A REPORT ON AN EIGHT-WEEK INTERNAL ATTACHMENT AT DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

FROM 9TH JUNE 2022 TO 8TH JULY 2022

PRESENTED BY:

NAME: BRIAN MINJIRE WAMBUGU

REG. NO: C026-01-1339/2019

THIS REPORT IS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE, BACHELOR OF SCIENCE IN COMPUTER SCIENCE

SUBMITTED TO THE DEPARTMENT OF COMPUTER SCIENCE

SCHOOL OF COMPUTER SCIENCE

JULY 2022

DECLARATION

I declare that this report is an original work and has not been presented to any degree in any other institution. This report on internal attachment shown to the Dedan Kimathi University of Technology, as partial fulfillment of the requirements for the award of a bachelor's degree in computer science is the result of my work.

NAME**: BRIAN MINJIRE WAMBUGU**

REG. NO.: **C026-01-1339/2019**

SIGN: ……

DATE: ……

This report has been put into submission for approval and examination with the approval of the university supervisor;

NAME: ……..

TITLE HELD: ……

SIGN: ……DATE…….. STAMP……

ACKNOWLEDGMENT

The completion of the internal attachment took the support of our instructors. They provided the needed support and guidance during the entire training session.

Last but not least, I am grateful to Dedan Kimathi University for offering me an opportunity to enhance my skills through this program and undertaking different studies at the institution.

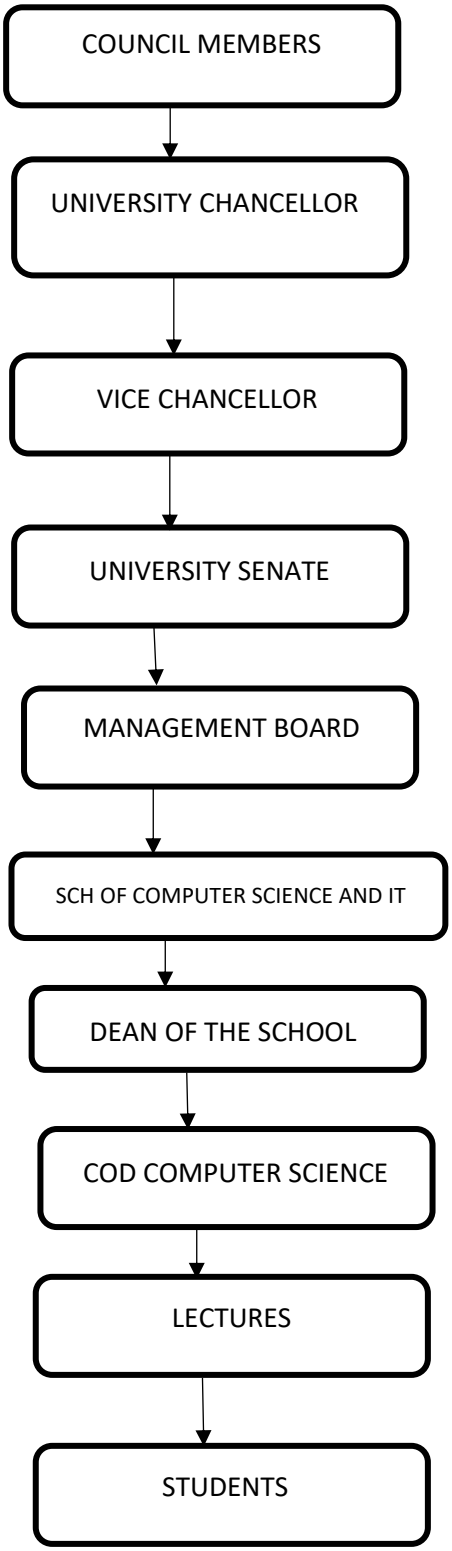
DEDICATION

I dedicate this report to my God and family. Moreover, thank the instructors who took me through the entire process. I also thank my fellow students who assisted me in doing it.

ABSTRACT

This report is an overview of eight weeks of internal attachment I had at the Dedan Kimathi University of Technology. It rehashes the work done during this period and the problems encountered and includes suggestions on how to solve these problems. It also contains highlights of specific tasks performed during the attachment. I also emphasized some of the solutions that one can do in the future to overcome those problems.

STRUCTURE OF THE SCHOOL MANAGEMENT



Contents

CHAPTER 1: INTRODUCTION

I joined the internal attachment offered by the Dedan Kimathi University of Technology, where I pursue my degree in Computer Science. We concentrated on the topics: Software Development, Networking, and PC Repair and Maintenance. All sessions were carried out in computer laboratories with the help of our instructors under our able supervision Mr. Mburu.

1.1 History

DeKUT was established under the University's Act 2012 by the Government of Kenya in December 2012. It is a public university that mainly focuses on; quality education, research, innovation, technology development, and transfer. It is the successor of Kimathi University College of Technology (KUCT) which was established in 2007.

1.2 Vision and Mission Statements

1.2.1 Motto:

Better Life Through Technology

1.2.2 Vision:

To be a Premier Technological University Excelling in Quality Education, Research, and Technology Transfer for National Development.

1.2.3 Mission:

To provide an academically stimulating, culturally diverse, and quality learning environment that fosters research, innovation, and technology development towards producing relevant technical and managerial human resources and leaders to contribute to the attainment of national development goals.

1.3 Core Values

- Innovation
- Scholarship

- Diversity
- Integrity
- Teamwork

1.4 Objectives

- Allows students the opportunity to work in their area of intended specialization.
- To expose the students to the external and internal environment and encourage them to be productive whilst developing future workers.
- To demonstrate effective use of written, verbal and non-verbal communication, employing relevant knowledge skills and judgment in a business set-up setting.

CHAPTER 2: SOFTWARE DEVELOPMENT

2.1 Theory

Software development refers to a set of computer science activities dedicated to the process of creating, designing, deploying, and supporting software.

Software development is a process of dividing software development work into smaller, parallel, sequential steps or sub-processes to improve design and product management. It is also known as a software development life cycle (SDLC). The methodology may include the pre-definition of specific deliverables and artifacts created and completed by a project team to develop or maintain an application.

The Software Development Process consists of 5 steps:

1. System Planning
   This involves understanding why the software should be developed and how the programmers should go about developing it. The value of the software to its users and creators is identified and the work plans of identifying staff are done in preparation for development.
2. System Analysis
   The current system is investigated, improvement opportunities are identified and the concept of the new system is developed.
3. System Design
   This clarifies the design strategy to be used in developing the software, the database and file specifications are developed together with the program design which defines the programs to be written.
4. System Implementation
   The software is built, purchased, and outsourced. Software installation and establishing a support plan are also done here. The support plan offers a systematic way of identifying major and minor changes to the software.
5. System Support
   The staff maintains, enhances, and protects the software. Errors are corrected and the software is adapted to changes in the environment.

2.2 Procedure

Week 1:

- Introduction to Software Documentation.
- Presentation of the software project proposal.
- Background of the study.

Week 2:

- Literature review.
- System methodology
- System design
- Commissioning to write code.

Week 3:

- Front-End Design and Development.
- Database Development.
- Back-End Design and Development.
- Integration of Front-End, Database, and Back-End into a fully working System.
- Testing and Debugging.
- Implementation and deployment.

2.3 Data Discussion

After an introduction, our group identified a problem and stated the objectives we would like to achieve to solve the problem. We were directed on how to come up with several case studies and how to review their methodologies. We presented our project proposal for review which was approved for development.

We were introduced to System Analysis and Design, where they stated the requirements for our software. We displayed the functionalities of the software using appropriate diagrams that would help us in program design and design strategy.

We programmed the software and integrated it, tested and implemented the software.

2.4 Limitations

- Insufficient time for choosing the system to develop and write a proposal.
- Inadequate time for the development of the software is a common problem in developing countries.

2.5 Recommendations

- More time is allocated for researching the system to be developed and writing proposal time is allocated for coding and writing documentation.

CHAPTER 3: COMPUTER NETWORKING

3.1: Theory

A computer network is a set of computers sharing resources located on network nodes. The computers use common communication protocols, over digital interconnections to communicate with each other. These interconnections are made up of telecommunication network technologies, based on physically wired, optical, and wireless radio-frequency methods that may be arranged in a variety of network topologies.

Computer networking enables devices and endpoints to be connected on a local area network (LAN) or to a larger network, such as the internet or a private vast area network (WAN). This is an essential function for service providers, businesses, and consumers worldwide to share resources, use or offer services, and communicate. Networking facilitates everything from telephone calls to text messaging to streaming video to the internet of things (IoT).

3.2: Procedure

Week 1:

- Definition of terms
- Installing cisco packet tracer
- Classifying media devices
- Simulating networks

Week 2:

- Utp cable termination
- Cross-over cable connection
- Router configuration

Week 3:

- Introduction to fiber optics
- Fiber optic cable termination
- Network security

3.3: Data Discussion

We discussed various networking terminologies and objectives of the computer networking session. We installed a Cisco packet tracer, after which we simulated various network structures. I was introduced to various networking terms such as VLANS and pinging.

I was introduced to UTP cable termination where we handled various tools such as clipper and stripper tools. I learned crossover cable termination. Also, we learned how to configure a router to connect to a network.

We were introduced to fiber optic cables and the ways they transmit data. Moreover, we discussed steps to terminate optic cables.

Finally, we discussed network security and ways to enforce it across networks.

3.4: Limitations

Inadequate practical materials such as rj45 connectors to practice.

3.5: Recommendations

More practical materials i.e. rj45 connectors to be allocated to trainees for efficient practice.

CHAPTER 4: COMPUTER HARDWARE

4.1: Theory

Computer repair is the process of identifying, troubleshooting, and resolving problems and issues in a faulty computer. Computer repair is a broad field encompassing many tools, techniques, and procedures used to repair computer hardware, software, or network/Internet problems.

Computer maintenance involves keeping a computer in a good state of repair and physical health. Meaning, that it's a set of maintenance tasks and procedures that help to keep the computer software and hardware updated and operational.

4.2: Procedure

Week 1:

- Introduction to Computer Repair and Maintenance.
- Identifying computer parts and functions.
- Categorizing computer problems.
- System Unit.
- Motherboard.
- Disassembly and assembly of PC.

Week 2:

- Identifying computer specifications before the upgrade.
- Operating System installation.
- Improving computer performance.
- Troubleshooting operating system problems.

4.3 Data Discussion

Our Instructor gave an introduction to the course. In groups, we identified various computer parts and their functions. This included a deep focus on the system unit and the motherboard. We were able to categorize PC problems and learned quick fixes as well as specific

procedures for specific problems. We also carried out an O.S installation and learned how to identify a computer's specifications to bring compatibility.

4.4 Limitations

Lack of damaged hardware to be repaired by trainees.

Lack of PCs to install Operating Systems.

4.5 Recommendations

Trainees are provided with damaged hardware for them to repair.

Trainees are to be provided with PCs to install various Operating Systems.