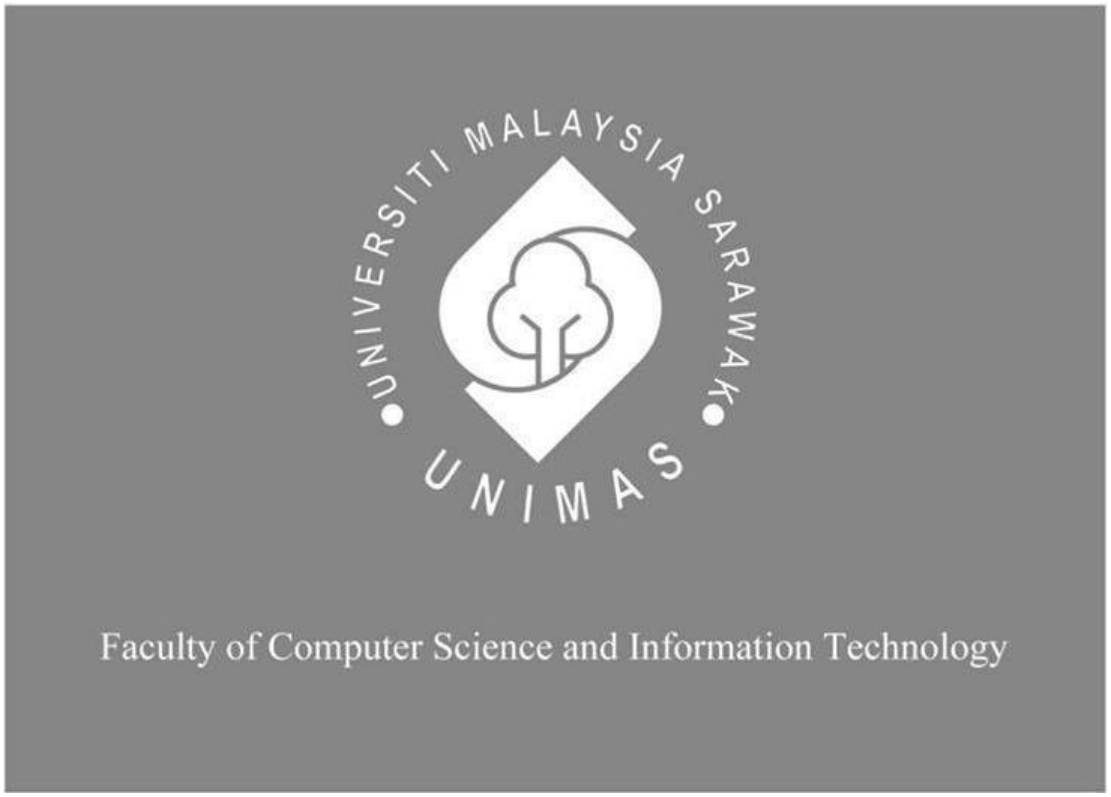

Flood Aid Distribution Management System

Mohammad Syafiq Izzuan bin Sabri

Bachelor of Computer Science with Honours (Network Computing)

2023

FLOOD AID DISTRIBUTION MANAGEMENT SYSTEM

MOHAMMAD SYAFIQ IZZUAN BIN SABRI

This project is submitted in partial fulfillment of the requirements for the degree of
Bachelor of Computer Science with Honours
(Network Computing)

Faculty of Computer Science and Information Technology
UNIVERSITI MALAYSIA SARAWAK
2023

SISTEM PENGURUSAN PEMBAHAGIAN BANTUAN BANJIR

MOHAMMAD SYAFIQ IZZUAN BIN SABRI

Projek ini merupakan satu keperluan untuk

Ijazah Sarjana Muda Sains Komputer dengan Kepujian
(Pengkomputeran Rangkaian)

Fakulti Sains Komputer dan Teknologi Maklumat

UNIVERSITI MALAYSIA SARAWAK

2023

DECLARATION OF ORIGINALITY

I hereby declare that this research together with all of its content is none other than that of my own work, with consideration of the exception of research-based information and relative materials that were adapted and extracted from other resources, which have evidently been quoted or stated respectively.

Signed,

…….

MOHAMMAD SYAFIQ IZZUAN BIN SABRI

Faculty of Computer Science and Information Technology 25/01/2023

Universiti Malaysia Sarawak.

THESIS STATUS ENDORSEMENT FORM

UNIVERSITI MALAYSIA SARAWAK

THESIS STATUS ENDORSEMENT FORM

TITLE **FLOOD AID DISTRIBUTION MANAGEMENT SYSTEM**

ACADEMIC SESSION: **22/23**

MOHAMMAD SYAFIQ IZZUAN BIN SABRI

(CAPITAL LETTERS)

hereby agree that this Thesis* shall be kept at the Centre for Academic Information Services, Universiti Malaysia Sarawak, subject to the following terms and conditions:

1. The Thesis is solely owned by Universiti Malaysia Sarawak
2. The Centre for Academic Information Services is given full rights to produce copies for educational purposes only
3. The Centre for Academic Information Services is given full rights to do digitization in order to develop local content database
4. The Centre for Academic Information Services is given full rights to produce copies of this Thesis as part of its exchange item program between Higher Learning Institutions [or for the purpose of interlibrary loan between HLI]
5. ** Please tick (√)

☐	CONFIDENTIAL	(Contains classified information bounded by the OFFICIAL SECRETS ACT 1972)
☐	RESTRICTED	(Contains restricted information as dictated by the body or organization where the research was conducted)
☑	UNRESTRICTED	

(AUTHOR'S SIGNATURE)

Validated by

Hamizan Bt Sharbini
Lecturer
Faculty of Computer Science & Information Technology
Universiti Malaysia Sarawak

(SUPERVISOR'S SIGNATURE)

Permanent Address

No2, Kampung Sungai Latoh,
81760 Masai,
Johor

Date: 30/6/2023

Date: 01/07/2023

Note * Thesis refers to PhD, Master, and Bachelor Degree
** For Confidential or Restricted materials, please attach relevant documents from relevant organizations / authorities

ACKNOWLEDGEMENT

In the compilation of this Final Year Project (FYP) report, I have incurred debts of gratitude to many individuals, and I would like to address this appreciation to them. A lot of new things learned throughout the process of completion of this study were made.

I would like to express my deepest gratitude to my supervisor, Madam Hamizan Binti Sharbini, for your guidance, support, and encouragement throughout the research process. Your expertise and knowledge in the field were invaluable, and I am deeply grateful for the time you dedicated to mentoring me. Without your guidance, this project would not have been possible.

I would also like to thank my friends and family for their unwavering support and understanding during the time I devoted to this research. Their encouragement and belief in me were essential to the success of this project. I am truly grateful for the love and support that I received throughout this journey. I could not have completed this project without their understanding and support.

I would like to extend my sincerest gratitude to myself for the hard work, dedication and perseverance put into this research project. The journey was not always easy but with my own determination and motivation, I was able to overcome any obstacles that came my way. I am proud of the effort and dedication I invested in this project, and the knowledge and skills that I have gained through this process will be invaluable in my future endeavors. I am truly grateful for the opportunity to undertake this research and for my own ability to bring it to completion.

ABSTRACT

Floods are a common natural disaster that can cause significant damage and displacement of people. An effective flood aid distribution management system is crucial in providing timely and efficient assistance to affected communities. The purpose of this project is to design and develop a flood aid distribution management system. The system will assist the Goods Charity Hub (GCH) Distribution Centre that is located in Selangor in managing the aid inventory, donor's data, and Non-Governmental Organization (NGO)'s data effectively. Donors, NGOs, and the distribution center all play a critical role in the flood aid distribution management system. In this project, a donor, and an NGO act as different entities. A donor in this project context is a person or organization that donates aid to a distribution center, while an NGO is an organization that receives aid from a distribution center. A distribution center is the place where managing aids are performed. A literature review of existing applications was conducted to study the design, features, and functionality implemented in similar systems. The system will streamline the aid distribution process, improve the coordination and communication among stakeholders, and increase the transparency and accountability of the aid distribution process.

ABSTRAK

Banjir adalah bencana alam yang biasa yang boleh menyebabkan kerosakan dan pengungsian yang besar terhadap penduduk. Sistem pengurusan pengagihan bantuan banjir yang berkesan sangat penting dalam memberikan bantuan yang cepat dan berkesan kepada komuniti yang terjejas. Tujuan projek ini adalah untuk merancang dan mengembangkan sistem pengurusan pengagihan bantuan banjir. Sistem ini akan membantu Pusat Pengagihan Goods Charity Hub *(GCH) yang terletak di Selangor dalam menguruskan inventori bantuan, data penderma, dan data* Non-Governmental Organization (*NGO) dengan berkesan. Penderma, NGO, dan pusat pengagihan semua memainkan peranan penting dalam sistem pengurusan pengagihan bantuan banjir. Dalam projek ini, penderma dan NGO berperanan sebagai entiti yang berbeza. Penderma dalam konteks projek ini adalah seseorang atau organisasi yang menyumbangkan bantuan kepada pusat pengagihan, manakala NGO adalah sebuah organisasi yang menerima bantuan dari pusat pengagihan. Pusat pengagihan adalah tempat dimana pencocokan bantuan dilakukan. Kajian literatur terhadap aplikasi yang sedia ada telah dilakukan untuk mempelajari reka bentuk, ciri, dan fungsi yang dilaksanakan dalam sistem yang serupa. Sistem ini akan memudahkan proses pengagihan bantuan, meningkatkan koordinasi dan komunikasi antara pihak berkepentingan, dan meningkatkan transparansi dan akauntabiliti proses pengagihan bantuan.*

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATION

NGO	: Non-Governmental Organization
GCH	: Goods Charity Hub
AI	: Artificial intelligence
ML	: Machine learning
FYP	: Final year project
SBS NADMA	: “e-Sumbangan Badan Sukarela” National Disaster Management Agency
UNICEF	: United Nations International Children's Emergency Fund
CARE International	: Cooperative for American Relief Everywhere International
UN WFP	: United Nations World Food Programme
IDE	: Integrated development environment
DFD	: Data flow diagram
ERD	: Entity relationship diagram
UAT	: User acceptance testing

CHAPTER 1

INTRODUCTION

1.1 Introduction

Floods are a common and destructive natural disaster in Malaysia. The impact of floods on communities can be severe, causing significant damage to infrastructure, displacement of people, loss of property and livelihoods. Effective management of flood disasters is crucial to minimize the harm caused and provide support to affected communities. This requires the coordination of multiple stakeholders, including the local authority, distribution channels, volunteer organizations, NGOs, and relief centers. Managing the resources and aid available, organizing the evacuation and relocation of victims, and ensuring the efficient distribution of relief and support through effective channels are all key components of a successful flood disaster response. Depots and distribution centers play a crucial role in ensuring that aid reaches those in need, while volunteers and NGOs play an important role in supporting the efforts of disaster response teams. Donors also play a crucial role in providing the necessary resources to respond to flood disasters and support affected communities. With a well-coordinated and organized flood disaster management system in place, communities in Malaysia can be better prepared to respond to and recover from the effects of floods. Distribute aid strives to bring aid to underprivileged communities. The proposed project aims to simplify the connection between donors and front-line aid organizations, allowing them to comprehend the needs in the community, and ensuring the successful delivery of aid through coordinated end-to-end shipments.

1.2 Problem Statement/Research Problem:

Mostly distribution centre in Malaysia have been managing their operation manually for a long time. The organization has to manage their daily organization such as aids inventory, donor data and NGO data using pen and paper. Then, the data will be recorded in a physical file and stored in the file cabinet. This is an unfavourable occurrence at our current distribution center for multiple reasons. Firstly, poor distribution management system will lead to huge waste. This shows how unsystematic it is in dealing with this problem. Lastly, the current manual way in storing data will cause data redundancy. This means that the data that are trying to be stored are lost or duplicated. One study found that manual data entry can lead to a significant number of errors, with up to 1 in 20 entries containing errors (KPMG, 2016). Another study found that manual processes can also lead to increased costs, as organizations must spend more time and resources on data entry and management (McKinsey, 2018).

1.3 Objectives

1. To design a Flood Aid Distribution Management System.
2. To develop a Flood Aid Distribution Management System for a systematic process in the distribution center.
3. To evaluate a Flood Aid Distribution Management System that will reduce the amount of manual effort involve in.

1.4 Brief Methodology

This project technique is a waterfall methodology. Waterfall methodology is an effective project management strategy that emphasizes a linear development from the project's commencement to its conclusion. Given the time constraints, a distinct and customized methodology is the most suitable approach. The waterfall methodology establishes strict deadlines for each section, as the project cannot advance if the previous task has not been completed.

Phase 1: Requirements Planning

During this phase, all potential system needs are identified and recorded in a requirement specification document.

Phase 2: System Design

This phase studies the need specifications from the first phase and prepares the system design. This system design aids in the specification of system requirements as well as the definition of overall system architecture.

Phase 3: Implementation

Input from the system design, the system is first built as small programs called units, which are then combined in the next phase.

Phase 4: Testing

To identify potential problems, quality assurance, unit, system, and beta testing are conducted at this time. This can necessitate the implementation/coding stage of debugging to be repeated. The waterfall advances if the system passes the test.

Phase 5: Maintenance

The final product is constantly improved, updated, and enhanced through corrective, adaptive, and perfective maintenance.

1.5 Scope

The scope of the Flood Aid Distribution Management System project includes the development and implementation of a software application to streamline the operations of distribution center in handling and organizing flood aid. The system will provide a user-friendly platform for users to create accounts, choose specific items to donate, and generate reports. The system will also enable users to track the status of donated items, promoting transparency and accountability in the aid distribution process.

The system will store data securely in a database and use an automated approach to prevent duplication. It is designed to assist distribution center that have difficulties in organizing and meeting the needs of NGOs. The system will not provide a feature to make monetary donations or payments.

The scope of the project does not include the integration of advanced technologies such as artificial intelligence (AI) and machine learning (ML) or blockchain technology. These topics may be considered as areas of future study. Additionally, the system will not be designed to adapt to different types of natural disasters and emergency situations but may be evaluated for its scalability in a future study.

The scope of the project is limited to the development and implementation of a software application to streamline the operations of flood aid distribution center. The focus of the project is to provide a user-friendly and efficient platform for the management of inventory, donor data, and NGO data, and to promote transparency and accountability in the aid distribution process.

1.6 Significance of Project

The significance of the Flood Aid Distribution Management System project lies in its potential to simplify and streamline the distribution of aid during natural disasters, such as floods. The system aims to provide an efficient and effective solution for handling and organizing the operations of distribution center, including inventory management, donor data tracking, and NGO data management. This can help alleviate some of the difficulties that organizations face when responding to natural disasters, including coordination issues, logistical challenges, and the need to ensure that aid reaches the intended recipients.

One of the key benefits of the Flood Aid Distribution Management System is that it promotes transparency and accountability by securely storing data in a database and allowing users to track the status of donated items. This can help increase the confidence of donors, who want to know that their contributions are being used effectively, and of affected communities, who want to see that aid is being distributed fairly and equitably. The ability to generate reports also offers valuable insights into the performance of the donation process, which can be used to improve future efforts.

Another important aspect of the Flood Aid Distribution Management System is that it is user-friendly, allowing users to create accounts, choose specific items to donate, generate reports and view statistic. This makes it easy for individuals, organizations, and businesses to support disaster response efforts, which can help increase the overall volume of aid that is distributed.

1.7 Project Schedule

In completing this final year project (FYP), all progress and processes need to be done throughout two semesters, namely for FYP1 in the first semester of 2022/2023 and FYP2 in the second semester of 2023/2024. For FYP1, the project starts on 28 October 2022 and focuses on proposals. Meanwhile, FYP2 will start in the first week of the second semester and will focus on development.

The project is expected to be completed within two semesters following the course Final Year Project I and Final Year Project II as shown as Table 1.1 below:

Table 1.1: Gantt Chart for Final Year Project 1 & 2

	2022			2023					
Activity	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Preparation phase									
Submission of full proposal									
Chapter 1 Introduction									
Chapter 2 Literature Review									
Chapter 3 Requirement Analysis & Design									
Submission of FYP1 final report									
System Development									
System Testing And debugging									
Submission Chapter 4: Implementation and Testing									
Submission Chapter 5: Conclusion and Future Works									
Submission of Final Report									

1.8 Expected Outcome

The Flood Aid Distribution Management System is anticipated to result in a more efficient and effective distribution of aid in communities affected by floods. The system has been designed to simplify the tasks involved in managing the operations of distribution center, such as inventory management, tracking of donor information, and NGO data management.

By utilizing an automated approach and securely storing data in a centralized database, the system is aimed at reducing the likelihood of duplications and ensuring that the right aid reaches the right individuals. The interface of the system enables users to easily create accounts and select specific items to donate.

The generation of reports is an important aspect of the system as it provides valuable insights into the performance of the donation process and can be used to make improvements in the future. The ability to track donated items promotes transparency and accountability, ensuring that aid reaches its intended recipients and monitoring its flow.

1.9 Thesis Outline

1.9.1 Chapter 1: Introduction

This chapter is the overview of this project. It is a summary of the whole workflow of this project. It is the introduction of the full working system that will be having to develop during this whole 2 semesters based on the methodology listed inside Chapter 1.

1.9.2 Chapter 2: Literature Review

In this chapter, it will consist of any related research and resources which will be related to this chapter. It will also emphasize the existing system to create a bigger picture in understanding the proposed method. Furthermore, the comparison in terms of functionalities by each of the current systems will be compared in Chapter 2. At the end of the chapter, the proposed system will be explained in terms of its functionality and the proposed system’s difference to the existing system.