**MERU UNIVERSITY Management System - README**

**Summary**

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| Course: | Data Structures and Algorithms |
| Lecture: | Mr. Dismas Kitaria |
| Institution: | Meru University of Science and Technology |
| Semester: | 2024/2025 |
| Project Due Date: | 24th October 2025 |

# Overview

The MeruLite School Management System is a modular prototype developed to demonstrate the use of core data structures in solving real-world academic management problems. It provides functionalities for student registration, course scheduling, fee tracking, library management, and performance analytics, implemented in C++ as part of the Data Structures and Algorithms coursework.

# Data Structures Used

* Student Registry — Hash Table (unordered\_map)
* Course Scheduling — Circular Queue
* Fee Tracking — AVL Tree (Balanced Binary Search Tree)
* Library System — Stack and Hash Map
* Performance Analytics — Matrix and Max Heap

# How to Compile and Run

1. Save the file **sms\_system.cpp** to your computer.
2. Open a terminal or command prompt in the same directory.
3. Compile using:

g++ -std=c++17 sms\_system.cpp -o merulite\_sms 4. Run the program using:

./merulite\_sms

5. Use the on-screen menu to explore modules like registration, library, and analytics.

# Included Files for Submission

* **sms\_system.cpp** – Source code for the School Management System.
* **MeruLite\_School\_Management\_System\_Report.pdf** – System design, performance analysis, and ethical reflection.
* **MeruLite\_School\_Management\_System\_Code.pdf** – Formatted source code (appendix).
* **MeruLite\_School\_Management\_System\_README.pdf** – This summary document.

# Conclusion

This README document summarizes the full project submission for the Data Structures Group Assignment. All files together represent a complete and functional system, ready for upload to GitHub as required by the instructor.