📘 Use Cases – Library Management System

# UC-01: Search Books

Actor: Student / Librarian  
Precondition: User authenticated.  
Trigger: User wants to find a book.  
Main Flow:  
1. User enters search criteria.  
2. System displays matching results with status.  
Alternative: If no results → system shows 'No matches found'.  
Exceptions: Catalog service unavailable → error logged.

# UC-02: Borrow Book

Actor: Student  
Precondition: Student logged in, less than 3 active loans.  
Trigger: Student selects a book.  
Main Flow:  
1. Student clicks 'Borrow'.  
2. System checks availability.  
3. System creates Loan record with due date.  
4. System updates book status.  
5. Confirmation sent to student.  
Alternative: If unavailable → system offers 'Hold Request'.  
Exceptions: Account inactive → system denies request.

# UC-03: Return Book

Actor: Student / Librarian  
Precondition: Book is loaned.  
Main Flow:  
1. Student returns book.  
2. Librarian scans book.  
3. System updates return date.  
4. If overdue → system calculates fine.  
5. Book status updated.  
Exceptions: Book not found → incident logged.

# UC-04: Pay Fine

Actor: Student  
Precondition: Student has outstanding fines.  
Main Flow:  
1. Student logs in.  
2. System displays outstanding fines.  
3. Student selects payment method.  
4. System processes payment.  
5. Finance receives confirmation.  
Exceptions: Payment rejected → fine remains open.

# UC-05: Manage Catalog

Actor: Librarian  
Precondition: Librarian with admin role.  
Main Flow:  
1. Librarian adds/edits/removes book.  
2. System validates fields.  
3. Catalog updated.  
Exceptions: Duplicate ISBN → save prevented.

# UC-06: Generate Reports

Actor: Librarian / Management  
Precondition: User has reporting permission.  
Main Flow:  
1. User selects report type.  
2. System compiles data.  
3. Report generated.  
4. User downloads/prints report.  
Exceptions: Data service unavailable → error logged.