



## Medical Laboratory Management

### Project Context

Nowadays, computerization is one of the processes that help us develop in many ways, particularly in the storage of information/data, which can save a lot of time, labor, and tasks over time.

Keeping a patient's record is critical in a medical laboratory. It takes time to carefully store and process. The incorporation of technology to operate the manual form in every medical operation is vital to fulfilling the responsibility successfully and efficiently. Maintaining tasks and duties in medical establishments without the assistance of new technology and performing all information-related tasks manually is indeed difficult to achieve because medical operations alone are difficult to fulfil, how much more so when performed without the consideration of making the task using advanced and simple methods. The researcher of this study implemented the capstone project titled "Medical Laboratory Management" to provide precise and accurate results in medical laboratories. The system integration will serve as a centralized platform for medical laboratories to manage to different managerial areas. Medical workers will be able to perform accurate labs and provide precise reports for patient information, records, and laboratory results thanks to the technology. This technology allows doctors to combine correct test and laboratory results and communicate with patients even when they are not physically there. Patients can also use the system to view the results online, saving them money and time, and they can discuss the results with administrators or doctors. The system will be used to save results for longer periods of time. The project will be developed using the Software Development Life Cycle (SDLC) method. To ensure seamless and accurate functionality, the project will be tested, examined, and assessed. The system's intended users are medical clinics, their doctors, workers, and patients.

### Objectives of the Study

**General Objective**—The primary goal of the project is to design, develop, and implement a Medical Laboratory Management System that will streamline the accurate results and information of laboratory tests supplied to patients.

The researchers specifically aim for the following goals:

1. Clinical development of a centralized system accessible and usable by medical laboratories.
2. To facilitate and simplify patient outcomes, information records, and medical reports that will be used as a reference by health care providers.
3. The establishment of an online transaction platform for medical laboratories and their patients.
4. To create a platform that allows patients to easily check up on laboratories and, if necessary, alleviate any burdens they may have felt.
5. To evaluate the user acceptability, effectiveness, productivity, quality, and dependability of the system.



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### Significance of the Study

The daily management of a laboratory's operations, including personnel, tools, supplies, and patient care, falls to lab managers. They could also be in charge of hiring new staff members and managing office duties like scheduling and billing.

The medical laboratory is a key part of the healthcare system, as it helps diagnose and monitor disease. As such, it is important for lab managers to have the knowledge and skills to manage lab operations.

### The following individuals/ groups will benefit from the success of the study:

**Laboratory Doctors.** The technology will help them process the laboratory findings of their patients in a timely, convenient, and accurate manner. They can perform or create records automatically using this system, eliminating the need for paper copies; instead, they will just record the results, and individual patients will have access to those data. They can provide better treatment to their patients.

**Patients.** The success of the project would substantially help them by offering a readily available and accessible platform from which they can simply monitor and check the results. They can save time and effort by not having to travel to the lab to obtain the results. Using the system, they can publicly ask questions regarding the outcomes.

**Researchers.** The study's success will improve their research abilities and knowledge.

**Future Researchers:** The study can be used as a reference or a guide in the development of their Medical Laboratory Management System.

### Features of the System

- **Patient Management** - this module is used to manage information of the patient in the system. The administrator can add, edit, update or delete patient information.
- **Doctor Management** - the information of the doctors in the medical laboratory will be managed using this feature. The admin can add, edit, update or delete details of the doctors in the system.
- **Chatbot** - this can be used by the doctors and the patients to communicate. Artificial intelligence (AI) that uses chatbots is created to communicate with people in natural language. Although chatbots have been around for a while, they are not yet as sophisticated as they will be. The advantages of chatbots over humans are numerous. They do not need breaks, holidays, or meals and they may labor continuously. They can also swiftly and accurately process a lot of data and give answers to questions.
- **Lab Test Management** - this module will be used to manage lab test in the medical laboratory. This feature can be used to add, edit, update details of the Lab test.
- **User Management** - this module is used to manage the users of the system. The admin can add, edit, update or delete user details.



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- **Reports Generation** - this feature is used to generate and view reports in the system. This can be used to generate reports in the medical laboratory.
- **Database Backup** - this is used to manage database backup of the system. The database backup feature in the system helps you create a copy of your data to safeguard against accidental deletion or corruption. This is especially useful when you have a large volume of data or when you are working with sensitive information and need to protect it from unauthorized access.

### Conclusion

The goal of this study was to assess existing medical laboratory techniques. The analysis identifies weaknesses in the current system and suggests areas for improvement. As a result, the researchers developed and presented a Medical Laboratory Management System to responders and end-users. The study's findings revealed that the established system satisfied the needs and expectations of the study's intended end-users and respondents. The majority of respondents saw the system's potential and awarded it high marks for user acceptability, efficacy, quality, productivity, and dependability.

### Recommendations

The study's impressive findings spurred the researchers to advocate for the system's implementation passionately. Because of the efficiency and dependability it may deliver to the targeted end-users, the Medical Laboratory management system is suggested. It will increase the security and confidentiality of files containing medical records for patients, such as records, data, and test results. The researchers also note that in order to correctly use the system, the targeted end-users must become acquainted with its features and how it operates.

### Summary

The Medical Laboratory Management System will enable medical workers to do accurate labs and provide accurate reports for patient information, records, and laboratory results. Doctors can use this technology to combine correct test and laboratory data and speak with patients even when they are not physically present. Patients can also utilize the system to view the results online, saving money and time, and they can communicate with the administrators or doctors about the results. The study's findings revealed that the built system matched the expectations and requirements of the study's target end-users and responders. The majority of respondents saw the system's potential and awarded it high marks for user acceptability, efficacy, quality, productivity, and dependability. The Medical Laboratory management system is recommended because of the efficiency and dependability it may provide to the intended end-users.