**ADMIN USERNANE: admin**

**PASSWORD: admin\_password**

**STAFF USERNAME : staff**

**PASSWORD: staff\_admin**

**INTRODUCTION**

In order to accomplish the project goals, an organized approach was used to design and implementation of the National Library Information System (NaLib), including best practices and contemporary technologies. The process of developing the system will be broken down into several important stages, including database design, system architecture, user interface development, and backend functionality.

1. System Architecture

By leveraging scalable and reliable cloud infrastructure, the NaLib system was developed as a cloud-native application.The use of microservices architecture was used to improve maintainability, flexibility, and modularity.To ensure consistency across different settings, individual services will be packaged and deployed.

2. Design of Databases:

Effective storage and management of library data will be achieved through the use of a relational database management system (RDBMS) by using MongoDB.Tables for staff records, library materials, borrowing activities, membership information, and reminder setups will all be included in the database schema.

3. The past tense of user interface development

With a user-centric design theory, the user interface guarantees an intuitive experience on the web, in mobile applications, on WhatsApp, and on USSD. Adaptive layouts on various devices were created using the concepts of responsive design.

4. Functionality of the Backend:

A combination of programming languages was used to construct the backend, with Flask and Python being used for web services and real-time capabilities.

Frontend and backend components are able to communicate more easily due to RESTful APIs.

Based on user roles, authentication and authorization procedures were  put in place to provide secure access.

**ERD**

Entities:

Staff

Attributes: qualification, experience, skill\_set, grades, contact\_info, role

Book

Attributes: title, author, genre, format, borrowing\_limit, reminder\_config, availability, cataloging\_date, cataloging\_personnel

Additional attributes for lending\_info: current\_borrower, due\_date, return\_condition

Membership

Attributes: name, postal\_address, physical\_address, enrollment\_date, status

Additional attributes for lending\_behavior: transactions, overdue\_occurrences, lending\_preferences

**RELATIONSHIPS**

Staff to Book (1:N): A staff member may be involved in the cataloging of several books, but only one staff member catalogs each book.

Membership to Book (M:N): Per book, members are able to check out numerous copies for themselves. To do this, the borrowing connection must be represented as a transaction entity.

**DIAGRAM**

