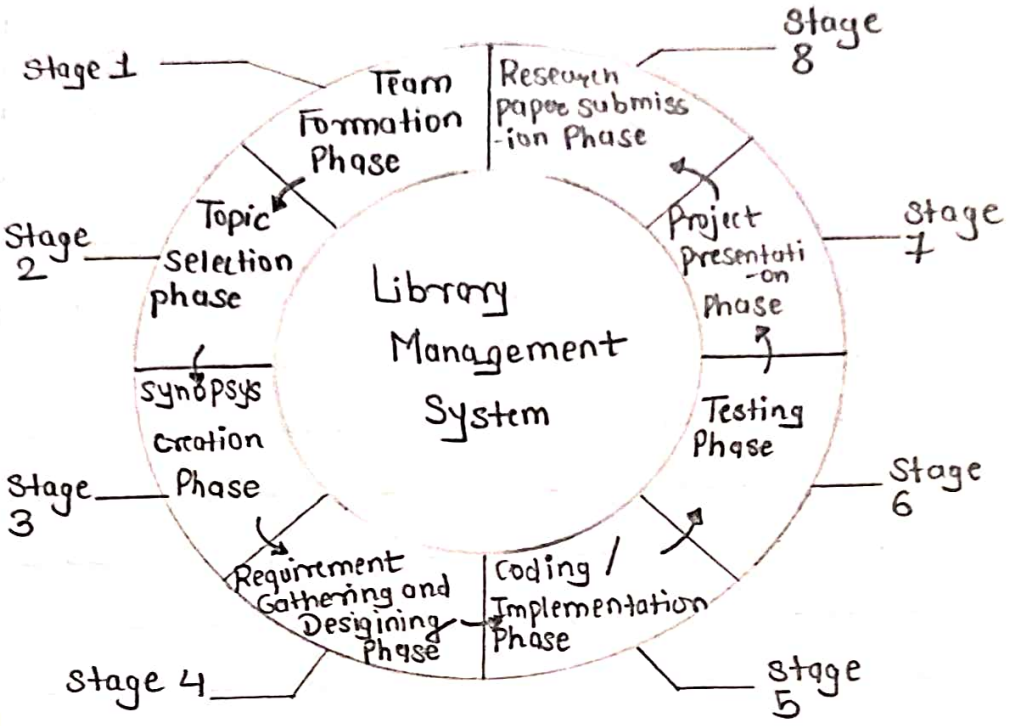
Experiment No. 1

Date :

Aim : Case study on "Library Management System".

Objective : To study and apply SDLC concepts to the above case study.

Diagram :



* Library Management System *

Experiment No. 1 Date: 31

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Objective: To study and apply SDLC concepts to the above case study.

Theory & Case study Analysis:

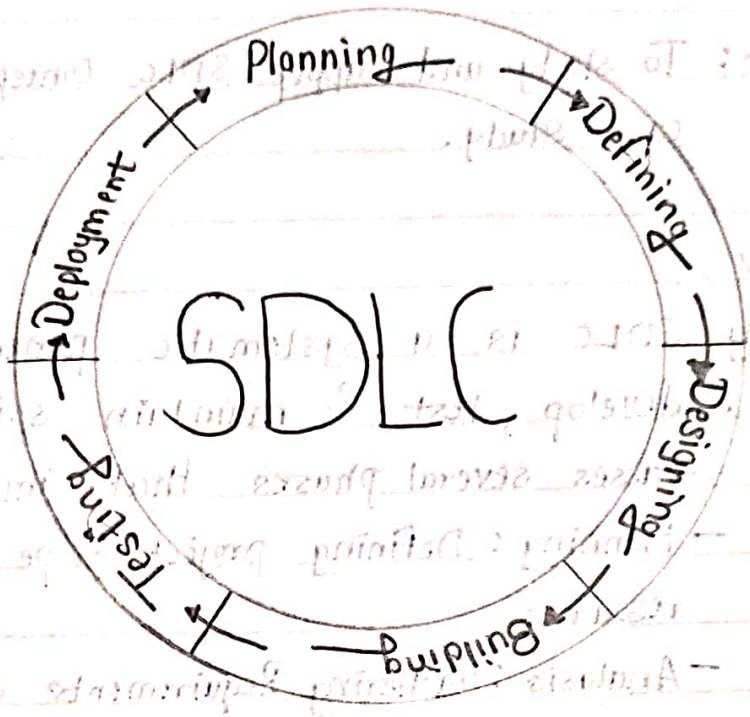
SDLC is a systematic process used to design, develop, test & maintain software. It encompasses several phases that includes:

- Planning: Defining project scope, objectives & resources.
- Analysis: Gathering Requirements and understanding user needs.
- Design: Creating system architecture and detailed specifications.
- Implementation: Writing code and building the software.
- Testing: Verifying functionality and identifying goals.
- Deployment: Rolling out the software to users.
- Maintainance: Ensuring ongoing support and updates.

SDLC ensures efficient software development by following a structured approach from inception to completion.

Experiment No. 1

Diagram:



* Software Development Life cycle *

About the A library management system automates library library operations, making them more efficient.
Management key Aspects of LMS are :-
System :

— Functional Requirements :

- Books Management : Store book information (title, author, genere, avaliability).
- User management : User accounts, profiles and about registrations.
- Circulation Management : Borrowing, returns, renewals & fines.
- Reporting and Analytics : Usage reports, inventory reports, etc.

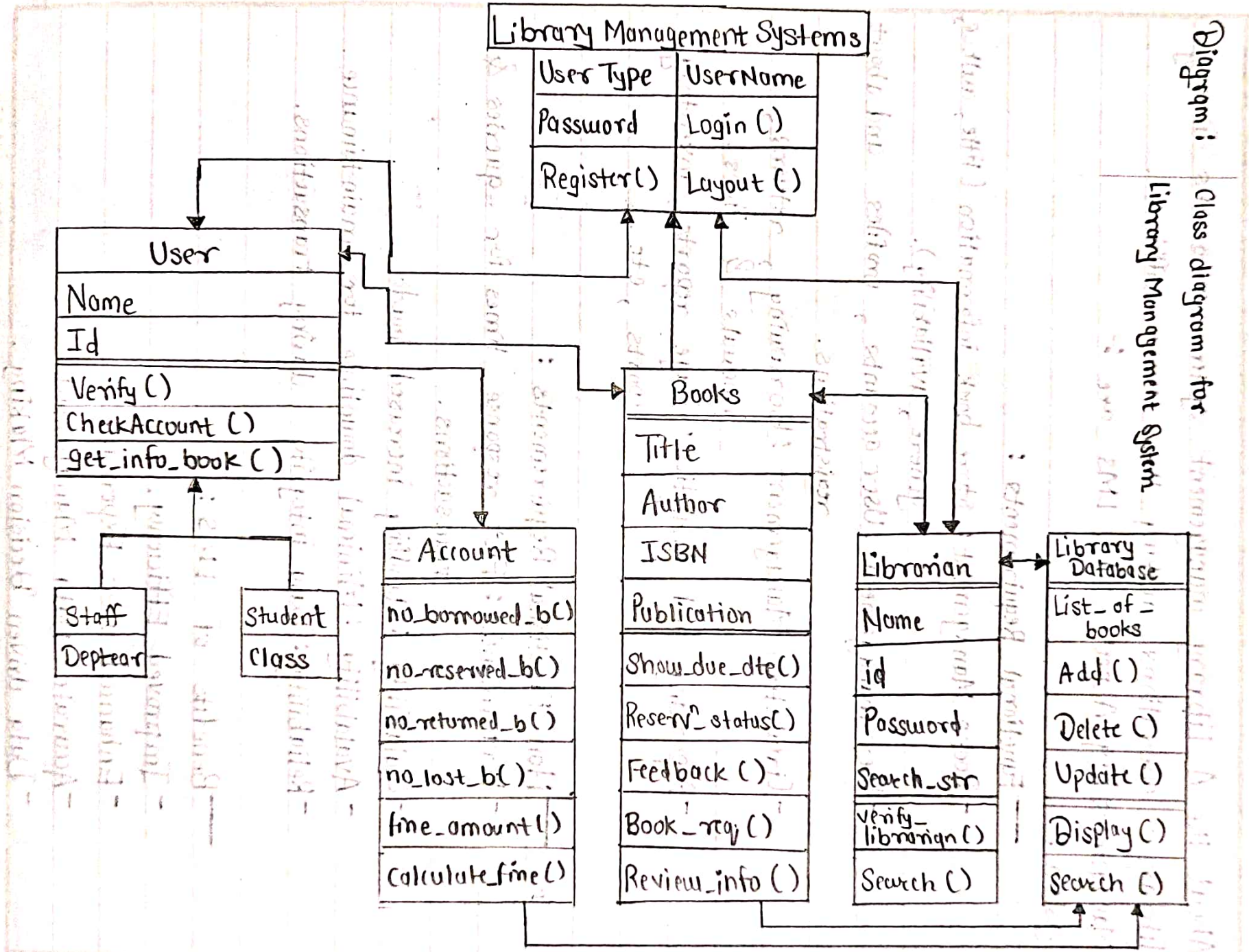
— Non- Functimal Requirments :

- Performance : Fast response times for queries & transactions.
- Scalability : Handling increased load
- Avalability : Minimal downtime for maintainance.
- Reliability : Data integrity during transactions.

— Benefits of LMS :

- Improved Efficieny.
- Enhanced user Experience
- Accurate Data Management
- Data driven Decision Making.

Diagram : Class diagram for Library Management System



Comparative

Case Study: Comparison of each stage of the Software Development Life Cycle (SDLC) with a case study on Library Management System (LMS).

1. Planning :

SDLC Stage :- Defining purpose & scope of project
- Identify resources, stakeholders and project goals.
- Create a project plan & schedule.

LMS Case study :- Determine the need for a new library management system. (eg outdated system new functionalities required)
- Identify key stakeholders (library staff, students & faculty).
- Define goals (improve book tracking, streamline borrowing / return process)
- Create a timeline and Budget for project.

2. Requirement Analysis :

SDLC Stage :- Gathered Detailed information on what the system should do.
- Document requirements and get approval from the ~~state~~ stakeholders.

LMS Case Study :- Conduct interviews and surveys with librarians and users to gather requirements.

(eg: User interface preferences) (eg: Barcode scanning).
- Document Requirements (eg: User Login, search functionality, overdue notifications).
- Get approval from Library management & other stakeholders.

3. System Design :
SDLC Stage :- Design the system architecture and components.
- Create detailed design documents.
LMS Case study :- Design the system (eg. client server model)
- Create design documents detailing the user interface, data flow diagrams & system modules (eg: User management, book inventory, etc).

4. Implementation :- (Coding)
SDLC Stage :- Write the actual code based on the design documents.
- Develop the systems in modules or phases.
LMS case study :- Develop the system's front & Backend (eg: UI/UX, web application using MERN Stack, Server side scripting with Node.js etc ....).
- Implement modules like user registration, book catelog, borrowing system, etc).

5. Testing :

SDLC Stage :- Test the system for defects & ensure it meets the requirements.

- Conducts various testing on individual models.

LMS case study :-

- Conduct Integration testing to ensure modules work together (eg: user reg. with borrowing system).
- Execute system testing to validate the complete system's functionality.
- Perform user acceptance testing with actual trial / demo users (library staff and students).

6. Deployment :-

SDLC Stage :- Deploy the system to a production environment.

- Ensure all components are properly configured & are operational.

LMS Case Study :- Install the system on the library servers and config neccessary harware & softwares.

- Migrate data from the old system to the new system if applicable.
- Conduct a final round of testing in the production environment.

Conclusion: By comparing each stage of the SDLC with the development of a Library Management System, we can see how the structured program approach of the SDLC helps ensure the system is well-planned, throughly tested and effectively maintained.

7. Maintenance :-

SDLC Stage :- Provide ongoing support & legal Maintainence.

- Fix any issues that arise & implement updates as needed.
- Monitoring the software.

LMS Case Study :- Moniter the system for the ongoing performance.

- Provide regular updates and enhanced software on user feedback (eg: new features, security patches)
- offer terminal support to library staff and users.
- Providing regular hardware / server maintainence.

Conclusion :- By comparing each stage of the SDLC with the development of Library Management System (LMS), we can see how the structured program approach of the SDLC helps ensure the system is well planed, throughly tested and effectively maintained.