

CSF 101

ALGORITMA & PEMROGRAMAN

PROGRESS 3 - FINAL PROJECT

Aplikasi Peminjaman dan Pengembalian Buku

Dosen Pengampu:

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Kelompok 7

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Tujuan Presentasi:

Memaparkan perkembangan final project pada tahap ketiga, yaitu pembuatan Aplikasi Peminjaman dan Pengembalian Buku.

Daftar Isi:

- 1. Pendahuluan**
- 2. Metode**
- 3. Rancangan**
- 4. Hasil Aplikasi**

PENDAHULUAN

Pendahuluan

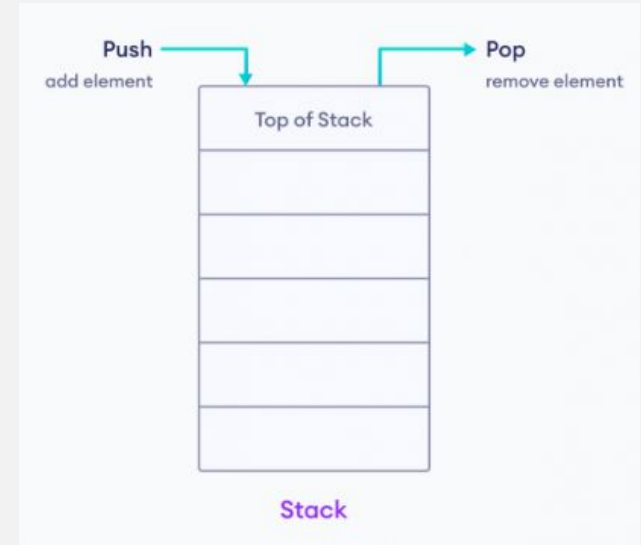
Dalam era digital yang terus berkembang, perpustakaan tradisional menghadapi berbagai tantangan, seperti kesalahan pencatatan, pelacakan status buku yang tidak efisien, dan keterbatasan dalam menghasilkan laporan yang akurat. Untuk menjawab tantangan tersebut, dikembangkan **Aplikasi Peminjaman dan Pengembalian Buku**, sebuah sistem manajemen perpustakaan digital berbasis **C++** dengan implementasi struktur data **Stack**. Aplikasi ini dirancang untuk mengotomatisasi proses peminjaman dan pengembalian buku, mempermudah administrasi, serta memberikan visibilitas yang lebih baik terhadap inventaris perpustakaan. Dengan fitur seperti **manajemen buku**, **manajemen anggota**, **transaksi**, dan **pelaporan**, aplikasi ini bertujuan untuk meningkatkan efisiensi operasional perpustakaan, meminimalkan kesalahan pencatatan, dan mendukung pelacakan serta pengelolaan buku yang lebih akurat dan modern.



METODE

Metode

Metode utama yang digunakan dalam aplikasi ini adalah struktur data **Stack**, yang beroperasi dengan prinsip **LIFO (Last In, First Out)**. Artinya, data yang dimasukkan terakhir akan diakses atau dikeluarkan terlebih dahulu. Struktur ini sangat cocok untuk **mengelola proses peminjaman dan pengembalian buku**, karena transaksi terbaru dapat langsung diproses terlebih dahulu.



Metode

Dalam aplikasi, **Stack** digunakan untuk:

- **Mencatat Peminjaman Buku:** Setiap buku yang dipinjam akan dimasukkan ke dalam **Stack**, sehingga buku yang dipinjam terakhir akan berada di posisi teratas untuk pengelolaan yang mudah.
- **Mengelola Pengembalian Buku:** Saat buku dikembalikan, data di **Stack** akan diperbarui dengan menghapus atau mengganti data sesuai dengan buku yang dikembalikan.
- **Pelacakan Status Buku:** Dengan memanfaatkan sifat **LIFO**, aplikasi dapat memastikan bahwa data peminjaman dan pengembalian dikelola secara terstruktur dan efisien.

Konsep **Push (menambahkan data)** dan **Pop (menghapus data)** digunakan untuk memanipulasi **Stack** dalam aplikasi ini.

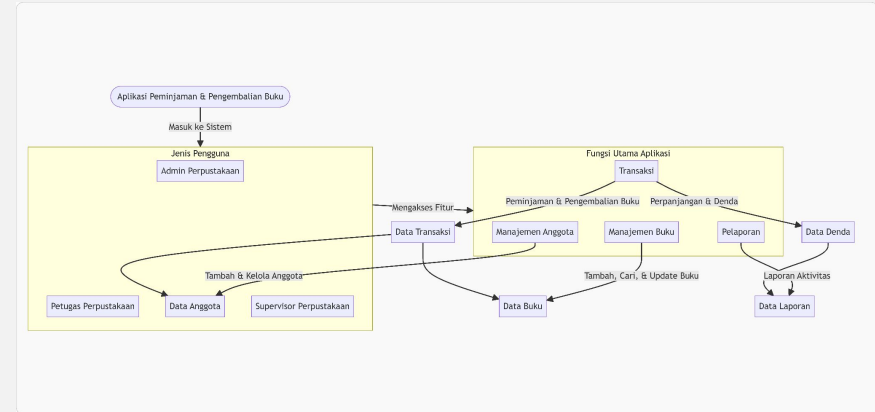
Penggunaan metode ini membantu menjaga data tetap konsisten dan mempermudah pengelolaan transaksi secara sistematis.



RANCANGAN

Rancangan

Pada tahap rancangan, aplikasi peminjaman dan pengembalian buku dirancang dengan memperhatikan alur sistem yang melibatkan berbagai jenis pengguna, fungsi utama, serta data pendukung. Sistem ini dirancang untuk diakses oleh **Admin Perpustakaan**, **Petugas Perpustakaan**, dan **Supervisor Perpustakaan**, masing-masing memiliki akses terhadap fitur sesuai dengan tugasnya.



Rancangan

Rancangan aplikasi mencakup empat fungsi utama:

- **Transaksi:** Meliputi peminjaman, pengembalian, perpanjangan buku, dan penghitungan denda keterlambatan.
- **Manajemen Buku:** Menambah, mencari, memperbarui data buku, serta mengelola katalog buku secara digital.
- **Manajemen Anggota:** Mengelola data anggota, termasuk pendaftaran, pengelolaan profil, dan riwayat peminjaman.
- **Pelaporan:** Menyediakan laporan aktivitas perpustakaan, statistik buku populer, dan laporan keterlambatan secara akurat.

Seluruh fungsi ini saling terintegrasi melalui data pendukung, seperti **data buku**, **data anggota**, **data transaksi**, dan **data denda**, yang memastikan pengelolaan perpustakaan berjalan secara efisien dan terorganisir. Diagram alur sistem memberikan gambaran menyeluruh tentang interaksi antar komponen di dalam aplikasi.



HASIL APLIKASI

Hasil Aplikasi (Login)

```
C:\Users\muham\Downloads\ x + v
Enter username: admin
Enter password: admin123
Login successful! Welcome, admin

Library Management System
1. Book Management
2. Member Management
3. Transactions
4. Reports
5. Exit
Enter your choice: |
```

```
C:\Users\muham\Downloads\ x + v
Enter username: petugas
Enter password: petugas123
Login successful! Welcome, petugas

Library Management System
1. Transactions
2. Exit
Enter your choice:
```

```
C:\Users\muham\Downloads\ x + v
Enter username: akbar
Enter password: admin123
Login failed! Please check your credentials.

-----
Process exited after 5.802 seconds with return value 0
Press any key to continue . . .
```




Hasil Aplikasi (Register New Book)

```
C:\Users\yusufham\Downloads\ x + -
Enter username: supervisor
Enter password: supervisor123
Login successful! Welcome, supervisor

Library Management System
1. Book Management
2. Member Management
3. Transactions
4. Reports
5. Exit
Enter your choice: 1

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 1
Enter book ID: 123
Enter book title: Jurnal CRM
Enter author: Akbar Fadilah
Enter category: Jurnal
Book registered successfully.

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: |
```



Hasil Aplikasi (View Book Catalog)

```
C:\Users\muham\Downloads\ x + -
5. Exit
Enter your choice: 1

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 1
Enter book ID: 123
Enter book title: Jurnal CRM
Enter author: Akbar Fadilah
Enter category: Jurnal
Book registered successfully.

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 2

Book Catalog:
+-----+-----+-----+-----+-----+
| Book ID | Title | Author | Category | Availability |
+-----+-----+-----+-----+-----+
| 123 | Jurnal CRM | Akbar Fadilah | Jurnal | Yes |
+-----+-----+-----+-----+-----+

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice:
```



Hasil Aplikasi (Search Book)

```
C:\Users\muham\Downloads\ x + -
Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 2

Book Catalog:
| Book ID | Title | Author | Category | Availability |
| 123 | Jurnal CRM | Akbar Fadilah | Jurnal | Yes |

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 3
Enter book title or author to search: Jurnal

Search Results:
| Book ID | Title | Author | Category | Availability |
| 123 | Jurnal CRM | Akbar Fadilah | Jurnal | Yes |

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice:
```



Hasil Aplikasi (Update Book Information)

```
C:\Users\muhami\Downloads\ x + -
Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 3
Enter book title or author to search: Jurnal

Search Results:
+-----+-----+-----+-----+-----+
| Book ID | Title | Author | Category | Availability |
+-----+-----+-----+-----+-----+
| 123 | Jurnal CRM | Akbar Fadilah | Jurnal | Yes |
+-----+-----+-----+-----+-----+

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 4
Enter book ID to update: 123
Enter new title (leave blank to keep current): Jurnal DMS
Enter new author (leave blank to keep current): Muhamad Akbar Fadilah
Enter new category (leave blank to keep current): Jurnal Internasional
Is the book available? (1 for Yes, 0 for No): 0
Book updated successfully.

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice:
```



Hasil Aplikasi (View Book Catalog - After Update)

```
C:\Users\muhami\Downloads\ x + -
```

```
Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 4
Enter book ID to update: 123
Enter new title (leave blank to keep current): Jurnal DMS
Enter new author (leave blank to keep current): Muhamad Akbar Fadilah
Enter new category (leave blank to keep current): Jurnal Internasional
Is the book available? (1 for Yes, 0 for No): 0
Book updated successfully.

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 2

Book Catalog:
+-----+-----+-----+-----+-----+
| Book ID | Title           | Author           | Category           | Availability |
+-----+-----+-----+-----+-----+
| 123     | Jurnal DMS      | Muhamad Akbar Fadilah | Jurnal Internasional | No          |
+-----+-----+-----+-----+-----+

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice:
```

JYC
Berkas

Search

17:29
04/11/2023



Hasil Aplikasi (Delete Book)

```
C:\Users\muhami\Downloads\ x + -
Enter new title (leave blank to keep current): Jurnal DMS
Enter new author (leave blank to keep current): Muhamad Akbar Fadilah
Enter new category (leave blank to keep current): Jurnal Internasional
Is the book available? (1 for Yes, 0 for No): 0
Book updated successfully.

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 2

Book Catalog:


| Book ID | Title      | Author                | Category             | Availability |
|---------|------------|-----------------------|----------------------|--------------|
| 123     | Jurnal DMS | Muhamad Akbar Fadilah | Jurnal Internasional | No           |



Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 5
Enter book ID to delete: 123
Book deleted successfully.

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice:
```



Hasil Aplikasi (View Book Catalog - After Delete)

```
C:\Users\muhami\Downloads\ x + -
```

Book ID	Title	Author	Category	Availability
123	Jurnal DNS	Muhamad Akbar Fadilah	Jurnal Internasional	No

```
Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 5
Enter book ID to delete: 123
Book deleted successfully.

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 2

Book Catalog:
| Book ID | Title | Author | Category | Availability |
| Data books not found. |

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: |
```

JYC
Berkas

Search

17:29
04/01/2025



Hasil Aplikasi (Register New Member)

```
C:\Users\muhamad\Downloads\ x + -
+-----+-----+-----+-----+
| 123 | Junal CRM & DHS | Akbar Fadilah | Jurnal | Yes |
+-----+-----+-----+-----+

Book Management
1. Register New Book
2. View Book Catalog
3. Search Book
4. Update Book Information
5. Delete Book
6. Back to Main Menu
Enter your choice: 6

Library Management System
1. Book Management
2. Member Management
3. Transactions
4. Reports
5. Exit
Enter your choice: 2

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 1
Enter member ID: 123
Enter member name: Muhamad Akbar Fadilah
Member registered successfully.

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: |
```



Hasil Aplikasi (View Member)

```
C:\Users\muham\Downloads\ x + -
3. Transactions
4. Reports
5. Exit
Enter your choice: 2

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 1
Enter member ID: 123
Enter member name: Muhamad Akbar Fadilah
Member registered successfully.

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 2

Member Catalog:
+-----+-----+-----+
| Member ID | Name           | Status |
+-----+-----+-----+
| 123       | Muhamad Akbar | Active |
+-----+-----+-----+

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice:
```



Hasil Aplikasi (Search Member)

```
C:\Users\msuhani\Downloads\ >
Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 2

Member Catalog:
+-----+-----+-----+
| Member ID | Name                | Status |
+-----+-----+-----+
| 123       | Muhamad Akbar Fadilah | Active |
+-----+-----+-----+

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 3
Enter member name to search: Akbar

Search Results:
+-----+-----+-----+
| Member ID | Name                | Status |
+-----+-----+-----+
| 123       | Muhamad Akbar Fadilah | Active |
+-----+-----+-----+

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice:
```



Hasil Aplikasi (Update Member Profile)

```
C:\Users\muhamad\Downloads\ >
+ -
| 123 | Muhamad Akbar Fadilah | Active |
+-----+-----+-----+
Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 3
Enter member name to search: Akbar

Search Results:
+-----+-----+-----+
| Member ID | Name | Status |
+-----+-----+-----+
| 123 | Muhamad Akbar Fadilah | Active |
+-----+-----+-----+

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 4
Enter member ID to update: 123
Enter new name (leave blank to keep current): Diny Khoerun Nida
Enter new membership status (leave blank to keep current): Non Active
Member updated successfully.

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice:
```



Hasil Aplikasi (View Member - After Update)

```
C:\Users\muham\Downloads\ x + -  
+-----+  
| 123 | Muhamad Akbar Fadilah | Active |  
+-----+  
Member Management  
1. Register New Member  
2. View Member  
3. Search Member  
4. Update Member Profile  
5. Delete Member  
6. Back to Main Menu  
Enter your choice: 4  
Enter member ID to update: 123  
Enter new name (leave blank to keep current): Diny Khoerun Nida  
Enter new membership status (leave blank to keep current): Non Active  
Member updated successfully.  
Member Management  
1. Register New Member  
2. View Member  
3. Search Member  
4. Update Member Profile  
5. Delete Member  
6. Back to Main Menu  
Enter your choice: 2  
Member Catalog:  
+-----+  
| Member ID | Name | Status |  
+-----+  
| 123 | Diny Khoerun Nida | Non Active |  
+-----+  
Member Management  
1. Register New Member  
2. View Member  
3. Search Member  
4. Update Member Profile  
5. Delete Member  
6. Back to Main Menu  
Enter your choice:
```



Hasil Aplikasi (Delete Member)

```
C:\Users\muhami\Downloads\ >
Enter your choice: 4
Enter member ID to update: 123
Enter new name (leave blank to keep current): Diny Khoerun Nida
Enter new membership status (leave blank to keep current): Non Active
Member updated successfully.

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 2

Member Catalog:
+-----+-----+-----+
| Member ID | Name           | Status   |
+-----+-----+-----+
| 123        | Diny Khoerun Nida | Non Active |
+-----+-----+-----+

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 5
Enter member ID to delete: 123
Member deleted successfully.

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: |
```



Hasil Aplikasi (View Member - After Delete)

```
C:\Users\muhami\Downloads\ x + -
```

Member ID	Name	Status
123	Diny Khoerun Nida	Non Active

```
Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 5
Enter member ID to delete: 123
Member deleted successfully.

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 2

Member Catalog:
| Member ID | Name | Status |
| Data members not found. |

Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice:
```

JYC
Berkas

Search

17:23
04/01/2025



Hasil Aplikasi (Borrow Book)

```
C:\Users\muham\Downloads\ x + -
Member Management
1. Register New Member
2. View Member
3. Search Member
4. Update Member Profile
5. Delete Member
6. Back to Main Menu
Enter your choice: 6

Library Management System
1. Book Management
2. Member Management
3. Transactions
4. Reports
5. Exit
Enter your choice: 3

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: 1
Enter Book ID to borrow: 123
Enter Member ID: 123
Book borrowed successfully. Due date: 2025-01-11

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: |
```



Hasil Aplikasi (View Transactions - After Borrow Book)

```
C:\Users\muham\Downloads\ x + -
Enter your choice: 3
Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: 1
Enter Book ID to borrow: 123
Enter Member ID: 123
Book borrowed successfully. Due date: 2025-01-11

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: 5

Transaction History:
+-----+-----+-----+-----+-----+
| Book ID | Member ID | Transaction | Date       | Due Date   |
+-----+-----+-----+-----+-----+
| 123     | 123       | Borrow      | 2025-01-04 | 2025-01-11 |
+-----+-----+-----+-----+-----+

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: |
```



Hasil Aplikasi (Extend Borrowing)

```
C:\Users\muham\Downloads\ x + v
Book borrowed successfully. Due date: 2025-01-11

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: 5

Transaction History:
+-----+-----+-----+-----+-----+
| Book ID | Member ID | Transaction | Date       | Due Date   |
+-----+-----+-----+-----+-----+
| 123     | 123       | Borrow      | 2025-01-04 | 2025-01-11 |
+-----+-----+-----+-----+-----+

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: 3
Enter Book ID: 123
Enter Member ID: 123
Borrowing period extended successfully. New due date: 2025-01-18

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: |
```



Hasil Aplikasi (View Transactions - After Extend Borrowing)

```
C:\Users\muhami\Downloads\ x + -
Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: 3
Enter Book ID: 123
Enter Member ID: 123
Borrowing period extended successfully. New due date: 2025-01-18

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: 5

Transaction History:
+-----+-----+-----+-----+-----+
| Book ID | Member ID | Transaction | Date | Due Date |
+-----+-----+-----+-----+-----+
| 123 | 123 | Extend | 2025-01-04 | 2025-01-18 |
+-----+-----+-----+-----+-----+

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: |
```



Hasil Aplikasi (Return Book)

```
C:\Users\muham\Downloads\ x + -
Borrowing period extended successfully. New due date: 2025-01-18

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: 5

Transaction History:
+-----+-----+-----+-----+-----+
| Book ID | Member ID | Transaction | Date | Due Date |
+-----+-----+-----+-----+-----+
| 123 | 123 | Extend | 2025-01-04 | 2025-01-18 |
+-----+-----+-----+-----+-----+

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: 4
Enter Book ID: 123
Enter Member ID: 123
Transaction not found or not eligible for late fee calculation.

Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: |
```



Hasil Aplikasi (View Transactions - After Return)

```
C:\Users\muham\Downloads\ x + - x
Enter your choice: 2
Enter Book ID to return: 123
Enter Member ID: 123
Book returned successfully.

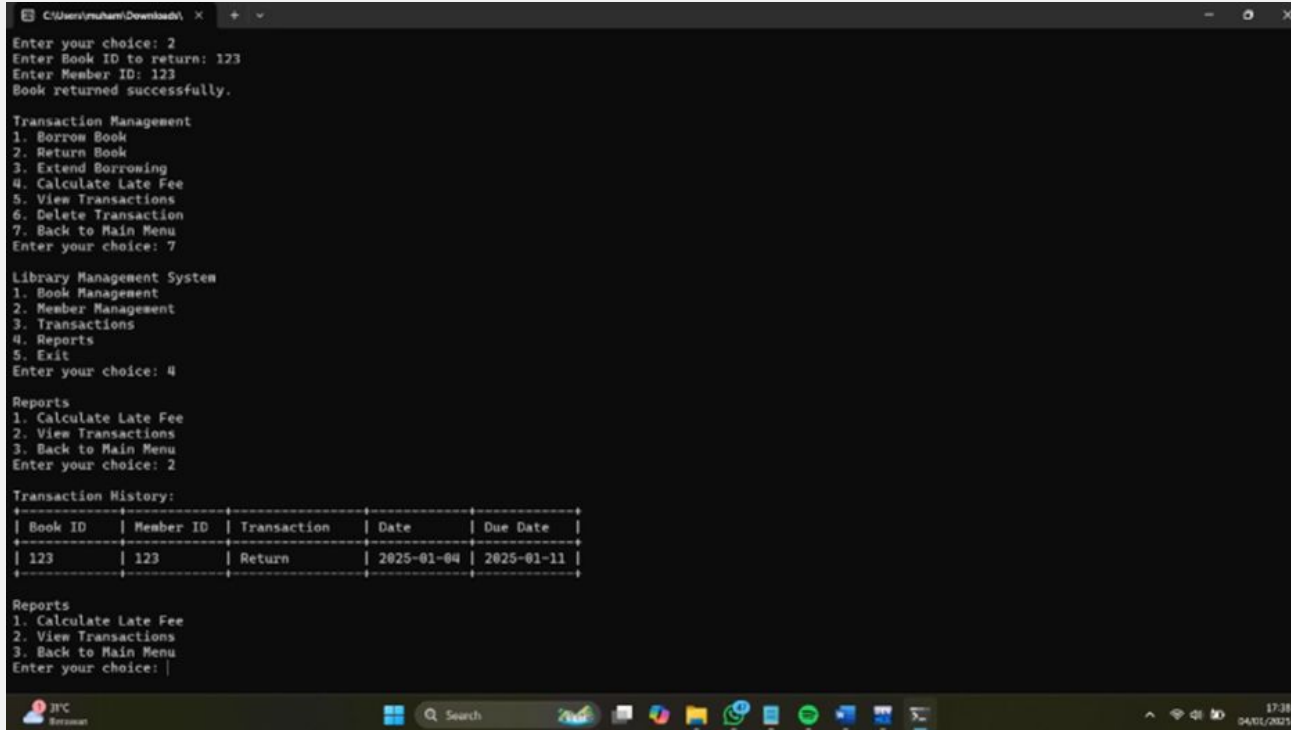
Transaction Management
1. Borrow Book
2. Return Book
3. Extend Borrowing
4. Calculate Late Fee
5. View Transactions
6. Delete Transaction
7. Back to Main Menu
Enter your choice: 7

Library Management System
1. Book Management
2. Member Management
3. Transactions
4. Reports
5. Exit
Enter your choice: 4

Reports
1. Calculate Late Fee
2. View Transactions
3. Back to Main Menu
Enter your choice: 2

Transaction History:
+-----+-----+-----+-----+-----+
| Book ID | Member ID | Transaction | Date | Due Date |
+-----+-----+-----+-----+-----+
| 123     | 123      | Return      | 2025-01-04 | 2025-01-11 |
+-----+-----+-----+-----+-----+

Reports
1. Calculate Late Fee
2. View Transactions
3. Back to Main Menu
Enter your choice: |
```



KESIMPULAN

Kesimpulan

Aplikasi Peminjaman dan Pengembalian Buku berbasis **C++** yang dikembangkan oleh **Kelompok 7** memanfaatkan struktur data **Stack** untuk mengelola proses transaksi dengan efisien. Implementasi konsep **Last In, First Out (LIFO)** melalui metode seperti **push()**, **pop()**, **top()**, **empty()**, dan **size()** memungkinkan pengelolaan data peminjaman dan pengembalian buku secara terstruktur.

Kelebihan aplikasi ini meliputi:

- Antarmuka pengguna yang sederhana dan intuitif.
- Mendukung pengelolaan data secara terorganisir berdasarkan prinsip **LIFO**.
- Memanfaatkan **Standard Template Library (STL)** di **C++**, sehingga mempercepat pengembangan.



Kesimpulan

Namun, terdapat beberapa keterbatasan:

- Struktur data Stack tidak mendukung traversal langsung, sehingga kurang optimal untuk kebutuhan akses acak.
- Cocok hanya untuk aplikasi yang mengutamakan urutan **LIFO**.

Secara keseluruhan, aplikasi ini berhasil menjawab tantangan dalam pengelolaan perpustakaan tradisional, meningkatkan efisiensi, meminimalkan kesalahan pencatatan, dan mendukung pelacakan inventaris yang lebih modern.



**Ada
Pertanyaan ?**





Terima Kasih

