

## Comp 1630

### Relational Database Design & UML

#### EXERCISE 6 – SQL Server Management Studio

Complete the following using the [Microsoft SQL Server Management Studio](#) tool.

1. Launch and connect to SQL Server.
2. Create a database called **Exercise\_6** (Right click).

```
CREATE DATABASE Exercise_6
ON (
    NAME = Exercise_6_data,
    FILENAME = 'C:\Program Files\Microsoft SQL Server\MSSQL\Data\
Exercise_6_data.mdf'
)
LOG ON
(
    NAME = Exercise_6_log,
    FILENAME = 'C:\Program Files\Microsoft SQL Server\MSSQL\Data\
Exercise_6_log.ldf'
)
```

3. Create a user-defined data type called **Id\_DataType**. This will be used for the Id columns to ensure consistent data type, length, and null ability.

```
EXEC sp_addtype Id_Datatype, 'CHAR(5)', 'NOT NULL'
```

4. Create the following tables (see page 2 for column information):

- Author

```
CREATE TABLE Author
(
    Auth_Id          Id_Datatype,
    Auth_LastName    VARCHAR(50),
    Auth_FirstName    VARCHAR(50),
    Auth_MiddleName   VARCHAR(50)
)
```

- Book

```
CREATE TABLE Book
(
    Book_Id          Id_Datatype,
    Book_Title       VARCHAR(50),
    Book_Price       MONEY,
    Book_Paperback   CHAR(1),
    Book_PubDate     DATETIME,
    Pub_Id           Id_Datatype,
    Auth_Id          Id_Datatype,
    Type_Id          CHAR(3)
)
```

- Branch

```
CREATE TABLE Branch
(
    Branch_Id        Id_Datatype,
    Branch_Name      VARCHAR(50),
    Branch_Location  VARCHAR(50),
    Branch_Staff     INT
)
```

- Inventory

```
CREATE TABLE Inventory
(
    Book_Id          Id_Datatype,
    Branch_Id        Id_Datatype,
    Inv_Level        INT
)
```

- Publisher

```
CREATE TABLE Publisher
(
    Pub_Id           Id_Datatype,
    Pub_Name         VARCHAR(50),
    Pub_Address      VARCHAR(50),
    Pub_City         VARCHAR(50),
    Pub_Prov         CHAR(2),
    Pub_postal       CHAR(6)
)
```

- Type

```
CREATE TABLE Type
(
    Type_Id          CHAR(3) NOT NULL,
    Type_Description VARCHAR(50)
)
```

5. Add all the Primary Keys and Foreign Keys.

```
ALTER TABLE Author  
ADD PRIMARY KEY (Auth_Id)
```

```
ALTER TABLE Book  
ADD PRIMARY KEY (Book_Id)
```

```
ALTER TABLE Branch  
ADD PRIMARY KEY (Branch_Id)
```

```
ALTER TABLE Inventory  
ADD PRIMARY KEY (Book_Id, Branch_Id)
```

```
ALTER TABLE Publisher  
ADD PRIMARY KEY (Pub_Id)
```

```
ALTER TABLE Type  
ADD PRIMARY KEY (Type_Id)
```

```
ALTER TABLE Book  
WITH CHECK ADD FOREIGN KEY (Pub_Id )  
REFERENCES Publisher (Pub_Id )
```

```
ALTER TABLE Book  
WITH CHECK ADD FOREIGN KEY (Auth_Id)  
REFERENCES Author (Auth_Id)
```

```
ALTER TABLE Book  
WITH CHECK ADD FOREIGN KEY (Type_Id)  
REFERENCES Type (Type_Id)
```

6. The default value for the **Book** table's **Paperback** column is 'N'.

```
ALTER TABLE Book  
ADD DEFAULT ( 'N' ) FOR Book_Paperback
```

7. The default value for the **Publisher** table's **Prov** column is 'BC'.

```
ALTER TABLE Publisher  
ADD DEFAULT ( 'BC' ) FOR Pub_Prov
```

8. The default value for the **Book** table's **PubDate** column is today **GETDATE()**.

```
ALTER TABLE Book  
ADD DEFAULT ( GETDATE() ) FOR Book_PubDate
```

9. Add a check constraint to the **Book** table's **Type\_Id** column to ensure the upper case letters A through Z are the only acceptable values for each of the characters in the column.

```
ALTER TABLE Book  
ADD CONSTRAINT type_values CHECK ( Type_Id LIKE ( '[A-Z][A-Z][A-Z]' ) )
```

10. Add a check constraint to the **Branch** table's **Id** column for values 1 through 99999.

```
ALTER TABLE Branch  
ADD CONSTRAINT branch_value CHECK ( Branch_Id BETWEEN 1 AND 99999 )
```

11. Add a check constraint to the **Type** table's **Description** column for the values 'FIC', 'NON', 'REF'.

```
ALTER TABLE Type  
ADD CONSTRAINT booktype_values CHECK (Type_Description IN ( 'FIC','NON','REF' ) )
```

Submit the PDF image of the ERD created in step 4 to the D2L Ex6 drop box.

## Table Layout

### Author

| Column Name     | Data Type | Length |                        | Key | Null |
|-----------------|-----------|--------|------------------------|-----|------|
| Auth_Id         | char      | 5      | User-defined Data Type | PK  | No   |
| Auth_LastName   | varchar   | 50     |                        |     |      |
| Auth_FirstName  | varchar   | 50     |                        |     |      |
| Auth_MiddleName | varchar   | 50     |                        |     |      |

### Book

| Column Name    | Data Type | Length |                        | Key | Null |
|----------------|-----------|--------|------------------------|-----|------|
| Book_Id        | char      | 5      | User-defined Data Type | PK  | No   |
| Book_Title     | varchar   | 50     |                        |     |      |
| Book_Price     | money     |        |                        |     |      |
| Book_Paperback | char      | 1      |                        |     |      |
| Book_PubDate   | datetime  |        |                        |     |      |
| Pub_Id         | char      | 5      | User-defined Data Type | FK  | No   |
| Auth_Id        | char      | 5      | User-defined Data Type | FK  | No   |
| Type_Id        | char      | 3      |                        | FK  | No   |

### Branch

| Column Name     | Data Type | Length |                        | Key | Null |
|-----------------|-----------|--------|------------------------|-----|------|
| Branch_Id       | char      | 5      | User-defined Data Type | PK  | No   |
| Branch_Name     | varchar   | 50     |                        |     |      |
| Branch_Location | varchar   | 50     |                        |     |      |
| Branch_Staff    | int       |        |                        |     |      |

### Inventory

| Column Name | Data Type | Length |                        | Key    | Null |
|-------------|-----------|--------|------------------------|--------|------|
| Book_Id     | char      | 5      | User-defined Data Type | PK1 FK | No   |
| Branch_Id   | char      | 5      | User-defined Data Type | PK2 FK | No   |
| Inv_Level   | int       |        |                        |        |      |

### Publisher

| Column Name | Data Type | Length |                        | Key | Null |
|-------------|-----------|--------|------------------------|-----|------|
| Pub_Id      | char      | 5      | User-defined Data Type | PK  | No   |
| Pub_Name    | varchar   | 50     |                        |     |      |
| Pub_Address | varchar   | 50     |                        |     |      |
| Pub_City    | varchar   | 50     |                        |     |      |
| Pub_Prov    | char      | 2      |                        |     |      |
| Pub_Postal  | char      | 6      |                        |     |      |

### Type

| Column Name      | Data Type | Length |  | Key | Null |
|------------------|-----------|--------|--|-----|------|
| Type_Id          | char      | 3      |  | PK  | No   |
| Type_Description | varchar   | 50     |  |     |      |