

Phase 3: Data Modeling & Relationships (Library Book Borrowing System)

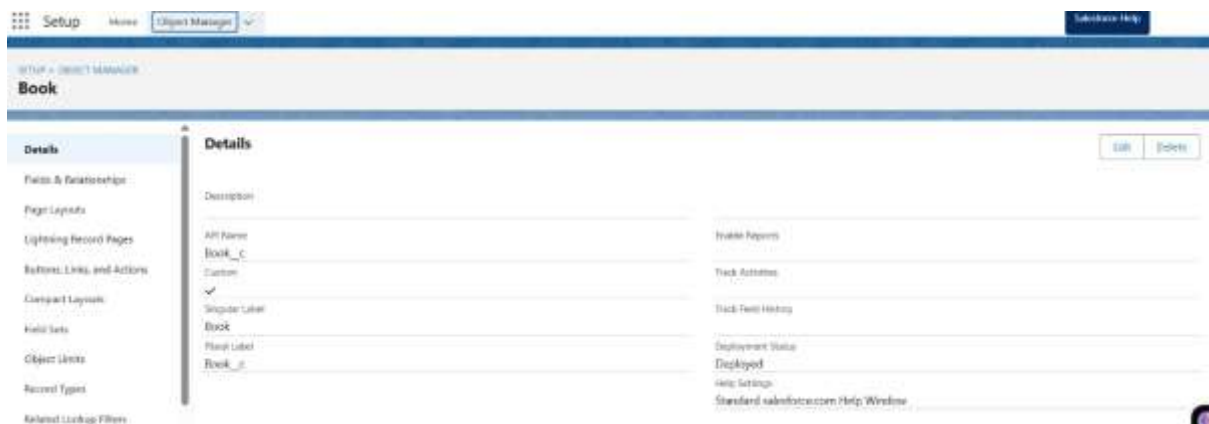
Goal

Design the data model for the Library Book Borrowing System using Salesforce custom objects, fields, and relationships.

Step 1: Create Custom Objects

- **Book__c**
 - Label: Book
 - Plural Label: Books
 - Record Name: Book Number (Auto Number, Format: B-{000})
 - Created custom tab with book icon.
- **Student__c**
 - Label: Student
 - Plural Label: Students
 - Record Name: Student Name (Text)
 - Created custom tab with student icon.
- **Borrow_Record__c**
 - Label: Borrow Record
 - Plural Label: Borrow Records
 - Record Name: Borrow Record Number (Auto Number, Format: BR-{000})
 - Created custom tab with borrow/transaction icon.

Screenshots: New Custom Object forms and Tab Wizard results



SETUP > OBJECT MANAGER

Borrow Record

Details	Details
Fields & Relationships	Description
Page Layouts	API Name: Borrow_Record__c
Lightning Record Pages	Custom: <input checked="" type="checkbox"/>
Buttons, Links, and Actions	Singular Label: Borrow Record
Compact Layouts	Plural Label: Borrow Records
Field Sets	Enable Reports: <input type="checkbox"/>
Object Links	Track Activities: <input type="checkbox"/>
Record Types	Track Field History: <input type="checkbox"/>
Related Lookup Filters	Deployment Status: Deployed
	Help Settings: Standard salesforce.com Help Window

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Step 2: Add Fields

Book__c Fields

- Title__c (Text)
- Author__c (Text)
- ISBN__c (Text, Unique)
- Status__c (Picklist: Available, Borrowed, Reserved, Lost)
- Category__c (Picklist: Fiction, Non-Fiction, Science, History, Reference, Other)
- Location__c (Text)

Student__c Fields

- Roll_Number__c (Text, Unique)
- Email__c (Email)
- Department__c (Picklist: Science, Arts, Commerce, Engineering, Other)
- Phone__c (Phone)

Borrow_Record__c Fields

- Borrow_Date__c (Date)
- Return_Date__c (Date)

- Status__c (Picklist: Borrowed, Returned, Lost, Extended)
- Book__c (Lookup to Book)
- Student__c (Lookup or Master-Detail to Student)
- Due_Reminder_Sent__c (Checkbox, default false)

Screenshots: Field creation pages and field lists for each object

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
BOOK	BOOK__c	Text(15)		
Created By	CreatedById	Lookup(User)		
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User Group)		✓
Student Email	Student_Email__c	Email (Unique)		✓
Student Name	Name	Text(30)		✓

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Student Email	Student_Email__c	Email (Unique)		✓
Student Name	Name	Text(30)		✓
Student__c	Student__c	Text(15)		

Step 3: Relationships

- Borrow_Record__c → Lookup to **Book__c** (identifies which book is borrowed).
- Borrow_Record__c → Master-Detail or Lookup to **Student__c** (identifies borrower).

Screenshot: Relationship field creation page

Step 4: Page Layouts

- **Book Layout** → Includes Title, Author, ISBN, Status, Category, Location + Related List: Borrow Records.
- **Student Layout** → Includes Name, Roll Number, Email, Department + Related List: Borrow Records.
- **Borrow Record Layout** → Includes Borrow Date, Return Date, Status, Book, Student, Reminder Sent.

Screenshot: Page Layout editor with related lists added

Student Compact Layout

Help for this Page

Borrow Record Compact Layout

[« Back to Student](#)

Compact Layout Detail

EditCloneDelete

Compact Layout Assignment

Label	Borrow Record Compact Layout	Object Name	<u>Student</u>
API Name	Borrow_Record_Compact_Layout		
Included Fields	Borrow_Record__c		
Created By	<u>GUDE Adithyaram</u> , 9/23/2025, 11:19 AM	Modified By	<u>GUDE Adithyaram</u> , 9/23/2025, 11:19 AM

EditCloneDelete

Compact Layout Assignment

Book Compact Layout

[« Back to Student](#)

Compact Layout Detail

[Edit](#)[Clone](#)[Delete](#)[Compact Layout Assignment](#)

Label	Book Compact Layout	Object Name	<u>Student</u>
API Name	Book_Compact_Layout		
Included Fields	Student Name Student Email		
Created By	<u>GUDE Adithyaram,</u> 9/23/2025, 11:18 AM	Modified By	<u>GUDE Adithyaram,</u> 9/23/2025, 11:18 AM

[Edit](#)[Clone](#)[Delete](#)[Compact Layout Assignment](#)

Student Compact Layout

[« Back to Student](#)

Compact Layout Detail

[Edit](#)[Clone](#)[Delete](#)[Compact Layout Assignment](#)

Label	Student Compact Layout	Object Name	<u>Student</u>
API Name	Student_Compact_Layout		
Included Fields	Student Email Student Name Student__c		
Created By	<u>GUDE Adithyaram,</u> 9/23/2025, 11:16 AM	Modified By	<u>GUDE Adithyaram,</u> 9/23/2025, 11:16 AM

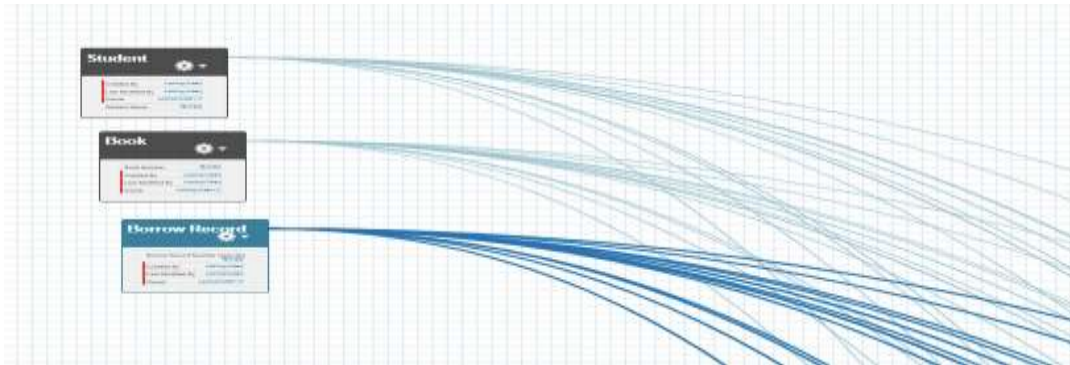
[Edit](#)[Clone](#)[Delete](#)[Compact Layout Assignment](#)

- **Book Compact Layout:** Title, Author, Status.
 - **Student Compact Layout:** Name, Roll Number, Department.
 - **Borrow Record Compact Layout:** Borrow Date, Return Date, Status.
-

Step 6: Schema Builder

- Setup → Schema Builder → Selected Book, Student, Borrow Record.
- Arranged objects visually:
- Student ←— Borrow Record —→ Book
- Displayed fields and relationships in a clear diagram.

Screenshot: Schema Builder canvas with 3 objects and relationships



Step 7: Tabs & App

- Created tabs for Books, Students, and Borrow Records.
 - Added them to the **Library Management App** for easy navigation.
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Step 8: Field-Level Security & Profiles

- **Manager Profile** → Full CRUD (Create, Read, Update, Delete) on Book, Student, Borrow Record.
 - **Librarian Profile** → Read, Create, Edit (no Delete) on Book & Borrow Record.
 - **Assistant Librarian** → Read-only access on Student; Read/Edit on Book.
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Step 9: Import Sample Data

- Used **Data Import Wizard** to upload sample Students and Books.
- Created test Borrow Records linking Students and Books.

Screenshot: Data Import

Title	Author	ISBN	Status	Category	Location
The Alchemist	Paulo Coelho	9.78E+12	Available	Fiction	Shelf A1
Brief History of Time	Stephen Hawking	9.78E+12	Available	Science	Shelf B2
Data Structures in Java	Robert Lafore	9.78E+12	Available	Reference	Shelf C3
History of India	Romila Thapar	9.78E+12	Available	History	Shelf D4
Principles of Economics	N. Gregory Mankiw	9.78E+12	Available	Non-Fiction	Shelf E5

Student Name	Roll Number	Email	Department	Phone
Rohan Sharma	S001	rohan.sharma@example.com	Science	9.88E+09
Priya Singh	S002	priya.singh@example.com	Arts	9.88E+09
Aarav Mehta	S003	aarav.mehta@example.com	Commerce	9.88E+09
Ananya Iyer	S004	ananya.iyer@example.com	Engineering	9.88E+09
Kunal Verma	S005	kunal.verma@example.com	Science	9.88E+09

3 BorrowRecords.csv (Optional for testing after Books & Students are imported)

Borrow Record Number	Borrow Date	Return Date	Status	Book_id (Book Title or ID)	Student_id (Student Name or ID)
BR-0001	#####	#####	Borrowed	The Alchemist	Rohan Sharma
BR-0002	#####	#####	Borrowed	Brief History of Time	Priya Singh
BR-0003	#####	#####	Returned	Data Structures in Java	Aarav Mehta

Step 10: Testing

- Created Student (S001) and Book (B001).
 - Created Borrow Record linking Student S001 and Book B001.
 - Verified Borrow Record appeared under both Book and Student related lists.
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Phase 3 Summary

- Built 3 custom objects (Book, Student, Borrow Record).
- Added key fields, picklists, and lookups.
- Established relationships and page layouts.
- Configured compact layouts and Schema Builder.
- Created tabs and Library Management App.
- Set profile-level access and imported sample data.
- Verified relationships and data integrity with test records.