | String |  |
| LastName | String |  |
| Email | String |  |

**Table Name:** AuthorsBooks (related to Books and Authors)

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *AuthorId* | number | PK FK |
| *ISBN* | string | PK FK |
|  |  |  |
|  |  |  |

**Table Name:** Publishers (related to Books)

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *PublisherId* | number | PK |
| PublisherName | String |  |
|  |  |  |
|  |  |  |

**Table Name:** Books

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *ISBN* | string | PK |
| BookTitle | String |  |
| UnitPrice | number |  |
| YearPublished | number |  |
| QOH | number |  |
| PublisherId | number | FK |
| CategoryId | number | FK |

**Table Name:** OrderDetails

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *OrderId* | number | PK FK |
| *ISBN* | String | PK FK |
|  |  |  |
|  |  |  |

**Table Name:** Employees (related to Orders)

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *EmployeeId* | number | PK |
| LastName | String |  |
| FirstName | String |  |
| JobId | Number | FK |

**Table Name:** Users (0…1)

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *UserId* | number | PK |
| Password | String |  |
| UserStatus | String |  |
| *EmployeeId* |  | FK |

**Table Name:** Jobs (related to Employees)

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *JobId* | number | PK |
| JobTitle | String |  |
| JobDesc | String |  |
|  |  |  |

**Table Name:** Customers (related to Orders)

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *CustomerId* | number | PK |
| CustomerName | String |  |
| Street | String |  |
| City | string |  |
| PostalCode | String |  |
| PhoneNumber | String |  |
| FaxNumber | String |  |
| CreditLimit | Number |  |

**Table Name:** Orders

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Design Note |
| *OrderId* | number | PK |
| CustomerId | Number | FK |
| EmployeeId | Number | FK |
| OrderDate | Date |  |

**II. Implementation**

**Use SQL Server 2017 and SQL Server Management Studio 1**

**III. Testing with Sample Data**

**Hint:** Get data from the Internet

**Based on the Users and Operations**

**Note:** Pay attention to the **DELETE** operations

***ERD***

