

① Library — Book

Relationship name: manages

Meaning

- One **Library** manages **many Books**
- Each **Book** belongs to **one and only one Library**

Cardinality

- Library 1 ———< M Book

② Library — Staff

Relationship name: employs

Meaning

- One **Library** employs **many Staff**
- Each **Staff member** works at **only one Library**

Cardinality

- Library 1 ———< M Staff

3 Member — Loan

Relationship name: borrows

Meaning

- One **Member** can borrow **many Books over time**
- Each **Loan** belongs to **one Member**

Cardinality

- Member 1 ———< M Loan

4 Book — Loan

Relationship name: is loaned

Meaning

- One **Book** can appear in **many Loans** (at different times)
- Each **Loan** refers to **one Book**

Cardinality

- Book 1 ———< M Loan

5 Loan — Payment

Relationship name: has paid

Meaning

- One **Loan** can have **zero or many Payments**
- Each **Payment** belongs to **one Loan only**

Cardinality

- Loan **1** ———< **M** Payment

Member → Review (1 to many)

This relationship is **one to many** because **one member can write many reviews**, but **each review is written by only one member**.

Insert into Library

	library_id	name	location	contactnumber	establishedyear
1	1	Central Library	Muscat	91234567	1990
2	2	North Branch	Sohar	92345678	2000
3	3	East Branch	Sur	93456789	2010
4	4	West Branch	Nizwa	94567890	2015

-- Insert into Book

	book_id	isbn	title	price	isavailable	genre	shelflocation	library_id
1	1	978-1111111111	Database Systems	25.50	1	Reference	A1	1
2	2	978-2222222222	Children Stories	10.00	1	Children	B2	1
3	3	978-3333333333	Fiction Novel	15.75	1	Fiction	C3	2
4	4	978-4444444444	Science Facts	20.00	1	Non-fiction	D4	2
5	5	978-5555555555	Programming Basics	30.00	1	Reference	E5	3

-- Insert into Staff

	staff_id	fullname	position	contactnumber	library_id
1	1	Ali Hassan	Manager	95123456	1
2	2	Fatima Said	Assistant	95234567	1
3	3	Omar Khalid	Librarian	95345678	2
4	4	Sara Ahmed	Technician	95456789	3

-- Insert into Member

	member_id	fullname	email	membershipstartdate	phonenumber
1	1	Mohammed Ali	mohammed@example.com	2023-01-10	96123456
2	2	Aisha Noor	aisha@example.com	2023-02-15	96234567
3	3	Khalid Yousuf	khalid@example.com	2023-03-20	96345678
4	4	Layla Hassan	layla@example.com	2023-04-25	96456789

-- Insert into Loan

	loan_id	loandate	duedate	returndate	status	member_id	book_id
1	1	2023-05-01	2023-05-15	2023-05-10	Returned	1	1
2	2	2023-06-01	2023-06-15	NULL	Issued	2	2
3	3	2023-07-01	2023-07-15	2023-07-20	Overdue	3	3
4	4	2023-08-01	2023-08-15	NULL	Issued	4	4

-- Insert into Review

	review_id	rating	comments	reviewdate	book_id	member_id
1	1	5	Excellent book!	2023-05-12	1	1
2	2	4	Very useful reference.	2023-06-18	2	2
3	3	3	Good but a bit long.	2023-07-22	3	3
4	4	2	Not very interesting.	2023-08-05	4	4

-- Insert into Payment

	payment_id	paymentdate	amount	method	loan_id
1	1	2023-05-12	5.00	Cash	1
2	2	2023-07-22	10.00	Card	3
3	3	2023-08-10	7.50	Cash	4
4	4	2023-09-01	12.00	Online	2

