



UNIVERSITAS
MUHAMMADIYAH
MALANG

Project OOP

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Background & Project Objectives



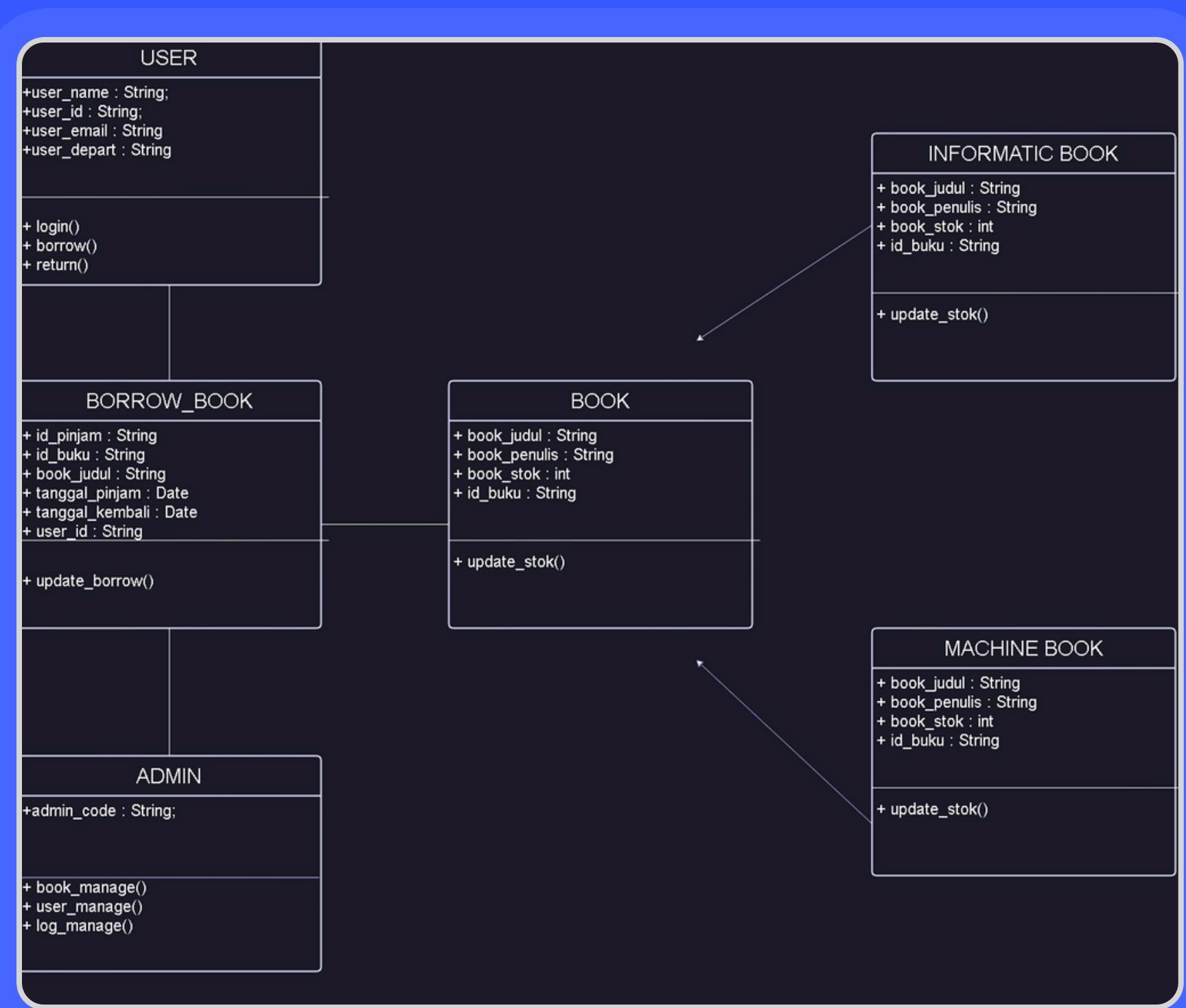
BACKGROUND

- Traditional library management relies heavily on manual recordkeeping.
- Prone to issues like data inconsistency, missing books, and poor traceability.
- Staff must physically track borrowed books, which is time-consuming and error-prone.

OBJECTIVE

- Develop a Java-based desktop application using OOP principles.
- Implement a modular architecture to separate logic (MVC pattern).
- Provide key library features: Book management (CRUD), Member registration and Borrowing and returning

System Architecture & Class Diagram



Model (Data)

- User, Book, BorrowBook, Admin – Store data and handle logic (e.g., stock updates, borrow records).

View (UI)

- Screens for users (login, borrow) and admins (manage books, users).

Controller (Logic)

- Processes actions (e.g., UserController for logins, BookController for stock changes).

Flow:

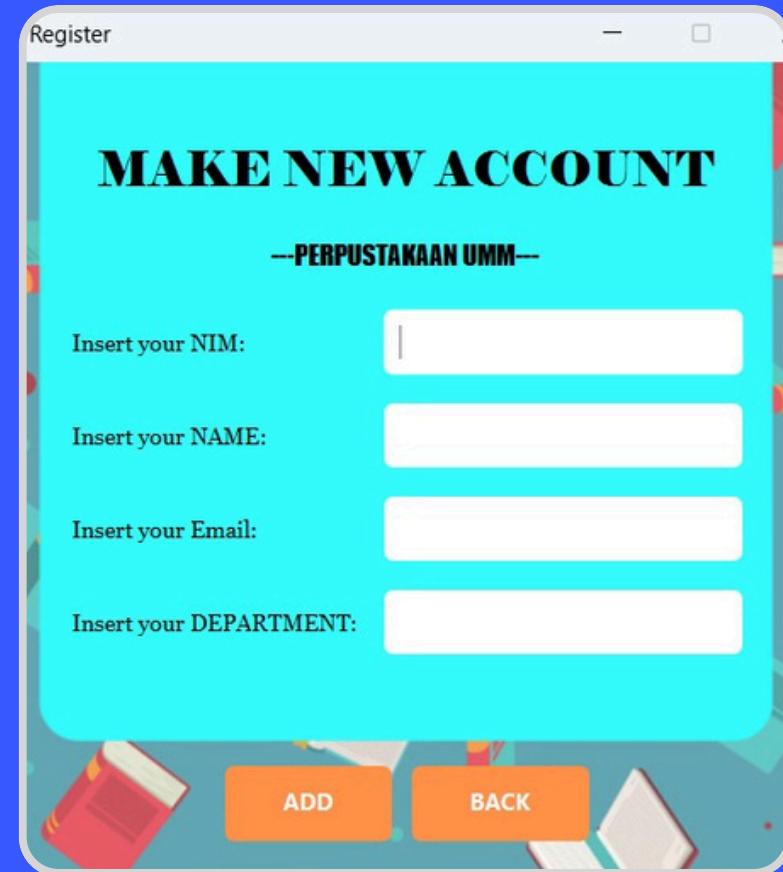
1. User clicks "Borrow" (View).
2. Controller updates BorrowBook (Model).
3. View shows confirmation.

Features Demo



BOOK ADDITION

Admins can add books to different categories



MEMBER REGISTRATION

Students can register by providing their NIM, name, email, and department

Daftar Buku				
Judul	Penulis	Stok	ID BOOK	Kembalikan
Algorithms	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein	10	001	<button>Pinjam</button>
Computer Networking: A Top-Down Approach	James F. Kurose dan Keith W. Ross	10	002	<button>Pinjam</button>
Programming	Donald E. Knuth	10	003	<button>Pinjam</button>
Design and Analysis of Computer Algorithms	David A. Patterson & John L. Hennessy	10	004	<button>Pinjam</button>
Computer Architecture: A Quantitative Approach	Abraham Silberschatz, Henry F. Korth, and James F. Galvin	10	005	<button>Pinjam</button>
Computer Organization and Design: The Hardware/Software Interface	Robert Sedgewick & Kevin Wayne	10	006	<button>Pinjam</button>
Introduction to the Theory of Computation	Harold Abelson & Gerald Jay Sussman	10	007	<button>Pinjam</button>
Agile Software Development: Principles, Patterns, and Practices	Robert C. Martin	10	008	<button>Pinjam</button>
Statics and Dynamics	J.L. Meriam & L.G. Kraige	10	101	<button>Pinjam</button>
Engineering Mechanics: Statics and Dynamics	Ronald C. Brown	10	102	<button>Pinjam</button>
Engineering Mechanics: Statics and Dynamics	Yunus A. Çengel & Michael A. Boles	10	103	<button>Pinjam</button>
Engineering Mechanics: Statics and Dynamics	Frank M. White	10	104	<button>Pinjam</button>

BORROWING

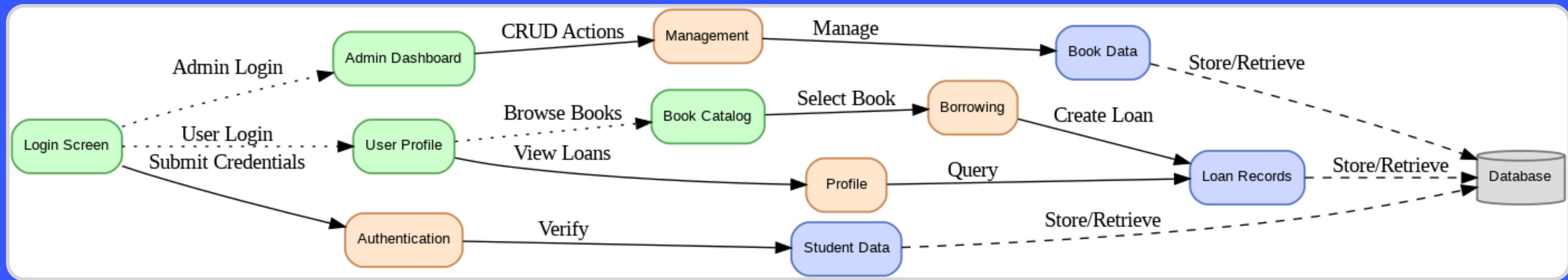
Students can borrow available books

Judul	Penulis	Kembalikan
Computer Networking: A Top-Down Approach	James F. Kurose...	<button>Kembalikan</button>
Algorithms	Robert Sedgewick...	<button>Kembalikan</button>
Engineering Mechanics: Statics and Dynamics	J.L. Meriam & L....	<button>Kembalikan</button>

RETURNING

Students can return borrowed books

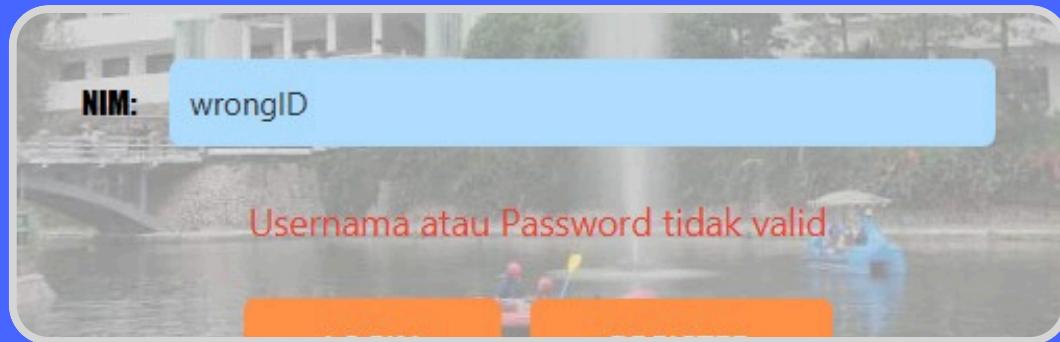
UI & User Flow



- Users begin at a shared Login Screen, where their credentials determine if they proceed as an admin or regular user.
- Admins are directed to a dashboard that lets them manage the system – adding, updating, or removing book data through CRUD operations.
- Users, on the other hand, can view their profile, explore the book catalog, and borrow books, with each action tied to their personal loan records.
- The Authentication module verifies identities, while all user and book data is handled through a central Database.

Testing Results & Challenges

Testing Results



System blocks unauthorized access



System prevents duplicate account creation



System rejects empty input

Bug



Bug: The system allowed account creation despite empty input fields.

Fix



Fix: The system now enforces input validation, allowing account creation only when all required fields are filled.



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Thank you