

DBMS PROJECT

LIBRARY DATABASE

DESIGNED BY:

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PROBLEM STATEMENT

This database will be helpful to track the books in the library online.

Only valid users will be able to access this Library Database. Through this Database, it will be easy to manage accounts and various details of particular member along with the records of book.



ER-MODEL

This Database includes the following entities:

1) BOOKS:

It contains books with unique ISBN.

Attributes: ISBN, EDITION, BOOK_TITLE, PAGES

Primary Key: ISBN.

2) AUTHOR:

It contains author information.

Attributes: Author_Id, NAME, DOB, AGE

Primary Key: Author_Id.

3) LITERATURE_CATEGORY:

This stores the genre/type of a particular book.

Attributes: Literature_Id, Category_Name

Primary Key: Literature_Id.

4) PUBLISHER:

This stores all the Publisher's information.

Attributes: Publisher_Id, Name, Country, Established Year

Primary Key: Publisher_Id.

5) BOOK ITEM:

This entity has all the copies of all the types of books available in the library.

Attributes: BOOK_ID.

Primary Key: BOOK_ID.

6) LOANED BOOK:

It contains all the details about a book which is loaned by a Particular member.

Attributes: LOANEDBOOK_ID, DATE_LOANED, DATE_RETURNED, DAYS_LIMIT, OVERDUE_FINE

Primary Key: LOANEDBOOK_ID.

7) MEMBERS:

It contains all the details about the members of the library.

Attributes: Member_ID, Name, Email, Phone Number, Address

Primary Key: Member_ID.

RELATIONS BETWEEN ENTITIES:

1) WRITTEN BY:

Many-Many relations which establishes

Between **AUTHOR** and **BOOKS** entities meaning one

Book may be written by many authors and one author may

Write many books.

2) TYPE OF BOOK:

Many-One relation from **BOOKS** TO

LITERATURE_CATEGORY as every book has to fall into one

Of the types and here it is assumed that one book may not have multiple types.

3) COPIES:

One-Many relations from **BOOKS** to **BOOKITEM**.

Copies of different books (ISBN's) are uniquely identified in **BOOKITEM** entity.

4) PUBLISHING:

Many-One relation between **BOOKS** and **PUBLISHER** considering the fact that many books may Be published by one publisher. Here a BOOK may present Without the Publisher also.

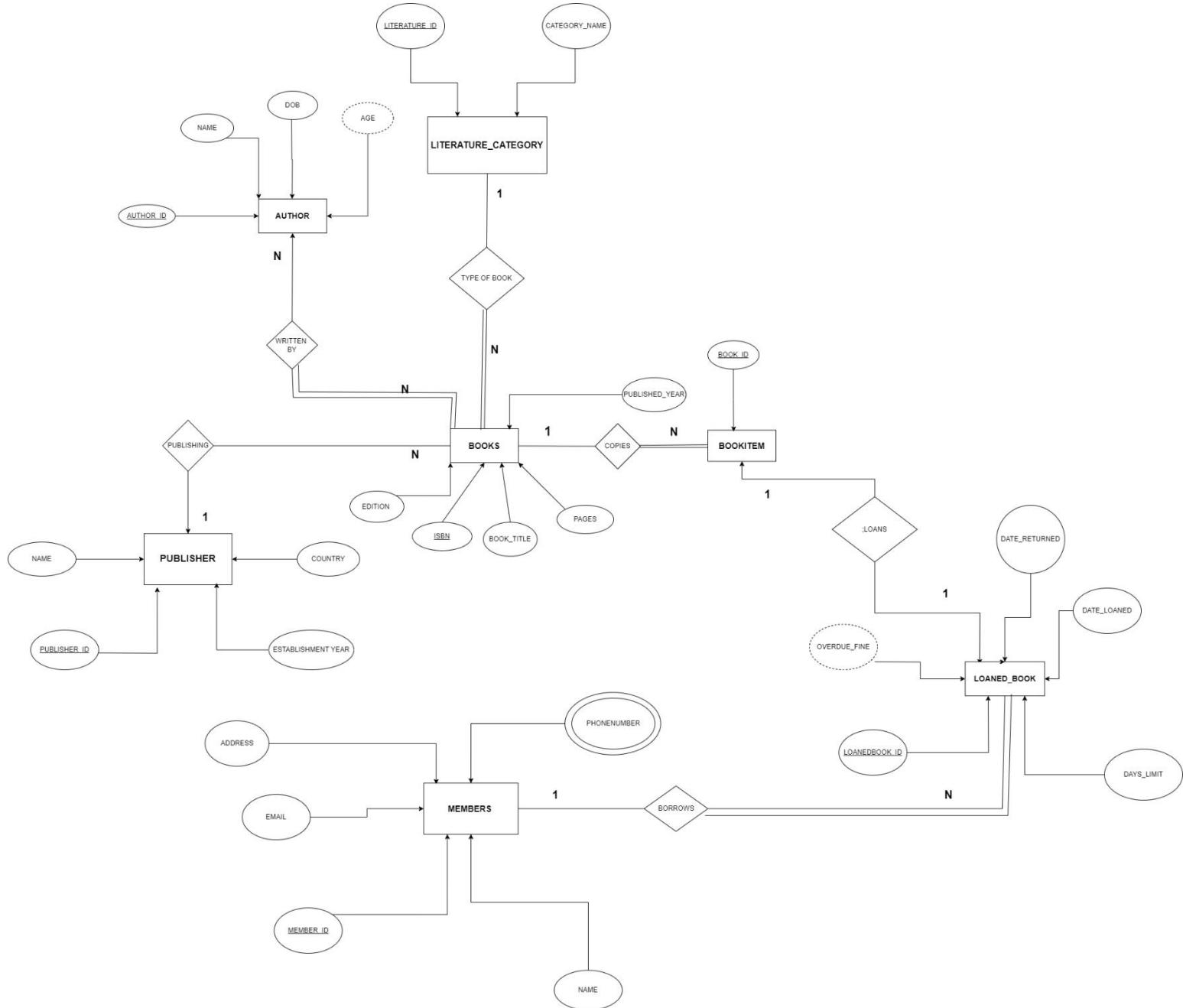
5) BORROWS:

One-Many relations from **MEMBERS** to **LOANEDBOOK**.

6) LOANS:

One-One relation between **BOOKITEM** and **LOANEDBOOK**. It establishes relation between all books available to the Books which are loaned.

ER-DIAGRAM

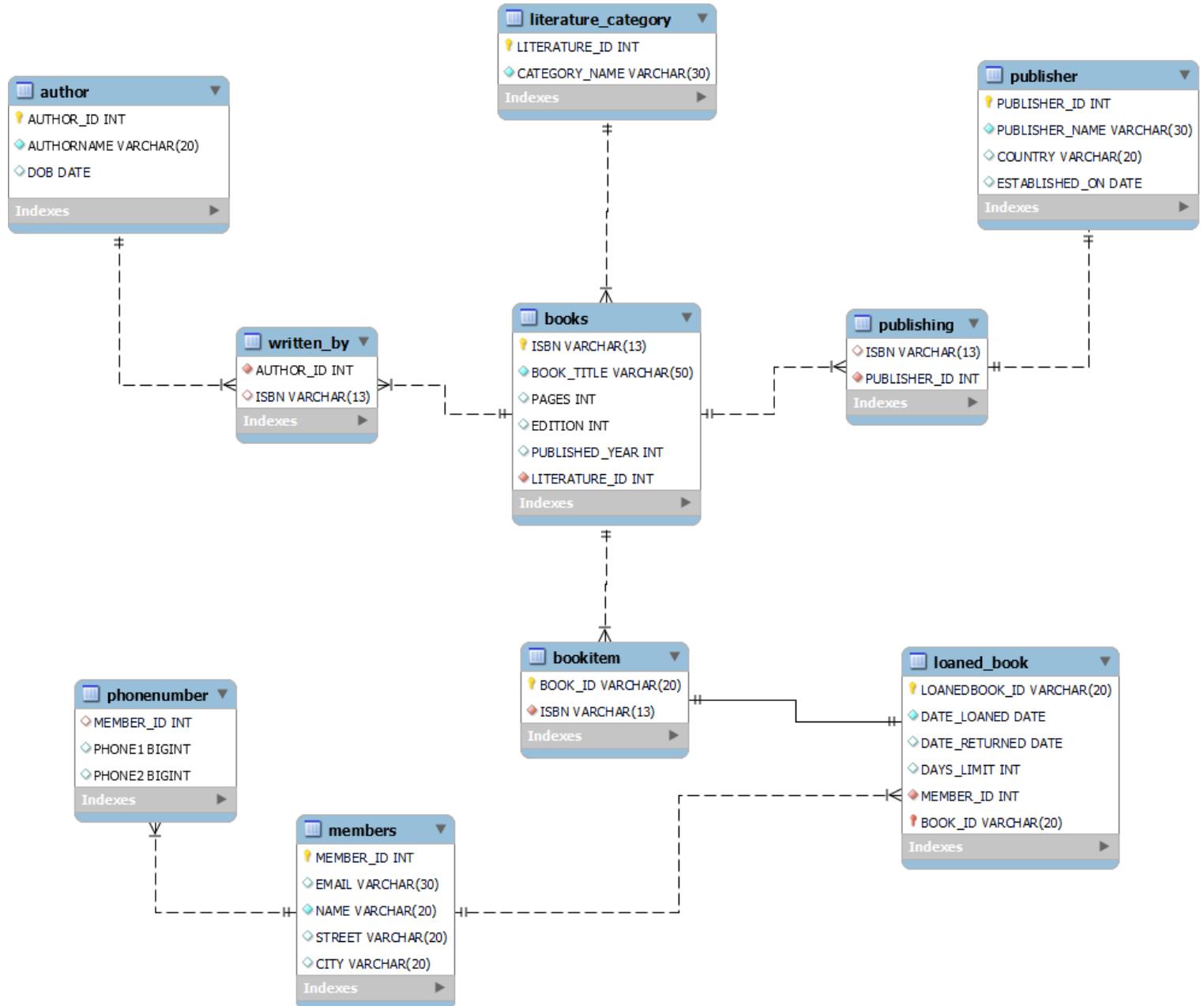


ER-MODEL TO RELATIONAL MODEL

RELATIONS/TABLES:

- 1)BOOKS
- 2)AUTHOR
- 3)WRITTEN_BY
- 4)LITERATURE_CATEGORY
- 5)PUBLISHER
- 6)PUBLISHING
- 7)BOOKITEM
- 8)LOANED_BOOK
- 9)MEMBERS
- 10)PHONE NUMBER

RELATIONAL SCHEMA



ASSUMPTIONS

- Every Book need not have a Publisher.
- Over Due Fine for each day after days limit reached is Rs.2 per book Irrespective of No_of_Pages.
- A Member can give at max two of his phone numbers.
- There can be different ISBN with same book title.

NORMALISATION:

BOOKS

ATTRIBUTE	DATATYPE	CONSTRAINTS
ISBN	VARCHAR (13)	PRIMARY KEY NOT NULL
BOOK_TITLE	VARCHAR (50)	NOT NULL
PAGES	INT	CAN BE NULL
EDITION	INT	CAN BE NULL
PUBLISHED_YEAR	INT	CAN BE NULL
LITERATURE_ID	INT	FOREIGN KEY NOT NULL

FUNCTIONAL DEPENDENCY:

- ISBN \rightarrow (BOOK_TITLE, PAGES, EDITION, PUBLISHED_YEAR, LITERATURE_ID)
 - ISBN is the PRIMARY KEY
- ❖ NO PARTIAL DEPENDENCY SO IN **2NF**
- ❖ NO TRANSITIVE DEPENDENCY SO IN **3NF**
- ❖ The Entity is in **BCNF**

BOOK_ITEM

ATTRIBUTE	DATATYPE	CONSTRAINTS
BOOK_ID	VARCHAR (20)	PRIMARY KEY NOT NULL
ISBN	VARCHAR (13)	FOREIGN KEY NOT NULL

FUNCTIONAL DEPENDENCY:

- BOOK_ID \rightarrow (ISBN)
- BOOK_ID is the PRIMARY KEY
- ❖ NO PARTIAL DEPENDENCY SO IN **2NF**
- ❖ NO TRANSITIVE DEPENDENCY SO IN **3NF**
- ❖ The Entity is in **BCNF**

AUTHOR

ATTRIBUTE	DATATYPE	CONSTRAINTS
AUTHOR_ID	INT	PRIMARY KEY NOT NULL
AUTHOR_NAME	VARCHAR (20)	NOT NULL
DOB	DATE	CAN BE NULL

FUNCTIONAL DEPENDENCY:

- AUTHOR_ID \rightarrow (AUTHOR_NAME, DOB)
- AUTHOR_ID is the PRIMARY KEY
- ❖ NO PARTIAL DEPENDENCY SO IN **2NF**
- ❖ NO TRANSITIVE DEPENDENCY SO IN **3NF**
- ❖ The Entity is in **BCNF**

WRITTEN BY

ATTRIBUTE	DATATYPE	CONSTRAINTS
AUTHOR_ID	INT	FOREIGN KEY NOT NULL
ISBN	VARCHAR (13)	FOREIGN KEY CAN BE NULL

FUNCTIONAL DEPENDENCY:

- NO NON_TRIVIAL FD
- ❖ NO PARTIAL DEPENDENCY SO IN **2NF**
- ❖ NO TRANSITIVE DEPENDENCY SO IN **3NF**
- ❖ The Entity is in **BCNF**

LITERATURE_CATEGORY

ATTRIBUTE	DATATYPE	CONSTRAINTS
LITERATURE_ID	INT	PRIMARY KEY NOT NULL
CATEGORY_NAME	VARCHAR (30)	NOT NULL

FUNCTIONAL DEPENDENCY:

- LITERATURE_ID \rightarrow (ISBN)
- LITERATURE_ID is the PRIMARY KEY
- ❖ NO PARTIAL DEPENDENCY SO IN **2NF**
- ❖ NO TRANSITIVE DEPENDENCY SO IN **3NF**
- ❖ The Entity is in **BCNF**

PUBLISHING

ATTRIBUTE	DATATYPE	CONSTRAINTS
PUBLISHER_ID	INT	FOREIGN KEY NOT NULL
ISBN	VARCHAR (13)	FOREIGN KEY

FUNCTIONAL DEPENDENCY:

- NO NON_TRIVIAL FD
- ❖ NO PARTIAL DEPENDENCY SO IN **2NF**
- ❖ NO TRANSITIVE DEPENDENCY SO IN **3NF**
- ❖ The Entity is in **BCNF**

PUBLISHER

ATTRIBUTE	DATATYPE	CONSTRAINTS
PUBLISHER_ID	INT	PRIMARY KEY NOT NULL
PUBLISHER_NAME	VARCHAR (30)	NOT NULL
COUNTRY	VARCHAR (20)	CAN BE NULL
ESTABLISHED_ON	DATE	CAN BE NULL

FUNCTIONAL DEPENDENCY:

- PUBLISHER_ID -> (PUBLISHER_NAME, COUNTRY, ESTABLISHED_ON)
- PUBLISHER_ID is the PRIMARY KEY
- ❖ NO PARTIAL DEPENDENCY SO IN **2NF**
- ❖ NO TRANSITIVE DEPENDENCY SO IN **3NF**
- ❖ The Entity is in **BCNF**

LOANED_BOOK

ATTRIBUTE	DATATYPE	CONSTRAINTS
LOANEDBOOK_ID	VARCHAR (20)	PRIMARY KEY NOT NULL
DATE_LOANED	DATE	NOT NULL
DATE_RETURNED	DATE	CAN BE NULL
DAYS_LIMIT	INT	CAN BE NULL
MEMBER_ID	INT	FOREIGN KEY NOT NULL
BOOK_ID	VARCHAR (20)	FOREIGN KEY NOT NULL UNIQUE

FUNCTIONAL DEPENDENCY:

- LOANEDBOOK_ID \rightarrow (DATE_LOANED, DATE_RETURNED, DATE_DUE, MEMBER_ID, BOOK_ID)
- LOANEDBOOK_ID is the PRIMARY KEY

- ❖ NO PARTIAL DEPENDENCY SO IN 2NF
- ❖ NO TRANSITIVE DEPENDENCY SO IN 3NF
- ❖ The Entity is in BCNF

MEMBERS

ATTRIBUTE	DATATYPE	CONSTRAINTS
MEMBER_ID	INT	PRIMARY KEY NOT NULL
EMAIL	VARCHAR (30)	CAN BE NULL
NAME	VARCHAR (20)	NOT NULL
STREET	VARCHAR (20)	CAN BE NULL
CITY	VARCHAR (20)	CAN BE NULL

FUNCTIONAL DEPENDENCY:

- MEMBER_ID \rightarrow (EMAIL, NAME, STREET, CITY)
 - MEMBER_ID is the PRIMARY KEY
- ❖ NO PARTIAL DEPENDENCY SO IN **2NF**
- ❖ NO TRANSITIVE DEPENDENCY SO IN **3NF**
- ❖ The Entity is in **BCNF**

PHONE NUMBER

ATTRIBUTE	DATATYPE	CONSTRAINTS
MEMBER_ID	INT	FOREIGN KEY NOT NULL
PHONE1	BIGINT	NOT NULL
PHONE2	BIGINT	CAN BE NULL

FUNCTIONAL DEPENDENCY:

- MEMBER_ID \rightarrow (PHONE1, PHONE2)
 - MEMBER_ID is the FOREIGN KEY AND SUPER KEY
- ❖ NO PARTIAL DEPENDENCY SO IN **2NF**
- ❖ NO TRANSITIVE DEPENDENCY SO IN **3NF**
- ❖ The Entity is in **BCNF**

CREATION AND INSERTION:

SQL:

USE LIBRARY;

```
CREATE TABLE LITERATURE_CATEGORY (
    LITERATURE_ID INT,
    CATEGORY_NAME VARCHAR (30) NOT NULL,
    PRIMARY KEY(LITERATURE_ID)
);
```

-- LITERATURE_CATEGORY

```
INSERT INTO LITERATURE_CATEGORY (LITERATURE_ID, CATEGORY_NAME) VALUES
(1, 'Fiction'),
(2, 'Fantasy'),
(3, 'Science Fiction'),
(4, 'Mystery'),
(5, 'Thriller'),
(6, 'Romance'),
(7, 'Historical Fiction'),
(8, 'Horror'),
```

(9, 'Non-fiction'),

(10, 'Biography'),

(11, 'Memoir'),

(12, 'Self-help'),

(13, 'Poetry'),

(14, 'Drama'),

(15, 'Comedy');

SELECT * FROM LITERATURE_CATEGORY;

LITERATURE_ID	CATEGORY_NAME
1	Fiction
2	Fantasy
3	Science Fiction
4	Mystery
5	Thriller
6	Romance
7	Historical Fiction
8	Horror
9	Non-fiction
10	Biography
11	Memoir
12	Self-help
13	Poetry
14	Drama
15	Comedy

CREATE TABLE AUTHOR (

AUTHOR_ID INT,

AUTHORNAME VARCHAR (20) NOT NULL,

DOB DATE,
PRIMARY KEY(AUTHOR_ID)
);

-- AUTHOR

```
INSERT INTO AUTHOR (AUTHOR_ID, AUTHORNAME, DOB) VALUES  
(1, 'Jane Austen', '1775-12-16'),  
(2, 'William Shakespeare', '1564-04-23'),  
(3, 'J.K. Rowling', '1965-07-31'),  
(4, 'Mark Twain', '1835-11-30'),  
(5, 'George Orwell', '1903-06-25'),  
(6, 'Agatha Christie', '1890-09-15'),  
(7, 'F. Scott Fitzgerald', '1896-09-24'),  
(8, 'Stephen King', '1947-09-21'),  
(9, 'Harper Lee', '1926-04-28'),  
(10, 'J.R.R. Tolkien', '1892-01-03'),  
(11, 'Ernest Hemingway', '1899-07-21'),  
(12, 'Leo Tolstoy', '1828-09-09'),  
(13, 'Charles Dickens', '1812-02-07'),  
(14, 'Emily Bronte', '1818-07-30'),  
(15, 'Virginia Woolf', '1882-01-25');
```

SELECT * FROM AUTHOR;

AUTHOR_ID	AUTHORNAME	DOB
1	Jane Austen	1775-12-16
2	William Shakespeare	1564-04-23
3	J.K. Rowling	1965-07-31
4	Mark Twain	1835-11-30
5	George Orwell	1903-06-25
6	Agatha Christie	1890-09-15
7	F. Scott Fitzgerald	1896-09-24
8	Stephen King	1947-09-21
9	Harper Lee	1926-04-28
10	J.R.R. Tolkien	1892-01-03
11	Ernest Hemingway	1899-07-21
12	Leo Tolstoy	1828-09-09
13	Charles Dickens	1812-02-07
14	Emily Bronte	1818-07-30
15	Virginia Woolf	1882-01-25

CREATE TABLE PUBLISHER (

PUBLISHER_ID INT,

PUBLISHER_NAME VARCHAR (30) NOT NULL,

COUNTRY VARCHAR (20),

ESTABLISHED_ON DATE,

PRIMARY KEY(PUBLISHER_ID)

);

-- PUBLISHER

INSERT INTO PUBLISHER (PUBLISHER_ID, PUBLISHER_NAME, COUNTRY, ESTABLISHED_ON) VALUES

(1, 'Penguin Random House', 'United States', '1927-07-01'),

(2, 'HarperCollins', 'United States', '1989-06-22'),

(3, 'Simon & Schuster', 'United States', '1924-04-01'),

(4, 'Macmillan Publishers', 'United Kingdom', '1843-09-01'),

(5, 'Hachette Livre', 'France', '1826-11-01'),

(6, 'Oxford University Press', 'United Kingdom', '1478-01-01'),

(7, 'Pearson Education', 'United Kingdom', '1844-01-01'),

(8, 'Bloomsbury Publishing', 'United Kingdom', '1986-01-01'),

(9, 'Wiley', 'United States', '1807-02-01'),

(10, 'Scholastic Corporation', 'United States', '1920-10-01'),

(11, 'Random House', 'United States', '1925-01-01'),

(12, 'Houghton Mifflin Harcourt', 'United States', '1832-01-01'),

(13, 'Pan Macmillan', 'Australia', '1843-01-01'),

(14, 'Harlequin Enterprises', 'Canada', '1949-01-01'),

(15, 'Cambridge University Press', 'United Kingdom', '1534-02-01'),

(16, 'Penguin India', 'India', '1985-02-01'),

(17, 'Rupa Publications', 'India', '1936-01-01'),

(18, 'SAGE Publications', 'India', '1965-01-01');

SELECT * FROM PUBLISHER;

PUBLISHER_ID	PUBLISHER_NAME	COUNTRY	ESTABLISHED_ON
1	Penguin Random House	United States	1927-07-01
2	HarperCollins	United States	1989-06-22
3	Simon & Schuster	United States	1924-04-01
4	Macmillan Publishers	United Kingdom	1843-09-01
5	Hachette Livre	France	1826-11-01
6	Oxford University Press	United Kingdom	1478-01-01
7	Pearson Education	United Kingdom	1844-01-01
8	Bloomsbury Publishing	United Kingdom	1986-01-01
9	Wiley	United States	1807-02-01
10	Scholastic Corporation	United States	1920-10-01
11	Random House	United States	1925-01-01
12	Houghton Mifflin Harcourt	United States	1832-01-01
13	Pan Macmillan	Australia	1843-01-01
14	Harlequin Enterprises	Canada	1949-01-01
15	Cambridge University P...	United Kingdom	1534-02-01
16	Penguin India	India	1985-02-01
17	Rupa Publications	India	1936-01-01
18	SAGE Publications	India	1965-01-01

-- drop table books;

CREATE TABLE BOOKS (

ISBN VARCHAR (13),

BOOK_TITLE VARCHAR (50) NOT NULL,

PAGES INT,

EDITION INT,

PUBLISHED_YEAR INT,

LITERATURE_ID INT NOT NULL,

PRIMARY KEY(ISBN),

**FOREIGN KEY (LITERATURE_ID) REFERENCES
LITERATURE_CATEGORY(LITERATURE_ID)**

);

-- BOOKS

INSERT INTO BOOKS (ISBN, BOOK_TITLE, PAGES, EDITION, PUBLISHED_YEAR, LITERATURE_ID) VALUES ('9780142437208', 'Pride and Prejudice', 279, 1, 1813, 1),
('9780743273564', 'The Great Gatsby', 180, 2, 1925, 2),
('9780439136365', 'Harry Potter and the Sorcerers Stone', 320, 1, 1997, 3),
('9780061120084', 'To Kill a Mockingbird', 324, 1, 1960, 4),
('9780451524935', '1984', 328, 1, 1949, 5),
('9780007117116', 'The Hobbit', 310, 1, 1937, 6),
('9780062073488', 'The Catcher in the Rye', 277, 1, 1951, 7),
('9780544003415', 'The Lord of the Rings', 1178, 1, 1954, 8),
('9780684801469', 'The Old Man and the Sea', 127, 1, 1952, 9),
('9780062024688', 'The Alchemist', 197, 1, 1988, 10),
('9781853262400', 'Anna Karenina', 864, 1, 1878, 11),
('9780143128542', 'A Tale of Two Cities', 489, 1, 1859, 12),
('9780141439471', 'A Tale of Two Cities', 416, 2, 1867, 12),
('9780151008121', 'Mrs. Dalloway', 194, 1, 1925, 14),
('9780316015844', 'Twilight', 498, 1, 2005, 2),
('9780140183526', 'The Lightning Thief', 720, 1, 1851, 3),
('9780375831003', 'The Lightning Thief', 377, 2, 2005, 3),
('9780064401883', 'Matilda', 240, 1, 1988, 4),
('9780451527745', 'Dracula', 418, 1, 1897, 5),

('9780143131207', 'Slaughterhouse-Five', 275, 1, 1969, 6),
('9780140449334', 'Slaughterhouse-Five ', 671, 2, 2000, 6),
('9780062699168', 'The Night Circus', 400, 1, 2011, 8),
('9780140187395', 'Jane Eyre', 507, 1, 1847, 9),
('9780345339683', 'Fahrenheit 451', 249, 1, 1953, 3),
('9780679783268', 'Memoirs of a Geisha', 434, 1, 1997, 10),
('9780451528551', 'The Picture of Dorian Gray', 254, 1, 1890, 12),
('9780062081551', 'The Help', 544, 1, 2009, 13),
('9781400032804', 'The Kite Runner', 371, 1, 2003, 12),
('9780140449335', 'Pride and Prejudice', 279, 2, 1832, 1),
('9780743273565', 'The Great Gatsby', 180, 3, 1953, 2),
('9780142437209', 'Pride and Prejudice', 279, 3, 1892, 1);

SELECT * FROM BOOKS;

ISBN	BOOK_TITLE	PAGES	EDITION	PUBLISHED_YEAR	LITERATURE_ID
9780007117116	The Hobbit	310	1	1937	6
9780061120084	To Kill a Mockingbird	324	1	1960	4
9780062024688	The Alchemist	197	1	1988	10
9780062073488	The Catcher in the Rye	277	1	1951	7
9780062081551	The Help	544	1	2009	13
9780062699168	The Night Circus	400	1	2011	8
9780064401883	Matilda	240	1	1988	4
9780140183526	The Lightning Thief	720	1	1851	3
9780140187395	Jane Eyre	507	1	1847	9
9780140449334	Slaughterhouse-Five	671	2	2000	6
9780140449335	Pride and Prejudice	279	2	1832	1
9780141439471	A Tale of Two Cities	416	2	1867	12
9780142437208	Pride and Prejudice	279	1	1813	1
9780142437209	Pride and Prejudice	279	3	1892	1



```
CREATE TABLE WRITTEN_BY (
AUTHOR_ID INT NOT NULL,
ISBN VARCHAR (13),
FOREIGN KEY (AUTHOR_ID) REFERENCES AUTHOR(AUTHOR_ID),
FOREIGN KEY (ISBN) REFERENCES BOOKS(ISBN)
);
```

-- WRITTEN BY

```
INSERT INTO WRITTEN_BY (AUTHOR_ID, ISBN) VALUES
(1,'9780142437208'),
(1, '9780142437209'),
(2, '9780743273564'),
(3, '9780439136365'),
(4, '9780061120084'),
(5, '9780451524935'),
(6, '9780007117116'),
(7, '9780062073488'),
(8, '9780544003415'),
(9, '9780684801469'),
(10, '9780062024688'),
```



(11, '9781853262400'),
(12, '9780143128542'),
(13, '9780141439471'),
(14, '9780151008121'),
(15, '9780316015844'),
(15, '9780142437209'),
(14, '9780743273565'),
(13, '9780439136365'),
(12, '9780061120084'),
(11, '9780451524935'),
(10, '9780007117116'),
(9, '9780062073488'),
(1, '9780544003415'),
(7, '9780684801469'),
(6, '9780062024688'),
(5, '9781853262400'),
(4, '9780143128542'),
(3, '9780141439471'),
(2, '9780151008121'),
(1, '9780316015844'),
(9, '9780140449335');

INSERT INTO WRITTEN_BY (AUTHOR_ID, ISBN) VALUES

(1, '9780140183526'),
(2, '9780375831003'),
(3, '9780064401883'),
(4, '9780451527745'),
(5, '9780143131207'),
(6, '9780140449334'),
(7, '9780062699168'),
(8, '9780140187395'),
(9, '9780345339683'),
(10, '9780679783268'),
(11, '9780451528551'),
(12, '9780062081551'),
(13, '9781400032804'),
(14, '9780140449334'),
(15, '9780743273565');

SELECT * FROM WRITTEN_BY;

AUTHOR_ID	ISBN
1	9780142437208
1	9780142437209
2	9780743273564
3	9780439136365
4	9780061120084
5	9780451524935
6	9780007117116
7	9780062073488
8	9780544003415
9	9780684801469
10	9780062024688
11	9781853262400
12	9780143128542
13	9780141439471
14	9780151008121
15	9780316015844
15	9780142437209
14	9780743273565
13	9780439136365
12	9780061120084
11	9780451524935
10	9780007117116
9	9780062073488
1	9780544003415
7	9780684801469

CREATE TABLE PUBLISHING (

ISBN VARCHAR (13),

PUBLISHER_ID INT NOT NULL,

FOREIGN KEY (ISBN) REFERENCES BOOKS(ISBN),

FOREIGN KEY (PUBLISHER_ID) REFERENCES PUBLISHER(PUBLISHER_ID)

);

-- PUBLISHING

INSERT INTO PUBLISHING (ISBN, PUBLISHER_ID) VALUES

('9780142437208',1),

('9780142437209', 1),

('9780743273565', 2),

('9780439136365', 3),

('9780061120084', 4),

('9780451524935', 5),

('9780007117116', 6),

('9780062073488', 7),

('9780544003415', 8),

('9780684801469', 9),

('9780062024688', 10),

('9781853262400', 11),

('9780143128542', 12),

('9780141439471', 13),

('9780151008121', 14),

('9780316015844', 15),

('9780140183526', 1),

('9780375831003', 2),

('9780064401883', 3),

('9780451527745', 4),

('9780143131207', 5);

INSERT INTO PUBLISHING (ISBN, PUBLISHER_ID) VALUES

('9780140187395', 6),

('9780345339683', 7),

('9780679783268', 8),

('9780451528551', 9),

('9780062081551', 10);

SELECT * FROM PUBLISHING;

ISBN	PUBLISHER_ID
9780142437208	1
9780142437209	1
9780743273565	2
9780439136365	3
9780061120084	4
9780451524935	5
9780007117116	6
9780062073488	7
9780544003415	8
9780684801469	9
9780062024688	10
9781853262400	11
9780143128542	12
9780141439471	13
9780151008121	14
9780316015844	15
9780140183526	1
9780375831003	2
9780064401883	3
9780451527745	4
9780143131207	5

```
CREATE TABLE MEMBERS (
    MEMBER_ID INT,
    EMAIL VARCHAR (30),
    NAME VARCHAR (20) NOT NULL,
    STREET VARCHAR (20),
    CITY VARCHAR (20),
    PRIMARY KEY(MEMBER_ID)
);

-- MEMBERS

INSERT INTO MEMBERS (MEMBER_ID, EMAIL, NAME, STREET, CITY) VALUES
(1, 'john@gmail.com', 'John Doe', '123 Main St', 'New York'),
(2, 'alice@gmail.com', 'Alice Smith', '456 Elm St', 'Los Angeles'),
(3, 'michael@gmail.com', 'Michael Johnson', '789 Oak St', 'Chicago'),
(4, 'emily@gmail.com', 'Emily Brown', '101 Pine St', 'Houston'),
(5, 'david@gmail.com', 'David Lee', '234 Maple St', 'Phoenix'),
(6, 'emma@gmail.com', 'Emma Wilson', '567 Cedar St', 'Philadelphia'),
(7, 'james@gmail.com', 'James Taylor', '890 Walnut St', 'San Antonio'),
(8, 'olivia@gmail.com', 'Olivia Martinez', '111 Birch St', 'San Diego'),
(9, 'william@gmail.com', 'William Anderson', '222 Spruce St', 'Dallas'),
```

- (10, 'sophia@gmail.com', 'Sophia Rodriguez', '333 Fir St', 'San Jose'),
- (11, 'daniel@gmail.com', 'Daniel Hernandez', '444 Cedar St', 'Austin'),
- (12, 'isabella@gmail.com', 'Isabella Garcia', '555 Elm St', 'Jacksonville'),
- (13, 'alexander@gmail.com', 'Alexander Lopez', '666 Oak St', 'Indianapolis'),
- (14, 'mia@gmail.com', 'Mia Gonzalez', '777 Maple St', 'San Francisco'),
- (15, 'matthew@gmail.com', 'Matthew Perez', '888 Pine St', 'Columbus'),
- (16, 'charlotte@gmail.com', 'Charlotte Turner', '999 Cedar St', 'Fort Worth'),
- (17, 'ethan@gmail.com', 'Ethan Moore', '1010 Elm St', 'Charlotte'),
- (18, 'amelia@gmail.com', 'Amelia Hill', '1111 Oak St', 'Detroit'),
- (19, 'benjamin@gmail.com', 'Benjamin Ward', '1212 Maple St', 'Seattle'),
- (20, 'ava@gmail.com', 'Ava Brooks', '1313 Pine St', 'Denver');

SELECT * FROM MEMBERS;

MEMBER_ID	EMAIL	NAME	STREET	CITY
1	john@gmail.com	John Doe	123 Main St	New York
2	alice@gmail.com	Alice Smith	456 Elm St	Los Angeles
3	michael@gmail.com	Michael Johnson	789 Oak St	Chicago
4	emily@gmail.com	Emily Brown	101 Pine St	Houston
5	david@gmail.com	David Lee	234 Maple St	Phoenix
6	emma@gmail.com	Emma Wilson	567 Cedar St	Philadelphia
7	james@gmail.com	James Taylor	890 Walnut St	San Antonio
8	olivia@gmail.com	Olivia Martinez	111 Birch St	San Diego
9	william@gmail.com	William Anderson	222 Spruce St	Dallas
10	sophia@gmail.com	Sophia Rodriguez	333 Fir St	San Jose
11	daniel@gmail.com	Daniel Hernandez	444 Cedar St	Austin
12	isabella@gmail.com	Isabella Garcia	555 Elm St	Jacksonville
13	alexander@gmail....	Alexander Lopez	666 Oak St	Indianapolis
14	mia@gmail.com	Mia Gonzalez	777 Maple St	San Francisco
15	matthew@gmail.com	Matthew Perez	888 Pine St	Columbus
16	charlotte@gmail.com	Charlotte Turner	999 Cedar St	Fort Worth
17	ethan@gmail.com	Ethan Moore	1010 Elm St	Charlotte
18	amelia@gmail.com	Amelia Hill	1111 Oak St	Detroit
19	benjamin@gmail.com	Benjamin Ward	1212 Maple St	Seattle
20	ava@gmail.com	Ava Brooks	1313 Pine St	Denver

CREATE TABLE PHONENUMBER (

MEMBER_ID INT NOT NULL,

PHONE1 BIGINT NOT NULL,

PHONE2 BIGINT,

FOREIGN KEY(MEMBER_ID) REFERENCES MEMBERS(MEMBER_ID)

);

-- PHONENUMBER

```
INSERT INTO PHONENUMBER (MEMBER_ID, PHONE1, PHONE2) VALUES  
(1, 1234567890, 9876543210),  
(2, 2345678901, 8765432109),  
(3, 3456789012, 7654321098),  
(4, 4567890123, 6543210987),  
(5, 5678901234, 5432109876),  
(6, 6789012345, 4321098765),  
(7, 7890123456, 3210987654),  
(8, 8901234567, 2109876543),  
(9, 9012345678, 1098765432),  
(10, 9876543210, 1234567890),  
(11, 8765432109, 2345678901),  
(12, 7654321098, 3456789012),  
(13, 6543210987, 4567890123),  
(14, 5432109876, 5678901234),  
(15, 4321098765, 6789012345),  
(16, 3210987654, 7890123456),  
(17, 2109876543, 8901234567),  
(18, 1098765432, 9012345678),  
(19, 1234567890, NULL),
```

(20, 9876543210, NULL);

SELECT * FROM PHONENUMBER;

MEMBER_ID	PHONE1	PHONE2
1	1234567890	9876543210
2	2345678901	8765432109
3	3456789012	7654321098
4	4567890123	6543210987
5	5678901234	5432109876
6	6789012345	4321098765
7	7890123456	3210987654
8	8901234567	2109876543
9	9012345678	1098765432
10	9876543210	1234567890
11	8765432109	2345678901
12	7654321098	3456789012
13	6543210987	4567890123
14	5432109876	5678901234
15	4321098765	6789012345
16	3210987654	7890123456
17	2109876543	8901234567
18	1098765432	9012345678
19	1234567890	NULL
20	9876543210	NULL

CREATE TABLE BOOKITEM (
BOOK_ID VARCHAR (20) PRIMARY KEY,
ISBN VARCHAR (13) NOT NULL,
UNIQUE (BOOK_ID),
FOREIGN KEY(ISBN) REFERENCES BOOKS(ISBN)
);

-- BOOKITEM

INSERT INTO BOOKITEM (BOOK_ID, ISBN) VALUES

('B001', '9780142437209'),

('B002', '9780743273564'),

('B003', '9780439136365'),

('B004', '9780061120084'),

('B005', '9780451524935'),

('B006', '9780007117116'),

('B007', '9780062073488'),

('B008', '9780544003415'),

('B009', '9780684801469'),

('B010', '9780062024688'),

('B011', '9781853262400'),

('B012', '9780143128542'),

('B013', '9780141439471'),

('B014', '9780151008121'),

('B015', '9780316015844'),

('B016', '9780140183526'),

('B017', '9780375831003'),

('B018', '9780064401883'),

('B019', '9780451527745'),

('B020', '9780143131207'),

('B021', '9780140449334'),

('B022', '9780062699168'),

('B023', '9780140187395'),

('B024', '9780345339683'),

('B025', '9780679783268'),

('B026', '9780451528551'),

('B027', '9780062081551'),

('B028', '9781400032804'),

('B029', '9780140449334'),

('B030', '9780743273565'),

('B031', '9780142437208'),

('B032', '9780142437209'),

('B033', '9780743273565'),

('B034', '9780439136365'),

('B035', '9780061120084'),

('B045', '9780451524935'),

('B046', '9780007117116'),

('B047', '9780062073488'),

('B048', '9780544003415'),

('B049', '9780684801469'),

('B110', '9780062024688'),

('B111', '9781853262400'),

('B112', '9780143128542'),
(('B113', '9780141439471'),
(('B114', '9780151008121'),
(('B115', '9780316015844'),
(('B116', '9780140183526'),
(('B117', '9780375831003'),
(('B118', '9780064401883'),
(('B119', '9780451527745'),
(('B120', '9780143131207'),
(('B121', '9780140449334'),
(('B122', '9780062699168'),
(('B123', '9780140187395'),
(('B124', '9780345339683'),
(('B125', '9780679783268'),
(('B126', '9780451528551'),
(('B127', '9780062081551'),
(('B128', '9781400032804'),
(('B129', '9780140449334'),
(('B130', '9780743273565'),
(('B131', '9780142437209');

```
SELECT * FROM BOOKITEM;
```

BOOK_ID	ISBN
B006	9780007117116
B046	9780007117116
B004	9780061120084
B035	9780061120084
B010	9780062024688
B110	9780062024688
B007	9780062073488
B047	9780062073488
B027	9780062081551
B127	9780062081551
B022	9780062699168
B122	9780062699168
B018	9780064401883
B118	9780064401883
B016	9780140183526
B116	9780140183526
B023	9780140187395
B123	9780140187395
B021	9780140449334
B029	9780140449334
B121	9780140449334
B129	9780140449334
B013	9780141439471

```
CREATE TABLE LOANED_BOOK (  
    LOANEDBOOK_ID VARCHAR (20) PRIMARY KEY,  
    DATE_LOANED DATE NOT NULL,  
    DATE_RETURNED DATE,  
    DAYS_LIMIT INT,  
    MEMBER_ID INT NOT NULL,  
    BOOK_ID VARCHAR (20) UNIQUE NOT NULL,  
    FOREIGN KEY(MEMBER_ID) REFERENCES MEMBERS(MEMBER_ID),  
    FOREIGN KEY(BOOK_ID) REFERENCES BOOKITEM(BOOK_ID)  
);
```

-- LOANED_BOOK

```
INSERT INTO LOANED_BOOK (LOANEDBOOK_ID, DATE_LOANED,  
DATE_RETURNED, DAYS_LIMIT, MEMBER_ID, BOOK_ID) VALUES  
('LB001', '2024-03-01', '2024-03-10', 10, 6, 'B001'),  
('LB002', '2024-03-02', '2024-03-12', 10, 6, 'B002'),  
('LB003', '2024-03-03', '2024-03-14', 10, 6, 'B003'),  
('LB004', '2024-03-04', '2024-03-16', 10, 1, 'B004'),  
('LB005', '2024-03-05', '2024-03-18', 10, 2, 'B005'),  
('LB006', '2024-03-06', '2024-03-20', 10, 3, 'B006'),  
('LB007', '2024-03-07', '2024-03-22', 10, 3, 'B007'),  
('LB008', '2024-03-08', '2024-03-24', 10, 3, 'B008'),  
('LB009', '2024-03-09', '2024-03-26', 10, 9, 'B009'),  
('LB010', '2024-03-10', '2024-03-28', 10, 10, 'B010'),  
('LB011', '2024-03-11', '2024-03-30', 10, 11, 'B011'),  
('LB012', '2024-03-12', '2024-04-01', 10, 12, 'B012'),  
('LB013', '2024-03-13', NULL, 10, 13, 'B013'),  
('LB014', '2024-03-14', NULL, 10, 14, 'B014'),  
('LB115', '2024-03-15', NULL, 10, 5, 'B115'),  
('LB116', '2024-03-16', NULL, 10, 4, 'B116'),  
('LB117', '2024-03-17', NULL, 10, 4, 'B117'),  
('LB118', '2024-03-18', NULL, 10, 4, 'B118'),
```

('LB119', '2024-03-19', NULL, 10, 4, 'B119'),
('LB120', '2024-03-20', NULL, 10, 9, 'B120'),
('LB121', '2024-03-21', NULL, 10, 9, 'B121'),
('LB122', '2024-03-22', NULL, 10, 9, 'B122'),
('LB123', '2024-03-23', NULL, 10, 9, 'B123'),
('LB124', '2024-03-24', NULL, 10, 9, 'B124'),
('LB125', '2024-03-25', NULL, 10, 11, 'B125'),
('LB126', '2024-03-26', NULL, 10, 11, 'B126'),
('LB127', '2024-03-27', NULL, 10, 11, 'B127'),
('LB128', '2024-03-28', NULL, 10, 14, 'B128'),
('LB129', '2024-03-29', NULL, 10, 14, 'B129'),
('LB130', '2024-03-30', NULL, 10, 14, 'B130');

SELECT * FROM LOANED_BOOK;

LOANEDBOOK_ID	DATE_LOANED	DATE_RETURNED	DAYS_LIMIT	MEMBER_ID	BOOK_ID
LB001	2024-03-01	2024-03-10	10	6	B001
LB002	2024-03-02	2024-03-12	10	6	B002
LB003	2024-03-03	2024-03-14	10	6	B003
LB004	2024-03-04	2024-03-16	10	1	B004
LB005	2024-03-05	2024-03-18	10	2	B005
LB006	2024-03-06	2024-03-20	10	3	B006
LB007	2024-03-07	2024-03-22	10	3	B007
LB008	2024-03-08	2024-03-24	10	3	B008
LB009	2024-03-09	2024-03-26	10	9	B009
LB010	2024-03-10	2024-03-28	10	10	B010
LB011	2024-03-11	2024-03-30	10	11	B011
LB012	2024-03-12	2024-04-01	10	12	B012
LB013	2024-03-13	NULL	10	13	B013
LB014	2024-03-14	NULL	10	14	B014
LB115	2024-03-15	NULL	10	5	B115
LB116	2024-03-16	NULL	10	4	B116
LB117	2024-03-17	NULL	10	4	B117
LB118	2024-03-18	NULL	10	4	B118
LB119	2024-03-19	NULL	10	4	B119
LB120	2024-03-20	NULL	10	9	B120

THANK YOU