BACHELOR OF INFORMATION SYSTEMS
SCHOOL OF INFORMATION SYSTEMS
BINA NUSANTARA UNIVERSITY
JAKARTA

ASSESSMENT FORM
Course: ISYS6123 Introduction to Database Systems
Method of Assessment: Group Project
Semester/Academic Year : Even/2022-2023

Name of Lecturer : **SAN KARYA, S.Kom., MMSI**
Date : **1 June 2023**
Class : **LF11**
Topic : **Database Architecture & Relational Model, Entity Relationship (ER) Modeling, SQL - Data Definition, SQL Data Manipulation (Basic Queries 1), SQL Data Manipulation (Basic Queries 2), SQL Data Manipulation (Multi-tables Queries), SQL Data Manipulation (Sub Queries) and View**

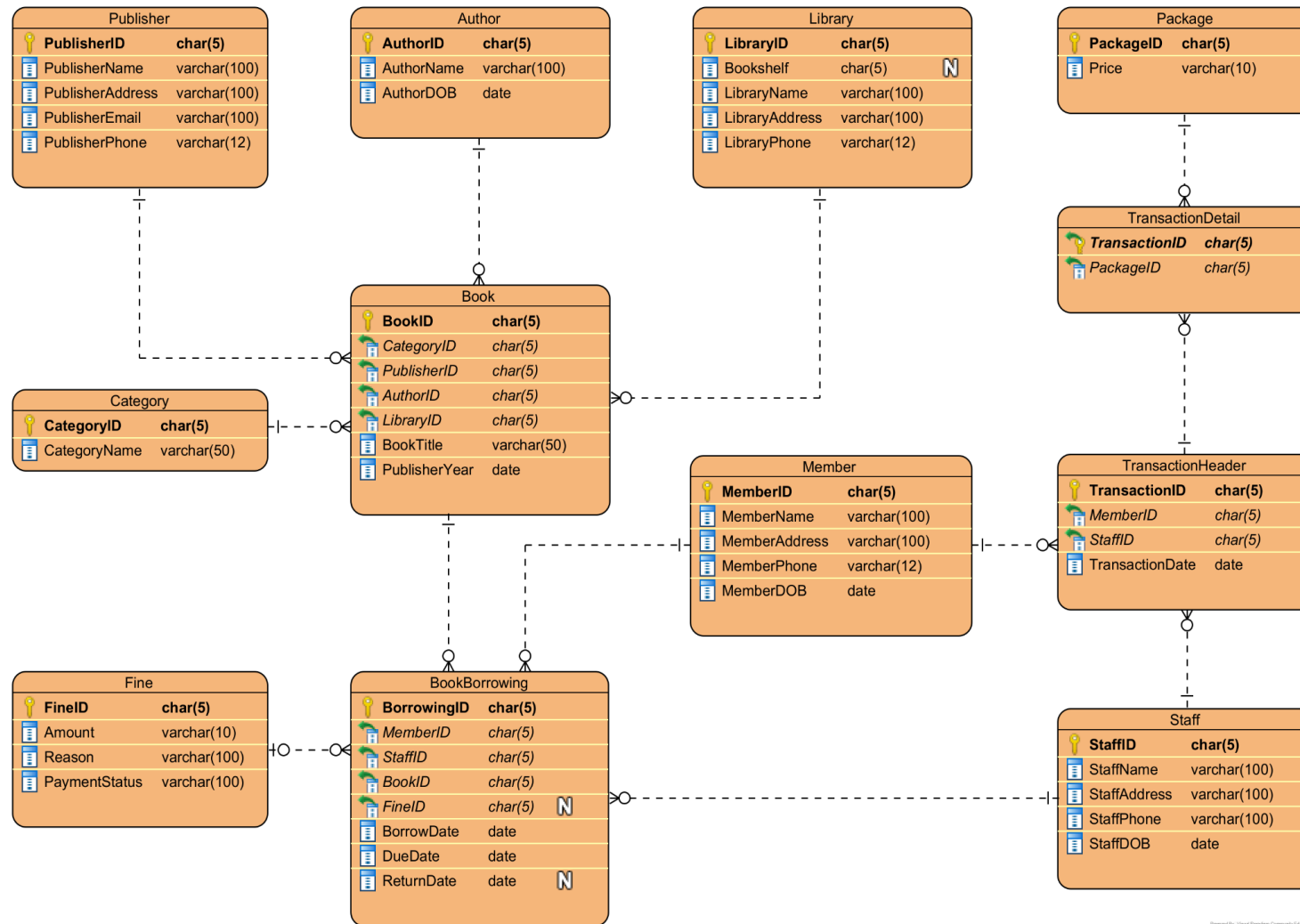| **Group Members :** | 1. 2602193912 - Huandika Ekaputra |
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Student Outcomes:
SO 1 - Able to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
Learning Objectives:
LObj 1.1 - Able to identify the needs of database for complex computing problems.

DATABASE SYSTEMS FOR LIBRARY MANAGEMENT

1. Entity Relationship Diagram (ERD)

Publisher

🔑	**PublisherID**	**char(5)**
▤	PublisherName	varchar(100)
▤	PublisherAddress	varchar(100)
▤	PublisherEmail	varchar(100)
▤	PublisherPhone	varchar(12)

Author

🔑	**AuthorID**	**char(5)**
▤	AuthorName	varchar(100)
▤	AuthorDOB	date

Library

🔑	**LibraryID**	**char(5)**
▤	Bookshelf	char(5)
▤	LibraryName	varchar(100)
▤	LibraryAddress	varchar(100)
▤	LibraryPhone	varchar(12)

Package

🔑	**PackageID**	**char(5)**
▤	Price	varchar(10)

TransactionDetail

🔑	*TransactionID*	*char(5)*
🔑	*PackageID*	*char(5)*

Book

🔑	**BookID**	**char(5)**
🔑	*CategoryID*	*char(5)*
🔑	*PublisherID*	*char(5)*
🔑	*AuthorID*	*char(5)*
🔑	*LibraryID*	*char(5)*
▤	BookTitle	varchar(50)
▤	PublisherYear	date

Category

🔑	**CategoryID**	**char(5)**
▤	CategoryName	varchar(50)

Member

🔑	**MemberID**	**char(5)**
▤	MemberName	varchar(100)
▤	MemberAddress	varchar(100)
▤	MemberPhone	varchar(12)
▤	MemberDOB	date

TransactionHeader

🔑	**TransactionID**	**char(5)**
🔑	*MemberID*	*char(5)*
🔑	*StaffID*	*char(5)*
▤	TransactionDate	date

Fine

🔑	**FineID**	**char(5)**
▤	Amount	varchar(10)
▤	Reason	varchar(100)
▤	PaymentStatus	varchar(100)

BookBorrowing

🔑	**BorrowingID**	**char(5)**
🔑	*MemberID*	*char(5)*
🔑	*StaffID*	*char(5)*
🔑	*BookID*	*char(5)*
🔑	*FineID*	*char(5)*
▤	BorrowDate	date
▤	DueDate	date
▤	ReturnDate	date

Staff

🔑	**StaffID**	**char(5)**
▤	StaffName	varchar(100)
▤	StaffAddress	varchar(100)
▤	StaffPhone	varchar(100)
▤	StaffDOB	date

2. Pendaftaran Member

a. **CREATE TABLE Member — DDL**

```
CREATE TABLE Member (
     MemberID CHAR(5) PRIMARY KEY CHECK (MemberID LIKE 'MM[0-9][0-9][0-9]'),
     MemberName VARCHAR(50) NOT NULL,
     MemberAddress VARCHAR(100) NOT NULL,
     MemberPhone VARCHAR(50) NOT NULL,
     MemberDOB DATE NOT NULL
)
```

b. **INSERT INTO — DML**
   - Menekan tombol "Register"

```
INSERT INTO Member VALUES
     ('MM001', 'Jessica', '12B Street', '81282738492', '12-02-2000'),
     ('MM002', 'Aulia', '12A Street', '823567819236', '14-04-2001'),
     ('MM003', 'Sugiharto', '15C Street', '871827364819', '05-12-2001'),
     ('MM004', 'Hiro', '17D Street', '813527391284', '02-01-2002'),
     ('MM005', 'Milea', '19E Street', '826487391278', '26-04-2003')
```

c. **CREATE VIEW — DML**

Registration Information View

Registration New Member Results:

ID	Member Name	Phone Number
MM001	Jessica	81282738492
MM002	Aulia	823567819236
MM003	Sugiharto	871827364819
MM004	Hiro	813527391284
MM005	Milea	826487391278

   - Akan keluar sebuah popup untuk view

```
CREATE VIEW ViewRegistrationInformation AS
SELECT
      MemberID,
      MemberName,
      MemberPhone
FROM Member
```

3. Menu Peminjaman Buku

d. **CREATE TABLE Book and BookBorrowing — DDL**

```
CREATE TABLE Book (
```

```
      BookID CHAR(5) PRIMARY KEY CHECK (BookID CHECK 'BK[0-9][0-9][0-9]'),
      CategoryID CHAR(5) FOREIGN KEY REFERENCES Category(CategoryID) NOT NULL,
      PublisherID CHAR(5) FOREIGN KEY REFERENCES Publisher(PublisherID) NOT NULL,
      AuthorID CHAR(5) FOREIGN KEY REFERENCES Author(AuthorID) NOT NULL,
      LibraryID CHAR(5) FOREIGN KEY REFERENCES Library(LibraryID) NOT NULL,
      BookTitle VARCHAR(50) NOT NULL,
      PublisherDate DATE NOT NULL
)

CREATE TABLE BookBorrowing (
      BorrowingID CHAR(5) PRIMARY KEY CHECK (BorrowingID CHECK 'BR[0-9[0-9][0-9]'),
      MemberID CHAR(5) FOREIGN KEY REFERENCES Member(MemberID) NOT NULL,
      StaffID CHAR(5) FOREIGN KEY REFERENCES Staff(StaffID) NOT NULL,
      BookID CHAR(5) FOREIGN KEY REFERENCES Book(BookID) NOT NULL,
      FineID CHAR(5) FOREIGN KEY REFERENCES Fine(FineID),
      BorrowDate DATE NOT NULL,
      DueDate DATE NOT NULL,
      ReturnDate DATE
)
```

e. **INSERT INTO — DML**
   - Insert data ke dalam tabel Book

```
INSERT INTO Book VALUES
      ('BK039', 'CT002', 'PB008', 'AT008', 'LB090', 'The Hunger Games', '07-07-2000'),
      ('BK040', 'CT006', 'PB001', 'AT004', 'LB090', 'One Punch Man', '23-08-2005'),
      ('BK041', 'CT001', 'PB005', 'AT001', 'LB090', 'Divergent', '09-06-2003'),
```

```
        ('BK042', 'CT003', 'PB002', 'AT009', 'LB090', 'Songs and Birds', '10-01-2004'),
        ('BK090', 'CT002', 'PB007', 'AT006', 'LB090', 'Boku no Pico', '29-03-2006')
```

- Menampilkan Book Title

```
SELECT
      BookTitle
FROM
      Book
WHERE
      BookID = "BK040"
```

- Menekan tombol "Borrow"

```
INSERT TABLE BookBorrowing VALUES
      ('BR003', 'LB001', 'BK040', 'FN001', 'ST006', 'MM001' ,'10-June-2023', 10, '20-06-2023')
```

- Menekan tombol "Borrow" - Status peminjaman update secara otomatis

```
UPDATE Book
SET Status = 'Dipinjam'
WHERE BookID = 'BK040';
```

4. Pengembalian Buku

f. **CREATE TABLE Book and BookBorrowing — DDL**

```
CREATE TABLE BookBorrowing(
    BorrowID CHAR(5) PRIMARY KEY CHECK (BorrowID LIKE 'BR[0-9][0-9][0-9]'),
    BookID CHAR(5)FOREIGN KEY REFERENCES Book(BookID) NOT NULL,
    FineID CHAR (5) FOREIGN KEY REFERENCES Fine(FineID),
    StaffID CHAR(5) FOREIGN KEY REFERENCES Staff(StaffID) NOT NULL,
    MemberID CHAR(5) FOREIGN KEY REFERENCES Member(MemberID) NOT NULL,
    BorrowDate DATE NOT NULL, DueDate DATE NOT NULL, ReturnDate DATE
)

CREATE TABLE Book(
    BookID CHAR(5) PRIMARY KEY CHECK (BookID LIKE 'BK[0-9][0-9][0-9]'),
```

```
    CategoryID CHAR(5) FOREIGN KEY REFERENCES Category(CategoryID) NOT NULL,
    PublisherID CHAR(5) FOREIGN KEY REFERENCES Publisher(PublisherID) NOT NULL,
    AuthorID CHAR(5) FOREIGN KEY REFERENCES Author(AuthorID) NOT NULL,
    GenreID CHAR(5) FOREIGN KEY REFERENCES Genre(GenreID) NOT NULL,
    LibraryID CHAR(5) FOREIGN KEY REFERENCES Library(LibraryID) NOT NULL,
    BookTitle VARCHAR(50) NOT NULL,
    PublicationYear DATE NOT NULL
)
```

g. **SELECT & UPDATE — DML**

- Setelah memasukan MemberID dan menekan tombol "Enter"

```
SELECT bb.BookID, BookTitle, DueDate
FROM BorrowBook bb
JOIN Book b ON bb.BookID = b.BookID
WHERE MemberID = 'MM001'
```

Pengembalian Buku

MemberID: MM001

Borrowed Book

BookID	Borrowed Book	DueDate	Return
BK040	One Punch Man	20/06/2023	◉
BK090	Boku No Pico	12/07/2023	○

Return Book

- Menekan tombol "Return Book"

```
UPDATE BorrowBook
SET ReturnDate = '18-06-2023'
WHERE BookID = 'BK040';
```

```
UPDATE Book
SET Status = 'Tersedia'
WHERE BookID = 'BK040';
```

5. Mencari Letak Buku Berdasarkan Kategori

h. **CREATE TABLE — DDL**

```
CREATE TABLE Book (
    BookID CHAR(5) PRIMARY KEY CHECK (BookID LIKE 'BK[0-9][0-9][0-9]'),
    CategoryID CHAR(5) FOREIGN KEY REFERENCES Category(CategoryID) NOT NULL,
    PublisherID CHAR(5) FOREIGN KEY REFERENCES Publisher(PublisherID) NOT NULL,
    AuthorID CHAR(5) FOREIGN KEY REFERENCES Author(AuthorID) NOT NULL,
```

```
        GenreID CHAR(5) FOREIGN KEY REFERENCES Genre(GenreID) NOT NULL,
        LibraryID CHAR(5) FOREIGN KEY REFERENCES Library(LibraryID) NOT NULL,
        BookTitle VARCHAR(50) NOT NULL,
        PublicationYear DATE NOT NULL
)

CREATE TABLE Library (
        LibraryID CHAR(5) PRIMARY KEY CHECK (LibraryID LIKE 'LB[0-9][0-9][0-9]'),
        Bookshelf CHAR(6) CHECK (Bookshelf LIKE '[A-Z][A-Z][A-Z][0-9][0-9][0-9]'),
        LibraryName VARCHAR(100) NOT NULL,
        LibraryAddress VARCHAR(200) NOT NULL,
        LibraryPhone INT NOT NULL
)

CREATE TABLE Category (
        CategoryID CHAR(5) PRIMARY KEY CHECK (CategoryID LIKE 'CT[0-9][0-9][0-9]'),
        CategoryName VARCHAR(50) NOT NULL
)
```

i. **CREATE VIEW — DML**

Pencarian Buku berdasarkan Kategori

Kategori

| Novel |
| Komik |
| Biografi |
| Science |

Search

Result:

BookID	Book Title	Book Shelf
BK139	Gagal Menjadi Manusia	NV004
BK020	Dalam Coretan Senja	NV004
BK021	Misteri Tersembunyi di Jendela Hati	NV004
BK022	Jejak Langkah di Bawah Cahaya Bulan	NV004
BK023	Dilan	NV004
BK080	Kumalala	NV005

-   Setelah memilih kategori novel dan menekan tombol "Search"

```
CREATE VIEW BookCategory
AS
SELECT
      CategoryName,
      BookID,
      BookTitle,
      Bookshelf
FROM
      Category mc
      JOIN Book mb ON mc.CategoryID = mb.CategoryID
```

```
        JOIN Library ml ON mb.LibraryID = ml.LibraryID
WHERE
        CategoryName = 'Novel'
```

6. Mendonasikan Buku ke Perpustakaan

j. **CREATE TABLE — DDL**

```
CREATE TABLE Book(
        BookID CHAR(5) PRIMARY KEY CHECK (BookID LIKE 'BK[0-9][0-9][0-9]'),
        CategoryID CHAR(5) FOREIGN KEY REFERENCES Category(CategoryID) NOT NULL,
        PublisherID CHAR(5) FOREIGN KEY REFERENCES Publisher(PublisherID) NOT NULL,
        AuthorID CHAR(5) FOREIGN KEY REFERENCES Author(AuthorID) NOT NULL,
```

```
        GenreID CHAR(5) FOREIGN KEY REFERENCES Genre(GenreID) NOT NULL,
        LibraryID CHAR(5) FOREIGN KEY REFERENCES Library(LibraryID) NOT NULL,
        BookTitle VARCHAR(50) NOT NULL,
        PublicationYear DATE NOT NULL
)
```

k. **INSERT INTO — DML**

```
INSERT INTO Author VALUES
        ('AU023', 'Robert Rijayadi', '22-08-1992')

INSERT INTO Publisher VALUES
        ('PB001', 'GramaPublish', 'Birmingham Street Blok 15B', 'gramapublish@company', '129003129')

INSERT INTO Book VALUES
        ('BK212', 'CT004', 'PB001', 'AU023', 'GR012', 'NV004', 'Para Pencari Domba', '10-09-2022')
```

7. Pembelian Membership

l. **CREATE TABLE — DDL**

```
CREATE TABLE TransactionHeader(
    TransactionID CHAR(5) PRIMARY KEY CHECK (TransactionID LIKE 'TA[0-9][0-9[0-9]'),
    MemberID CHAR(5) FOREIGN KEY REFERENCES Member(MemberID) NOT NULL,
    StaffID CHAR(5) FOREIGN KEY REFERENCES Staff(StaffID) NOT NULL,
    TransactionDate DATE NOT NULL
)

CREATE TABLE TransactionDetail(
    TransactionID CHAR(5) FOREIGN KEY REFERENCES TransactionHeader(TransactionID) NOT NULL,
    PackageID CHAR(5) FOREIGN KEY REFERENCES Package(PackageID) NOT NULL
```

```
)
```

m. **INSERT INTO — DML**

- Menekan Tombol "Purchase"

```
INSERT INTO TransactionHeader VALUES
      ('TA023', 'MM001', 'ST006', '20-07-2023')

INSERT INTO TransactionDetail VALUES
      ('TA023', 'PG001')
```