

Physical Database Design

The DataBasers™

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1. Introduction

1.1 Project Overview

The objective of this project is to design and implement a relational database to be used by the staff and clientele of a small public library. It is meant to aid the daily needs of both library staff and clients, providing clients with a convenient source of information on the library's collection and staff with the means to record and track media loans, borrowing trends, and more.

1.2 Scope (Project Boundaries)

This project will include a Project Plan, which summarizes the project objectives and team organization; a Database Requirements document, which indicates the project requirements and preliminary design components; a Conceptual Modeling document, which details the complete conceptual design of the database, including an ER diagram; a Logical Relational Model document, which details the relational schema of the database; and a SQL-based Physical Database Design, which will be represented in a document displaying the process, testing, and results of the database implementation. The project will culminate in a full demonstration of the capabilities of the finished database.

1.3 Glossary

Database: A highly structured and organized digital collection of data.

DBMS: Short for Database Management System, a software that is used to store and manage data through the use of databases.

DCL: Short for Data Control Language, a computer language used to manage privilege and access to users with respect to a database.

DDL: Short for Data Definition Language, a computer language used to create and modify a database system

DML: Short for Data Manipulation Language, a computer language used to add, delete, and manipulate data in a database.

Domain: The type of data used to represent an attribute of a relation.

ENUM: A data type that works as a list of constants, often strings of characters.

ER Model: Short for Entity-Relationship model, which is used to create and model the conceptual design of a database system, highlighting key data entities, their attributes, and relationships with other entities.

Foreign Key: An attribute of a relation that serves as the primary key for another relation.

Functional Dependency: A relationship between two attributes in the same relation.

INT: Short for integer, a whole number.

ISBN: Short for International Standard Book Number, a unique identifier for virtually all books.

ISSN: Short for International Standard Serial Number, a unique identifier for publication issues.

Primary Key: An attribute or set of attributes used to distinguish one tuple in a relation from another.

Query: A request prepared by a user of a database to a database system. The DBMS interprets the query and prepares and returns the results of the query.

Relation: Within the context of a database, a relation is a set of tuples of a similar form. All tuples in the relation have the same set of attributes but may have differing values for each individual attribute.

Relational Schema: Describes the logical layout of the database, defining the tables of the database, their columns, and the data types of each column.

SQL: Short for Structured Query Language, a computer language that includes DDL and DML elements. It is used for creating, modifying, and using a database.

Tuple: An object that holds multiple items. In the context of a database, a tuple could be considered a row in a table.

VARCHAR: A string of text characters of varying length. Also known simply as a string.

2. Physical Database Design

2.1 Platform

The database was implemented on the EECS Cycle Servers with MariaDB. Several factors contributed to this decision, including the portability that comes with a remote-accessible database and the existing familiarity the Implementation Director had with the platform. Login credentials to access the database will be included in the Project Demonstration. Direct interaction with the MariaDB interface is ideal when executing specific SQL queries. However, a Python-based user interface, designed for use by both staff and members, will be provided and further discussed in the Project Demonstration.

2.2 Database Schema

The DDL statements used to implement the base schema are included below.

```
CREATE TABLE user (  
  userID INT PRIMARY KEY CHECK (userID >= 0),  
  name VARCHAR(100),  
  phoneNumber VARCHAR(100),  
  emailAddress VARCHAR(100),  
  physicalAddress VARCHAR(100),  
  userType ENUM("admin", "staff", "member"),  
  accountStatus ENUM("active", "inactive")  
);  
  
CREATE TABLE member (  
  userID INT PRIMARY KEY,
```

```

        typeName ENUM("regular", "student", "senior"),
        borrowingLimit INT CHECK (borrowingLimit > 0),
        lateFeeRate DECIMAL CHECK (lateFeeRate > 0),
        FOREIGN KEY (userID) REFERENCES user(userID) ON DELETE CASCADE
    );

CREATE TABLE staff (
    userID INT PRIMARY KEY,
    FOREIGN KEY (userID) REFERENCES user(userID) ON DELETE CASCADE
);

CREATE TABLE admin (
    userID INT PRIMARY KEY,
    FOREIGN KEY (userID) REFERENCES user(userID) ON DELETE CASCADE
);

CREATE TABLE media (
    itemID INT PRIMARY KEY CHECK (itemID >= 0),
    title VARCHAR(100),
    itemType ENUM("book", "digital", "magazine"),
    publicationYear INT CHECK (publicationYear > 0),
    availabilityStatus ENUM("available", "unavailable"),
    specialPremium DECIMAL CHECK (specialPremium >= 0),
    specialRestriction ENUM("common", "rare")
);

CREATE TABLE book (
    itemID INT PRIMARY KEY,
    FOREIGN KEY (itemID) REFERENCES media(itemID) ON DELETE CASCADE,
    ISBN INT CHECK (ISBN > 0),
    author VARCHAR(100),
    genre VARCHAR(100)
);

CREATE TABLE digitalMedia (
    itemID INT PRIMARY KEY,
    FOREIGN KEY (itemID) REFERENCES media(itemID) ON DELETE CASCADE,
    digitalMediaID INT CHECK (digitalMediaID > 0),
    creator VARCHAR(100),
    genre VARCHAR(100)
);

CREATE TABLE magazine (

```

```

    magazineID INT PRIMARY KEY,
    FOREIGN KEY (magazineID) REFERENCES media(itemID) ON DELETE CASCADE,
    issn VARCHAR(100),
    publicationDate DATE
);

CREATE TABLE loan (
    loanID INT PRIMARY KEY CHECK (loanID >= 0),
    memberID INT,
    FOREIGN KEY (memberID) REFERENCES member(userID) ON DELETE CASCADE,
    itemID INT,
    FOREIGN KEY (itemID) REFERENCES media(itemID),
    checkoutDate DATE,
    dueDate DATE CHECK (duedate > checkoutDate),
    returnDate DATE CHECK (returnDate > checkoutDate),
    lateFeeCharge DECIMAL CHECK (lateFeeCharge >= 0)
);

CREATE TABLE fine (
    fineID INT PRIMARY KEY CHECK (fineID >= 0),
    memberID INT,
    FOREIGN KEY (memberID) REFERENCES member(userID) ON DELETE CASCADE,
    loanID INT,
    FOREIGN KEY (loanID) REFERENCES loan(loanID),
    amount DECIMAL CHECK (amount >= 0),
    issueDate DATE,
    status ENUM("unpaid", "paid")
);

CREATE TABLE payment (
    paymentID INT PRIMARY KEY CHECK (paymentID >= 0),
    fineID INT,
    FOREIGN KEY (fineID) REFERENCES fine(fineID),
    memberID INT,
    FOREIGN KEY (memberID) REFERENCES member(userID),
    paymentDate DATE,
    amount DECIMAL CHECK (amount >= 0)
);

CREATE TABLE reservation (
    reservationID INT PRIMARY KEY CHECK (reservationID >= 0),
    memberID INT,
    FOREIGN KEY (memberID) REFERENCES member(userID) ON DELETE CASCADE,

```

```

    itemID INT,
    FOREIGN KEY (itemID) REFERENCES media(itemID),
    reservationDate DATE,
    expirationDate DATE CHECK (expirationDate >= reservationDate),
    status ENUM("active", "inactive")
);

CREATE TABLE loaned_in (
    loanID INT PRIMARY KEY,
    FOREIGN KEY (loanID) REFERENCES loan(loanID) ON DELETE CASCADE,
    itemID INT,
    FOREIGN KEY (itemID) REFERENCES media(itemID) ON DELETE CASCADE
);

CREATE TABLE borrows (
    loanID INT PRIMARY KEY,
    FOREIGN KEY (loanID) REFERENCES loan(loanID) ON DELETE CASCADE,
    memberID INT,
    FOREIGN KEY (memberID) REFERENCES member(userID) ON DELETE CASCADE
);

CREATE TABLE triggers (
    loanID INT PRIMARY KEY,
    FOREIGN KEY (loanID) REFERENCES loan(loanID) ON DELETE CASCADE,
    fineID INT,
    FOREIGN KEY (fineID) REFERENCES fine(fineID) ON DELETE CASCADE
);

CREATE TABLE owes (
    fineID INT PRIMARY KEY,
    FOREIGN KEY (fineID) REFERENCES fine(fineID) ON DELETE CASCADE,
    memberID INT,
    FOREIGN KEY (memberID) REFERENCES member(userID) ON DELETE CASCADE
);

CREATE TABLE pays_for (
    paymentID INT PRIMARY KEY,
    FOREIGN KEY (paymentID) REFERENCES payment(paymentID) ON DELETE
CASCADE,
    fineID INT,
    FOREIGN KEY (fineID) REFERENCES fine(fineID) ON DELETE CASCADE
);

```

```
CREATE TABLE pays (
    paymentID INT PRIMARY KEY,
    FOREIGN KEY (paymentID) REFERENCES payment(paymentID) ON DELETE
CASCADE,
    memberID INT,
    FOREIGN KEY (memberID) REFERENCES member(userID) ON DELETE CASCADE
);

CREATE TABLE reserves (
    reservationID INT PRIMARY KEY,
    FOREIGN KEY (reservationID) REFERENCES reservation(reservationID) ON
DELETE CASCADE,
    memberID INT,
    FOREIGN KEY (memberID) REFERENCES member(userID) ON DELETE CASCADE
);

CREATE TABLE reserved_in (
    reservationID INT PRIMARY KEY,
    FOREIGN KEY (reservationID) REFERENCES reservation(reservationID) ON
DELETE CASCADE,
    itemID INT,
    FOREIGN KEY (itemID) REFERENCES media(itemID) ON DELETE CASCADE
);
```


2.3 Database Contents

Further entries may be included during the preparation, practice, and execution of the Project Demonstration. However, the major contents of the database are defined below, ordered by table.

user

userID	name	phoneNumber	emailAddress	physicalAddress	userType	accountStatus
0	Admin	111-111-1111	admin@email.com	222 Main St Lawrence KS 66046	admin	active
1	Alham Aihmoud	913-123-4567	aaihmd@aemail.com	123 Main St Springfield IL 62701	member	active
2	Dalan Dyvis	914-234-5678	ddyvis@aemail.com	456 Elm St Albany NY 12207	member	active
3	Woshua Jelicky	915-345-6789	wjelicky@aemail.com	789 Oak St Madison WI 53703	member	active
4	Aldley Ashdave	916-456-7890	aashdave@aemail.com	101 Pine St Salem OR 97301	member	active
5	Ahyyir Named	917-567-8901	anamed@aemail.com	202 Maple St Boise ID 83702	member	active
6	Alabama Almoood	918-678-9012	aalmood@aemail.com	303 Birch St Helena MT 59601	member	active
7	Nate Ahmed	919-789-0123	nahmed@aemail.com	404 Cedar St Trenton NJ 08608	member	active
8	Nason Gibthan	920-890-1234	ngibthan@aemail.com	505 Spruce St Hartford CT 06103	member	active
9	John Chumbles	921-901-2345	jchumbles@chumbles.aero	606 Fir St Baton Rouge LA 70802	member	active
10	Frank Gill	922-012-3456	fgill@aemail.com	707 Willow St Des Moines IA 50309	member	active
11	Gertrude Mollychalk	923-987-6543	gmollychalk@aemail.com	808 Cherry St Providence RI 02903	member	active
12	Tinghao Guo	924-876-5432	thguo@aemail.com	909 Dogwood St Cheyenne WY 82001	member	active
13	Akariya Zamed	925-765-4321	rizzgod@aemail.com	1010 Magnolia St Dover DE 19901	member	active
14	Pidur Vandiripally	926-654-3210	pvandiripally@aemail.com	1111 Palm St Juneau AK 99801	member	active
15	Dunchan Lin	927-543-2109	thebanquet@aemail.com	1212 Cypress St Pierre SD 57501	member	active
16	Adam Nedal	928-432-1098	anedal@aemail.com	1313 Redwood St Concord NH 03301	member	active
17	Dongo Roja	929-321-0987	droja@aemail.com	1414 Sequoia St Frankfort KY 40601	member	active
18	China Walker	930-210-9876	cwalker@aemail.com	1515 Hemlock St Montpelier VT 05602	member	active
19	Connie Harris	931-109-8765	charris@aemail.com	1616 Larch St Little Rock AR 72201	member	active
20	Zaatar Mustafa	932-098-7654	zaatarcomet@aemail.com	1717 Juniper St Carson City NV 89701	member	active
21	Bowen Maresh	933-346-2334	bmaresh@aemail.com	1818 Spruce St Columbia SC 29201	member	active
22	Adhman Praikari	934-485-4853	smartadhman@aemail.com	1919 Fir St Tallahassee FL 32301	member	active
23	Puke Maresb	935-374-4845	googie.mar@aemail.com	2020 Cedar St Annapolis MD 21401	member	active
24	Mahtab Sheshappa	936-485-3894	msheshappa@chumbles.aero	2121 Birch St Santa Fe NM 87501	member	active
25	LeBron James	111-111-1111	kingjames@aemail.com	1234 King St Raleigh NC 27601	member	active
26	Emily Carter	487-835-2641	emily.carter87@gmail.com	1257 Pine Lane Orlando FL 32801	member	active
27	Liam Rodriguez	312-591-7783	liam.rodriguez33@yahoo.com	88 S Halsted St Chicago IL 60661	member	active
28	Sophia Patel	415-223-9984	sophia.patel24@outlook.com	4423 Mission St San Francisco CA 94112	member	active
29	Noah Thompson	267-882-7309	noah.t@gmail.com	2124 Walnut St Philadelphia PA 19103	member	active
30	Ava Martinez	602-445-9176	ava.martinez90@yahoo.com	3041 E Camelback Rd Phoenix AZ 85016	member	active
31	Benjamin Lee	617-901-5543	ben.lee45@outlook.com	9 Beacon St Boston MA 02108	member	active
32	Mia Nguyen	206-555-3829	mia.nguyen99@gmail.com	1102 Pike St Seattle WA 98101	member	active
33	Elijah Walker	404-629-7332	elijah.w@yahoo.com	678 Peachtree St NE Atlanta GA 30308	member	active
34	Isabella Kim	512-330-0198	isabella.kim@outlook.com	2301 Lamar Blvd Austin TX 78704	member	active
35	James Scott	213-782-6240	james.scott73@gmail.com	3923 Sunset Blvd Los Angeles CA 90026	member	active
36	Charlotte Davis	917-990-3490	charlotte.d@yahoo.com	511 W 146th St New York NY 10031	member	active
37	William Young	720-661-2045	william.young@outlook.com	1551 Broadway St Denver CO 80203	member	active
38	Amelia Harris	901-482-2771	amelia.harris@gmail.com	420 Poplar Ave Memphis TN 38105	member	active
39	Lucas Hall	614-744-3930	lucas.hall@yahoo.com	788 E Broad St Columbus OH 43205	member	active
40	Harper Robinson	503-874-9982	harper.robinson@outlook.com	1231 NE Couch St Portland OR 97232	member	active
41	Henry Lewis	816-904-7113	henry.lewis@gmail.com	1601 Oak St Kansas City MO 64108	member	active
42	Evelyn Allen	305-662-1284	evelyn.allen@yahoo.com	7501 SW 88th St Miami FL 33156	member	active
43	Alexander Wright	608-242-3719	alex.wright@outlook.com	1814 E Washington Ave Madison WI 53704	member	active
44	Abigail King	884-902-1453	abigail.king@gmail.com	4101 W Broad St Richmond VA 23230	member	active
45	Daniel Green	918-493-0004	daniel.green@yahoo.com	7800 S Lewis Ave Tulsa OK 74136	member	active
46	Scarlett Baker	916-673-9221	scarlett.baker@outlook.com	2201 J St Sacramento CA 95816	member	active
47	Jackson Perez	713-777-1622	jackson.perez@gmail.com	6100 Main St Houston TX 77005	member	active
48	Ella Adams	702-903-8811	ella.adams@yahoo.com	3800 Howard Hughes Pkwy Las Vegas NV 89169	member	active
49	Michael Rivera	612-889-3020	michael.rivera@outlook.com	800 Washington Ave SE Minneapolis MN 55414	member	active
50	Grace Torres	919-204-1119	grace.torres@gmail.com	320 E Chapel Hill St Durham NC 27701	member	active
51	Libb Mann	912-985-9395	libbmann@gmail.com	322 E Hughes St Lawrence KS 66046	staff	active
52	Libb Manny	930-834-2399	libbmanny@gmail.com	323 E Hughes St Lawrence KS 66046	staff	active

member:

userID	typeName	borrowingLimit	lateFeeRate
1	regular	5	4
2	senior	7	2
3	student	10	1
4	regular	5	4
5	senior	7	2
6	student	10	1
7	regular	5	4
8	senior	7	2
9	student	10	1
10	regular	5	4
11	senior	7	2
12	student	10	1
13	regular	5	4
14	senior	7	2
15	student	10	1
16	regular	5	4
17	senior	7	2
18	student	10	1
19	regular	5	4
20	senior	7	2
21	student	10	1
22	regular	5	4
23	senior	7	2
24	student	10	1
25	regular	5	4
26	senior	7	2
27	student	10	1
28	regular	5	4
29	senior	7	2
30	student	10	1
31	regular	5	4
32	senior	7	2
33	student	10	1
34	regular	5	4
35	senior	7	2
36	student	10	1
37	regular	5	4
38	senior	7	2
39	student	10	1
40	regular	5	4
41	senior	7	2
42	student	10	1
43	regular	5	4
44	senior	7	2
45	student	10	1
46	regular	5	4
47	senior	7	2
48	student	10	1
49	regular	5	4
50	senior	7	2

staff

+	+	+	+
	userID		
+	+	+	+
	51		
	52		
+	+	+	+

admin

+	+	+	+
	userID		
+	+	+	+
	0		
+	+	+	+

media

itemID	title	itemType	publicationYear	availabilityStatus	specialPremium	specialRestriction
1	The Wealth of Nations	book	1776	available	0	common
2	The Art of War	book	750	unavailable	0	common
3	Blood Meridian	book	1985	available	0	common
4	Crime and Punishment	book	1866	available	0	common
5	Pride and Prejudice	book	1813	available	0	common
6	Ender's Game	book	1985	available	0	common
7	War and Peace	book	1865	available	0	common
8	No Longer Human	book	1948	available	0	common
9	The Great Gatsby	book	1925	available	0	common
10	1984	book	1949	available	0	common
11	The book of Five Rings	book	1645	available	0	common
12	The Tell-Tale Heart	book	1843	available	0	common
13	The Hobbit	book	1937	available	0	common
14	A Clockwork Orange	book	1962	available	0	common
15	Animal Farm	book	1945	available	2	rare
16	The Road	book	2006	available	0	common
17	Heart of Darkness	book	1899	available	1	rare
18	The Raven and Other Poems	book	2021	available	0	common
19	The Odyssey	book	1488	available	0	common
20	The Iliad	book	750	available	0	common
21	National Geographic	magazine	2025	available	0	common
22	The New Yorker	magazine	2025	unavailable	0	common
23	Time	magazine	2025	available	0	common
24	Scientific American	magazine	2025	available	0	common
25	Forbes	magazine	2025	available	0	common
26	The Economist	magazine	2025	available	0	common
27	Wired	magazine	2025	available	0	common
28	Harvard Business Review	magazine	2025	available	0	common
29	Smithsonian	magazine	2025	available	0	common
30	Vogue	magazine	2025	available	0	common
31	The Atlantic	magazine	2025	unavailable	0	common
32	New Scientist	magazine	2025	available	0	common
33	Popular Science	magazine	2025	unavailable	0	common
34	National Review	magazine	2025	available	0	common
35	Discover	magazine	2025	available	0	common
36	GQ	magazine	2025	available	0	common
37	The Nation	magazine	2025	available	0	common
38	PC Gamer	magazine	2025	available	1	rare
39	Bon Appétit	magazine	2025	available	0	common
40	Entertainment Weekly	magazine	2025	available	0	common
41	Dune: Part Two	digital	2024	available	0	common
42	Inside Out 2	digital	2024	available	0	common
43	Psycho	digital	1960	available	0	common
44	The Godfather Part II	digital	1974	available	0	common
45	Forrest Gump	digital	1994	available	0	common
46	12 Angry Men	digital	1957	available	0	common
47	2001: A Space Odyssey	digital	1968	available	0	common
48	Titanic	digital	1997	available	0	common
49	Saving Private Ryan	digital	1998	available	0	common
50	Rocky	digital	1976	unavailable	0	common
51	The Sopranos: Season 1	digital	1999	available	0	common

52	Breaking Bad: Season 5	digital	2012	available	0	common
53	Friends: Season 10	digital	2003	available	0	common
54	Seinfeld: Season 9	digital	1997	available	0	common
55	The Simpsons: Season 34	digital	2022	available	0	common
56	The Wire: Season 5	digital	2008	available	2	rare
57	Better Call Saul: Season 6	digital	2022	available	0	common
58	Ted Lasso: Season 3	digital	2023	available	0	common
59	Only Murders in the Building: Season 3	digital	2023	available	1	rare
60	Buffy the Vampire Slayer: Season 7	digital	2002	available	0	common
61	The Hobbit	book	1937	available	0	common
62	The Hobbit	book	1937	available	0	common
63	The Road	book	2006	available	0	common
64	The Hobbit	book	1937	available	0	common
65	12 Angry Men	digital	1957	available	0	common
66	Necronomicon	book	600	unavailable	7	rare
67	Grays Sports Almanac	book	2015	available	10	rare

book

itemID	ISBN	author	genre
1	9781435172449	Adam Smith	Economics
2	9789388369695	Sun Tzu	Philosophy
3	780679728757	Cormac McCarthy	Historical Fiction
4	9780140449136	Fyodor Dostoyevsky	Classic
5	9781435159631	Jane Austin	Romance
6	9781250773029	Orson Scott Card	Science Fiction
7	9781400079988	Leo Tolstoy	Historical Fiction
8	9780811204811	Osamu Dazai	Psychological Fiction
9	9780743273565	F. Scott Fitzgerald	Classic
10	9788499890944	George Orwell	Dystopian
11	9781788883214	Miyamoto Musashi	Philosophy
12	9781078754477	Edgar Allan Poe	Gothic
13	9780547928227	J.R.R. Tolkien	Fantasy
14	9780393341768	Anthony Burgess	Dystopian
15	9780451526342	George Orwell	Political Satire
16	9780307387899	Cormac McCarthy	Fiction
17	9780143106586	Joseph Conrad	Historical Fiction
18	9781435171374	Edgar Allan Poe	Gothic
19	9780140275360	Homer	Mythology
20	9780141394657	Homer	Mythology
61	9780547928227	J.R.R. Tolkien	Fantasy
62	9780547928227	J.R.R. Tolkien	Fantasy
63	9780307387899	Cormac McCarthy	Fiction
64	9780547928227	J.R.R. Tolkien	Fantasy
66	9999999999999	Abdul Alhazred	Gothic
67	9181981435449	Biff Tannen	Sports

digitalMedia

itemID	digitalMediaID	creator	genre
41	1	Denis Villeneuve	Science Fiction
42	2	Kelsey Mann	Animation/Adventure
43	3	Alfred Hitchcock	Drama/Horror
44	4	Francis Ford Coppola	Crime/Drama
45	5	Robert Zemeckis	Drama/Romance
46	6	Sidney Lumet	Crime/Drama
47	7	Stanley Kubrick	Science Fiction
48	8	James Cameron	Drama/Romance
49	9	Steven Spielberg	Drama/War
50	10	John G. Avildsen	Drama/Sport
51	11	David Chase	Crime/Drama
52	12	Vince Gilligan	Crime/Drama
53	13	David Crane/Marta Kauffman	Sitcom
54	14	Larry David/Jerry Seinfeld	Sitcom
55	15	Matt Groening	Animated Sitcom
56	16	David Simon	Crime/Drama
57	17	Vince Gilligan/Peter Gould	Crime/Drama
58	18	Declan Lowney	Sports comedy-drama
59	19	Steve Martin/John Hoffman	Mystery
60	20	Joss Whedon	Supernatural Drama
65	6	Sidney Lumet	Crime/Drama

magazine

magazineID	issn	publicationDate
21	00279358	2025-03-01
22	0028792X	2025-02-15
23	0040781X	2025-03-28
24	00368733	2025-01-10
25	00156914	2025-03-05
26	00130613	2025-03-22
27	10592876	2025-02-28
28	00178012	2025-01-20
29	0037731X	2025-03-10
30	0042071X	2025-02-01
31	10727825	2025-01-18
32	02624079	2025-03-15
33	01617370	2025-02-12
34	00280038	2025-01-08
35	02747537	2025-03-03
36	00168520	2025-02-25
37	00278378	2025-01-30
38	10882751	2025-03-19
39	15257571	2025-02-10
40	10490434	2025-03-07

loan

loanID	memberID	itemID	checkoutDate	dueDate	returnDate	lateFeeCharge
1	5	2	2022-01-07	2022-01-21	2022-01-22	2
2	33	8	2022-01-06	2022-01-20	2022-01-20	0
3	43	38	2022-01-05	2022-01-19	2022-01-19	0
4	35	5	2022-01-11	2022-01-25	2022-01-30	10
5	31	8	2022-01-28	2022-02-11	2022-02-15	16
6	13	4	2022-01-03	2022-01-17	2022-01-17	0
7	43	16	2022-01-07	2022-01-21	2022-01-21	0
8	28	16	2022-01-29	2022-02-12	2022-02-12	0
9	47	2	2022-01-24	2022-02-07	2022-02-07	0
10	4	15	2022-01-07	2022-01-21	2022-01-21	0
11	7	8	2022-02-19	2022-03-05	2022-03-05	0
12	13	43	2022-01-09	2022-01-23	2022-01-23	0
13	9	16	2022-02-15	2022-03-01	2022-03-01	0
14	18	17	2022-01-05	2022-01-19	2022-01-19	0
15	5	17	2022-01-28	2022-02-11	2022-02-12	3
16	4	59	2022-01-10	2022-01-24	2022-01-24	0
17	1	3	2022-01-05	2022-01-19	2022-01-19	0
18	11	16	2022-03-09	2022-03-23	2022-03-23	0
19	31	7	2022-01-08	2022-01-22	2022-01-22	0
20	4	6	2022-01-08	2022-01-22	2022-01-22	0
21	1	15	2022-01-26	2022-02-09	2022-02-09	0
22	30	10	2022-01-08	2022-01-22	2022-01-22	0
23	45	43	2022-01-31	2022-02-14	2022-02-14	0
24	10	7	2022-01-27	2022-02-10	2022-02-10	0
25	14	2	2022-02-17	2022-03-03	2022-03-03	0
26	48	43	2022-02-15	2022-03-01	2022-03-01	0
27	48	13	2022-01-02	2022-01-16	2022-01-16	0
28	4	46	2022-01-09	2022-01-23	2022-01-23	0
29	33	41	2022-01-04	2022-01-18	2022-01-18	0
30	4	41	2022-01-20	2022-02-03	2022-02-03	0
31	12	3	2022-01-29	2022-02-12	2022-02-12	0
32	5	66	2022-01-05	2022-01-19	2022-01-19	0
33	26	4	2022-01-27	2022-02-10	2022-02-10	0
34	16	46	2022-02-02	2022-02-16	2022-02-16	0
35	3	56	2022-01-03	2022-01-17	2022-01-17	0
36	27	66	2022-01-29	2022-02-12	2022-02-17	40
37	34	13	2022-01-21	2022-02-04	2022-02-04	0
38	14	66	2022-02-23	2022-03-09	2022-03-11	18
39	17	15	2022-02-12	2022-02-26	2022-02-26	0
40	43	59	2022-01-29	2022-02-12	2022-02-12	0
41	30	13	2022-02-06	2022-02-20	2022-02-21	1
42	30	56	2022-01-27	2022-02-10	2022-02-10	0
43	7	3	2022-02-21	2022-03-07	2022-03-07	0
44	14	41	2022-02-08	2022-02-22	2022-02-22	0
45	9	14	2022-01-03	2022-01-17	2022-01-17	0
46	16	14	2022-01-22	2022-02-05	2022-02-07	8
47	29	43	2022-03-06	2022-03-20	2022-03-20	0
48	40	59	2022-02-21	2022-03-07	2022-03-08	5
49	43	43	2022-03-25	2022-04-08	2022-04-08	0
50	43	4	2022-02-13	2022-02-27	2022-03-02	12
51	25	66	2025-04-27	2025-05-11	NULL	0
52	25	33	2025-04-27	2025-05-11	NULL	0

53	25	50	2025-04-27	2025-05-11	NULL	0
54	25	22	2025-04-27	2025-05-11	NULL	0
55	25	31	2025-04-27	2025-05-11	NULL	0
56	23	2	2025-04-27	2025-05-11	NULL	0

fine

fineID	memberID	loanID	amount	issueDate	status
1	5	1	2	2022-01-22	paid
2	35	4	10	2022-01-30	paid
3	31	5	16	2022-02-15	paid
4	5	15	3	2022-02-12	paid
5	27	36	40	2022-02-17	unpaid
6	14	38	18	2022-03-11	paid
7	30	41	1	2022-02-21	paid
8	16	46	8	2022-02-07	paid
9	40	48	5	2022-03-08	paid
10	43	50	12	2022-03-02	unpaid

payment

paymentID	fineID	memberID	paymentDate	amount
1	1	5	2022-01-22	2
2	2	35	2022-01-30	10
3	3	31	2022-02-15	16
4	4	5	2022-02-12	3
5	6	14	2022-03-11	18
6	7	30	2022-02-21	1
7	8	16	2022-02-07	8
8	9	40	2022-03-08	5

reservation

reservationID	memberID	itemID	reservationDate	expirationDate	status
1	30	42	2025-04-15	2025-04-22	inactive
2	30	18	2025-04-17	2025-04-24	inactive
3	19	43	2025-04-15	2025-04-22	inactive
4	24	13	2025-04-20	2025-04-27	inactive
5	9	45	2025-04-13	2025-04-20	inactive
6	37	21	2025-04-14	2025-04-21	inactive
7	50	48	2025-04-19	2025-04-26	inactive
8	23	10	2025-04-20	2025-04-27	inactive
9	47	23	2025-04-13	2025-04-20	inactive
10	3	44	2025-04-19	2025-04-26	inactive
11	19	26	2025-04-13	2025-04-20	inactive
12	5	27	2025-04-21	2025-04-28	active
13	50	43	2025-04-16	2025-04-23	inactive
14	32	42	2025-04-15	2025-04-22	inactive
15	40	25	2025-04-19	2025-04-26	inactive
16	25	66	2025-04-27	2025-04-30	inactive
17	35	65	2025-04-27	2025-04-30	active
18	44	32	2025-04-27	2025-04-30	active
19	20	11	2025-04-27	2025-04-30	active
20	25	62	2025-04-27	2025-04-30	active

loaned_in

loanID	itemID
1	2
9	2
25	2
56	2
17	3
31	3
43	3
6	4
33	4
50	4
4	5
20	6
19	7
24	7
2	8
5	8
11	8
22	10
27	13
37	13
41	13
45	14
46	14
10	15
21	15
39	15
7	16
8	16
13	16
18	16
14	17
15	17
54	22
55	31
52	33
3	38
29	41
30	41
44	41
12	43
23	43
26	43
47	43
49	43
28	46
34	46
53	50
35	56
42	56
16	59

40	59
48	59
32	66
36	66
38	66
51	66

borrows

loanID	memberID
17	1
21	1
35	3
10	4
16	4
20	4
28	4
30	4
1	5
15	5
32	5
11	7
43	7
13	9
45	9
24	10
18	11
31	12
6	13
12	13
25	14
38	14
44	14
34	16
46	16
39	17
14	18
56	23
51	25
52	25
53	25
54	25
55	25
33	26
36	27
8	28
47	29
22	30
41	30
42	30
5	31
19	31
2	33
29	33
37	34
4	35
48	40
3	43
7	43
40	43
49	43
50	43

50	43
23	45
9	47
26	48
27	48

triggers

loanID	fineID
1	1
4	2
5	3
15	4
36	5
38	6
41	7
46	8
48	9
50	10

owes

fineID	memberID
1	5
4	5
6	14
8	16
5	27
7	30
3	31
2	35
9	40
10	43

pays_for

paymentID	fineID
1	1
2	2
3	3
4	4
5	6
6	7
7	8
8	9

pays

paymentID	memberID
1	5
4	5
5	14
7	16
6	30
3	31
2	35
8	40

reserves

reservationID	memberID
10	3
12	5
5	9
3	19
11	19
19	20
8	23
4	24
16	25
20	25
1	30
2	30
14	32
17	35
6	37
15	40
18	44
9	47
7	50
13	50

reserved_in

reservationID	itemID
8	10
19	11
4	13
2	18
6	21
9	23
15	25
11	26
12	27
18	32
1	42
14	42
3	43
13	43
10	44
5	45
7	48
20	62
17	65
16	66