**INTERNSHIP REPORT GUIDELINE**

*A report submitted in partial fulfillment of the requirements for the Award of Degree of*

### BACHELOR OF SCIENCE

**BUSINESS INFORMATION TECHNOLOGY**

**by XXXXXXXX**

**Regd. No.: XXXXXXX**

**Under Supervision of Mr. /Dr. xxxxx**

**(Duration: Day- Month, 2021 to Day- Month, 2021)**

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**DEPARTMENT OF INFORMATION COMMUNICATION TECHNOLOGY**

**FACULTY OF BUSINESS ADMINISTRATION**

**ZANZIBAR UNIVERSITY**

**DEPARTMENT OF INFORMATION COMMUNICATION TECHNOLOGY**

**FACULTY OF BUSINESS ADMINISTRATION**

**ZANZIBAR UNIVERSITY**

****

***CERTIFICATE***

This is to certify that the “**Internship report”** submitted by **OMAR ABDULAZIZI OMAR(Regd. No.: 232010635)** is work done by her/him and submitted during 2024 – 2025 academic year, in partial fulfillment of the requirements for the award of the degree of **BACHELOR OF SCIENCE BUSINESS INFORMATION TECHNOLOGY,** at **ZANZIBAR FISHERIES RESEACH RESOURCE INSTITUTE (ZAFIRI).**

**Head of Department Internship Coordinator/Supervisor**

**Signature ……………………… Signature ……………………….**

**Date: ………………… Date: …………………………**

CERTIFICATE OF INTERNSHIP

This is to certify that OMAR ABDULAZIZI OMAR , student of Zanzibar University, having Regd. No.232010635 has successfully completed the internship programme from 07" July 2025 to 19" Sept 2025 in our organization ZANZIBAR FISHERIES RESEACH INSTITUTE (ZAFIRI).

Signature of the Authority

Date:

# ACKNOWLEDGEMENT

First and foremost, I would like to express my sincere gratitude to **Mr. Zakaria Ali Khamis**, Director General of **ZAFIRI (Zanzibar Fisheries Research Resource Institute)**, for giving me the opportunity to undertake my internship within this esteemed organization. His support and leadership have been instrumental in providing a meaningful and practical learning experience.

I would also like to extend my heartfelt thanks to all the staff and team members at ZAFIRI for their cooperation, patience, and openness. The positive and collaborative working environment they created made my internship both enjoyable and insightful.

It is indeed with a deep sense of gratitude and appreciation that I acknowledge the support of everyone who contributed to my professional development during this internship period.

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I also express my sincere appreciation to **Mr. Moh’d Azad Sharif**, Head Officer of the ICT Department, for his technical insights, valuable advice, and consistent support during the course of my internship.

Furthermore, I would like to thank the **Faculty of Business Administration** and the **Department of Business Information Technology** at Zanzibar University for their assistance and for providing the academic foundation that supported my successful internship experience.

Lastly, I am extremely grateful to my friends and department staff members for their continuous help, motivation, and support during this journey.

# ABSTRACT

In today’s digital landscape, the development and integration of information systems within research-based institutions is essential for improving data accuracy, operational efficiency, and informed decision-making. This report presents a detailed summary of my internship experience at the **Zanzibar Fisheries Research Resource Institute (ZAFIRI)**, carried out as part of my academic program under the **Faculty of Business Administration**, in the **Department of Business Information Technology (BsBIT)** at **Zanzibar University**.

The internship focused on the **design and development of an internal information system** aimed at enhancing ZAFIRI’s data management and reporting capabilities. Through this project, I applied core principles of the **System Development Life Cycle (SDLC)** — including requirements gathering, system analysis, interface design, coding, testing, and deployment — to deliver a functional system that addresses the institute’s operational challenges.

The system was developed using a combination of technologies, including **HTML, CSS, PYTHON**, and **PROSTIDRESQL** for the database. These tools enabled the creation of a responsive web-based application that supports efficient data entry, retrieval, and reporting functions, aligned with the organization’s goals of improving research workflows and internal operations.

By working closely with ICT professionals and end-users, I gained valuable insights into the practical application of business information technology in a government research context. The experience also strengthened my technical skills in **web development**, **database design**, and **user interface development**, while enhancing my problem-solving, teamwork, and project management abilities.

This internship served as a vital bridge between academic learning and professional practice, demonstrating the impactful role of ICT and system development in supporting institutional growth and sustainable fisheries research.

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**Learning Objectives/Internship Objectives**

The primary objective of this internship was to bridge the gap between academic theory and real-world application in the field of **Business Information Technology**, particularly in the area of **system development**. The internship was conducted at the **Zanzibar Fisheries Research Resource Institute (ZAFIRI)**, and it provided a practical environment to apply the knowledge and skills gained during my coursework at **Zanzibar University**, under the **Faculty of Business Administration**, **Department of Business Information Technology (BsBIT)**.

The specific learning and internship objectives were as follows:

* **To gain practical experience in system development** by engaging in real-world projects that involve designing, coding, testing, and implementing information systems.
* **To understand and apply the System Development Life Cycle (SDLC)** within a professional institutional environment, including the phases of planning, analysis, design, development, implementation, and maintenance.
* **To enhance technical skills** in programming, database management, and front-end development using technologies such as **HTML, CSS, PHP**, and **POSTRIGRESQL**.
* **To improve problem-solving and analytical thinking** by working on actual institutional challenges and proposing digital solutions to improve workflow and data management processes at ZAFIRI.
* **To collaborate with professionals and stakeholders** within the organization to understand user requirements and ensure that the system developed meets operational needs.
* **To develop professional competencies**, including teamwork, communication, time management, and documentation skills necessary for successful project execution in the field of ICT.
* **To build a strong foundation for future career opportunities** by gaining hands-on experience in a public sector research institution and contributing meaningfully to the improvement of its ICT infrastructure.

This internship not only helped in achieving academic goals but also offered an opportunity for professional growth, exposure to institutional operations, and a deeper understanding of the role of information systems in supporting research and sustainable resource management

### WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

|  |  |  |  |
| --- | --- | --- | --- |
| **1st WEEK** | **DATE** | **DAY** | **NAME OF THE TOPIC/MODULE COMPLETED** |
| 28/07/2025 | Monday | ORIENTATION |
| 29/07/2025 | Tuesday | ORIENTATION |
| 30/07/2025 | Wednesday | ORIENTATION |
| 31/07/2025 | Thursday | Introduction to system and web-development |
| 01/08/2025 | Friday | Continuing lesson for system development |
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| --- | --- | --- | --- |
| **2st WEEK** | **DATE** | **DAY** | **NAME OF THE TOPIC/MODULE COMPLETED** |
| 04/08/2025 | Monday | Development frame work lesson in practically |
| 05/08/2025 | Tuesday | Self learning to web-development frame work |
| 06/08/2025 | Wednesday | Installing react frame work via cmd command |
| 07/08/2025 | Thursday | Learning some basics syntax for react development |
| 08/08/2025 | Friday | NANE NANE DAY |
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| --- | --- | --- | --- |
| **3st WEEK** | **DATE** | **DAY** | **NAME OF THE TOPIC/MODULE COMPLETED** |
| 11/07/2025 | Monday | Learning general concept of APIs (Application programs interfaces) |
| 12/07/2025 | Tuesday | Learning how to create REST APIs via Django frame work |
| 13/07/2025 | Wednesday | Learning with practices sending and receiving data via APIs |
| 14/07/2025 | Thursday | Learining Django backend framework , general concept |
| 15/08/2025 | Friday | Presentation to director general to system development task feedback |
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| --- | --- | --- | --- |
| **4st WEEK** | **DATE** | **DAY** | **NAME OF THE TOPIC/MODULE COMPLETED** |
| 18/08/2025 | Monday | Website creations starting to home pages |
| 19/08/2025 | Tuesday | Navbar and header with slide images development |
| 20/08/2025 | Wednesday | Events, news, footer developments and finishing home pages |
| 21/08/2025 | Thursday | Online presentations for websites and systems to D.G |
| 22/08/2025 | Friday | Error corrections for websites |
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| --- | --- | --- | --- |
| **5st WEEK** | **DATE** | **DAY** | **NAME OF THE TOPIC/MODULE COMPLETED** |
| 25/08/2025 | Monday | Small meeting for comments for our development projects |
| 26/08/2025 | Tuesday | Working with all comments and correction |
| 27/08/2025 | Wednesday | Continuing web development , especially in navmenus such as about us |
| 28/08/2025 | Thursday | Team mates discussion for motivation and improvements |
| 29/08/2025 | Friday | Self learning and working with projects |
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| --- | --- | --- | --- |
| **6st WEEK** | **DATE** | **DAY** | **NAME OF THE TOPIC/MODULE COMPLETED** |
| 01/09/2025 | Monday | Creating conetent management system for websites |
| 02/09/2025 | Tuesday | Creating login page for admin to login to the CMS |
| 03/09/2025 | Wednesday | Creating backend for CMS using Django frame work |
| 04/09/2025 | Thursday | Creating Django login logic for user access login with full authentications |
| 05/09/2025 | Friday | Testing the APIs with JWT(Web token ) via Postman for login |
|  |  |  |

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| --- | --- | --- | --- |
| **7st WEEK** | **DATE** | **DAY** | **NAME OF THE TOPIC/MODULE COMPLETED** |
| 08/09/2025 | Monday | Self learning with POSTMAN |
| 09/09/2025 | Tuesday | How to download postman for window |
| 10/09/2025 | Wednesday | Self learning with testing APIs with Postman |
| 11/09/2025 | Thursday | Leaning to github or gitlub and how are used |
| 12/09/2025 | Friday | Repository creation from github account then pushing my project to github via VS code . |
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| --- | --- | --- | --- |
| **8st WEEK** | **DATE** | **DAY** | **NAME OF THE TOPIC/MODULE COMPLETED** |
| 15/09/2025 | Monday | Website creations starting to home pages |
| 16/09/2025 | Tuesday | Navbar and header with slide images development |
| 17/09/2025 | Wednesday | Events, news, footer developments and finishing home pages |
| 18/09/2025 | Thursday | Online presentations for websites and systems to D.G |
| 19/09/2025 | Friday | Error corrections for websites |
|  |  |  |

# INTRODUCTION

### As part of my Bachelor of Science in Business Information Technology at Zanzibar University, I undertook a 08-week internship from 7th July 2025 to 19th September 2025 at the Zanzibar Fisheries Research Resource Institute (ZAFIRI). ZAFIRI was established as a government research institute dedicated to supporting sustainable fisheries and aquaculture development in Zanzibar through research, data management, and resource monitoring.

### The institute comprises several departments, including Research and Development, Fisheries Monitoring, Administration, and the Information and Communication Technology (ICT) Department. Each department has specialized roles aimed at enhancing research productivity, data accuracy, and operational efficiency across the organization.

### During my internship, I was assigned to the ICT Department, where my primary role was to assist in the development and implementation of an internal information system designed to improve data management and reporting processes. My daily activities included collaborating with ICT staff to gather user requirements, designing system interfaces, coding, testing, and deploying functional modules of the system. In addition, I provided support in troubleshooting technical issues and participated in team meetings to understand the operational needs of other departments.

### The main area of specialization during my internship was the design and development of a web-based information system that integrates database management, front-end user interfaces, and reporting functionalities. This opportunity allowed me to apply theoretical knowledge from my coursework in a practical setting, develop technical and professional skills, and contribute meaningfully to the efficiency and effectiveness of ZAFIRI’s operations.

### 

### 1.1 ACTIVITES ASSIGNED IN ZAFIRI

**1st Week: Orientation and Introduction (28/07/2025 – 01/08/2025)**

The first week focused on **orientation** to the institute and introduction to system and web development. I learned about ZAFIRI’s organizational structure, the objectives of the internship, and the role of ICT in supporting research operations. By the end of the week, I began lessons on system development fundamentals.



# SUPERVISION ANALYSIS

During my internship at the Zanzibar Fisheries Research Resource Institute (ZAFIRI), I had the privilege of being supervised by Mr. Moh’d Azad Sharif, Head Officer of the ICT Department. Mr. moh’d has extensive experience in ICT management and system development within government institutions, which made his guidance highly valuable throughout my internship.

I consider myself fortunate to have had him as my supervisor, as he was always approachable, patient, and willing to address any questions or challenges I encountered. He provided clear instructions, offered constructive feedback on my work, and encouraged me to think critically and propose solutions to technical and operational problems.

In addition to Mr. moh’d, I received guidance and support from other ICT staff members who played significant roles in my learning experience. They assisted me in understanding the internal workflows of ZAFIRI, taught me practical aspects of system development, and ensured I was able to apply theoretical knowledge from my coursework effectively.

Overall, the supervision and mentorship I received were instrumental in enhancing my technical skills, improving my problem-solving abilities, and giving me confidence to work independently while contributing meaningfully to the ICT projects at ZAFIRI.

# INTERNSHIP DETAILED

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During my internship at the Zanzibar Fisheries Research Resource Institute (ZAFIRI), I was assigned to the ICT Department, where I was directly involved in the **design and development of an internal information system**. This system was created from scratch to improve the institute’s data management, reporting, and operational efficiency. The internship provided an opportunity to apply theoretical knowledge from my coursework to a real-world government research environment.

**System Overview**

Prior to my internship, ZAFIRI did not have a dedicated information system for managing research data or administrative processes. My work focused on creating a **web-based internal system** that would support staff in recording, managing, and retrieving data related to fisheries research, as well as generating reports to facilitate decision-making.

**System Specifications**

* **Operating System:** Windows 11
* **Front-End Framework:** React.js
* **Back-End Framework:** Django (Python)
* **Database Management System:** PostgreSQL
* **API Testing Tool:** Postman
* **Development Tools:** Visual Studio Code, Chrome Developer Tools

**Hardware Requirements**

* **Processor:** Pentium IV 2.4 GHz or higher
* **RAM:** 4 GB minimum (8 GB recommended for optimal performance)
* **Hard Disk:** 1 TB or higher
* **Network:** Stable internet connection for API testing and cloud access

**System Functionality**

The system I developed included the following key features:

* **Data Entry and Management:** Users can efficiently input, edit, and manage fisheries research data.
* **User Authentication:** Secure login and registration with role-based access control.
* **Reporting:** Automated generation of operational and research reports to aid decision-making.
* **Communication Modules:** Staff contact functions and notifications for internal coordination.
* **API Integration and Testing:** Ensured accurate data flow between front-end and back-end using Postman.

**My Contributions**

During the internship, I contributed to all stages of system development, including:

* Gathering user requirements and understanding workflow needs within the ICT Department.
* Designing and developing interactive front-end components using React.js.
* Implementing back-end functionalities in Django, including models, views, and APIs.
* Creating PostgreSQL database schemas and establishing proper relationships between data tables.
* Testing system modules using Postman to validate API endpoints and ensure data integrity.
* Troubleshooting and refining the system based on feedback from staff and supervisors.

**Impact of the System**

The system introduced at ZAFIRI now provides a **centralized platform** for managing research data, automating reporting, and improving operational efficiency. It allows staff to access accurate data quickly, enhances coordination across departments, and lays a foundation for future ICT advancements within the institute.

# TECHNOLOGY

During my internship at the Zanzibar Fisheries Research Resource Institute (ZAFIRI), I utilized and became familiar with various modern technologies to develop a web-based internal information system. These technologies facilitated front-end development, back-end processing, database management, and API testing. The main technologies used include React, Django, PostgreSQL, and Postman.

**4.1 React.js**

React.js is a popular **JavaScript library** used for building dynamic and responsive user interfaces for web applications. It allows developers to create reusable components, which improves efficiency and maintainability of code. React works by updating only the parts of the user interface that change, instead of reloading the entire page, which enhances the performance of web applications.

React uses a **virtual DOM (Document Object Model)**, which enables efficient comparison of UI changes and updates the actual DOM only where necessary. This approach ensures faster rendering and smooth user interactions.

In my internship, I used React.js to develop the **front-end interface** of the ZAFIRI system, including:

* User login and registration forms
* Dashboard for data visualization and report access
* Data entry and management modules
* Navigation components for different system sections

**4.2 Django (Python)**

Django is a **high-level Python web framework** that encourages rapid development and clean, pragmatic design. It follows the **Model-View-Template (MVT)** architectural pattern, which separates data models, business logic, and presentation layers. Django provides built-in tools for authentication, database management, and routing, which simplifies the development of secure and scalable web applications.

Key features of Django include:

* **ORM (Object-Relational Mapping):** Allows interaction with the database using Python objects instead of SQL queries.
* **Built-in Security:** Provides protection against common web attacks like SQL injection, cross-site scripting, and CSRF.
* **Admin Interface:** Automatically generates an admin dashboard for managing database records.

During my internship, I implemented the **back-end functionality** of the system using Django, which included:

* User authentication and role-based access
* CRUD operations (Create, Read, Update, Delete) for fisheries research data
* API endpoints to connect front-end React components with the PostgreSQL database

**4.3 PostgreSQL**

PostgreSQL is a **powerful open-source relational database management system (RDBMS)** used for storing and managing structured data. It supports advanced data types, indexing, transactions, and query optimization, making it suitable for applications that require reliable and scalable data storage.

In the ZAFIRI system, PostgreSQL was used to:

* Store fisheries and research data in structured tables
* Maintain relationships between different data entities (e.g., users, research projects, reports)
* Support queries for generating real-time and automated reports
* Ensure data integrity and consistency through transactional operations

**4.4 Postman**

Postman is an **API development and testing tool** that allows developers to send HTTP requests to web servers and analyze responses. It is widely used to test the communication between front-end and back-end systems, ensuring that data is correctly sent and received.

During the internship, I used Postman to:

* Test API endpoints developed in Django
* Verify data retrieval and submission between React front-end and PostgreSQL database
* Identify and debug errors in data handling
* Ensure the reliability and security of the system’s data flow

This combination of **React, Django, PostgreSQL, and Postman** allowed me to develop a complete web-based system for ZAFIRI, from front-end user interfaces to back-end data management and testing. These technologies ensured a **robust, scalable, and user-friendly application** that addressed the institute’s operational needs.

### CHALLENGES AND THOUGHT OF IMPROVEMENT

# Developing the System from Scratch

# Since ZAFIRI had no pre-existing information system, I had to design and implement the entire system from the ground up. This required thorough planning of system architecture, defining modules, and designing workflows that would meet the institute’s operational needs. Developing a complete system without prior templates or references demanded careful attention to detail and iterative testing to ensure functionality.

# Data Collection and Standardization

# Much of the research and administrative data at ZAFIRI was stored in paper records or scattered spreadsheets. Consolidating this data into a structured PostgreSQL database was challenging, as it required validating information, correcting inconsistencies, and ensuring proper relationships between tables. This process was critical to ensure that the system would provide accurate reports and reliable data for decision-making.

# Front-End and Back-End Integration

# Integrating the React front-end with the Django back-end posed technical challenges, especially in handling API requests, data validation, and ensuring real-time updates. Debugging issues such as incorrect data retrieval, formatting errors, and communication delays between the front-end and database required careful testing using Postman and iterative adjustments to both client-side and server-side code.

# Time and Resource Constraints

# Completing the system within the 8-week internship required prioritization of essential modules and efficient time management. Limited ICT infrastructure, such as slower computers and intermittent network connectivity, sometimes delayed development and testing. This challenge taught me to optimize code, manage resources effectively, and focus on delivering core functionalities before adding additional features.

# INTERNSHIP EVALUATION (LESSON LEARNED)

Before starting my internship at the Zanzibar Fisheries Research Resource Institute (ZAFIRI), my knowledge of applying theoretical ICT concepts in a real organizational context was limited. Although I had studied system development, database management, and programming during my coursework, I had not yet experienced the practical challenges of developing a fully functional information system for an organization.

During my internship, I was actively involved in the design and development of ZAFIRI’s first internal information system. This experience provided a comprehensive understanding of the **System Development Life Cycle (SDLC)**, from requirement gathering and system analysis to front-end and back-end development, database design, testing, and deployment. By working closely with ICT staff and end-users, I learned how to translate organizational needs into functional system features, ensuring that the system was both user-friendly and operationally effective.

The process of building the system from scratch exposed me to several practical challenges, including consolidating scattered data, integrating the React front-end with the Django back-end, and ensuring smooth communication with the PostgreSQL database. Addressing these challenges improved my **problem-solving skills, critical thinking, and technical proficiency**. I gained hands-on experience with technologies such as React.js, Django, PostgreSQL, and Postman, which strengthened my ability to develop, test, and deploy web-based applications effectively.

Beyond technical skills, the internship also enhanced my **professional competencies**. I learned the importance of time management, teamwork, and clear communication, as collaboration with supervisors and staff was essential to understand requirements, gather feedback, and refine the system. Furthermore, the internship provided insights into project management, including task prioritization, resource optimization, and delivering functional solutions within a constrained timeframe.

Overall, the internship at ZAFIRI was a transformative experience. It bridged the gap between academic theory and professional practice, allowing me to develop both technical and professional skills. I gained a deeper appreciation of how information systems can improve operational efficiency in research institutions, and I now feel more confident and prepared to contribute effectively to ICT projects in my future career.

# CONCLUSION

My internship at the Zanzibar Fisheries Research Resource Institute (ZAFIRI) provided a valuable opportunity to apply academic knowledge to real-world ICT challenges. Developing the institute’s first internal information system allowed me to enhance my technical skills in React, Django, and PostgreSQL, while also improving my problem-solving, teamwork, and project management abilities.

This experience gave me practical insights into how information systems can improve organizational efficiency and decision-making. Overall, the internship strengthened my professional competencies and prepared me to contribute effectively to future ICT projects.

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