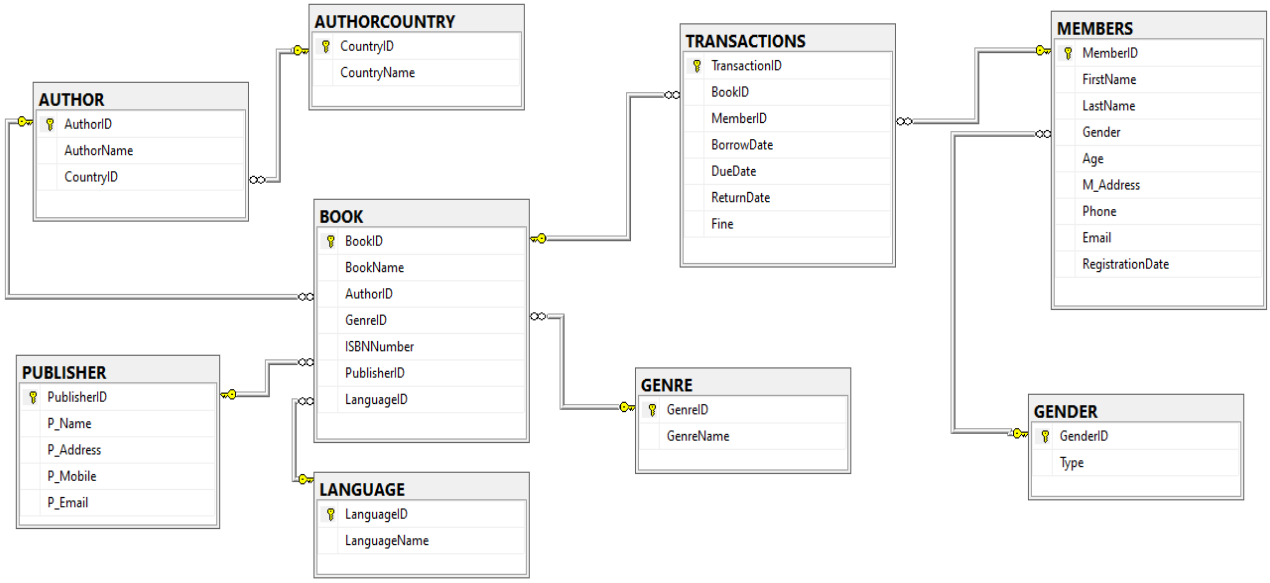
Project :- Designing a Dynamic Library Database

- by Soumajit Das

Description :-

Designing a database schema for a fictional library system involves identifying various entities (objects or concepts) within the system and defining their relationships. It's essential to define primary keys, foreign keys, and appropriate data types for columns to ensure data integrity and efficient querying. Additionally, you may need to further normalize the schema based on specific requirements and to minimize redundancy.

Entity-Relationship Diagram for Library System :-



Creating Statements for the Database :-

1) Creating table for the books

```
CREATE TABLE BOOK(
                    BookID INT IDENTITY(1,1) PRIMARY KEY,
                    BookName VARCHAR(50) NOT NULL,
                    AuthorID INT NOT NULL CHECK (AuthorID BETWEEN 1 AND 12),
                    GenreID INT NOT NULL CHECK (GenreID BETWEEN 1 AND 9),
                    ISBNNumber BIGINT NOT NULL,
                    PublisherID INT NOT NULL CHECK (PublisherID BETWEEN 1 AND 8),
                    LanguageID INT NOT NULL CHECK (LanguageID BETWEEN 1 AND 7),
                    FOREIGN KEY (AuthorID) REFERENCES AUTHOR(AuthorID),
                    FOREIGN KEY (GenreID) REFERENCES GENRE(GenreID),
                    FOREIGN KEY (PublisherID) REFERENCES PUBLISHER(PublisherID),
                    FOREIGN KEY (LanguageID) REFERENCES LANGUAGE(LanguageID)
);
```

2) Creating table for the book authors

```
CREATE TABLE AUTHOR(
                    AuthorID INT IDENTITY(1,1) PRIMARY KEY,
                    AuthorName VARCHAR(50) NOT NULL,
                    CountryID INT NOT NULL CHECK (CountryID BETWEEN 1 AND 4),
                    FOREIGN KEY (CountryID) REFERENCES AUTHORCOUNTRY(CountryID)
);
```

3) Creating table for the country of book authors

```
CREATE TABLE AUTHORCOUNTRY(
                    CountryID INT IDENTITY(1,1) PRIMARY KEY,
                    CountryName VARCHAR(30) NOT NULL
);
```

4) Creating table for genre of the books

```
CREATE TABLE GENRE(
                    GenreID INT IDENTITY(1,1) PRIMARY KEY,
                    GenreName VARCHAR(20) NOT NULL,
);
```

5) Creating table for the book publishers

```
CREATE TABLE PUBLISHER(
                    PublisherID INT IDENTITY(1,1) PRIMARY KEY,
                    P_Name VARCHAR(50) NOT NULL,
                    P_Address VARCHAR(100) NOT NULL,
                    P_Mobile BIGINT NOT NULL,
                    P_Email VARCHAR(100) NOT NULL,
);
```

6) Creating table for the book languages

```
CREATE TABLE LANGUAGE(
        LanguageID INT IDENTITY(1,1) PRIMARY KEY,
        LanguageName VARCHAR(20) NOT NULL
);
```

7) Creating table for members

```
CREATE TABLE MEMBERS(
        MemberID INT IDENTITY(1,1) PRIMARY KEY,
        FirstName VARCHAR(50) NOT NULL,
        LastName VARCHAR(50) NOT NULL,
        Gender VARCHAR(1) NOT NULL CHECK (Gender IN('M', 'F', 'O')),
        Age INT NOT NULL,
        M_Address VARCHAR(100) NOT NULL,
        Phone BIGINT NOT NULL,
        Email VARCHAR(100) NOT NULL,
        RegistrationDate DATE NOT NULL,
        FOREIGN KEY (Gender) REFERENCES GENDER(GenderID)
);
```

8) Creating table of gender of members

```
CREATE TABLE GENDER(
                GenderID VARCHAR(1) PRIMARY KEY,
                Type VARCHAR(15) NOT NULL
);
```

9) Creating table for book transactions

```
CREATE TABLE TRANSACTIONS(
                TransactionID INT IDENTITY(1,1) PRIMARY KEY,
                BookID INT NOT NULL CHECK (BookID BETWEEN 1 AND 16),
                MemberID INT NOT NULL CHECK (MemberID BETWEEN 1 AND 20),
                BorrowDate DATE NOT NULL,
                DueDate DATE NOT NULL,
                ReturnDate DATE NOT NULL,
                Fine DECIMAL(10,2) NOT NULL,
                FOREIGN KEY (BookID) REFERENCES BOOK(BookID),
                FOREIGN KEY (MemberID) REFERENCES MEMBERS(MemberID)
);
```

Insert Statements for the Database :-

1) Inserting records for the books

```
INSERT INTO BOOK(BookName, AuthorID, GenreID, ISBNNumber, PublisherID, LanguageID)
        VALUES('To Kill a Mockingbird', 1, 2, 214125171189, 1, 1),
                ('1984', 2, 1, 342525171134, 2, 2),
                ('The Great Gatsby', 3, 1, 418825171160, 3, 3),
                ('Pride and Prejudice', 4, 4, 214125171189, 1, 1),
                ('The Catcher and the Rye', 5, 3, 900125171119, 7, 6),
                ('The Hobbit', 6, 8, 780125171136, 5, 1),
                ('The Da Vinci Code', 7, 7, 894125171197, 4, 7),
                ('The Alchemist', 8, 9, 114125171100, 7, 3),
                ('Harry Potter and the Sorcerer''s Stone', 9, 8, 694125171131, 8, 1),
                ('The Girl with the Dragon Tattoo', 10, 7, 785125171125, 3, 7),
                ('The Martian', 11, 5, 514125171161, 5, 4),
                ('Gone girl', 12, 6, 804125171177, 6, 1),
                ('Go set a Watchman', 1, 2, 494125171158, 1, 6),
                ('Artemis', 11, 5, 666125171116, 5, 4),
                ('The side of Paradise', 3, 1, 123125171165, 3, 1),
                ('Angels & Demons', 7, 8, 811125171194, 4, 2);
```

2) inserting records for the book authors table

```
INSERT INTO AUTHOR(AuthorName, CountryID)
                VALUES('Harper Lee', 4),
                        ('George Orwell', 1),
                        ('F.Scott Fitzgerald', 2),
                        ('Jane Austen', 3),
                        ('J.D.Salinger', 1),
                        ('J.R.R.Tolkien', 3),
                        ('Dan Brown', 4),
                        ('Paulo Coelho', 3),
                        ('J.K.Rowling', 1),
                        ('Stieg Larsson', 2),
                        ('Andy Weir', 4),
                        ('Gillian Flynn', 1);
```

3) Inserting records to the country of book authors table

```
INSERT INTO AUTHORCOUNTRY(CountryName)
                VALUES('England'),
                        ('France'),
                        ('Netherlands'),
                        ('Germany');
```

4) insert records for genre of the books

```
INSERT INTO GENRE(GenreName)
        VALUES('Fiction'),
                ('Legal Drama'),
                ('Coming-of-age'),
                ('Romance'),
                ('Science'),
                ('Mystery'),
                ('Thriller'),
                ('Fantasy'),
                ('Inspirational');
```

5) Inserting records for the book publishers

```
INSERT INTO PUBLISHER(P_Name, P_Address, P_Mobile, P_Email)
        VALUES('ABC', '123 Main Street, Anytown, USA', '7284247932', 'ABC@gmail.com'),
                ('DEF', '456 Elm Avenue, Springfield, USA', '7884412821', 'DEF@gmail.com'),
                ('GHI', '789 Oak Lane, Lakeside City, USA', '3791371930', 'GHI@gmail.com'),
                ('JKL', '101 Maple Drive, Riverdale, USA', '4739482200', 'JKL@gmail.com'),
                ('MNO', '567 Cedar Road, Hillcrest, USA', '1318414390', 'MNO@gmail.com'),
                ('PQRS', '345 Cherry Avenue, Maplewood, USA', '7214791211', 'PQRS@gmail.com'),
                ('TUV', '678 Sycamore Street, Oakville, USA', '9288292382', 'TUV@gmail.com'),
                ('WXYZ', '112 Willow Lane, Parkside, USA', '1282984331', 'WXYZ@gmail.com');
```

6) Inserting records for the book languages

```
INSERT INTO LANGUAGE(LanguageName)
        VALUES('English'),
                ('Spanish'),
                ('Portuguese'),
                ('Dutch'),
                ('Italian'),
                ('Deutsch'),
                ('French');
```

7) Inserting records for members

```
INSERT INTO MEMBERS(FirstName, LastName, Gender, Age, M_Address, Phone, Email, RegistrationDate)
VALUES('Raja', 'Roy', 'M', 24, '10, Park Street, Kolkata-700024', 9876543210, 'rajaroy@gmail.com', '2020-01-15'),
  ('Chandan', 'Dey', 'M', 27, '25, Camac Street, Kolkata-700029', 8765432109, 'chandandey@gmail.com', '2020-03-08'),
  ('Priti', 'Barik', 'F', 20, '5/1, Strand Road, Kolkata-700020', 7654321098, 'pritibarik@gmail.com', '2020-05-20'),
  ('Amit', 'Dutta', 'M', 32, '15A, Shakespeare Sarani, Kolkata-700012', 6543210987, 'amitdutta@gmail.com', '2020-07-03'),
  ('Soumajit', 'Das', 'M', 27, '8, Rabindra Sarani, Kolkata-700142', 5432109876, 'soumajitdas@gmail.com', '2020-09-18'),
  ('Biswajit', 'Paramanik', 'M', 25, '3, Ho Chi Minh Sarani, Kolkata-700044', 4321098765, 'biswajitparamanik@gmail.com',
'2020-11-05'),
  ('Naren', 'Deol', 'M', 33, '18, Park Lane, Kolkata-700067', 3210987654, 'narendeol@gmail.com', '2021-02-10'),
  ('Abhijit', 'Choubey', 'M', 47, '7, Red Cross Place, Kolkata-700089', 2109876543, 'abhijitchoubey@gmail.com', '2021-04-
22'),
  ('Sunita', 'Thapa', 'F', 32, '21, Old Court House Street, Kolkata-700112', 1098765432, 'sunitathapa@gmail.com', '2021-
06-07'),
  ('Gyani Kumar', 'Singh', 'M', 26, '12A, Netaji Subhas Road, Kolkata-700014', 9876054321,
'gyanikumarsingh@gmail.com', '2021-08-25'),
  ('Riya', 'Majumdar', 'F', 22, '30, Jawaharlal Nehru Road, Kolkata-700017', 9876512345, 'riyamajumdar@gmail.com',
'2021-10-12'),
```

('Antara', 'Sarkar', 'F', 49, '9/1, Middleton Row, Kolkata-700033', 8765423456, 'antarasarkar@gmail.com', '2021-12-30'),
('Tripti', 'Mondal', 'F', 31, '14, Camac Street, Kolkata-700090', 7654334567, 'triptimondal@gmail.com', '2022-03-02'),
('Payel', 'Mondal', 'F', 23, '6, Royd Street, Kolkata-700023', 6543245678, 'payelmondal@gmail.com', '2022-05-14'),
('Rith', 'Dutta', 'M', 21, '22, Camac Street, Kolkata-700084', 5432156789, 'rithdutta@gmail.com', '2022-07-27'),
('Sushmita', 'Sen', 'F', 33, '11, Shakespeare Sarani, Kolkata-700050', 4321067890, 'sushmitasen@gmail.com', '2022-09-09'),
('Diya', 'Paul', 'F', 27, '16, Dr. Sarat Banerjee Road, Kolkata-700039', 3210978901, 'diyapaul@gmail.com', '2022-11-20'),
('Omkar', 'Nandy', 'M', 43, '4, B.B.D. Bagh East, Kolkata-700078', 2109889012, 'omkarnandy@gmail.com', '2023-01-08'),
('Arijit', 'Chakraborty', 'M', 46, '2, Strand Road, Kolkata-700059', 1098790123, 'arijitchakraborty@gmail.com', '2023-04-01'),
('Subarthi', 'Bose', 'M', 22, '17, Park Street, Kolkata-700070', 9087601234, 'subarthibose@gmail.com', '2023-06-19');

8) Inserting records of gender of members

```
INSERT INTO GENDER(GenderID, Type)
        VALUES('M', 'Male'),
                ('F', 'Female'),
                ('O', 'Others');
```

9) Inserting records for book transactions

```
INSERT INTO TRANSACTIONS(BookID, MemberID, BorrowDate, DueDate, ReturnDate, Fine)
        VALUES(2, 3, '2020-01-01', '2020-01-15', '2020-01-15', 0.00),
                (1, 3, '2020-02-03', '2020-02-17', '2020-02-19', 100.00),
                (10, 3, '2020-03-05', '2020-03-19', '2020-03-19', 0.00),
                (16, 1, '2020-04-07', '2020-04-21', '2020-04-21', 0.00),
                (11, 2, '2020-05-09', '2020-05-23', '2020-05-26', 100.00),
                (12, 5, '2020-06-11', '2020-06-25', '2020-06-26', 100.00),
                (3, 4, '2020-07-13', '2020-07-27', '2020-07-27', 0.00),
                (5, 4, '2020-08-15', '2020-08-29', '2020-08-29', 0.00),
                (6, 1, '2020-09-17', '2020-10-01', '2020-10-01', 0.00),
                (5, 2, '2020-10-19', '2020-11-02', '2020-11-03', 100.00),
                (4, 3, '2020-11-21', '2020-12-05', '2020-12-05', 0.00),
                (2, 6, '2020-12-23', '2021-01-06', '2021-01-08', 100.00),
                (1, 5, '2021-01-25', '2021-02-08', '2021-02-10', 100.00),
                (9, 6, '2021-02-27', '2021-03-13', '2021-03-13', 0.00),
                (8, 6, '2021-03-29', '2021-04-12', '2021-04-13', 100.00),
                (6, 4, '2021-04-30', '2021-05-14', '2021-05-14', 0.00),
                (7, 1, '2021-06-01', '2021-06-15', '2021-06-15', 0.00),
                (4, 8, '2021-07-03', '2021-07-17', '2021-07-17', 0.00),
                (2, 9, '2021-08-04', '2021-08-18', '2021-08-21', 100.00),
                (5, 8, '2021-09-05', '2021-09-19', '2021-09-19', 0.00),
                (6, 7, '2021-10-07', '2021-10-21', '2021-10-21', 0.00),
                (16, 9, '2021-10-07', '2021-11-08', '2021-11-11', 100.00),
                (14, 10, '2021-11-08', '2021-11-22', '2021-11-22', 0.00),
                (11, 9, '2021-12-10', '2021-12-24', '2021-12-27', 100.00),
                (12, 1, '2022-01-11', '2022-01-25', '2022-01-27', 100.00),
                (5, 11, '2022-02-12', '2022-02-26', '2022-02-26', 0.00),
                (8, 14, '2022-03-14', '2022-03-28', '2022-03-28', 0.00),
                (6, 17, '2022-04-15', '2022-04-29', '2022-04-29', 0.00),
-               (7, 20, '2022-05-17', '2022-05-31', '2022-05-31', 0.00),
                (8, 19, '2022-06-18', '2022-07-02', '2022-07-06', 100.00),
                (13, 16, '2022-07-20', '2022-08-03', '2022-08-03', 0.00),
```

(7, 15, '2022-08-21', '2022-09-04', '2022-09-04', 0.00),
(6, 12, '2022-09-22', '2022-10-06', '2022-10-06', 0.00),
(7, 13, '2022-10-24', '2022-11-07', '2022-11-10', 100.00),
(3, 18, '2022-11-25', '2022-12-09', '2022-12-09', 0.00),
(4, 13, '2022-12-07', '2023-01-10', '2023-01-10', 0.00),
(10, 14, '2023-01-28', '2023-02-11', '2023-02-11', 0.00),
(9, 20, '2023-03-01', '2023-03-15', '2023-03-15', 0.00),
(16, 18, '2023-04-02', '2023-04-16', '2023-04-16', 0.00),
(10, 17, '2023-05-04', '2023-05-18', '2023-05-21', 100.00),
(5, 13, '2023-06-05', '2023-06-19', '2023-06-19', 0.00),
(2, 12, '2023-07-06', '2023-07-20', '2023-07-20', 0.00),
(10, 14, '2023-08-07', '2023-08-21', '2023-08-21', 0.00),
(12, 16, '2023-09-08', '2023-09-22', '2023-09-22', 0.00);

All the possible Queries and it's output for the Database :-

-> Query to show all the columns of book table

```
SELECT * FROM BOOK;
```

	BookID	BookName	AuthorID	GenreID	ISBNNumber	PublisherID	LanguageID
1	1	To Kill a Mockingbird	1	2	214125171189	1	1
2	2	1984	2	1	342525171134	2	2
3	3	The Great Gatsby	3	1	418825171160	3	3
4	4	Pride and Prejudice	4	4	214125171189	1	1
5	5	The Catcher and the Rye	5	3	900125171119	7	6
6	6	The Hobbit	6	8	780125171136	5	1
7	7	The Da Vinci Code	7	7	894125171197	4	7
8	8	The Alchemist	8	9	114125171100	7	3
9	9	Harry Potter and the Sorcerer's Stone	9	8	694125171131	8	1
10	10	The Girl with the Dragon Tattoo	10	7	785125171125	3	7
11	11	The Martian	11	5	514125171161	5	4
12	12	Gone girl	12	6	804125171177	6	1
13	13	Go set a Watchman	1	2	494125171158	1	6
14	14	Artemis	11	5	666125171116	5	4
15	15	The side of Paradise	3	1	123125171165	3	1
16	16	Angels & Demons	7	8	811125171194	4	2

-> Query to show the list book names

```
SELECT BookName FROM BOOK;
```

	BookName
1	To Kill a Mockingbird
2	1984
3	The Great Gatsby
4	Pride and Prejudice
5	The Catcher and the Rye
6	The Hobbit
7	The Da Vinci Code
8	The Alchemist
9	Harry Potter and the Sorcerer's Stone
10	The Girl with the Dragon Tattoo
11	The Martian
12	Gone girl
13	Go set a Watchman
14	Artemis
15	The side of Paradise
16	Angels & Demons

-> Query to show booknames written by ‘Harper Lee’

```
SELECT BOOK.BookName
FROM BOOK
INNER JOIN AUTHOR ON BOOK.AuthorID=AUTHOR.AuthorID
WHERE AUTHOR.AuthorName='Harper Lee';
```

	BookName
1	To Kill a Mockingbird
2	Go set a Watchman

-> Query to show English language books

```
SELECT BOOK.BookName
FROM BOOK
INNER JOIN LANGUAGE ON BOOK.LanguageID=LANGUAGE.LanguageID
WHERE LANGUAGE.LanguageName='English';
```

	BookName
1	To Kill a Mockingbird
2	Pride and Prejudice
3	The Hobbit
4	Harry Potter and the Sorcerer's Stone
5	Gone girl
6	The side of Paradise

-> Query to show booknames whose genre is ‘Legal Drama’ and ‘Science’(In Outputs booknames must be shown with Genre names)

```
SELECT BOOK.BookName, GENRE.GenreName
FROM BOOK
INNER JOIN GENRE ON BOOK.GenreID=GENRE.GenreID
WHERE GENRE.GenreName IN ('Legal Drama', 'Science');
```

	BookName	GenreName
1	To Kill a Mockingbird	Legal Drama
2	The Martian	Science
3	Go set a Watchman	Legal Drama
4	Artemis	Science

-> Query to show how many books are there in the library for each genre(The list will be sorted by genre names’)

```
SELECT GENRE.GenreName, COUNT(BOOK.BookName) NumOfBooks
FROM BOOK
INNER JOIN GENRE ON BOOK.GenreID=GENRE.GenreID
GROUP BY GENRE.GenreName
ORDER BY GENRE.GenreName;
```

	GenreName	NumOfBooks
1	Coming-of-age	1
2	Fantasy	3
3	Fiction	3
4	Inspirational	1
5	Legal Drama	2
6	Mystery	1
7	Romance	1
8	Science	2
9	Thriller	2

-> Query to show booknames with publisher details that has ‘Street’ word in their addresses

```
SELECT BOOK.BookName, PUBLISHER.P_Name, PUBLISHER.P_Address, PUBLISHER.P_Mobile, PUBLISHER.P_Email
FROM BOOK
INNER JOIN PUBLISHER ON BOOK.PublisherID=PUBLISHER.PublisherID
WHERE PUBLISHER.P_Address LIKE '%Street%';
```

	BookName	P_Name	P_Address	P_Mobile	P_Email
1	To Kill a Mockingbird	ABC	123 Main Street, Anytown, USA	7284247932	ABC@gmail.com
2	Pride and Prejudice	ABC	123 Main Street, Anytown, USA	7284247932	ABC@gmail.com
3	The Catcher and the Rye	TUV	678 Sycamore Street, Oakville, USA	9288292382	TUV@gmail.com
4	The Alchemist	TUV	678 Sycamore Street, Oakville, USA	9288292382	TUV@gmail.com
5	Go set a Watchman	ABC	123 Main Street, Anytown, USA	7284247932	ABC@gmail.com

-> Query to show the booknames along with its author who is from ‘England’

```
SELECT BOOK.BookName, AUTHOR.AuthorName
FROM BOOK
INNER JOIN AUTHOR ON BOOK.AuthorID=AUTHOR.AuthorID
WHERE AUTHOR.AuthorID IN
(SELECT AUTHOR.AuthorID FROM AUTHOR
INNER JOIN AUTHORCOUNTRY ON AUTHOR.CountryID=AUTHORCOUNTRY.CountryID
WHERE CountryName='England');
```

	BookName	AuthorName
1	1984	George Orwell
2	The Catcher and the Rye	J.D.Salinger
3	Harry Potter and the Sorcerer's Stone	J.K.Rowling
4	Gone girl	Gillian Flynn

-> Query to show the booknames along with author names whose id is between 4 to 8

```
SELECT BOOK.BookName, AUTHOR.AuthorName
FROM BOOK
INNER JOIN AUTHOR ON BOOK.AuthorID=AUTHOR.AuthorID
WHERE AUTHOR.AuthorID BETWEEN 4 AND 8;
```

	BookName	AuthorName
1	Pride and Prejudice	Jane Austen
2	The Catcher and the Rye	J.D.Salinger
3	The Hobbit	J.R.R.Tolkien
4	The Da Vinci Code	Dan Brown
5	The Alchemist	Paulo Coelho
6	Angels & Demons	Dan Brown

-> Query to show the member details whose name start with ‘R’

```
SELECT * FROM MEMBERS WHERE FirstName LIKE 'R%';
```

	MemberID	FirstName	LastName	Gender	Age	M_Address	Phone	Email	RegistrationDate
1	1	Raja	Roy	M	24	10, Park Street, Kolkata-700024	9876543210	rajaroy@gmail.com	2020-01-15
2	11	Riya	Majumdar	F	22	30, Jawaharlal Nehru Road, Kolkata-700017	9876512345	riyamajumdar@gmail.com	2021-10-12
3	15	Rith	Dutta	M	21	22, Camac Street, Kolkata-700084	5432156789	rithdutta@gmail.com	2022-07-27

-> Query to show the member details who are from ‘Park Street’ area

```
SELECT * FROM MEMBERS WHERE M_Address LIKE '%Park Street%';
```

	MemberID	FirstName	LastName	Gender	Age	M_Address	Phone	Email	RegistrationDate
1	1	Raja	Roy	M	24	10, Park Street, Kolkata-700024	9876543210	rajaroy@gmail.com	2020-01-15
2	20	Subarthi	Bose	M	22	17, Park Street, Kolkata-700070	9087601234	subarthibose@gmail.com	2023-06-19

-> Query to show the member details who are under 30

```
SELECT * FROM MEMBERS WHERE Age<30;
```

	MemberID	FirstName	LastName	Gender	Age	M_Address	Phone	Email	RegistrationDate
1	1	Raja	Roy	M	24	10, Park Street, Kolkata-700024	9876543210	rajaroy@gmail.com	2020-01-15
2	2	Chandan	Dey	M	27	25, Camac Street, Kolkata-700029	8765432109	chandandey@gmail.com	2020-03-08
3	3	Priti	Barik	F	20	5/1, Strand Road, Kolkata-700020	7654321098	pritibarik@gmail.com	2020-05-20
4	5	Soumajit	Das	M	27	8, Rabindra Sarani, Kolkata-700142	5432109876	soumajitdas@gmail.com	2020-09-18
5	6	Biswajit	Paramanik	M	25	3, Ho Chi Minh Sarani, Kolkata-700044	4321098765	biswajitparamanik@gmail.com	2020-11-05
6	10	Gyani Kumar	Singh	M	26	12A, Netaji Subhas Road, Kolkata-700014	9876054321	gyanikumarsingh@gmail.com	2021-08-25
7	11	Riya	Majumdar	F	22	30, Jawaharlal Nehru Road, Kolkata-700017	9876512345	riyamajumdar@gmail.com	2021-10-12
8	14	Payel	Mondal	F	23	6, Royd Street, Kolkata-700023	6543245678	payelmondal@gmail.com	2022-05-14
9	15	Rith	Dutta	M	21	22, Camac Street, Kolkata-700084	5432156789	rithdutta@gmail.com	2022-07-27
10	17	Diya	Paul	F	27	16, Dr. Sarat Banerjee Road, Kolkata-700039	3210978901	diyapaul@gmail.com	2022-11-20
11	20	Subarthi	Bose	M	22	17, Park Street, Kolkata-700070	9087601234	subarthibose@gmail.com	2023-06-19

-> Query to show the phone number of ‘Soumajit Das’

```
SELECT Phone FROM MEMBERS WHERE CONCAT(FirstName, ' ', LastName)='Soumajit Das';
```

	Phone
1	5432109876

-> Query to show the number of members grouping by their genders

```
SELECT GENDER.Type, COUNT(MEMBERS.MemberID) NumOfPersons
FROM MEMBERS
INNER JOIN GENDER ON MEMBERS.Gender=GENDER.GenderID
GROUP BY GENDER.Type;
```

	Type	NumOfPersons
1	Female	8
2	Male	12

-> Query to show the members who joined between 2020 to 2022

```
SELECT CONCAT(MEMBERS.FirstName, ' ', MEMBERS.LastName) Members
FROM MEMBERS
WHERE RegistrationDate BETWEEN '2020-01-01' AND '2021-12-31';
```

	Members
1	Raja Roy
2	Chandan Dey
3	Priti Barik
4	Amit Dutta
5	Soumajit Das
6	Biswajit Paramanik
7	Naren Deol
8	Abhijit Choubey
9	Sunita Thapa
10	Gyani Kumar Singh
11	Riya Majumdar
12	Antara Sarkar

-> Query to show all the transactions of ‘Raja Roy’

```
SELECT BOOK.BookName,
        TRANSACTIONS.TransactionID,
        TRANSACTIONS.BorrowDate,
        TRANSACTIONS.DueDate,
        TRANSACTIONS.ReturnDate
FROM TRANSACTIONS
INNER JOIN BOOK ON BOOK.BookID=TRANSACTIONS.BookID
INNER JOIN MEMBERS ON MEMBERS.MemberID=TRANSACTIONS.MemberID
WHERE (FirstName + ' ' + LastName) = 'Raja Roy';
```

	BookName	TransactionID	BorrowDate	DueDate	ReturnDate
1	Angels & Demons	4	2020-04-07	2020-04-21	2020-04-21
2	The Hobbit	9	2020-09-17	2020-10-01	2020-10-01
3	The Da Vinci Code	17	2021-06-01	2021-06-15	2021-06-15
4	Gone girl	25	2022-01-11	2022-01-25	2022-01-27

-> Query to count number of people got fined for late book returning and show total fined amount

```
SELECT COUNT(MemberID) FinedPeople,
        SUM(Fine) TotalFine
FROM TRANSACTIONS WHERE Fine>0;
```

	FinedPeople	TotalFine
1	14	1400.00

-> Query to show all the books with its full details(not id numbers)

```
SELECT BOOK.BookID,
        BOOK.BookName,
        AUTHOR.AuthorName,
        GENRE.GenreName,
        PUBLISHER.P_Name,
        LANGUAGE.LanguageName
FROM BOOK
INNER JOIN AUTHOR ON AUTHOR.AuthorID=BOOK.AuthorID
INNER JOIN GENRE ON GENRE.GenreID=BOOK.GenreID
INNER JOIN PUBLISHER ON PUBLISHER.PublisherID=BOOK.PublisherID
INNER JOIN LANGUAGE ON LANGUAGE.LanguageID=BOOK.LanguageID;
```

	BookID	BookName	AuthorName	GenreName	P_Name	LanguageName
1	1	To Kill a Mockingbird	Harper Lee	Legal Drama	ABC	English
2	2	1984	George Orwell	Fiction	DEF	Spanish
3	3	The Great Gatsby	F.Scott Fitzgerald	Fiction	GHI	Portuguese
4	4	Pride and Prejudice	Jane Austen	Romance	ABC	English
5	5	The Catcher and the Rye	J.D.Salinger	Coming-of-age	TUV	Deutsch
6	6	The Hobbit	J.R.R.Tolkien	Fantasy	MNO	English
7	7	The Da Vinci Code	Dan Brown	Thriller	JKL	French
8	8	The Alchemist	Paulo Coelho	Inspirational	TUV	Portuguese
9	9	Harry Potter and the Sorcerer's Stone	J.K.Rowling	Fantasy	WXYZ	English
10	10	The Girl with the Dragon Tattoo	Stieg Larsson	Thriller	GHI	French
11	11	The Martian	Andy Weir	Science	MNO	Dutch
12	12	Gone girl	Gillian Flynn	Mystery	PQRS	English
13	13	Go set a Watchman	Harper Lee	Legal Drama	ABC	Deutsch
14	14	Artemis	Andy Weir	Science	MNO	Dutch
15	15	The side of Paradise	F.Scott Fitzgerald	Fiction	GHI	English
16	16	Angels & Demons	Dan Brown	Fantasy	JKL	Spanish

-> Query to show all possible transactions(i.e., issue dates) of 2021 to 2023 with the member names and book names

```
SELECT TRANSACTIONS.TransactionID,
        CONCAT(MEMBERS.FirstName, ' ', MEMBERS.LastName) FullName,
        BOOK.BookName,
        TRANSACTIONS.BorrowDate
FROM TRANSACTIONS
INNER JOIN BOOK ON TRANSACTIONS.BookID=BOOK.BookID
INNER JOIN MEMBERS ON TRANSACTIONS.MemberID=MEMBERS.MemberID
WHERE TRANSACTIONS.BorrowDate BETWEEN '2021-01-01' AND '2022-12-31';
```

	TransactionID	FullName	BookName	BorrowDate
1	13	Soumajit Das	To Kill a Mockingbird	2021-01-25
2	14	Biswajit Paramanik	Harry Potter and the Sorcerer's Stone	2021-02-27
3	15	Biswajit Paramanik	The Alchemist	2021-03-29
4	16	Amit Dutta	The Hobbit	2021-04-30
5	17	Raja Roy	The Da Vinci Code	2021-06-01
6	18	Abhijit Choubey	Pride and Prejudice	2021-07-03
7	19	Sunita Thapa	1984	2021-08-04
8	20	Abhijit Choubey	The Catcher and the Rye	2021-09-05
9	21	Naren Deol	The Hobbit	2021-10-07
10	22	Sunita Thapa	Angels & Demons	2021-10-07
11	23	Gyani Kumar Sin...	Artemis	2021-11-08
12	24	Sunita Thapa	The Martian	2021-12-10
13	25	Raja Roy	Gone girl	2022-01-11
14	26	Riya Majumdar	The Catcher and the Rye	2022-02-12
15	27	Payel Mondal	The Alchemist	2022-03-14
16	28	Diya Paul	The Hobbit	2022-04-15
17	29	Subarthi Bose	The Da Vinci Code	2022-05-17
18	30	Arijit Chakraborty	The Alchemist	2022-06-18
19	31	Sushmita Sen	Go set a Watchman	2022-07-20
20	32	Rith Dutta	The Da Vinci Code	2022-08-21
21	33	Antara Sarkar	The Hobbit	2022-09-22
22	34	Tripti Mondal	The Da Vinci Code	2022-10-24
23	35	Omkar Nandy	The Great Gatsby	2022-11-25
24	36	Tripti Mondal	Pride and Prejudice	2022-12-07

-> Query to differentiate the old and young members of the library along with their names

```
SELECT CONCAT(FirstName, ' ', LastName) FullName,
        CASE
                WHEN Age>=30 THEN 'Old Member'
                WHEN Age<30 THEN 'Young Member'
        END MemberType
FROM MEMBERS;
```

	FullName	MemberType
1	Raja Roy	Young Member
2	Chandan Dey	Young Member
3	Priti Barik	Young Member
4	Amit Dutta	Old Member
5	Soumajit Das	Young Member
6	Biswajit Paramanik	Young Member
7	Naren Deol	Old Member
8	Abhijit Choubey	Old Member
9	Sunita Thapa	Old Member
10	Gyani Kumar Singh	Young Member
11	Riya Majumdar	Young Member
12	Antara Sarkar	Old Member
13	Tripti Mondal	Old Member
14	Payel Mondal	Young Member
15	Rith Dutta	Young Member
16	Sushmita Sen	Old Member
17	Diya Paul	Young Member
18	Omkar Nandy	Old Member
19	Arijit Chakraborty	Old Member
20	Subarthi Bose	Young Member