BAHRIA UNIVERSITY, (Karachi Campus)

Department of Computer Science

PROPOSAL

Course Title: Computer Organization & Assembly Language **Course Code**: CEL-324
Course Instructor: Ms. Aisha Danish **Class**: BS (CS) – 3B
Senior Lab Instructor: Ms. Mehwish Saleem **Name:** ALIZA

PROJECT TITLE:

"LIBRARY MANAGEMENT SYSTEM"

GROUP MEMBERS LIST:

<WITH TEAM LEAD>

ALIZA MALIK (02-134231-029)

AYESHA (02-134231-026)

PROJECT SCOPE:

The scope of a library management system project in computer organization and assembly language encompasses various crucial aspects, including robust functionality for user interaction, efficient data handling through appropriate algorithms and data structures, user-friendly interfaces, error handling mechanisms, performance optimization techniques, rigorous testing and validation procedures, comprehensive documentation, effective project management strategies, and seamless integration and deployment considerations. By addressing these key components, the project aims to deliver a reliable, user-friendly, and efficient system for managing library operations, catering to the needs of librarians, administrators, and library patrons while ensuring scalability, maintainability, and adherence to specified requirements.

PROJECT ABSTRACT:

The Library Management System (LMS) project aims to revolutionize the efficiency of library operations through automation and optimization. Implemented in assembly language for the x86 architecture, the system encompasses crucial modules for user interaction, book management, search and retrieval, and data storage. By providing a user-friendly interface for patrons and staff, facilitating seamless addition, removal, and modification of books, enabling efficient search functionalities, and ensuring robust data storage and retrieval mechanisms, the LMS project strives to enhance overall productivity, reduce manual tasks, and improve accessibility to library resources. Leveraging assembly language's direct control over hardware resources, the project demonstrates its capability to develop efficient software solutions for real-world applications, particularly in resourceconstrained environments.

PROJECT FUNCTIONALITIES:

1. Display Books in Library (Aliza-029,Ayesha-026)
 - Users can view the list of books available in the library along with their names and types.

2. Add Book(Ayesha-026)
 - Users can add a new book to the library. They are prompted to enter the name and type of the book, and the system allocates space for it in the library.

3. Remove Book(Aliza-029)
 - Users can remove a book from the library by specifying its number. The system marks the space occupied by the removed book as available for adding new books.

4. Exit
 - Users can exit the application, ending the program execution.

These functionalities provide basic library management operations, allowing users to interact with the library system by displaying, adding, and removing books.

MODULE DISTRIBUTION

Part Name: Initialization and Data Declaration
Associated to: Aliza-029
Functionality: This section includes initializing the program with the **.org**, **.model**, and **.stack** directives, as well as declaring various data sections like **header**, **menu**, **book_name**, **book_type**, **book_num**, **book_list**, **error_msg**, and **full_msg**. These data sections contain messages and prompts used in the program.

Part Name: Book Information
Associated to: Ayesha-026
Functionality: There are arrays containing information about the books such as **book1_name**, **book1_type**, **book2_name**, **book2_type**, and so on. Each book's name and type are stored in these arrays.

Part Name: Book Availability
Associated to: Aliza-029
Functionality: The array **available_book** keeps track of available slots for books in the library. Each element corresponds to a slot, with **0** indicating an empty slot and numbers **1-9** representing occupied slots.

Part Name: Code Section
Associated to: Aliza-029,Ayesha-026
Functionality : The code section begins with a loop labeled begin which initializes the program and prints the header.

- The program then enters a loop labeled start, where it displays the menu and waits for user input.
- Based on the user's choice, the program executes different functionalities:
- First Choice: Display the list of books in the library.
- Second Choice: Add a new book to the library.
- Third Choice: Remove a book from the library based on the user's input book number.

- Fourth Choice: Exit the program.
- Each functionality is implemented with its own subroutine (FIRST_CHOICE, SECOND_CHOICE, THIRD_CHOICE, FORTH_CHOICE) and relevant subroutines (print_book, add_book, space_pad, etc.).

Part Name: **Subroutines**
Associated to: **Ayesha-026**
Functionality:

- print_book: Prints the list of available books in the library.
- add_book: Adds a new book to the library.
- space_pad: Pads spaces to the book name and type to ensure consistent formatting. These subroutines are called based on the user's choice to perform specific actions.
- Overall, your code implements a basic library management system in assembly language, allowing users to display books, add new books, and remove existing books

Teacher Signature: _____

Remarks: _____

Submission Date: _____