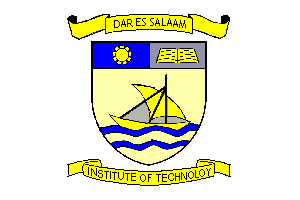
DAR ES SALAAM INSTITUTE OF TECHNOLOGY



DEPARTMENT OF COMPUTER ENGINEERING

ORDINARY DIPLOMA IN COMPUTER ENGINEERING

(NTA LEVEL 6)

PROJECT 1

PROJECT TITLE: DEVELOPING A LABORATORY INFORMATION MANAGEMENT SYSTEM FOR MANAGING DIT LABTECH DEPARTMENT LABORATORIES.

PROJECT TYPE: PROBLEM SOLVING

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YEAR OF STUDY: 2019/2020

1. INTRODUCTION

In Laboratory there should be well trained laboratory personnel who must understand how chemistry, Biology and physics laboratory facilities operate and managed to ensure sustainability and safety. Given the chance, they should provide input to the laboratory designers to ensure that the facilities meet the needs of the functions of the laboratory. Laboratory personnel need to understand the capabilities and limitations of the ventilation systems, environmental controls, laboratory chemical hoods, and other exhaust devices associated with such equipment and how to use them properly. To ensure safety and efficiency, the experimental work should be viewed in the context of the entire laboratory and its facilities. Laboratories are important for training, research and innovations hence need to be well managed to ensure quality and safety. Therefore, means or ways of ensuring quality, safety and good management of laboratories is essential.

1.1 PROBLEM STATEMENT

Many laboratories in research, higher learning institutions and secondary schools have challenges in the preparation, handling and managing facilities and chemicals in the laboratory environment. The occurrence of these challenges is due to lack of comprehensive information system, alert systems or safety detection systems that are able to coordinate the entire laboratory management in a more secure way for users and caretakers of laboratory. In many laboratories, laboratory management system available are those manual systems that enable user to collect and record information manually something that takes a lot of time, with human errors.

But also the security of laboratory, chemicals, equipment and other facilities is also a challenge in many of laboratories in the country.

In view of these challenges, this project will focus on developing a computerized laboratory management system that will reduce problems and challenges found within the laboratory. The system will facilitate collection, recording, storing and handling of all information systematically within the laboratory for a short period of time and with a high security for prevention of data loss and managing of all required facilities and chemicals in Laboratory.

1.2 OBJECTIVES

The following are the objectives to be achieved by this project

1.2.0 MAIN OBJECTIVES

* The aim of this project is to develop a department computerized information management system for managing laboratory, information, facilities and chemicals.

1.2.1 SPECIFIC OBJECTIVES

1. To develop subsystem to monitor laboratory facilities usage.
2. To develop subsystem to monitor chemical and equipment new entries and their utilization/usage.
3. To design and develop subsystem for users to communicate with system admin to gather their information based on requirements and facilities needed or limited.
4. To design and implement a database for storing information into the system.

1.3 SIGNIFICANCE OF THE PROJECT

1. This project will be useful in Laboratory department ensuring that there is a proper arrangement of facilities and chemicals for all laboratory users.
2. To increase the quality and focus of keeping all material facilities, equipment and chemicals in check.
3. To keep track of the information and time for every laboratory requirements embedded and rooted from the laboratory.
4. To prevent corrective maintenance.
5. Increases operation efficiency of department.

# 2.0. LITERATURE REVIEW

This section involves passing through different works done by different people which relates to my project. Also it involves reading different sources of information such as internets, books and articles, which contributes positively to my project.

The literature review is categorized into two parts which are

* The existing system
* The proposed system

2.0.1 OPERATION OF EXISTING SYSTEM.

In Dar es Salaam Institute of Technology (DIT) we have number of laboratories which may accommodate approximately 30 students once per each laboratory. I have conducted a simple survey to identify what method used to manage those labs facilities and chemicals, thus I observed people are suffering while using manual paper to monitor laboratory facilities and chemicals, improper usage of chemicals and lab facilities led to the absence of complete information within the department in the submissions and versions of all laboratory requirements.

Lab users spend a lot of time in organizing their information but it also gives them a hard time discovering some of the facilities, substances and chemicals that have been released or decomposed or gone through their own manual system.

2.0.2 DISADVANTAGES OF THE EXISTING SYSTEM

1. The efficiency of the system is low and slow.
2. It takes a lot of time to collect data of requirements.
3. It easy to loss data

2.1 OPERATION OF PROPOSED SYSTEM

The proposed system that will come up will help to overcome the challenges identified by the lab manager, store keeper, students, lab Lectures and Head of laboratory department by looking at the whole process of reporting information, handling of material information with the utmost urgency and high quality.

This system will control and manage the facilities and chemicals through sending information of such requirements directly to the database system to maintain proper way of recording added, removed or replaced facilities and chemicals within the laboratory.

DIAGRAM OF A PROPOSED SYSTEM

**Raw Data Entries**

**D**

**B**

**M**

**S**

**Data Storage**

**Facilities**

**System Administrator**

**LABORATORY INFORMATION MANAGEMENT SYSTEM**

**DATABASE**

**Data Security**

**Queries**

**Reports**

**Data Retrieval**

**Administration**

**Chemicals**

**Equipments**

**Figures**

2.1.0 ADVANTAGES OF THE PROPOSED SYSTEM

1. The system will give out visual output and will increase efficiency of system.
2. Presence of departmental information system will function better in way that input data and output data of requirements will be controlled and managed in system correctly.
3. It will reduce the wastage of time in collecting and managing all facilities and chemicals in laboratory.

# 3.0. MATERIALS AND METHODS

## 3.1. Development of System

In designing and developing this system prototyping modal will be used because it will allow to build, test, and then reworked when needed until an acceptable prototype is achieved. It also creates a base to produce the final system.

Prototyping model works best in scenarios where the project requirements are not known. It is an iterative, trial, and error method which take place between the developer and the client.

Therefore the Departmental Information System for managing laboratory facilities and chemicals will be developed in a move from concept, through design, building prototype, evaluating user requirements, refining the prototyping, implementation, and ends up at operation and maintenance.

**As the diagram of phase shown below.**

