

Data Dictionary

The following table provides detailed descriptions of the entities and attributes used in the College Library System database, along with notes on their usage and constraints.

Entity: Member

Attribute	Description	Notes
MemberID	Unique identifier for each member.	Primary Key.
Fname	First name of the member.	Part of the composite attribute Name.
Lname	Last name of the member.	Part of the composite attribute Name.
Email	Email address of the member.	Single-valued. Must be in the college domain (@abc.ac.uk).
MemberType	Type of member (e.g., student or staff).	Foreign Key referencing MEMBER_TYPE.
MaxLoans	Maximum number of resources a member can borrow at one time.	Derived from MemberType.
AccountStatus	Status of the member's account (e.g., active or suspended).	Derived attribute. Set to suspended if fines exceed \$10.
TotalLoans	Number of active loans a member has.	Derived attribute.
AmountDue	Total unpaid fines a member owes.	Derived attribute. Calculated as Total Fines - Total Payments.

Entity: Resource

Attribute	Description	Notes
ResourceID	Unique identifier for each resource.	Primary Key.
Title	Title of the resource.	
FloorNumber	Floor where the resource is located.	Part of the composite attribute Location.
ShelfNumber	Shelf where the resource is located.	Part of the composite attribute Location.
ClassNumber	Subject area classification number.	Used for categorization.
ClassName	Name of the subject area (e.g., Law, Engineering).	Normalized into a separate CLASS table.

Attribute	Description	Notes
LoanType	Indicates the borrowing period for the resource.	Values are standardized as 14 (2 weeks), 2 (2 days), and 0(within library).
Format	Format of the resource (e.g., book, video, DVD, CD).	Represents generalization for four subclasses.
ISBN	International identifier for publications.	Also applied to videos, DVDs, and CDs for inventory purposes.

Entity: Copy

Attribute	Description	Notes
CopyNumber	Unique identifier for each copy of a resource.	Part of the composite Primary Key with ResourceID.
ResourceID	Identifier linking the copy to the corresponding resource.	Foreign Key referencing RESOURCE.
Availability	Indicates whether the copy is available for loan.	Derived attribute. Unavailable if the copy is in loan records with no ReturnDate.

Entity: Loan

Attribute	Description	Notes
LoanNumber	Unique identifier for each loan.	Primary Key.
MemberID	Identifier linking the loan to the corresponding member.	Foreign Key referencing MEMBER.
ResourceID	Identifier linking the loan to the corresponding resource.	Foreign Key referencing RESOURCE.
CopyNumber	Identifier linking the loan to the specific copy of the resource.	Foreign Key referencing COPY.
IssueDate	Date when the resource was borrowed.	Must include date and time.
ReturnDate	Date when the resource was returned.	Must include date and time.
DueDate	Deadline for returning the resource.	Derived attribute. Calculated based on LoanType and IssueDate.
OverdueDays	Number of days the loan is overdue.	Derived attribute. Calculated as CurrentDate - DueDate.

Entity: Fine

Attribute	Description	Notes
FineID	Unique identifier for each fine.	Primary Key.
MemberID	Identifier linking the fine to the corresponding member.	Foreign Key referencing MEMBER.
LoanNumber	Identifier linking the fine to the corresponding loan.	Foreign Key referencing LOAN.
FineAmount	Total amount of fine incurred.	Derived attribute. Calculated as $\text{OverdueDays} * \$1$.

Entity: Payment

Attribute	Description	Notes
PaymentID	Unique identifier for each payment.	Primary Key.
MemberID	Identifier linking the payment to the corresponding member.	Foreign Key referencing MEMBER.
PaymentDate	Date when the payment was made.	Must include date and time.
PaymentAmount	Amount paid by the member.	Members can make payments independent of fines.

Entity: Reservation

Attribute	Description	Notes
ReservationNumber	Unique identifier for each reservation.	Primary Key.
MemberID	Identifier linking the reservation to the corresponding member.	Foreign Key referencing MEMBER.
ResourceID	Identifier linking the reservation to the corresponding resource.	Foreign Key referencing RESOURCE.
ReservationDate	Date and time when the reservation was made.	Determines the order of notifications.
ReservationStatus	Indicates whether the reservation is pending or failed.	Derived attribute.
RemainNotifications	Number of notifications left before the reservation is considered failed.	Limited to a maximum of 3 notifications.

Entity: Notification

Attribute	Description	Notes
NotificationNumber	Unique identifier for each notification.	Primary Key.
MemberID	Identifier linking the notification to the corresponding member.	Foreign Key referencing MEMBER.
ReservationNumber	Identifier linking the notification to the corresponding reservation.	Foreign Key referencing RESERVATION.
NotificationDate	Date when the notification was sent.	Must include date and time.
OfferValidityDate	Deadline for responding to the notification.	Derived attribute. Valid for 2 days from NotificationDate.
Status	Indicates whether the notification is pending or expired.	Derived attribute.