**THE STATE UNIVERSITY OF ZANZIBAR**

**DEPARTMENT OF COMPUTER SCIENCE AND IN­FORMATION TECHNOLOGY**

**FINAL YEAR PROJECT SYSTEM DOCUMENTATION FORMAT 2022/2023**

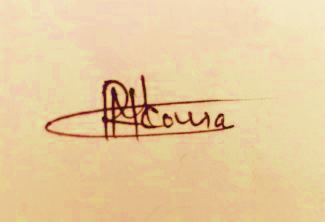
****

|  |  |
| --- | --- |
| NAME: | RAMADHAN MOHAMMED MKOMA |
| REGISTRATION NO. | BCS/15/20/005/TZ |
| SIGNATURE: |  |
| SUPERVISOR: | **Dr.** Maryam Khamis |
| NAME OF COMMITTEE MEMBER 1: |  |
| NAME OF COMMITTEE MEMBER 2: |  |

**PROJECT TITLE:** IMPLEMENTING BIOMETRIC ATTENDANCY FOR UNIVERISITY STUDENTS AND STAFFS.

**PROJECT BRAND:** BIOTECH ATTENDANCY

# DECLARATION

I**, MKOMA, RAMADHAN MOHAMMED** do hereby declare that this is my own work and it has not been submitted for a similar or any other diploma in any other college.

SIGNATURE: ……………………

**RAMADHAN MOHAMMED MKOMA**

Submitted This Day of 2022

# ABSTRACT

The general purpose of this system documentation is to show all the areas that will performed by student during the time that I will start the implementation phase of my final year system project and shows how the system project imparted the knowledge and self-experience to student.

This system documentation has chapters with chapter one explaining the project background of Biometric Attendance Monitoring System.

Chapter two explains the different methodologies such as the software development approaches, software development lifecycle, architecture of the system and lastly the tools that will be used in developing this software. In chapter three will discuss about the requirement analysis and modeling, while chapter four explains about the system design such as architectural design, database design and UI design.

This system document shows how the the system will flow and be able to perform its given tasks and achieve its objectives as needed.

Table of Contents

[DECLARATION ii](#_Toc123253840)

[ABSTRACT iii](#_Toc123253841)

[LIST OF ABBREVIATIONS 6](#_Toc123253842)

[CHAPTER 1 7](#_Toc123253843)

[**1.1 INTRODUCTION** 7](#_Toc123253844)

[**1.2 PROBLEM STATEMENT** 7](#_Toc123253845)

[**1.2 PROBLEM SOLUTION AND SCOPE** 8](#_Toc123253846)

[**1.3 OBJECTIVES** 8](#_Toc123253847)

[**1.4 PROJECT BACKGROUND AND MOTIVATION** 9](#_Toc123253848)

**No table of figures entries found.**

# LIST OF ABBREVIATIONS

|  |  |  |
| --- | --- | --- |
| BAMS | - | BIOMETRIC ATTENDANCE MONITORING SYSTEM |
| IOT | **-** | INTERNET OF THINGS |
| AI | **-** | Artificial Intelligence |
| PWA | **-** | PROGRESSIVE WEB APPLICATION |
| JS | **-** | JAVASCRIPT |
| CSS | **-** | CASCADING STYLESHEET |
| SSH | **-** | SECURE SOCKET SHELL |
| IOT | **-** | INTERNET OF THINGS |
| TCP | **-** | TRANSPORT CONTROL PROTOCOL |
| CS | **-** | COMPUTER SCIENCE |
| OS | **-** | OPERATING SYSTEM |
| DDoS | **-** | DISTRIBUTED DENIAL OF SERVICE ATTACK |

# CHAPTER 1

## **1.1 INTRODUCTION**

Introducing the Biometric Attendance Monitoring System (BAMS). **BAMS** is an AI and **IOT** web-mobile based system with **PWA** features that will help to monitor the attendance taking procedure from students and lecturers. The system will eliminate the tradition paper method used to manage the attendance from universities and colleges. The System will provide the Biotechnology (Biometric) fingerprint device that will help to scan the student and lecturer fingerprint and detect the fingerprint recognition by matching the registered fingerprint and the current scanned fingerprint and lastly mark the authorize candidate as attended status.

BAMS will be implemented using the web features but it will have the powerful capability to run on mobile devices such as Android, IOS and Windows phone as a native installed application with standalone app features. It will also have the capability to run as a desktop application on windows, Linux and mac os with standalone features. The system will also provide some services while its offline, so that the system user can be able to view the important features that doesn’t require internet to access them.

The intension of this project is help leveraging the attendance taking procedure to students and lecturer (staffs) in order to eliminate the problems of fraudulent signatures, failure to manage attendance schedules properly, lack of attention to study time and many more.

## **1.2 PROBLEM STATEMENT**

The current situation is that the universities and colleges uses the traditional name call procedure form attendance system and computerized excel sheets to manage the student’s attendance for each single day.

**BRIEF** **PROBLEM** **STATEMENT**

Unsatisfactory attendance from students and lecturers (staff) on the part of universities and colleges such as the problem of copying someone’s signature to sign for him or her (fraudulent signatures), failure to manage attendance schedule properly and lack of attention to study time from both instructors and students.

This kind of situation may lead to:

* Poor performance to students and lecturers
* Traditional manual paper signature can cause signature forgery (signature fraud)
* Lack of discipline to students
* Unsatisfactory storage management
* Lack of time management

## **1.3 PROBLEM SOLUTION AND SCOPE**

The proposed solution to these kind of problems will be solved using such methodologies:

* The use of Biometric Fingerprint device to scan and detect (fingerprint recognition) student id and staff (lecturer) id attended to the session.
* The use of software integrated with biometric fingerprint technology device to manage the students, lecturers and time for each session attended.
* Implementation of security features for the software and the biometric device to prevent identity frauds.
* Implementation of secure evaluation report access Human Resource Manager (HR) administration dashboard.

## **1.4 OBJECTIVES**

**MAIN** **OBJECTIVE**

The main objective is to automate the attendance taking procedures of an educational universities and colleges using an Intelligent Biometric Fingerprint technology agent in order to eliminate the problems caused by traditional name taking procedure which mostly lead to confusion and conflicts to students and instructors.

**SPECIFIC** **OBJECTIVES**

In order to accomplish the big aim of this project the specific objectives will came into play to help achieve the main goal as follows:

* Taking the attendance using biometric devices.
* Managing the attendance using a web-mobile app integrated with the devices.
* Decomposing (Break down) the complexity of managing the attendance for the HR using the intelligent system.
* Solving the problem of frauds and cheating using good security features for both the software and hardware.

## **1.5 PROJECT BACKGROUND AND MOTIVATION**

**MOTIVATION**

What if I say there is a technology that will help to reduce time and effort while working attendance sheet. Well! The answer is yes, there is a technology. An important Artificial Intelligence technology that can save thousands to millions of students in the universities and other institutes to leverage their performances at schools and outside the industry. This project is important because it solves problems and rises opportunities to the right ones. For me, I think it’s enough reason to say why.

**BACKGROUND**

For the background, many efforts have been donned explicitly to simplify the attendance taking procedure back then until now. We saw the excel sheets now plays a great role to simplify the work, also the google sheet app and web app, but still they weren’t design specifically for this kind of tasks, although they’re helpful a lot. So now as the world of tech grows, new great technology solution arises, I have seen the biometric fingerprint installed in company and offices and also at school labs, most of the designed specifically for employees to access a specific area and few of them to monitor employee arrival to their jobs. Now I think it’s time to use these new technologies to university students and staff in attendance taking and monitoring procedures.

## **1.6 FEASIBILITY STUDY REPORT**