E-TECHIFY



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

E-TECHIFY

WAN MUHAMMAD ISMAT BIN WAN AZMY



This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Software Development) with Honours.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2021

DECLARATION

I hereby declare that this project report entitled

E-TECHIFY

is written by me and is my own effort and that no part has been plagiarized

STUDENT Date : 12 Sept 2021 (WAN MUHAMMAD ISMAT BIN WAN AZMY) DIE : 12 Sept 2021 (WAN MUHAMMAD ISMAT BIN WAN AZMY) DIE : 12 Sept 2021 Thereby declare that I have read this project report and found this project report is sufficient in term of the scope and quality for the award of Bachelor of Computer Science (Software Development) with Honours.

without citations.

DEDICATION

This is dedicated to my beloved parents and my supervisor, who have been our source of inspiration and gave me the strength when we thought of giving up, who continually provide their moral, spiritual, emotional, and financial support.

To my sisters, friends and anyone who shared their words of advice and encouragement to finish this project.



ACKNOWLEDGEMENTS

I would want to thank my faculty, the Faculty of Information and Communication Technology, for giving me the opportunity to take this course and accomplish such an amazing project. Ts. Mashanum Osman, my esteemed project supervisor, has my undying gratitude for her faith in me throughout the project. I admire her never-ending enthusiasm, support, and direction, all of which have helped me finish my project. It would be unjust not to acknowledge my buddies and their families. Their unwavering moral and financial support is the driving factor behind our determination to complete the project. They are genuinely providing me with unimaginable power.



ABSTRACT

e-Techify acts as an e-commerce, inventory management and a tracking system. This is a web-based system, which are the main focus is to develop a simple, and efficient system for end user. It is built with Laravel, jQuery and MySQL as its database. The people who involve in the system are customer, reseller, and distributor. Various functionalities and data are provided with ease of access to all the users involved. Problems such as loss of data due to unsystematic way of organizing, human error itself and stock count is not real-time that could be solve by developing this system. The system will be up and running regardless of time and it is accessible anytime and anywhere. Customer purchasing experience can improve and it is more efficient rather than having to risk themselves of being expose to public as we know that will prone to the deadly virus. The objective of this system is to produce a systematic system that can manage every automated process without any hiccups, open more side jobs opportunity and keep inventory updated in real-time. The methodology used for e-Techify is Waterfall model. In this model, typically, the outcome of one phase acts as the input for the next phase sequentially. After a vast discussion, data and requirements are collected from Xmiryna Technology as they wanted a solution for problems in the computer market from customer to distributor part. Efficiency, proper data management and communication could be the key to success. Each and every process that is automated will ease the burden and require less man power. Cost saving and increase of profit will occur automatically as a special platform is provided to each users of the system. All of the functions and system accessibility is at fingertips. This is one of the core subjects that must not be underestimated.

ABSTRAK

e-Techify bertindak sebagai e-commerce, pengurusan inventori dan sistem penjejakan. Ini adalah sistem berasaskan web, yang menjadi fokus utama adalah mengembangkan sistem yang mudah dan efisien untuk pengguna akhir. Ia dibina dengan Laravel, jQuery dan MySQL sebagai pangkalan data. Orang yang terlibat dalam sistem ini adalah pelanggan, penjual semula, dan pengedar. Pelbagai fungsi dan data disediakan dengan kemudahan akses kepada semua pengguna yang terlibat. Masalah seperti kehilangan data kerana cara mengatur yang tidak sistematik, kesalahan manusia itu sendiri dan jumlah stok bukan masa nyata yang dapat diselesaikan dengan mengembangkan sistem ini. Sistem ini akan berjalan lancar tanpa mengira masa dan boleh diakses bila-bila masa dan di mana sahaja. Pengalaman membeli pelanggan dapat bertambah baik dan lebih efisien daripada harus mengambil risiko untuk terdedah kepada umum kerana kita tahu bahawa ia akan terdedah kepada virus yang berbahaya. Objektif sistem ini adalah untuk menghasilkan sistem yang sistematik yang dapat menguruskan setiap proses automatik tanpa cegukan, membuka lebih banyak peluang pekerjaan sampingan dan memastikan inventori dikemas kini dalam masa nyata. Metodologi yang digunakan untuk e-Techify adalah model Waterfall. Dalam model ini, biasanya, hasil satu fasa bertindak sebagai input untuk fasa seterusnya secara berurutan. Setelah perbincangan yang luas, data dan keperluan dikumpulkan dari Xmiryna Technology kerana mereka mahukan penyelesaian untuk masalah di pasaran komputer dari pelanggan hingga bahagian pengedar. Kecekapan, pengurusan data dan komunikasi yang tepat dapat menjadi kunci kejayaan. Setiap proses yang automatik akan meringankan beban dan memerlukan tenaga manusia yang lebih sedikit. Penjimatan kos dan peningkatan keuntungan akan berlaku secara automatik kerana platform khas disediakan untuk setiap pengguna sistem. Semua fungsi dan kebolehaksesan sistem berada di hujung jari. Ini adalah salah satu perkara penting yang tidak boleh dipandang rendah.

TABLE OF CONTENTS

DECI	LARATION	II
DEDI	ICATION	III
ACK	NOWLEDGEMENTS	IV
ABST	TRACT	V
ABST	Г RAK	VI
TABI	LE OF CONTENTS	VII
LIST	OF TABLES	XIV
LIST	OF FIGURES	XVI
LIST	OF ABBREVIATIONS	XX
LIST	OF ATTACHMENTS.	XXI
CHA	PTER 1: INTRODUCTION	1
1.1	Introduction	1
1.2	Problem Statements	2
1.3	Objective	2
1.4	Scope	2
1.5	Project Significance	3
1.6	Expected Output	3
1.7	Conclusion	4

CHA	PTER 2: LITERATURE REVIEW AND PROJECT METHODOLO)GY.5
2.1	Introduction	5
2.2	Facts and findings	5
	2.2.1 Domain	5
	2.2.2 Existing System	9
	2.2.3 Technique	11
2.3	Project Methodology	12
	2.3.1 Requirement Gathering and Analysis	15
	2.3.2 System Design	16
	2.3.3 Implementation	17
	2.3.4 Testing	17
2.4	Project Requirements	18
	2.4.1 Software Requirements	18
	2.4.2 Hardware Requirements	18
	2.4.3 Other Requirements	18
2.5	Project Schedule and Milestones	19
2.6	Conclusion	20
CHA	PTER 3: ANALYSIS	21
3.1	Introduction	21
3.2	Problem Analysis	21
3.3	Requirement Analysis	23
	3.3.1 Data Requirement	23
	3.3.2 Functional Requirement	36
	3.3.2.1 Data Flow Diagram	42

	3.3.2.2	Flowchart	45
	3.3.3	Non-functional Requirement	46
	3.3.4	Others Requirement	47
3.4	Conclus	sion	47
CHAI	PTER 4: I	DESIGN	48
4.1	Introduc	ction	48
4.2	High-Le	evel Design	48
	4.2.1	System Architecture	48
	4.2.2	User Interface Design	49
	4.2.2.1	Navigation Design	50
	4.2.2.2	Input Design	53
	4.2.2.3	Output Design	64
	4.2.3	Database Design	87
	4.2.3.1	Conceptual and Logical Database Design	87
	4.2.3.2	Conceptual Database Design	88
	4.2.3.3	Logical Database Design	89
	4.2.3.4	Entity Relationship Diagram	90
	4.2.3.5	Business Rules	90
4.3	Detailed	d Design	92
	4.3.1	Software Design	92
	4.3.2	Physical Database Design	93
4.4	Conclus	sion	94
CHAI	PTER 5: I	MPLEMENTATION	95

5.1	Introduction	95
5.2	Software Development Environment Setup	95
5.3	Software Configuration Management	96
	5.3.1 Configuration Environment Setup	96
	5.3.1.1 Installation for Heroku and JawsDB	96
	5.3.1.2 Installation for Amazon Web Service S3 Bucket	99
	5.3.2 Version Control Procedure	100
5.4	Implementation Status	103
5.5	Conclusion	107
CHAP	PTER 6: TESTING	108
6.1	Introduction	108
6.2	Test Plan	108
	6.2.1 Test Organization.	108 109
	U6.2.3 EFTest Schedule IKAL MALAYSIA MELAKA	109
6.3	Test Strategy	109
	6.3.1 Classes of Tests	111
6.4	Test Design	111
	6.4.1 Test Description	111
	6.4.2 Use Case Testing (Black Box Testing)	111
	6.4.2.1 Use Case Testing: Login Module	112
	6.4.2.2 Use Case Testing: Register Module	112
	6.4.2.3 Use Case Testing: Manage Products (Insert New Product) 113	Module

	6.4.2.4	Use Case Testing: Manage Job (Insert New Job) Module 114
	6.4.2.5	Use Case Testing: Request Shipment (Insert in Shipment Cart) Module
	6.4.2.6	Use Case Testing: Manage Product Serial Number (Insert New Serial Number) Module
	6.4.2.7	Use Case Testing: Shop (Filter Product) Module 116
	6.4.2.8	Use Case Testing: e-Track Parcel Module 117
	6.4.2.9	Use Case Testing: Manage Profile Module 117
	6.4.2.10	Use Case Testing: Manage Address (Insert New Address) Module
TEV.	6.4.2.11 6.4.2.12	Use Case Testing: Manage Cart Module 119 Use Case Testing: e-RMA Module 119
	6.4.2.13	Use Case Testing: Manage Repair Module 120
-	6.4.3	Test Case 121
Ū	6.4.4 EF	Test Data MALAY SIA MELAKA 122
	6.4.5	Integration Testing (Big Bang Approach) 122
	6.4.5.1	Integration Testing: Login Module
	6.4.5.2	Integration Testing: Register Module 123
	6.4.5.3	Integration Testing: Manage Products Module 123
	6.4.5.4	Integration Testing: Manage Job Module
	6.4.5.5	Integration Testing: Request Shipment Module 124
	6.4.5.6	Integration Testing: Manage Product Serial Number Module 124
	6.4.5.7	Integration Testing: Shop Module

	6.4.5.8	Integration Testing: e-Track Parcel Module	. 125
	6.4.5.9	Integration Testing: Manage Cart Module	. 125
	6.4.5.10	Integration Testing: e-RMA Module	. 126
	6.4.5.11	Integration Testing: Manage Orders Module	. 126
6.5	Test Re	sults and Analysis	. 127
	6.5.1	Testing Result Phase 1 for Test Case	. 127
	6.5.2	Testing Result Phase 2 for Test Case	. 130
	6.5.3	Integration Testing Result	. 132
6.6	Conclus	sion	. 132
СПАРТ	FD 7. (CONCLUSION	122
			. 133
7.1	Observa	ation on Weaknesses and Strengths	. 133
7.2	Proposi	tions for Improvement	. 134
7.3	Project	Contribution	. 134
7.4	Conclus	اونيۇم,سىتى تېكىنىكل ملىسىيا sion	. 135
REFER	ENCES	RSITI TEKNIKAL MALAYSIA MELAKA	1
APPEN	DICES		1
ADDENI		TC: Locie Modulo	1
APPENI	JIA A:		1
APPENI	DIX B: 7	ГС: Register Module	2
APPENI	DIX C: T	ГС: Manage Products Module	4
APPENI	DIX D:	ГС: Manage Job Module	8
APPENI	DIX E: T	ГС: Request Shipment Module	9
APPENI	DIX F: 7	C: Manage Product Serial Number Module	12
APPENI	DIX G: "	ГС: Shop Module	13

APPENDIX H: TC: e-Track Parcel Module	14
APPENDIX I: TC: Manage Profile Module	16
APPENDIX J: TC: Manage Address Module	17
APPENDIX K: TC: Manage Cart Module	20
APPENDIX L: TC: e-RMA Module	22
APPENDIX M: TC: Manage Repair Module	25
APPENDIX N: TC: Manage Users Module	27
APPENDIX O: TC: Manage Orders Module	28
APPENDIX P: Sample Source Code	31



LIST OF TABLES

PAGE

Table 2.0: Activities and Outcomes in Requirement Gathering and Analysis	14
Table 2.1: Activities and Outcomes in System Design	15
Table 2.2 Activities and Outcomes in Requirement Implementation	16
Table 2.3: Activities and Outcomes in Testing	16
Table 2.4: Project Schedule	18
Table 3.1: Addresses Entity	23
Table 3.2: Confirm Orders Entity	24
Table 3.3: Distributor Products Entity	25
Table 3.4: Jobs Entity	26
Table 3.5: Orders Entity TEKNIKAL MALAYSIA MELAKA	27
Table 3.6: Order Details Entity	28
Table 3.7: Products Entity	29
Table 3.8: Repairs Entity	30
Table 3.9: Roles Entity	31
Table 3.10: Role User Entity	31
Table 3.11: Shipments Entity	32
Table 3.12: Shipment Details Entity	33
Table 3.13: Tracking's Entity	34
Table 3.14: Users Entity	35
Table 3.15: Functional Requirements of e-Techify for reseller	36 - 37
Table 3.16: Functional Requirements of e-Techify for customer	38 - 39
Table 3.17: Functional Requirements of e-Techify for distributor	39 - 40

Table 3.18: Non-Functional Requirements of e-Techify	45
Table 5.1: Implementation Status of Main Modules & Sub Modules	102 - 106
Table 6.1: Test Schedule	108
Table 6.2: UCT: Login Module	111
Table 6.3: UCT: Register Module	111 – 112
Table 6.4: UCT: Manage Products (Insert New Product) Module	112 - 113
Table 6.5: UCT: Manage Job (Insert New Job) Module	113 – 114
Table 6.6: UCT: Request Shipment (Insert in Shipment Cart) Module	114
Table 6.7: UCT: Manage Product Serial Number (Insert New Serial Numb	oer) Module
	115
Table 6.8: UCT: Shop (Filter Product) Module	115 – 116
Table 6.9: UCT: e-Track Parcel Module	116
Table 6.10: UCT: Manage Profile Module	116 – 117
Table 6.11: UCT: Manage Address (Insert New Address) Module	117 – 118
Table 6.12: UCT: Manage Cart Module	118
Table 6.13: UCT: e-RMA Module	118 – 119
Table 6.14: UCT: Manage Repair Module	119 – 120
Table 6.15: Test Case	120
Table 6.16: Test Data	121
Table 6.17: Integration Testing: Login Module	122
Table 6.18: Integration Testing: Register Module	122
Table 6.19: Integration Testing: Manage Products Module	122
Table 6.20: Integration Testing: Manage Job Module	123
Table 6.21: Integration Testing: Request Shipment Module	123
Table 6.22: Integration Testing: Manage Product Serial Number Module	123
Table 6.23: Integration Testing: Shop Module	124
Table 6.24: Integration Testing: e-Track Parcel Module	124
Table 6.25: Integration Testing: Manage Cart Module	124
Table 6.26: Integration Testing: e-RMA Module	125
Table 6.27: Integration Testing: Manage Orders Module	125 – 126
Table 6.28: Testing Result Phase 1	125 – 128
Table 6.29: Testing Result Phase 2	129 – 130
Table 6.30: Integration Testing Results	131

LIST OF FIGURES

PAGE

Figure 2.0: Activity Diagram of Current System	9
Figure 2.1: Sun Cycle Website	10
Figure 2.2: Waterfall SDLC Methodology	11
Figure 3.0: Activity Diagram of Current System	21
Figure 3.1: Context Diagram	41
Figure 3.2: Level-0 for Reseller	42
Figure 3.3: Level-0 for Distributor	43
Figure 3.4: Level-0 for Customer	43
Figure 3.5: Full System Flowchart KAL MALAYSIA MELAKA	44
Figure 4.0: Three-tier System Architecture of e-Techify	47
Figure 4.1: Navigation Design for customer	49
Figure 4.2: Navigation Design for reseller	50
Figure 4.3: Navigation Design for distributor	51
Figure 4.4: Login	52
Figure 4.5: Register	52
Figure 4.6: Input Job	53
Figure 4.7: Input Product	53
Figure 4.8: Input Product Serial Number	54
Figure 4.9: Input Serial Number	55
Figure 4.10: Request Shipment	56

Figure 4.11: Input Tracking Status	57
Figure 4.12: Update Product Info	58
Figure 4.13: Update Profile	58
Figure 4.14: Insert Address	59
Figure 4.15: Update RMA Status	60
Figure 4.16: Cart	61
Figure 4.17: Input RMA Request	62
Figure 4.18: Input Tracking Number	62
Figure 4.19: Home Dashboard for Reseller	63 - 64
Figure 4.20: Order Details	65
Figure 4.21: Update or Delete Product	66
Figure 4.22: Receipt Finder	67
Figure 4.23: Stock Management	68
Figure 4.24: Specific Stock Management	69
Figure 4.25: Manage Users	70
Figure 4.26: Requested Shipment	70
Figure 4.27: Approved Shipment	71
ويبور، سيني بـFigure 4.28: Waiting Approval Shipment	71
Figure 4.29: Shipped Shipment	71
Figure 4.30: Home Dashboard for Distributor	72 – 73
Figure 4.31: Home Dashboard for Customer	73
Figure 4.32: Tracking Progress	74
Figure 4.33: Cancelled Order	75
Figure 4.34: To Ship Order	75
Figure 4.35: Delivered Order	76
Figure 4.36: Shop	77
Figure 4.37: Tracking Status Dialog	78
Figure 4.38: Tracking Status e-Techify	78
Figure 4.39: Airway Bill	79
Figure 4.40: Order Confirm Email	80

xviii

Figure 4.41: Customer e-Receipt	81
Figure 4.42: RMA Request Receipt	82
Figure 4.43: Job Application Success Mail	83
Figure 4.44: Job Application Decline Mail	84
Figure 4.45: Empty to Ship Status	84
Figure 4.46: Empty Delivered Status	85
Figure 4.47: Empty Cancelled Status	85
Figure 4.48: Conceptual Design for e-Techify	87
Figure 4.49: Logical Design for e-Techify	88
Figure 4.50: ERD of e-Techify	89
Figure 4.51: Level-1 for Customer Manage Orders Process	91
Figure 4.52: Physical Design of e-Techify	92
Figure 5.1: Deployment Diagram	94
Figure 5.2: Heroku Create New App Landing Page	95
Figure 5.3: Heroku Create New App Form	96
Figure 5.4: Heroku Deployment Method	96
Figure 5.5: JawsDB Credentials	97
اويوم سيني تيڪنيڪ Figure 5.6: Heroku Add-Ons	97
Figure 5.7: Heroku Environment Variables	97
Figure 5.8: Heroku User Dashboard	98
Figure 5.9: Create Bucket Setup	98
Figure 5.10: Bucket in S3	99
Figure 5.11: Create New Repository in GitHub	100
Figure 5.12: e-Techify Repository	101
Figure 5.13: Push and Commit Changes to GitHub Repository	101
Figure 6.1: Test Organization Chart	107
Figure 6.2: Pie-Chart for Testing Phase 1	129
Figure 6.3: Bar-Chart for Testing Phase 1	129
Figure 6.4: Pie-Chart for Testing Phase 2	130
Figure 6.5: Bar-Chart for Testing Phase 2	130



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

LIST OF ABBREVIATIONS



LIST OF ATTACHMENTS

PAGE

Appendix A	TC: Login Module	1
Appendix B	TC: Register Module	2 - 4
Appendix C	TC: Manage Products Module	4 - 8
Appendix D	TC: Manage Job Module	8-9
Appendix E	TC: Request Shipment Module	9-11
Appendix FARLAYSIA	TC: Manage Product Serial Number	12 - 13
ST SE	Module	
Appendix G	TC: Shop Module	13 – 14
Appendix H	TC: e-Track Parcel Module	14 - 15
Appendix I	TC: Manage Profile Module	16
Appendix J	TC: Manage Address Module	17 - 19
Appendix K	TC: Manage Cart Module	20 - 21
Appendix L	TC: e-RMA Module	22 - 24
Appendix MERSITI TEI	TC: Manage Repair Module	25 - 26
Appendix N	TC: Manage Users' Module	27
Appendix O	TC: Manage Orders Module	28 - 30
Appendix P	Sample Source Code	31 - 33

CHAPTER 1: INTRODUCTION

1.1 Introduction

The e-Techify system will be developed using Laravel and MySQL. The purpose of this idea is to automate all the process and keeping it in a safe database without having to worry about loss of data. Every process is designed to help and ease every user in the system. All of the data or information will be precisely store as this involves important data such as money transaction history, stock information and etc. Possibilities like redundant data, miscount of stock, lost track of current parcel are commonly happened in the current system. In order to avoid these possibilities, validation will be done carefully for every process. Various implementation will be implemented and failure rate due to human errors can be reduce with the assistance of e-Techify. This system is 24 hours and 7 days online, regardless of system user's location and time. They can shop, manage and arrange anywhere, anytime without any restrictions. The main purpose of developing this system is to centralize all process intentionally for customer, reseller and distributor for computer parts. Some of the major additional functionality to make sure this system can give benefits to whom that wants to do a freelance job that could generate side income for themselves. The most important of all, this system existence will help the users of the system to ease their work without having to expose their own self to the outside whereas we know that the condition since Covid-19 pandemic might be very dangerous gives a big impact to everyone that face this situation. To some extent, this will also help the government reduce the current cases. We can no longer keep using the traditional method as it is a totally different condition right now. This system is the combination of ecommerce and inventory type of system exclusively for computer parts. Without having hesitation of going online during this pandemic, people on the internet almost most of the time.

1.2 Problem Statements

- Traditional method that will prone to loss of data & un-systematic way of organizing all process.
- No platform that offers job opportunity related to computer services specifically.
- Reseller having hard time to get stock confirmation and it is not realtime.

1.3 Objective

- 1. Produce a systematic system that can manage every automated process without any hiccups.
- 2. To open more side jobs opportunity, to generate income.
- 3. Ability to keep inventory updated in real-time.
- 1.4 Scope

Distributor Module

In distributor module where it has the ability to manage product, insert serial number in the system to let reseller assign to customer ordered items, manage jobs and manage related Return Merchandise Authorization (RMA) request by customer. Reporting in form of bar and pie charts are also provided to ease the distributor itself to see the simplify report for their performance.

Customer Module

In customer module where customer can shop for desire items, send RMA requests, track their own parcel, manage their orders and get job info advertised. All of the payments will be gone through PayPal that offers seamless experience for all customers of e-Techify.

Reseller Module

In reseller module it has the ability to manage orders, manage jobs and manage stock from distributor. The dashboard will show reporting in form of bar charts are also provided to ease the reseller itself to see the simplify report for their performance in terms of earnings monthly, earnings annual and specific brand sold per month.

Tracker Module

Customer has the access to check their parcel status. Including every detail that is needed to make sure customer is informed for every status updated. Customers may track the progress of their orders from the time they are packed until they are successfully delivered to their doorstep.

Stock Management Module

Every stock that is updated by every distributor will be visible for reseller to view all related information. This could give a better view for reseller to do a cross check for their inventory with every distributor.

1.5 Project Significance NIKAL MALAYSIA MELAKA

e-Techify will replace the current traditional system and provide benefits to customer, reseller and distributor that registered with this system. All of the process will be systematically in order to ease users of this system.

1.6 Expected Output

e-Techify was built to fulfil the requirements in order to solve the problem statements. I was expecting to get this project done within the time given. This project is resulted from my own observation in this technology industry especially in computer parts. With the help of this system, manual processes can be automated as it can give benefits to everyone that uses this system. Moreover, I hope that by developing this system, positive outputs would come out for a long-term benefit that could give everyone their own advantages.

1.7 Conclusion

This chapter opens with an overview of the role of information technology in the new pandemic norm, as well as the value of this technology to the community. Following that, this chapter discusses the key issues that users of the existing approach are facing, as well as the project's goals. This chapter also discusses the project's importance and contributions, as well as the predicted outcomes when the project is completed. The following chapter, Chapter 2, Literature Review, goes through the information technology used in e-commerce inventory as well as the development approach.



CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

The facts and findings will be discussed in detail in this chapter of the Literature Review to expose the necessary concepts, theories, and knowledges connected to the system and system domain. The analysis of existing products and systems that provide the same functions as 2.2.2 is discussed in the following part, which consists of comparisons between existing products and this project. Following that, the chosen methodology will be presented, and all activities related to the methodology will be discussed, as in 2.3. Following that, in section 2.4, a list of all the software and hardware requirements is shown. The project schedule will be presented, and milestones will be specified in the final section.

2.2 Facts and findings

Web application, information technology application in a mix of ecommerce, inventory, and tracking system are the domains associated to this project. The next parts, from 2.2.1 through 2.2.3, include the explanation.

2.2.1 Domain

This section covers the basics of web applications and their prevalent uses in today's society. Then there's a discussion about the advantages of web applications for humans.

Introduction of Web Application

The evolution of websites or web systems leads to the development of web apps. According to Stuttard (2011), the World Wide Web contained just websites at the start of the internet, which acted as information repositories containing static documents. Web browsers were developed as a means of extracting and displaying documents.

Web applications use a combination of server-side scripts (PHP and ASP) to store and retrieve data, as well as client-side scripts (JavaScript and HTML) to present data to users. Users can use online forms, content management systems, shopping carts, and other tools to communicate with the organization. Employees may also use the apps to create documents, share information, collaborate on projects, and work on shared documents regardless of where they are or what device they are using.

Common Web Application Functions

Web applications are designed to perform almost any useful function or service. In recent years, various web application features have become increasingly popular and widespread. Amazon, for example, offers online shopping, Facebook, a popular social networking site, online banking for both local and foreign banks, Gmail, a web mail service, and Wikipedia, which gives interactive knowledge (Stuttard, 2011).

The current state of information technology is causing an increasing number of web-based applications to be replaced with mobile applications that can be accessed via a smartphone or tablet. The majority of mobile apps connect to the server using a web browser or a specialised client-server application that employs HTTP-based APIs like web services.

s. Cai

Web apps are widely utilised within enterprises to support fundamental business processes, in addition to being widely used on the public Internet. Many applications are in charge of providing access to very sensitive information and functionality. A human resource application, for example, is a platform for retrieving payroll information, writing and receiving performance reviews, and managing recruitment. Second, although being exclusively accessible through a proprietary third-client programme, enterprise resource planning (ERP) software is an example of a business programme that can now be browsed using a web browser. Another example is cloud services like Microsoft Office Online and Google Apps for Work, which shift traditional desktop office tools like power point slides and spreadsheets to the cloud or web. The examples above, which are generally referred to as "internal" apps, were hosted externally when corporations moved them to outside service providers to save money. These issues are becoming more prevalent presently. As a result, most computer users' only client software will be a web browser, and this is rapidly approaching (Stuttard, 2011).

Benefits of Web Application

Web-based applications offer a variety of business benefits as compared to desktop apps. Instead of having to be installed on each computer that you want to access it from, these programs can be accessible via the internet from any computer. Software as a Service (SaaS) refers to the use of web-based software that runs in a virtual, cloud-based environment.

- Web applications run on multiple platforms regardless of OS or device as long as the browser is compatible.
- All users access the same version, eliminating any compatibility issues.

• They are not installed on the hard drive, thus eliminating space UNIVERSITITEKNIKAL MALAYSIA MELAKA limitations.

• Have a chance to be a Progressive Web Apps (PWA), which could be install in mobile devices.

Information Technology in E-Commerce

Information Technology (IT) moves in a rapid pace and drives drastic changes to all sectors of today's economy including education, business, manufacturing, etc. One of the fastest evolving is e-commerce. Ecommerce, often known as electronic commerce or online commerce, is the purchasing and selling of goods and services through the internet, as well as the financial and data transfers required to complete these transactions. Ecommerce is frequently used to refer to the online sale of real goods, but it can also refer to any type of economic transaction that is made possible by the internet. Whereas e-business encompasses all aspects of running an online firm, ecommerce focuses on the exchange of goods and services. There are four basic ecommerce models that can be used to explain practically any transaction between customers and businesses.

• Business to Consumer (B2C)

When a business sells a good or service to an individual consumer (e.g., You buy a pair of shoes from an online retailer).

• Business to Business (B2B)

When a business sells a good or service to another business (e.g., A business sells software-as-a-service for other businesses to use)

• Consumer to Consumer (C2C)

When a consumer sells a good or service to another consumer (e.g., You sell your old furniture on eBay to another consumer).

• Consumer to Business (C2B)

When a consumer sells their own products or services to a business or organization (e.g., An influencer offers exposure to their online audience in exchange for a fee, or a photographer licenses their photo for a business to use).

Information Technology in Inventory Management System

Inventory system is also one of the fastest sectors that follows Information Technology (IT) movement. Perhaps the most significant advantage of employing inventory management software is that it simplifies the process of maintaining your inventory, saving you time, money, and, quite frankly, your sanity. Inventory management software helps to eliminate the risk of human error by automating key business processes. With supply and demand changing throughout the year and stock levels constantly fluctuating, inventory management software helps to avoid the risk of human error by automating key business processes. Stock-outs and excess inventory are avoided at all costs. When it comes to inventory management, finding the right balance can be tough. After all, having insufficient supply might result in a stock-out, disgruntled customers, and significant revenue loss. Excess goods, on the other hand, can eat up valuable warehouse space and unnecessary cost.

2.2.2 Existing System

Traditional method which involves many processes can be the main problem that all people will face. On the top of that since Covid-19 pandemic hit all of the country in this world which are getting worst day by day. Automation is one of the key to help every country by having less physical contact in order to reduce everyday cases. The figure below shows every process from start to end of a transaction. Every transaction involves a customer, reseller & distributor. A long process like this could make it time consuming which could be reduced by having a systematic process through a system.

h a system. اونيونر،سيتي تيڪنيڪل مليسيا ملاك UNIVERSITI TEKNIKAL MALAYSIA MELAKA



Figure 2.0: Activity Diagram of Current System

Other Reference for Existing System



Figure 2.1: Sun Cycle Website

Sun Cycle website only offers viewing for the products that they brought in and RMA portal for end user to send warranty for their distributed products. The features that they lack of are end user cannot purchase directly through their website and limited products offered.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2.2.3 Technique

There are several techniques that have been done to gather more information about e-Techify which are:

Observation

Observation was carried out to collect and gather more information. As for now I found out that this traditional process has already been going through many years. All of the existing platforms did not offer additional service such as Return Merchandise Authorization (RMA), side-job offerings and stock management integration with their distributor.

Internet Resources

Internet resources is one of the simplest ways to find out feedback from other people on how the current system is. The e-commerce of technology items is not frequently known as other platforms that offers various items on their shelf to be sold. My main feedbacks and reviews are taken from a pc gaming community. Truth to be told the community wished that there is a platform solely for technology items that offers different kind of services as stated in the observation. There are some main concerns such as the handling of their ordered goods. I hope by developing this e-Techify could bring benefits to the community and also every people that involve in the process.

2.3 **Project Methodology**



Figure 2.2: Waterfall SDLC Methodology

The Waterfall Model was the first Process Model to be introduced. It is also referred to as a systematic linear-sequential life cycle model. It is very simple to understand and use. In a waterfall model, each phase must be completed before the next phase can begin and there is no overlapping in the phases. The Waterfall model is the earliest SDLC approach that was used for software development. The waterfall Model illustrates the software development process in a linear sequential flow. This means that any phase in the development process begins only if the previous phase is complete. In this waterfall model, the phases do not overlap. The sequential phases in Waterfall model are –

- Planning and analysis All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification document.
- System Design The requirement specifications from first phase are studied in this phase and the system design is prepared. This system design helps in specifying hardware and system requirements and helps in defining the overall system architecture.
- 3. Implementation With inputs from the system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality, which is referred to as Unit Testing.
- Integration and Testing All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.
- Deployment of system Once the functional and non-functional testing is done, the product is deployed in the customer environment or released into the market.
- 6. Maintenance There are some issues which come up in the client environment. To fix those issues, patches are released and also to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

All these phases are cascaded to each other in which progress is seen as flowing steadily downwards (like a waterfall) through the phases. The next phase is started only after the defined set of goals are achieved for previous phase and it is signed off, so the name "Waterfall Model". In this model, phases do not overlap. Some situations where the use of Waterfall model is most appropriate are requirements are very well documented, clear and fixed. There are no ambiguous requirements and ample resources with required expertise are available to support the product.

The advantages of waterfall development are that it allows for departmentalization and control. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process model phases one by one. Development moves from concept, through design, implementation, testing, installation, troubleshooting, and ends up at operation and maintenance. Each phase of development proceeds in strict order. Some of the major advantages of the Waterfall Model are easy to manage due to the rigidity of the model. Each phase has specific deliverables and a review process. Phases are processed and completed one at a time. Works well for smaller projects where requirements are very well understood. Well understood milestones and easy to arrange tasks.

The disadvantage of waterfall development is that it does not allow much reflection or revision. Once an application is in the testing stage, it is very difficult to go back and change something that was not well-documented or thought upon in the concept stage. The major disadvantages of the Waterfall Model are not suitable for the projects where requirements are at a moderate to high risk of changing. So, risk and uncertainty are high with this process model. High amounts of risk and uncertainty. Adjusting scope during the life cycle can end a project.
2.3.1 Requirement Gathering and Analysis

Table 2.0 lists all of the activities involved in acquiring and analyzing requirements. It also comprises the results of the corresponding set of activities.

Activities	Outcomes					
Identify problems faced in current or	Problems:					
existing system and gather requirements.	The problem faced by the current system					
	are all of the process still using the					
	manual method. It will be time					
	consuming for each process and prone to					
	human errors. Moreover, lack of					
MALAYSIA	functionality which it offers, and it is					
AST ME	more to giving an advantage to some					
A.W.	people but not to a whole.					
Analyses collected requirements and	Modules:					
categories into main modules.	1. Distributor Module					
AMIN -	2. Reseller Module					
كنيكل مليسيا ملاك	3. Customer Module					
Document functional and non-functional requirements, then arrange a meeting to	IALAYSIA MELAKA					
confirm them.						
Refine all the requirements and make						
final confirmation on the latest						
requirements.						
Construct diagram and requirement						
specification document.						
To determine the functional	Language: Laravel					
requirements, an analysis of a	UI/UX: HTML5, Bootstrap, CSS,					
programming language, tools, and	jQuery.					
library was conducted.	Library: All open-source library.					

Table 2.0: Activities and Outcomes in Requirement Gathering and Analysis

2.3.2 System Design

Table 2.1 presents all the activities that are carried out in system design phase. It also includes the outcomes associated with the related set of activity.

Activities	Outcomes
Develop a user interface for each input	The final version designs of the input and
and output screen. Hold a discussion	output screen in all the modules are
about the design that was created. Refine	shown and explained in the Chapter
the user interface. All of the screen	4.2.2.
interface designs' final versions are	
included in this document.	
Update all the system requirement	The final version of the functional and
specifications	non-functional requirements is listed and
A.M.	explained in the Chapter 3.3.2 and 3.3.3.
Discuss the process flow from data entry	
to final output using the interface design	
as a temporary prototype.	
Design software architecture	The system architecture is discussed in
0 .	the Chapter 3.2 associated with the
UNIVERSITI TEKNIKAL N	diagramSIA MELAKA
Develop database design, such as Entity	All the conceptual, logical, and physical
Relationship Diagram, Data Flow	database designs are included in Chapter
Diagrams.	3 with explanation and details. Different
	levels of data flow diagram also can be
	read in the Chapter 3.
Develop algorithm for each functionality	
in every module	

Table 2.1: Activities and Outcomes in System Design

2.3.3 Implementation

Table 2.2 presents all the activities that are carried out in implementation phase. It also includes the outcomes associated with the related set of activity.

Activities	Outcomes
Develop source code for each module	
based on the design created during the	
Design phase.	
For unit testing, create and construct test	
cases for each module. Each module	
should undergo unit testing.	
Integrate modules in the system.	
Every day, run version control and	Chapter 5.3 explains steps of practices of
backup processes. All code changes	this activity.
should be committed to GitHub, and	
daily backups should be made to the	
OneDrive folder.	
کنیککل ملیسیا ملاک 2.3.4 Testing	اونيۆم سيتي تيڭ

Table 2.2 Activities and Outcomes in Requirement Implementation

Table 2.3 presents all the activities that are carried out in testing phase. It also includes the outcomes associated with the related set of activity.

Activities	Outcomes				
For integration testing and system	Detailed explanation of testing activities				
testing, create and construct test cases for	r are discussed on the Chapter 6, Testing				
each module.					
Carry out integration testing and keep					
track of the results. Collect bugs, debug					
them, and describe the fixes. Rerun the					
test case that uncovered the flaws.					

Table 2.3: Activities and Outcomes in Testing

2.4 **Project Requirements**

This section lists out the software and hardware requirements related to the development of this project.

2.4.1 Software Requirements

- Development Tools PHP Storm, GitHub, XAMPP.
- Operating System Microsoft Windows.
- Database MySQL

2.4.2 Hardware Requirements

• A personal computer (PC) with at least 4GB RAM, a Core i3 processor, and Windows 7 or higher is required.



2.5 Project Schedule and Milestones

Gantt chart or Program Evaluation Review Technique (PERT) diagram is used to visualize the plan from beginning to finish time.

Activity/Task	Start	End		Week												
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sending proposal	W1	W1														
Approval proposal & gather requirements	W2	W2														
System Planning to be developed	W3	W3														
Project Identification,	W3	W5														
System Development & Analysis Planning		AKA					7									
System Design and	W5	W6						_	_							
Delivery System Design									4							
System	W6	W12		-		2		5		1	ييو	او				
Delivery of System Implementation	ITI T	EKN	ĸ	١L	M.A	۸L/	AY :	SIA	M	EL	A	KA				
Final Report Delivery	W13	W13														
System Presentation and Assessment	W14	W14														

Table 2.4: Project Schedule

2.6 Conclusion

This chapter introduces a web-based system that combines different system kinds with web server and client interaction. This chapter also addresses the project's underlying ideas, such as web application, e-commerce information technology, tracking system, and inventory management, as well as the standards that apply to each procedure. Because it is straightforward to understand and implement, the waterfall model was chosen as the development process. It's also been used to foster desirable practices like defining before designing and designing before coding in a number of past projects.



CHAPTER 3: ANALYSIS

3.1 Introduction

This chapter outlines how the problems observed in the present system were analyzed, as well as the needs of the proposed system in 3.2. In 3.3.1, 3.3.2, and 3.3.3, the requirement analysis elucidates data needs, functional requirements, and non-functional requirements, respectively. Other project criteria are also discussed, and the chapter concludes with a conclusion.

3.2 Problem Analysis

As we can see in the diagram below the process for traditional method is quite long and time consuming. The efficiency of the current system is less which would cause delay to the people involved and prone to human errors. Accessibility is also limited because of existing shortcomings.

Figure 3.0 below illustrates the main process involved in a daily process that will be done by customers. The first begins with customer will have to contact seller and ask for desired items that they wish to buy. Then, the seller will do a stock check for the requested items by the customer. If the requested items are available, then it will be sold to the customer. Otherwise, the seller would have to inform customer that they are out of stock and if the customer willingly to wait for seller to ask from their distributor, then if stock is available from distributor side, the distributor itself will arrange stock delivery to seller. Only then seller could sell the items to customer if stock already arrived at their side. From the flow mentioned above, the process itself already took too much time for customer, seller, and distributor. All of the people involved in this process would also be a problem as they are not systematically sorted which could leads to human errors.



Figure 3.0: Activity Diagram of Current System

3.3 Requirement Analysis

This section delves deeper into the analysis of e-Techify's data requirements, functional requirements, and non-functional requirements.

3.3.1 Data Requirement

A data dictionary is a database table that records all of the data and information about the table. In every entity, it specifies the field name, type, size, and description of each column. It also includes each entity's primary and foreign keys, as well as color-coded indicators.



a) Addresses

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	~		A unique number
					ID for addresses.
User_id	BIGINT	20		>	FK from user's
					table.
Name	VARCHAR				Name for address.
Phone_no	INT				Phone number for
					address.
Address	VARCHAR				Full address.
Postcode	INT				Postcode for
	LAKE .				address
Longitude	DOUBLE				Longitude for
FIS		U			address.
Latitude Manne	DOUBLE				Latitude for
5 Mal	- Jala	-: <	-		address.
Default_status	INT.	-	. (2	Default status of an
UNIVER	SITI TEKNI	KAL M	ALAYS	IA MEL	address
Created_at	TIMESTAMP				When data is
					created.
Updated_at	TIMESTAMP				When data is
					updated.

Table 3.1: Addresses Entity

b) Confirm Orders – (confirm_orders)

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	\checkmark		A unique number
					ID for confirm
					orders.
Order_id	BIGINT	20		~	FK from orders
					table.
Addresses_id	BIGINT	20		\checkmark	FK from
					addresses table.
Payment_total	INT				Total payment for
AL MALA	SIA MC				each confirmed
2 Milling	L. R. K.				order.
Payment_method	VARCHAR				Payment method
E		U/			for each
Samo.					confirmed order.
Tracking_num	VARCHAR				Tracking number
يا مارك	_ مىس		ي پيه	ورم	for each
UNIVERS		AL MA	LAYSI	A MELA	confirmed order.
Receipt_no	VARCHAR				Receipt number
					for each
					confirmed order.
Created_at	TIMESTAMP				When data is
					created.
Updated_at	TIMESTAMP				When data is
					updated.

Table 3.2: Confirm Orders Entity

c) Distributor Products – (distributor_products)

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	\checkmark		A unique number
					ID for distributor
					products.
Product_id	BIGINT	20		~	FK from products
					table.
User_id	BIGINT	20		\checkmark	FK from user's
					table.
Batch_no	INT				Batch number for
MALA	SIA MA				each distributor
and the second se	L'ARK				product.
Serial_number	VARCHAR				Serial number for
E		U,			each distributor
DNIAR					product.
Status	VARCHAR				Status for each
يا ملات	_ مىس		ي بيه	ومرسي	distributor
UNIVERS	ITI TEKNIK	AL MA	LAYSI	AMELA	product.
Created_at	TIMESTAMP				When data is
					created.
Updated_at	TIMESTAMP				When data is
					updated.

Table 3.3: Distributor Products Entity

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	~		A unique number
					ID for jobs.
Product_id	BIGINT	20		~	FK from products
					table.
Occupied_by	BIGINT	20		~	FK from user's
					table.
Job_name	VARCHAR				Job name.
Job_salary	INT				Job salary.
Job_location	VARCHAR				Job location.
Job_type	VARCHAR				Job type for each
E E					job.
Status	VARCHAR	U/			Job status for each
NINNE ^S					job.
Created_at	TIMESTAMP	2.2	1		When data is
	ل سیسا		S. S.	-09	created.
Updated_at/ERS	TIMESTAMP	AL MA	LAYSI	AMEL	When data is
					updated.

e) Orders

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	\checkmark		A unique number
					ID for orders.
User_id	BIGINT	20		~	FK from user's
					table.
Order_status	VARCHAR				Order status for
					each order.
Created_at	TIMESTAMP				When data is
51.61	10,				created.
Updated_at	TIMESTAMP				When data is
Lange Contraction	LAKA				updated.



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

f) Order Details - (order_details)

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	\checkmark		A unique number
					ID for order
					details.
Order_id	BIGINT	20		\checkmark	FK from orders
					table.
Product_id	BIGINT	20		\checkmark	FK from products
					table.
Product_order	INT				Ordered products
_quantity	BIA MC				quantity.
Serial_number	VARCHAR				Serial number for
TEN	P				each product.
Created_at	TIMESTAMP	U,		5 V	When data is
*SAINI					created.
Updated_at	TIMESTAMP	2.2			When data is
3	in the second		13 5	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	updated.

Table 3.6: Order Details Entity

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

g) Products

Table 3.7: Products Entity

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	\checkmark		A unique
					number ID for
					products.
User_id	BIGINT	20		\checkmark	FK from user's
					table.
Product_name	VARCHAR				Product name.
Product_sn	VARCHAR				Product special
A AVE.					number.
Product_image_path	VARCHAR				Product image
and the second se	See.				path.
Product_category	VARCHAR			I VI	Product
E.S.				IV	category.
Product_brand	VARCHAR				Product brand.
Product_warranty	INT	-	1		Product
_duration	یک ل س		ىيى يە	يور "	warranty
UNIVERSIT	I TEKNIKAL	MAL	AYSIA	MELAK	duration.
Product_price	DECIMAL				Product price.
Product_link	VARCHAR				Product link for
					each product.
Product_stock	INT				Product stock
_count					counter for
					each product.
Created_at	TIMESTAMP				When data is
					created.
Updated_at	TIMESTAMP				When data is
					updated.

h) Repairs

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	\checkmark		A unique number
					ID for repairs.
Addresses_id	BIGINT	20		~	FK from
					addresses table.
Product_id	BIGINT	20		<	FK from products
					table.
User_id	BIGINT	20		~	FK from user's
AL AY	0				table.
Sn_no	VARCHAR				Product serial
and the second se	A.				number.
Date_of_purchase	DATE				Date of
Fig					purchased
NING V					products.
File_path	VARCHAR		- 2 - 4		Proof of
ىيا سارك			بي ييم	-0.9	purchase.
Reason	VARCHAR	AL MA	LAYSI/	MELA	Reason to send
					for repair.
Status	VARCHAR				Repair status.
Tracking_no	VARCHAR				Tracking number.
Resolve_solution	VARCHAR				Repair resolution.
Receive_at	DATE				Data of received.
Created_at	TIMESTAMP				When data is
					created.
Updated_at	TIMESTAMP				When data is
					updated.

i) Roles

Table 3.9: Roles Entity

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	\checkmark		A unique number
					ID for roles.
Name	VARCHAR				Name of each
					role.
Created_at	TIMESTAMP				When data is
					created.
Updated_at	TIMESTAMP				When data is
ALA	687.				updated.

j) Role User – (role_user)

Table 3.10: Role User Entity

97					
Field	Туре	Size	Primary	Foreign	Description
+Mal.	Jala IC	.· C	Key	Key	ial
ID Dec 64	BIGINT	20		-03	A unique number
UNIVERS		AL MA	LAYSI	AMELA	ID for role user.
Role_id	BIGINT	20		\checkmark	FK from roles
					table.
User_id	BIGINT	20		~	FK from user's
					table.
Created_at	TIMESTAMP				When data is
					created.
Updated_at	TIMESTAMP				When data is
					updated.

k) Shipments

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	 		A unique number
					ID for shipments.
User_id	BIGINT	20		 	FK from user's
					table.
Tracking_no	VARCHAR				Shipment
					tracking number.
Remark	VARCHAR				Remark for each
A AY	9 a .				shipment.
Receive_at	DATE				Receive date.
Status 🖉	VARCHAR				Status for each
<u>e</u>					shipment.
Proof_of_payment	VARCHAR				Proof of
* AININ					payment.
Created_at	TIMESTAMP	. <	1. 1		When data is
سي سرد			يبي فيه	- ~ · · ·	created.
Updated_at/ERS	TIMESTAMP	LMA	LAYSIA	MELA	When data is
					updated.

Table 3.11: Shipments Entity

l) Shipment Details – (shipment_details)

Field	Туре	Size	Primary	Foreign	Description	
			Key	Key		
ID	BIGINT	20	~		A unique number	
					ID for shipment	
					details.	
Shipment_id	BIGINT	20		\checkmark	FK from	
					shipments table.	
Product_id	BIGINT	20		~	FK from	
					products table.	
Product_order	INT				Ordered products	
_quantity	ALA MC				quantity.	
Created_at	TIMESTAMP				When data is	
	P			V. P	created.	
Updated_at	TIMESTAMP			- N/	When data is	
S'AININ					updated.	
اونيوم سيتي تيكنيكل مليسيا ملاك						

Table 3.12: Shipment Details Entity

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

m) Trackings

Field	Туре	Size	Primary	Foreign	Description
			КСу	КСу	
ID	BIGINT	20	\checkmark		A unique number
					ID for tracking's.
Order_id	BIGINT	20		>	FK from orders
					table.
Tracking_no	VARCHAR				Tracking number
					for each order
Current_status	VARCHAR				Current status for
AV.	5 F				each order.
Created_at	TIMESTAMP				When data is
Series and Series	LAKA				created.
Updated_at	TIMESTAMP				When data is
LIST				ΗV	updated.

SAINO . ل مليسي اونيومرسيتي تيكنيد لو lo \leq

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

n) Users

Field	Туре	Size	Primary	Foreign	Description
			Key	Key	
ID	BIGINT	20	~		A unique
					number ID for
					users.
Name	VARCHAR				User name.
Email	VARCHAR				User email.
Email_verified_at	TIMESTAMP				User email
					verified.
Password	VARCHAR				User password.
Two_factor_secret	TEXT				2FA secret.
Two_factor	TEXT				2FA secret
_recovery_codes					recovery code.
Remember_token	VARCHAR			7 V	Account
* SAINO					remember token.
Created_at	TIMESTAMP	. <	- 1 A		When data is
		-	يي ي	-19.	created.
Updated_at/ERSI	TIMESTAMP	LMA	LAYSIA	MELA	When data is
					updated.

Table 3.14: Users Entity

3.3.2 Functional Requirement

This section outlines the system's functions, how it records, and the services and functionalities that e-Techify shall deliver to its users. Tables 3.15, 3.16, and 3.17 detail all of the system's functional needs.

Support Basic Account Authentication	The user must log in with an existing
	account and be able to log out at any
	time.
Manage Orders	The system will allow user that have
	reseller role to manage all customer
	orders. Information about an order is
	detailed out which consist of ordered
	items, when the order is created, tracking
	number that is assigned, name, phone
	number, receiver address and current
	tracking status. Other functionality such
WALAYSIA 4	as e-receipt, insert serial number, print air
	waybill, update current parcel status, and
	cancel order are also provided.
Stock Management	The system will allow user to see list of
	distributors that is exist in the system. In
عنيكل مليسيا ملاك	addition, further information is displayed
	such as stock count and other relevant
ONVERSITIERNIKAET	information for each product.
Request Shipment	The system will allow user to request
	desired items to the distributor of the
	products. Status for each request will also
	be displayed which include remark, a
	receipt and in detailed view of each
	request information.
Receipt Finder	The system will allow user to search and
	retrieve customer receipt for each order.

Table 3.15: Functional Requirements of e-Techify for reseller

Manage Product Serial Number	The system will allow user to insert each product serial number with batch number. Statistic for each batch is recorded and data will be displayed in a bar chart grouped by batch number. A table filled with full information
	shown.
Manage Users	The system will allow user to insert a job which the inserted jobs will be offered to user that holds customer role. The purpose of this part to let customer generate some side income.
المالمور المراجعة ال المراجعة المراجعة الم	users in the system. Create, update, and delete operation are included in this functionality.
Reseller Dashboard UNIVERSITI TEKNIKAL I	The system provides user in a compact view which offers variety of important functions such as manage all RMA requests, display earnings by monthly and annual, summary of earnings in Q1 till Q4 in bar chart and manage all job offerings.
Manage Address	The system will allow user to add new address without any limits and set an address to default address.

Support Basic Account Authentication	The user must log in with an existing
	account and be able to log out at any
	time.
Manage Orders	The system will allow user that have
	customer role to manage their orders.
	Information about an order is detailed out
	which consist of ordered items, when the
	order is created, tracking number that is
	assigned, name, phone number, receiver
	address and current tracking status. Other
	functionality such as e-receipt, check
WALAYSIA MA	parcel tracking status, and cancel order
	are provided.
× 1	
Shop	The system will allow user to shop their
Stano-	desired items throughout the list.
e-RMA كنيكل مليسيا مال	The system will allow user to submit
	RMA request for their purchased product
UNIVERSITI TEKNIKAL I	if there is a problem they encounter
	during usage.
e-Track Parcel	The system will allow user to track their
	parcel status in detail.
Manage Cart	The system will allow user to add or
	delete items in cart, alter quantity, change
	receiver address according to the address
	that have been saved and make payment
	by using online payment method.

Table 3.16: Functional Requirements of e-Techify for customer

Customer Dashboard	The system provides user in a compact
	view which offers variety of important
	functions such as manage all RMA
	requests, total spending, total orders
	created, and display all job offerings.
Manage Address	The system will allow user to add new
	address without any limits and set an
	address to default address.
Edit Profile	The system will allow user to alter their
	account information in terms of name
	and email address.
MALAYSIA .	

Table 3.17: Functional Requirements of e-Techify for distributor

Support Basic Account Authentication	The user must log in with an existing
ى مايسىيا ملاك	account and be able to log out at any
	اويىۋىرىسىتى تى.time
Manage Products	The system will allow user that have
	distributor role to manage their products
	in the system. They will have the ability
	to insert new product, update and delete
	existing product.
Manage Job	The system will allow user to insert a job
	which the inserted jobs will be offered to
	user that holds customer role. The
	purpose of this part to let customer
	generate some side income.

Manage Shipments	The system will allow user to manage the
	shipments requested by reseller. All of
	the requests will be grouped by status.
	Each request needs to have approval
	from distributor itself.
Distributor Dashboard	The system provides user in a compact
	view which offers variety of important
	functions such as manage all RMA
	requests, total RMA, total products,
	display sale for each brand in bar chart
	while percentage sale for each brand in
	pie chart and manage all job offerings.
WALAYSIA 4	
Manage Address	The system will allow user to add new
A LEK	address without any limits and set an
	address to default address for business
Seaton and the second second	purpose.
Edit Profile	The system will allow user to alter their
	account information in terms of name
UNIVERSITI TEKNIKALI	and email address.

3.3.2.1 Data Flow Diagram

With Data Flow Diagrams, this section describes all modules of the e-Techify System (DFD). It includes a context diagram and (Level 0). Each diagram will be briefly explained.





UNIVERSITI TFigure 3.2: Level-0 for Reseller IELAKA



Figure 3.4: Level-0 for Customer

3.3.2.2 Flowchart



Figure 3.5: Full System Flowchart

3.3.3 Non-functional Requirement

Extensibility	a Tashifu angunas that the system
Extensionity	e-rechtry ensures that the system
	platform is flexible and open to future
	feasible development.
Reliability / Availability	The failure rate of e-Techify must be
	low. Except for regular maintenance, the
	system should be available 24 hours a
	day, seven days a week. In order for the
	user to have access to the system server,
	the system also requires an internet
MALAYSIA	connection.
and the second	
Response Time	Each page request should take fewer than
¥. •	1500 milliseconds to complete. There
	should be no hiccups in any of the
*samn	requests.
فنتكا مليسيا ملاك	اونىقىرىسىتر تىك
Maintainability	e-Techify must have average time and
UNIVERSITI TEKNIKAL I	rapidity in system recovery to make sure
	user experience during their visit are not
	interrupted for such time.
Usability	e-Techify provides simple and interactive
	user interface for user ease of access
	towards the functionality that is offered
	in the system.

Table 3.18: Non-Functional Requirements of e-Techify

3.3.4 Others Requirement

The system should adhere to the requirements that have been provided by Xmiryna Technology. Each requirements provided are important in order to make the system as a whole. Every real-life scenario will be converted to functions in order to implement in the system.

3.4 Conclusion

This chapter discusses how the analytic tools were used to gather all of the requirements. Functional and non-functional requirements, as well as data requirements, have all been thoroughly explored. All of the studied requirements will then be passed on to the design stage, when all of the essential designs, such as database, software, and hardware designs, will be built, as detailed in the following



CHAPTER 4: DESIGN

4.1 Introduction

High-level design, which comprises system architecture and user interface designs, is covered in the first section of this chapter. The user interface design area in 4.2.2 covers navigation design, input design, and output design. The high-level design then defines database architecture in terms of conceptual and logical designs, which will be used throughout 4.2.3's development. This chapter's next section covers comprehensive design, which includes both software and physical database design. Each system function's specifics are described in the software design.

4.2 **High-Level Design**

This section delves into the intricacies of high-level design, such as system architecture, user interface design, and database design.





Figure 4.0: Three-tier System Architecture of e-Techify

Figure 4.0 shows the flow of a three-tier system architecture. e-Techify was built by using this architecture. It is a client-server architecture that includes capabilities for presentation, application processing, and data administration. Each function is segregated into three layers and physically segregated.

Three-tier web application development is commonly used in regular websites. The presentation layer is the application's highest level. The user interface is presented in this tier as a means of communication with the user. Its primary responsibility is to analyze user requests and transform the results into a format that the user can comprehend. This tier, for example, is used by the user to acquire the results report for each category of a brand that is sold. This system's presentation tier is the user's web browser, which is used to access it. The front-end platform for displaying the material sent from the server is the browser.

Business logic tier, application layer, and middle layer are all terms used to describe the logic tier. As seen in Figure 4.0, this tier sits between the display and data tiers. The functioning of an application is controlled by this layer, which processes instructions, does calculations, and makes logical decisions and judgments. Between the data tier and the presentation layer, it is also in charge of data access and processing. For example, this layer can read orders data from the data layer and perform computations to determine each customer subtotal price in a specific order. The application server XAMP, which handles content processing on the PHP platform, is the system's intermediate layer.

Data persistence strategies are found in the data tier, which is the lowest layer. This is the location where data is stored and extracted from a database or file system. This layer transfers data from the database to the logic tier for detailed processing, and subsequently shows the user the results. For example, this layer holds all of e-Techify data that has been entered into the system. MySQL is the system's backend database, which comprises data sets as well as database administration tools for managing and accessing the data.

4.2.2 User Interface Design

This section covers all the user interface designs of this e-Techify, including navigation design, input design and output design. Each user interface design will be accompanied by its screenshot picture.

4.2.2.1 Navigation Design

A navigation diagram, often known as a site map, is a low-level architecture diagram work product that explains how to move across an application's display components. The navigation diagram of e-Techify is shown in the picture below:



Figure 4.1: Navigation Design for customer




Figure 4.3: Navigation Design for distributor

4.2.2.2 Input Design

This section contains all the interface designs of the screen that enable user to input data into this system.

👸 e-Techify		→〕 🕈
	Email address	
	reseller@live.com	
	Password	
	Forgotten your password? <u>Reset it here.</u>	
	Login	
AALAYS	lla	
Figure 4.4 sho	Figure 4.4: Login	o the system.
The import for locin m	III he survit address and assurant	-
the input for login w	in be email address and password.	
e-Techify	اونيۇبرسىتى تېكنىكل ملىي	•) 🖸
UNIVERSI	TI TEKNIKAL	
	Name	
	Indine	
	Email addrese	
	We'll never share your email with anyone else.	
	Password	
	Confirm Password	
	Please make sure password and confirm password are tele.	
	Submit	

Figure 4.5: Register

Figure 4.5 shows the input screen for registration of e-Techify to create an account in the system. The input for register will be name, email address, password and confirm password.

	Job 🖬		
	Manage jobs info — Prepared by <i>Wan Is</i>	nere! ^{mat}	
Job Form			
Job Name	Job Salary	Job Type Please select	~
Job Location			
	Submit		

Figure 4.6: Input Job

Figure 4.6 shows the input screen for a job form. The input for job form is name, salary, type, and location. All of the job inserted will be display in job offerings section at user dashboard. The users that have ability for this functionality reseller and distributor.

Product Name	Crea Insert p	
	IKAL N	اويوم سيبي يي ALAYSIA MELAKA
Choose File No file chosen		
Warranty Duration Please select	~	Product Category Please select
Product Brand	~	Product Stock

Figure 4.7: Input Product

Figure 4.7 shows the input screen for product insertion. The input for insert product will be name, number, price, link, image, warranty duration, category, brand, and total stock. The users that have ability for this functionality are reseller and distributor.



Figure 4.8: Input Product Serial Number

Figure 4.8 shows the input screen for serial number insertion for a product. The input for this part will be product serial number and user have to choose which product from dropdown that belongs to the new serial number. The users that have ability for this functionality are reseller and distributor.



Figure 4.9: Input Serial Number

Figure 4.9 shows the input screen for serial number insertion for each customer orders. The input for this part will be product serial number suggested by the system according to the product ordered. The users that have ability for this functionality are reseller.



Figure 4.10 shows the input screen for request shipment functionality. The input for this part will be brand distributor, brand, product, and product quantity. Once the user has selected the dropdown and add to list button is execute then it will display inserted product at the cart section on the left. On bottom of the screen, requested shipment based on status will be shown. The users that have ability for this functionality are reseller and distributor but the distributor itself can only see the status section.



Figure 4.11: Input Tracking Status

Figure 4.11 shows the input screen for tracking status. The input for this part will be current tracking status. The users that have ability for this functionality are reseller.

📵 e-Techify	Product Information	× • •
Home Manage Product Users Manage Orders e		t SN nCov-19
]
	Product Name Kraken 773 - 360mm AIO Liquid Cooler	
	Product SN	Status Actions
RL-KRZ63-01 Kraken Z	RL-KRZ73-01 Product Picture	
RL-KRX73-R1 NZXT Kra	Choose File No file chosen	READY STOCK
(dar-	Stock Price	
CA-H710i-W1 NZ	9 RM 1245.00	READY STOCK
CA-H16WR-B1-UK	Close Save chang	es READY STOCK 🎁 🗹 🔗
RL-KRZ73-01 Kraken Z	73 - 360mm AlO Liquid Cooler NZXT 28/03/2021 11:	22 AM TOWISTOCK 觉 🖉 🔗

Figure 4.12: Update Product Info

Figure 4.12 shows the input screen for update product info. The input for this part will be product name, number, picture, total stock, and price. The users that have ability for this functionality are reseller and distributor.

W/MA		
e-Techify	اونوم سبخ نکنک مل	"≓ ≗ 0
UNIVERSI	TI TEKNIKAL MALAYSIA MELAKA	
0111711101	Profile 🛈	
	Name	
	Wan Ismat Wan Azmy	
	(ismatazmy@live.com	
	We ii never share your email with anyone eise. Submit Add New Address +	

Figure 4.13: Update Profile

Figure 4.13 shows the input for update profile info. The input for this part will be user name and email address. The users that have ability for this functionality are all e-Techify users.

e-	Techify				1	H 🕹
ne	Shop Manage Orders e-RMA	e-Track Parcel nCo	ov-19			
		In	sert Address 🧕			
		A we	II-known quote, contained in a blockquote element. — Someone famous in <i>Source Title</i>			
	Name					
	Address					
1	Phone No.		Insert Postcode			
	long		Lat			
	Click here if in google suggestic	n does not have yo	ur specific location or your postcode is wrong. Submit			
	Name	Phone	Address	Created On	Action	Default
(Nooreliany Wan Azmy	(+60) 123623856	KL East Mall, Jalan Lingkaran Tengah 2, KL Timur, Kuala Lumpur, Selangor, Malaysia	2021-05-23 13:07:10 PM	×	
	Muhammad Afiq Iskandar Bin Mohamad Azri	(+60) 125001524	No.1, Taman Air Tawar Indah, Taman Air Tawar Indah, 13050 Butterworth, Pulau Pinang, Malaysia	2021-05-23 13:29:54 PM	×	Update
	Wan Muhammad Ismat Wan Azmy	(+60) 172178319	no. 79, Jalan Taman Melati 1, Taman Melati, Kuala Lumpur, Federal Territory of Kuala Lumpur, Malaysia	2021-05-28 12:14:19 PM	×	
	Frank		Figure 4 14: Insert Address	Ý I		
	Aller		rigure 4.14. Insert Address			

Figure 4.14 shows the input screen for address insertion. The input for this part will be address name, full address, phone number. Postcode, longitude, and latitude will be determined by the system itself. The users that have ability for this functionality are all e-Techify users.

阈 e-Techify		& O
Home Manage Product Users Manage Orders e-Job	Stock Management Request Shipment Receipt Finder Insert SN nCov-19	
Hi, Xmiryna Tech	nology !	
EARNINGS MONTHLY Update My-RMA		×
All RMA Requests		← 1 2 → RMA Request Form ▲ Download File
CA-H16WR-B RMA No. Current Status Motherboa Reason	#6 Shipped My PCIE bracket did not detect VGA.	△ Update RMA Status RMA Request Form △ Download File
N7-Z49XT-B1 Update Status	Select Status Shipped	C Update RMA Status
Receive At	Date Of Arrival 05/27/2021	
Requested RMA At Tracking No. Remark Cose	26-May-2021 17:10 PM	arnings Trechnology
UNIVERSITI Trig	ure 4.15: Update RMA Status	AKA

Figure 4.15 shows the input screen for update RMA status. The input for this part will be status, receive at date, tracking number and remark. The users that have ability for this functionality are distributor.



Figure 4.16 shows the input screen for cart functionality. The input for this part will be items in cart, quantity, and payment method by PayPal. The users that have ability for this functionality are customer.

e-Techify				• 📲 🛔 🔊
Home Shop Manage Orders e-R	/IA e-Track Parcel nCov-19			
	e-RMA	your RI	MA request here.	
Name & Phone No. Address	Adi Iman (+60) 172178319 no. 49, Jalan ST Permai 3, Kampu Select Address no. 49, Jalan ST Permai 3, Kam	ing Bukit	Balai, Durian Tunggal, Malacca, Malaysia it Ralai, Durian Tunnoal, Malacca, Malaysia	~
Date of Purchase	Date Of Purchase mm/dd/yyyy	sang sa		
Proof of Purchase	Choose File No file chosen			
Brand Name		~	Product Products	~
Serial Number			Confirm Serial Number	
Comments	Figure 4.17:	su Inp	^{bmit} but RMA Request	

Figure 4.17 shows the input screen for RMA request form. The input for this part will be address dropdown, date of purchase, proof of purchase, brand name, type of product, serial number, confirm serial number and comments. The users that have ability for this functionality are customer.



Figure 4.18: Input Tracking Number

Figure 4.18 shows the input screen for tracking functionality. The input for this part will be tracking number that is exist in the system.

4.2.2.3 Output Design

e-Techify Home Users Manage Product Manage	Orders e-Job Stock Management Reques	t Shipment Receipt Finder	Insert SN nCov-19	2 (
Hi, Xmiryna	Technology	!		
EARNINGS MONTHLY MYR 54,600.00	EARNINGS ANNUAL MYR 60,936.00	\$	RMA REQUESTS 6	de
Customer RMA Requests				
NZXT H1 BLACK CA CA-H16WR-B1-UK	SE Serial Number 111222333444555	Status Shipped	Tracking No.	 RMA Request Form Download File Update RMA Status
NZXT N7 Z490 ATX Motherboard - Blac N7-Z49XT-B1	Serial Number Ik tkicjRDz	Status Repair	Tracking No. Not Available	RMA Request Form Comparison RMA Request Form Comparison Compariso
C 1 2	Serial Number ABCD88E	Status Pending Checking	Tracking No. Not Available	C RMA Request Form ▲ Download File ✓ Update RMA Status
Brand Cumulative Brand Co	unter Sale Per Month	Earnings A	Monthly Monthly Earnin	ngs 🔳
	brand per month for XI Technology	يتي ٽيڪ	Nov Oct	Feb Mar
UNIVERSI	TI TEKNIKAL N	ALAYSIA		Apr
Jan Feb Mar Apr M ASUS ROG	ay Jun Jul Aug Sep Oct Nov • FRACTAL DESIGN • NZXT	Dec Plain	Jul Jun Inverted Polar	



Figure 4.19: Home Dashboard for Reseller

·au g

Figure 4.19 shows the output screen for reseller dashboard, it consists of monthly earnings, monthly earnings, display total and all RMA request info. Brand cumulative, earnings monthly are shown in bar chart to ease user access towards data. Job offers are display in a carousel which have a draggable function to view all job offers offered by distributor or reseller itself.



Figure 4.20: Order Details

Figure 4.20 shows the output screen for order details, it consists of list of items that have been ordered by customer with quantity, name and phone number, address, tracking number, timestamp when order is created, invoice number, order current status, payment method and subtotal of the order.

		Undata	ام	ata 🔗			
		Manage produ – Prepare	cts in shop	e stock.			
		Name	Brand	Date	Status	A	ctions
RL-KR2	263-01	Kraken Z63 - 280mm AIO Liquid Cooler	NZXT	22/03/2021 16:58 PM	LOW STOCK	Ť	🗹 é
RL-KR)	(73-R1	NZXT Kraken X73 RGB - AIO Liquid RGB	NZXT	22/03/2021 17:04 PM	READY STOCK	ť	Ċ Ó
СА-Н71	10i-W1	NZXT H710i - MATTE WHITE	NZXT	23/03/2021 11:02 AM	READY STOCK	ť	Ċ Ó
СА-Н16W	/R-B1-UK	NZXT H1 BLACK CASE	NZXT	28/03/2021 11:16 AM	READY STOCK	Ť	Ċ Ó
RL-KRZ	273-01	Kraken Z73 - 360mm AIO Liquid Cooler	NZXT	28/03/2021 11:22 AM	LOW STOCK	Ť	🗹 Ó
N7-Z49	OXT-B1	NZXT N7 Z490 ATX Motherboard - Black	NZXT	01/04/2021 13:01 PM	READY STOCK	1	1 é

Figure 4.21: Update or Delete Product

Figure 4.21 shows the output screen for update or delete product section. It consists of a table with product details that is exists in the system. Information such as product picture, name, brand, timestamp for last updated product info, status, and actions. The users that have ability for this functionality are reseller and distributor. Pagination is provided in order let user have the ease to view product in a good arrangement of 6 product per page.

	Receint Fin	der O
	Find customer receipt here	
	— Prepared by Wan Ism	at
Search either order status or invoice ID		
XT-271620382283 31 May 2021 10:57 PM		🚚 To Ship
XT-604689015770 01 Jun 2021 12:40 AM		🚚 To Ship
XT-870533082253 01 Jun 2021 01:21 PM		🕷 Delivered
XT-755037092012 07 Jun 2021 12:21 AM		🏶 Delivered
XT-899271631367 07 Jun 2021 02:38 PM		🚚 To Ship
XT-563622409068 10 Jun 2021 11:46 PM		🚚 To Ship
XT-131410219085 11 Jun 2021 12:08 AM	4	🚚 To Ship
XT-793538516033 11 Jun 2021 03:23 PM	N.	🕫 To Ship
XT-792769976910 12 Jun 2021 09:46 PM	KA	(# To Ship
VT 926760241296		# Delivered

Figure 4.22 shows the output screen for receipt finder. It consists of a simple table with list of receipt that is existed in the system. Each receipt will be created as soon as when customer successfully checkout and payment is approved. Search bar is also provided in order to search receipt by its id to easily find the desired receipt.

e-Techify		
ome Manage Product Users Manage Orders e-Jo	ob Stock Management Request Shipment Receipt Finder	Insert SN nCov-19
Sto	ck Managemer Manage stock from every distributor in detail.	nt 🚣
ist of Distributors	— Prepared by Wan Ismat	
ist of Distributors Distributor	- Prepared by Wan Ismat Distributor	Distributor
ist of Distributors Distributor	— Prepared by Wan Ismat Distributor	Distributor
ist of Distributors Distributor Event Build Supply Technology Sdn. Bhd.	— Prepared by Wan Ismat Distributor Ban Leong Technologies Sdn. Bhd.	Distributor XTT Sun Cycle Sdn. Bhd.
ist of Distributors Distributor Build Supply Technology Sdn. Bhd. Xmiryna Tech Y Kuala Lumpur, TX	Prepared by Wan Ismat Distributor Ban Leong Technologies Sdn. Bhd. Xmiryna Tech Y Kuala Lumpur. TX	Distributor Sun Cycle Sdn. Bhd. Xmiryna Tech Y Kuala Lumpur, TX

Figure 4.23: Stock Management

WALAYSIA

Figure 4.23 shows the output screen for stock management. This section consists of list of distributors that is registered in the system. All of the registered distributors will be list down in this section and reseller have the ability to preview what kind of product that they bring into the system. The users that have ability for this functionality are reseller.

اونيوم سيتي تيكنيكل مليسيا ملاك UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Stock	by Sun Cycle		n Rhd		
SLOCK	by Sun Cycle	5 20	II. DIIU.		
	A well-known quote, contained in a	blockquote e	lement.		
			12.00	1.000	
BI KB762 01	Name	Brand	Date	Stock	READY STOCK
RL-RR203-01	Kraken 263 - 280mm AlO Liquid Cooler	NZAT	22/03/2021 10:58 PM	9	READTSTOCK
RL-KRX73-R1	NZXT Kraken X73 RGB - AIO Liquid RGB	NZXT	22/03/2021 17:04 PM	32	READY STOCK
CA-H710i-W1	NZXT H710i - MATTE WHITE	NZXT	23/03/2021 11:02 AM	57	READY STOCK
CA-H16WR-B1-UK	NZXT H1 BLACK CASE	NZXT	28/03/2021 11:16 AM	18	READY STOCK
RL-KRZ73-01	Kraken Z73 - 360mm AIO Liquid Cooler	NZXT	28/03/2021 11:22 AM	9	READY STOCK
N7-Z49XT-B1	NZXT N7 Z490 ATX Motherboard - Black	NZXT	01/04/2021 13:01 PM	20	READY STOCK
ALAYSI	A				

e-Techify

Figure 4.24: Specific Stock Management

Figure 4.24 shows the output screen for specific stock management. This section is intended to preview specific stock by each distributor that have inserted the product in the system. Details such as product picture, name, brand, timestamp of last updated, stock and status for each product is listed in a table. Pagination is provided in order let user have the ease to view product in a good arrangement of 6 product per page.

80

e-Tecł	nify		& (
me Ma	anage Product Users Manage Orders e-Job Stock	Management Request Shipment Receipt Finder Insert SN	nCov-19
		Users O Manage all registered users. – Prepared by Wan Ismat	
ID	Name	Email	Actions
3	Prof. Howell Turner IV	xlang@example.org	Edit Delete
5	Martin Goodwin	prosacco.cecelia@example.net	Edit Delete
6	Alba Gutmann	shany95@example.org	Edit Delete
7	Adolph Lockman	rcartwright@example.org	Edit Delete
9	Dr. Annette Gottlieb PhD	priscilla28@example.net	Edit Delete
10	Haley Barton	sbahringer@example.net	Edit Delete
12	Wan Ismat Bin Wan Azmy	ismatazmy@live.com	Edit Delete
14	Build Supply Technology Sdn. Bhd.	build@live.com	Edit Delete
15	Ban Leong Technologies Sdn. Bhd.	banleong@live.com	Edit Delete
16 < 1	Lucio Romaguera PhD	khauck@example.com	Edit Delete
	A A		

Figure 4.25 shows the output screen for manage users. This section is intended to manage users by editing their credentials or delete their account. List of users with their id, name and email will be displayed in a table. The users that have ability for this functionality are reseller. NIKAL MALAYSIA MELAKA

Status		
Shipped 1		\sim
Waiting Approval 3		\sim
Approved 1		~
Requested 1		^
	Request ID #32	
	XT	
	Requested	
	Xmiryna Tech Q Kuala Lumpur, TX	
0		

Figure 4.26: Requested Shipment

Status	
Shipped 1	~
Waiting Approval	~
Approved 1	^
Request ID #27	
XT	
Approved	
Xmiryna Tech Q Kuala Lumpur, TX	
Requested 1	~





Figure 4.28: Waiting Approval Shipment





Figure 4.26 shows the output screen for requested shipment. While figure 4.27 shows the output screen for approved shipment. Figure 4.28 shows the output screen for waiting approval shipment. Lastly, figure 4.29 shows the output screen for shipped shipment. All of the current shipment status will be displayed in according to their section or groups. It gives reseller the option to view shipment details and have a proof of shipment invoice.

🍓 e-Techify					≗ ⊙
Home Manage Product e	-Job Shipment Requested nCov	-19			
Hi, Sun (Cycle Sdn	. Bhd. !			
TOTAL RMA 5		al C	TOTAL PRODUCTS SOLD 44		æ
Earnings Overview	ALAYSIA 4			Revenue Sources	
25 20 15 10 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Brand Counter Sale	Per Month the for XT Technology		Percentage Sold 20. FRACTAL DES	for Each Brand, =
NZXT H CA-H16W	1 BLACK CASE R-B1-UK	Serial Number 111222333444555	Status Shipped	Tracking No.	 RMA Request Form Download File Update RMA Status
NZXT N Mother N7-Z49XT	7 Z490 ATX board - Black ^{B1}	Serial Number tkiCjRDz	Status Repair	Tracking No. Not Available	 RMA Request Form Download File Update RMA Status
NZXT K AIO Liq RL-KRX73	raken X73 RGB - uid RGB -R1	Serial Number sn01234	Status Pending Checking	Tracking No. Not Available	 RMA Request Form Download File Update RMA Status

Offerings Temporary	Full Time	Permanent	Permanent
PC Builder Expert Rot Occupied Sun Cycle Sdn. Bhd. Y Kuala Lumpur, Setapak	Senior Backend Engineer Not Occupied Sun Cycle Sdn. Bhd. O Dublin, Ireland	PHP Backend Dev Not Occupied Sun Cycle Sdn. Bhd. 9 Stuttgart, Deutsch	Sales of XT Technology Net Occupied Sun Cycle Sdn. Bhd. & Kuala Lumpur. Setapak
View	(Write)		View

Figure 4.30: Home Dashboard for Distributor

Figure 4.30 shows the output screen for distributor dashboard, it consists of total RMA request created by customer, list of RMA and total products sold. Earnings overviews are shown in bar chart while revenue sources are shown in pie chart to ease user access towards the data collected by the system. Job offers are display in a carousel which have a draggable function to view all job offers offered by distributor or reseller itself.

i, Adilmar		سینی نیک TOTAL ORDERS CREATED	اونيوم. IELAKA
RMA Requests			
NZXT H710i - MAT WHITE	TE Serial Number 9812654376	Status Pending Receive	Tracking No. Z Download Rec
CA-H/TUI-WT			
Offers			
offers Temporary	Permanent	Permanent	Permanent
Offers Temporary PC Builder Expert Occupied	Permanent F Senior Backend Engineer Occupied	Permanent PHP Backend Dev Not Occupied	Permanent Sales of XT Tech Occupied

Figure 4.31: Home Dashboard for Customer

Figure 4.31 shows the output screen for customer dashboard, it consists of total spending and total orders created. Job offers are display in a carousel which have a draggable function to view all job offers offered by distributor or reseller. If the user has request a RMA, it will be displayed in the my RMA request section.



Figure 4.32: Tracking Progress

Figure 4.32 shows the output screen for tracking progress. In this section it will show the parcel status before dispatched to official shipping courier. Each progress will be recorded in the system to keep customer updated in all time. A map is shown as a visualization of how far the parcel will travel from the origin to the customer itself.



Figure 4.34: To Ship Order

💦 e-Techify			• ₽ ≗ €
Home Shop Manage Orders e-RMA	e-Track Parcel e-Job nCov-19		
	Ord	er 🖐	
	Mana — Prepar	ge orders. ed by Wan Ismat	
View order in detail	Get receipt	Check tracking status	S Cancel order
To Ship Z Completed	Cancelled 2	der #62	
	2	xT	
	₅y Wan Isma	at Wan Azmy	
	31 May 2	elivered 2021 10:56 PM	
•		G	\otimes

Figure 4.35: Delivered Order

Figure 4.33, 4.34 and 4.35 shows the output screen for three types of order status that have been grouped by according to its status. As we can see in figure 4.33 customer only have the ability to see the order details and last updated tracking status if order is cancelled. While in figure 4.34 we can see all customer to ship order status have the ability to view order details, generate e-receipt, check current tracking status, and cancel the order if the tracking status is not set to "*Processing Order*". Lastly, figure 4.35 shows that customer can do all the function as in to ship order status, but they do not have the ability to cancel the order once the parcel is dispatched to the official courier.

		≝ ⊒ ™
Home Shop Manage Orders e-RMA e-Track Parcel r	1Cov-19	
Shop -	Select Brand Please select Apply Filters	Select Price Please select V Reset
- Prepared by Wan Ismat		
AIO Kraken Z63 - 280mm AIO Liquid Cooler RL-KRZ63-01	AIO NZXT Kraken X73 RGB - AIO Liquid RGB RL-KRX73-R1	CASES NZXT H710i - MATTE WHITE CA-H710i-W1
6 Years Warranty	1 Years Warranty	2 Years Warranty
RM 1115.00 Add to cart	RM 919.00 Add to cart	RM 749.00 Add to cart
🛱 9 piece available 🚺 🔗	32 piece available 🕕 🔗	57 piece available
CASES CA-H16WR-B1-UK	Est du date de conserver i ran PM	MOTHERBOARD NZXT N7 Z490 ATX Motherboard - Black N7-Z49XT-B1
② 10 Years Warranty ERSITITE	10 Years Warranty	3 Years Warranty
RM 1559.00 Add to cart	RM 1245.00 Add to cart	RM 1039.00 Add to car
18 piece available (i) 🔗	9 piece available (i)	20 piece available

Figure 4.36: Shop

Figure 4.36 shows the output screen for shop section. In this section, customer will have the ability to choose any products that are offered in the system and can add product to cart if they are interested. Customer can filter the shop catalogue by type of brand and price either low to high or vice versa. Pagination is provided in order let user have the ease to view product in a good arrangement of 6 product per page.



Figure 4.37: Tracking Status Dialog

Figure 4.37 shows the output screen for tracking status dialog. This dialog will be available in RMA request section and in tracking status page. The purpose of using this kind of technique is to ease user in tracking their parcel.



Figure 4.38: Tracking Status e-Techify

Figure 4.38 shows the output screen for tracking status of e-Techify. In this section it will show the current parcel status according to the tracking number that is supplied in the search bar. Each tracking information will be displayed with a suitable icon.



Figure 4.39: Airway Bill

Figure 4.39 shows the output screen for airway bill for each order. Each airway bill will be generated when a purchase has been successfully created. In the airway bill it shows all related information such as order details, sender details, recipient details, a barcode and also a qrcode for the runner to scan in order to contact the customer without having to dial in their phone.



Figure 4.40: Order Confirm Email

Figure 4.40 shows the output screen for order confirmation mail. This email will be sent over to customer once an order purchased have been successfully created. Ordered products or items will be displayed including with its quantity, per unit price, order subtotal and payment method. A button to generate e-receipt is also provided.

Xmiryna Technology [SA0546866-M]		B #XT-72264 MASHANUM BI Fakulti Tekno Komunikasi (FTMK). UT r	ATTI OSMAI Ogi Maklumat da M, Durian Tunggi Malacca, Malaysi
No. /9 Jalan i aman Melati 1, Taman Melati, Setapak, 53100, Kuala Lumpur xmiryna.tech@outlook.com / +(60) 17-217 8319 xmiryna.com.my		#75110	23 Jun 202 XT Expres
Summary	Quantity	Unit Price	Pric
			DU (())
E850 DIGITAL PSU - BLACK XKoWGawD 10 years local distributor warranty.	x1	KM 649.00	KM 649.0
EB50 DIGITAL PSU - BLACK XKoWGawD 10 years local distributor warranty. Fractal Design Define 7 Black TG Dark Tint ED-07-123	x1 x1	RM 649.00 RM 769.00	RM 549.0 RM 769.0

Figure 4.41 shows the output screen for customer e-receipt. Each receipt that is generated will have their own unique identification which makes it easy for reseller and customer to find their receipt in the system. It consists of order details, address of reseller and customer, system tracking number and list of ordered products with payment information.

			RM	A Request
XT				#6
		Muhan	nmad Afiq Iskandar Bi No.1, Taman Ai Tawar Indah, 1	n Mohamad Azri r Tawar Indah, Taman Air 13050 Butterworth, Pulau Pinang, Malaysia
Sun Cycle Sdn. Bhd. Sun Cycle Sdn Bhd (HQ), Kawasan Perusahaan Menglembu, Ipoh, Perak, Molewin				+(60)125001524
4/60) 220250508			2	26 May 2021
+(00) 32939990				,
Xmiryna Technology	,			
Summary	Brand	Product SKU	Serial Number	Date Of Purchase
NZXT H1 BLACK CASE 10 years local distributor warranty.	NZXT	CA-H16WR-B1-UK	111222333444555	2021-05-25
MALAYSIA		My PCI	E bracket did not	detect VGA.
A.	Please print this and	include inside your parcel.	Thank You!	
V TEKNIR	Figure 4.42:	RMA Request	Receipt	

Figure 4.42 shows the output screen for RMA request receipt. Each RMA request will be provided a receipt as a proof of request have been made in the system. Customer must include this receipt inside the parcel when they are sending over for a repair. Details such as address of distributor and customer are shown with a date of requested on repair including RMA details.



Figure 4.43: Job Application Success Mail

Figure 4.43 shows the output screen for job application success mail. This email will be sent over to customer once a job application that is applied by customer have been approved by the employer. Job details will be displayed and for further information about the job they have to contact the respective employer for further instructions.



Figure 4.44 shows the output screen for job application decline mail. This email will be sent over to customer once a job application that is applied by customer have been declined by the employer.

ViewTo Ship 0	v order in detail Completed 0 0	Cancelled 0	Get receipt	₽	Check tracking status	\otimes	Cancel order
				57			
			To ship er	mpty			

Figure 4.45: Empty to Ship Status



Figure 4.46: Empty Delivered Status



Tigure 4.47. Empty Cancened Status

Figure 4.45, 4.46 and 4.47 shows the output screen for three types of order status that have been grouped by according to its status. As we can see in figure 4.45 customer can view order with "To Ship" status. While in figure 4.46 customer can view order with "Completed" status. Lastly, figure 4.47 gives ability to customer can view order with "Cancelled" status. If there is no order in those three status, it will show a message, a picture and indicator to show it is empty.
4.2.3 Database Design

This section contains the conceptual, logical database designs and entity relationship diagram (ERD) of e-Techify System.

4.2.3.1 Conceptual and Logical Database Design

This section contains the conceptual and logical database of e-Techify. Conceptual database design is displayed in the Figure 4.24. The database design of e-Techify consists of fourteen entities. They are confirm_orders, trackings, orders, order_detail, addresses, repairs, roles, role_user, users, products, jobs, shipments, shipment_details and distributor_products. Logical database design has the same entity as the conceptual database design, but it has attributes with its data types.



4.2.3.2 Conceptual Database Design



Figure 4.48: Conceptual Design for e-Techify

4.2.3.3 Logical Database Design



Figure 4.49: Logical Design for e-Techify

4.2.3.4 Entity Relationship Diagram



Figure 4.50: ERD of e-Techify

Entity Relationship Diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is a component of data. In other words, ER diagrams illustrate the logical structure of databases.

4.2.3.5 Business Rules

A business rule is a component of the business rules flow that is used to assert business structure or impact business behavior. The database architecture relies heavily on identifying and documenting business rules. The designer can use business rules to build relationship participation rules and limitations, as well as a correct data model.

Below are the business rules for the system:

- One and only one address belongs to a user, while a user may have many or none address.
- One and only one confirm_orders belong to an order, while an order must have one and only one confirm_orders.
- One and only one confirm_orders belong to an address, while an address must have one or many confirm orders.
- One and only one distributor_products belong to a product, while a product must have one or many distributor_products.
- One and only one distributor_products belong to a user, while a user must have one or many distributor_products.
- > One and only one job belongs to a user, while a user may have many or no job.
- One and only one order belongs to a user, while a user may have many or no order.
- One and only one order_details belong to an order, while an order must have one or many order details.
- One and only one order_details belong to a product, while a product must have one or many order_details.
- One and only one product belongs to a user, while a user may have many or no products.
- One and only one repairs belong to an address, while an address must have one or many repairs.
- One and only one repair belongs to a user, while a user may have many or none repair.
- One and only one repair belongs to a product, while a product may have many or none repair.
- A user can have many roles and a role can have many users.
- One and only one shipment belongs to a user, while a user may have many or no shipment.

- One and only one shipment_details belong to a shipment, while a shipment must have one or many shipment_details.
- One and only one shipment_details belong to a product, while a product must have one or many shipment details.
- One and only one tracking belong to an order, while a order must have one or many tracking.

4.3 Detailed Design

This section elaborates project detailed designs, including physical database design and software design.



4.3.1 Software Design

Figure 4.51: Level-1 for Customer Manage Orders Process

4.3.2 Physical Database Design



Figure 4.52: Physical Design of e-Techify

The physical database design of e-Techify consists of fourteen entities with its data types and length. They are confirm_orders, trackings, orders, order_detail, addresses, repairs, roles, role_user, users, products, jobs, shipments, shipment_details and distributor_products.

4.4 Conclusion

The various designs that were used to help develop this system are outlined and described in this chapter. All of the diagrams in the Waterfall model are relics from the design stage. The design diagrams serve as a template for the project's next stage, implementation, and contain system architecture, user interface, database, and software design. During the implementation stage, the data represented on the design works is transferred and converted into a usable component, module, or prototype.



CHAPTER 5: IMPLEMENTATION

5.1 Introduction

The implementation of the e-Techify is discussed in this chapter. It involves the creation of the software development environment, software configuration management, and the status of each module's implementation.



5.2 Software Development Environment Setup

Figure 5.1: Deployment Diagram

Figure 5.1 shows the deployment diagram of e-Techify. According to the figure, the Heroku contains a cloud server, database and the client machine will be connected to the Heroku server via public Uniform Resource Locator (URL) with encrypted SSL. Client user must install at least one internet browser. It is suggested that every user should be using Google Chrome or Microsoft Edge as their primary browser in order to get the best experience during their browse time.

5.3 Software Configuration Management

This section explains the configuration environment setup and version control procedures.

5.3.1 Configuration Environment Setup

The configuration environment of this system requires Heroku cloud server. It is a cloud platform as a service that supports php programming language and manages all system request made by client to server. The following part covers the deployment of e-Techify to Heroku cloud. Then, the explanation will be followed by setting up MySQL database.

5.3.1.1 Installation for Heroku and JawsDB



Looking for help getting started with your language?

Get started by reading one of our language guides in the Dev Center



Figure 5.2: Heroku Create New App Landing Page

Step 2: Input the proper app name to create a new app in Heroku and choose Europe as the region for our application.

	Create New App	
App name		
e-techify		0
e-techify is available		
Choose a region		
Europe		\$
Add to pipeline		
Create app		
HALAY Figure :	5.3: Heroku Create New App Form	
ST No.		
Step 3: After successfully cro	eate an app in Heroku, we are going to p	coceed with the
deployment method. In this	demonstration we will be using GitHu	ib. Users have
options to choose other branc	ches as well. Heroku will fetch all project	files according
to the selected branch. If all	the process run smoothly, it will show u	ip a status says
"Connected".	ونيومرسيتي تيكنيك	
UNIVERSITI TE	Heroku Cit User Heroku CLI	
App connected to GitHub Code diffs, manual and auto deploys are available for this app.	Connected to [] <u>iSmat/e-Techify</u> by () <u>iSmat</u>	Disconnect

Figure 5.4: Heroku Deployment Method

Step 4: After all deployment method have succeeded, user have to proceed with addons. In this step we will add JawsDB MySQL as our database as we have added it from Resources tab and in add-ons section. JawsDB will provide credentials for our database setup such as DB_DATABASE, DB_HOST, DB_PASSWORD, DB_PORT and DB_USERNAME in order to access the database provided.

Settings f	for etechify	
Connection Info		
Connection String		
mysql://unzyot0ua7k	gs3mc:cm3l8savg5rm1gjs@c8u4r7fp8i8qaniw.chr7pe7iynqr.eu-west-1.rds.amazonaws.com:3306/h20ssg52qjwx0llo	
You can use your con	nection information to connect manually through a client such as HeidiSQL to administer your database.	
Property	Value	Action
Host	eu-west-1.rds.amazonaws.com	
Username		
Password		Reset
Port	3306	
Database		

Figure 5.5: JawsDB Credentials

Free Dynos Change Dyno Type		
web vendor/bin/heroku-php-apache2	public/	\$0.00
Add-ons		Find more add-ons
Q Quickly add add-ons from Elements	YSIA	
JawsDB MySQL 🖸	Attached as JAWSDB 🗢	Kitefin Shared Free 🗘
Estimated Monthly Cost	R.	\$0.00
TEK	Figure 5.6: Heroku Add	-Ons

Step 5: When user have done set-up the add-ons. User can freely use any Integrated Development Environment (IDE) to view and have full access to the database provided by JawsDB. The next step will proceed with config vars which means user have to add all the environment variables inside this section in order for Heroku to recognize our application.

Config Vars	Config Vars	(Hide Config Vars
Config vars change the way your app behaves. In addition to creating your own, some add- ons come with their own.	APP_DEBUG	true	/ ×
	APP_ENV	production	/ ×

Figure 5.7: Heroku Environment Variables

Step 6: After user have configured all related environment variables, user will be provided with a dashboard to view elements like installed add-ons, dyno formation, collaborator activity and latest activity update of our system deployment. All of the changes will be detected immediately by Heroku in order to make sure our application is up to date. Differentiation in each line of codes will be shown which make it easy for a user to recognize small or big changes. This is also with the help of GitHub. Further explanation for GitHub will be explained in version control procedure, 5.3.2 section.

Personal \diamond > 🔯 etechify GitHub O ismet/e-Techify Cmaster		📩 🛛 Open app	More 🗘
Overview Resources Deploy Metrics Activity	Access Settings		
Installed add-ons (\$0.00/month)	Configure Add-ons	Latest activity	All Activity ③
JawsDB MySQL (2 Kitefin Shared jawsdb-graceful-60313		wani5mat.dev@gmail.com: Deployed cfc30760 Jul 20 at 10:08 PM - v74 - <u>Compare diff</u>	
Dyno formation \$0.00/month	Configure Dynos ③	wani5mat.dev@gmail.com: Build succeeded Jul 20 at 10:08 PM - <u>View build log</u>	
This app is using free dynos		A State of the state o	
Web vendor/bin/heroku-php-apache2 public/	ON	wani5mat.dev@gmail.com: Build succeeded Jul 20 at 9:46 PM · <u>View build log</u>	
Collaborator activity 🌒	Manage Access ④	wani5mat.dev@gmail.com: Deployed 5a7808ec	
🥵 wani5mat.dev@gmail.com	(a) 42 deploys	Jul 20 at 9:37 PM · v72 · <u>Compare diff</u>	
		wani5mat.dev@gmail.com: Deployed 4c9f17e8 Jul 20 at 9:37 PM · v71 · <u>Compare diff</u>	

Figure 5.8: Heroku User Dashboard

Step 7: After all steps are correctly executed, our application should be available and live in Heroku cloud server. <u>https://appname.herokuapp.com/</u>

5.3.1.2 Installation for Amazon Web Service S3 Bucket

Step 1: Sign in to the AWS Management Console and open the Amazon S3 console at <u>https://console.aws.amazon.com/s3/</u>.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Step 2: Choose Create bucket. Then, the Create bucket page opens.

mazon S3 > Create bucket
Lineate bucket Info uckets are containers for data stored in S3. Learn more 🔀
General configuration
Bucket name
myawsbucket
Bucket name must be unique and must not contain spaces or uppercase letters. See rules for bucket naming 🔀
AWS Region
Asia Pacific (Singapore) ap-southeast-1
Copy settings from existing bucket - optional Only the bucket settings in the following configuration are copied. Choose bucket

Figure 5.9: Create Bucket Setup

Step 3: In Bucket name, enter a DNS-compliant name for your bucket. We must carefully choose the right name because we can't change its name once it is created. The bucket name must:

- Be unique across all of Amazon S3.
- Be between 3 and 63 characters long.
- Not contain uppercase characters.
- Start with a lowercase letter or number.

Step 4: Select the AWS Region where you want the bucket to be stored in region. Choose a Region that is geographically close to you to reduce latency and expenses while also meeting regulatory standards. Objects saved in a Region never leave it unless you transfer them to another Region directly.

Step 5: Keep the remaining settings set to the defaults. Then, click "Create Bucket".



Step 6: We have created a bucket in Amazon S3. List of buckets will be display in S3 Management Console. All of the settings can be configured by custom in the access section.

5.3.2 Version Control Procedure

GitHub is used to manage the system's version control. GitHub is a website that hosts Git repositories on the web. With its enhanced features, GitHub delivers Git functionality such as version control and source code management. It is also an effective means of storing file changes and maintaining file integrity, in addition to offering a version control method for code development.

Step 1: Create a Repository

Owner *	Repository name *
🔮 i5mat 🗸	
Great repository na	mes are short and memorable. Need inspiration? How about bookish-parakeet?
Description (option	al)
Public	
Anyone on	the internet can see this repository. You choose who can commit.
O Private You choose	e who can see and commit to this repository.
Initialize this repose Skip this step if you	itory with: I're importing an existing repository.
Add a README	file
This is where you o	an write a long description for your project. Learn more.
Add .gitignore	ALAYSIA
Choose which files	not to track from a list of templates. Learn more.
Choose a licens	e
	is what they can and can too with your code, team more.
Create repositor	
	Figure 5.11: Create New Repository in GitHub
ملاك	اونيۇم سىتى تېكنىكل ملىسىيا
Figure (5.11 shows a form that is provided by GitHub to fill in repository name

rigure 5.11 snows a form that is provided by GitHub to fill in repository name, description, choose either public or private, and some checkbox to add a readme, .gitignore or choose a license.

Step 2: View project files in GitHub.

a i5mat / e-Techify Private		⊙ Unwa	tch + 1 🛱 Star 0 💡 Fork 0
<> Code Solution Solut	ts 🕞 Actions 🔟 Projects 🖽 W	/iki 🕕 Security 🗠 Insights 🛛 🕸 Settings	
P master → P 1 branch ⓒ 0 tags i5mat 168th push, 20-7-2021		Go to file Add file ▼	About 🕸 Xmiryna Technology e-Commerce
📄 .idea	162th push, 20-7-2021.	5 days ago	
app	166th push, 20-7-2021.	5 days ago	Releases
bootstrap	First commit	5 months ago	No releases published
Config	80th push, 30-5-2021.	2 months ago	Create a new release
atabase database	127th push, 3-7-2021.	23 days ago	Deducer
public	135th push, 17-7-2021.	8 days ago	Раскадез
resources	168th push, 20-7-2021.	5 days ago	No packages published Publish your first package
in routes	149th push, 17-7-2021.	8 days ago	
i storage	152th push, 17-7-2021.	8 days ago	Environments 1
tests	7th push, 1/3/2021	5 months ago	12 etechify Active
.editorconfig	First commit	5 months ago	
.env.example	First commit	5 months ago	Languages
.gitattributes	First commit	5 months ago	 Blade 59.3% PHP 40.6%
🗅 .gitignore	134th push, 17-7-2021.	8 days ago	Shell 0.1%

Figure 5.12: e-Techify Repository

Figure 5.12 illustrates a GitHub repository named e-Techify that was created to administer the project. This repository can hold all of the project's files, data, and directories. As a result, this repository will hold all of the code files.

Step 3: Commit and push project files to	GitHub.
A iSmat / e-Techify Private	
Code O Issues 11 Pull requests O Actions Projects Wiki UNIVERSITITEKNIKAL	© Security 🗠 Insights 🔞 Settings
127th push, 3-7-2021. ^{On-Plan}	Browse files
1. Serial Number alter/update.	
System Progress => 98.5%	
00	
g ⁻ master	
I5mat committed 23 days ago	1 parent 76c1c8d commit 0fef8a2ba84d099ec34756307cf99e353d3f98fc
Showing 16 changed files with 144 additions and 154 deletions.	Unified Split
✓ [↑] 21 ■■■■ app/Http/Controllers/Order/OrderController.php	
.t. @@ -45,13 +45,15 @@ public function index()	
45 1)	45 1)
46 ->get();	46 ->get();
47	47
Searceiled - Orderjoin(dsers , dsers.id , - , orders.dser_id)	49 + -vioin('users', 'users.id', '=', 'orders.user id')
49 ->select('orders.id', 'orders.order status', 'users.name',	50 ->select('orders.id', 'orders.order status', 'users.name',
'orders.created at')	'orders.created at')
50 ->where([51 ->where([
<pre>51 - 'orders.order_status' => 'Cancelled',</pre>	
<pre>52 'orders.user_id' => Auth::id()</pre>	<pre>52 'orders.user_id' => Auth::id()</pre>
53])	53])
54 ->get();	54 ->get();
	55 +

Figure 5.13: Push and Commit Changes to GitHub Repository

Every modification is saved to the GitHub repository and is referred to as a commit on GitHub. Each commit is accompanied by a commit message, which explains why the change was made. As a result, commit messages serve to document the history of the recorded modifications while also assisting other visitors or contributors in understanding what was done and why. Any updates to the e-Techify source code are committed to the e-Techify GitHub repository. "127th push, 3-7-2021," according to the screen shown in Figure 5.13, is the commit message connected with the commit. As can be seen, the area marked in red denotes the old version of the code, whilst the part highlighted in green denotes the current version.

5.4 Implementation Status

The current stage of development for each of the system's components is summarized in this section. The current status of each major module and sub module's implementation is shown in Table 5.1.

Module Name	Description	Duration	Date Completed
Login diam	The user must log in with an	1 Days	March – June
Jake	existing account and be able to	in ma	2021
	log out at any time.	2. 02.	
Register	Users have the ability to register	4 Days	KA
	either as a or a distributor.		
Manage	The system will allow user that	5 Days	
Orders	have reseller role to manage all		
	customer orders. Information		
	about an order is detailed out		
	which consist of ordered items,		
	when the order is created,		
	tracking number that is assigned,		
	name, phone number, receiver		
	address and current tracking		
	status. Other functionality such as		
	e-receipt, insert serial number,		

Table 5.1: Implementation Status of Main Modules & Sub Modules

	print air waybill, update current
	parcel status, and cancel order are
	also provided. (Reseller)
	The system will allow user that
	have customer role to manage
	their orders. Information about an
	order is detailed out which consist
	of ordered items, when the order
	is created, tracking number that is
	assigned, name, phone number,
	receiver address and current
	tracking status. Other
at MAL	functionality such as e-receipt,
	check parcel tracking status, and
10	cancel order are provided.
Ella	(Customer)
Manage Manage	The system will allow user that 1 Week
Products	have distributor role to manage
2)~~ (their products in the system. They
UNIVER	will have the ability to insert new
	product, update and delete
	existing product.
Manage Job	The system will allow user to 2 Days
	insert a job which the inserted
	jobs will be offered to user that
	holds customer role. The purpose
	of this part to let customer
	generate some side income.
Manage	The system will allow user to 3 Days
Shipments	manage the shipments requested
	by reseller. All of the requests
	will be grouped by status. Each

	request needs to have approval		
	from distributor itself.		
Shop	The system will allow user to	5 Days	
	shop their desired items		
	throughout the list.		
e-RMA	The system will allow user to	2 Days	
	submit RMA request for their		
	purchased product if there is a		
	problem they encounter during		
	usage.		
Manage Repair	The system will allow distributor	5 days	
	and reseller to manage RMA		
	request by customers.		
e-Track Parcel	The system will allow user to	1 Day	
New York	track their parcel status in detail.		
Manage Cart	The system will allow user to add	1 Week	
FIS	or delete items in cart, alter		
SAINT	quantity, change receiver address		
sMal	according to the address that have	the second	ial
	been saved and make payment by	······································	
UNIVEF	using online payment method.	IA MELA	KA
Stock	The system will allow user to see	2 Days	
Management	list of distributors that is exist in		
	the system. In addition, further		
	information is displayed such as		
	stock count and other relevant		
	information for each product.		
Request	The system will allow user to	5 Days	
Shipment	request desired items to the		
	distributor of the products. Status		
	for each request will also be		
	displayed which include remark,		

	a receipt and in detailed view of		
	each request information.		
Receipt Finder	The system will allow user to	1 Days	
	search and retrieve customer		
	receipt for each order.		
Manage	The system will allow user to	3 Weeks	
Product Serial	insert each product serial number		
Number	with batch number. Statistic for		
	each batch is recorded and data		
	will be displayed in a bar chart		
	grouped by batch number. A table		
	filled with full information		
	regarding a serial number status		
AL MAL	will be shown.		
Manage Users	The system will allow user to	1 Days	
E	manage all users in the system.		1
III O	Create, update, and delete		
* AING	operation are included in this		
shlal	functionality.	ti da at	ial
User	The system provides user in a	2 Weeks	
Dashboard	compact view which offers	IA MELA	KA
	variety of important functions		
	such as manage all RMA		
	requests, display earnings by		
	monthly and annual, summary of		
	earnings in Q1 till Q4 in bar chart		
	and manage all job offerings.		
	(Reseller)		
	The system provides user in a		
	compact view which offers		
	variety of important functions		
	such as manage all RMA		

	requests, total spending, total
	orders created, and display all job
	offerings. (Customer)
	The system provides user in a
	compact view which offers
	variety of important functions
	such as manage all RMA
	requests, total RMA, total
	products, display sale for each
	brand in bar chart while
	percentage sale for each brand in
	pie chart and manage all job
at MAL	offerings. (Distributor)
Manage	The system will allow user to add 3 Days
Address	new address without any limits
E	and set an address to default
SAINT	address.
Manage	The system will allow user to alter 1 Days
Profile	their account information in terms
UNIVER	of name and email address. LAYS IA MELAKA

5.5 Conclusion

The first half of this chapter covers software development environment setup, while the second section, which goes into configuration environment setup and version control mechanisms in greater depth, covers software configuration management. It also gives an overview of how each module is being implemented in e-Techify.

CHAPTER 6: TESTING

6.1 Introduction

The details of the test plan are revealed in this chapter, which includes a description of the test organization, test environment, and test timetable. In terms of test classes, it also describes the test strategy. The test design, which includes a test description and test data, follows the chapter. The test findings and analysis based on the testing activities are then presented in the following chapter.

6.2 Test Plan

This section explains the personnel involved in the test organization. Then, test environment and test schedule are also documented in the following sections.



Figure 6.1: Test Organization Chart

During the project's testing phase, the supervisor serves as the testing management, while the developer serves as the testes, preparing test cases, test data, and the test environment. The testing manager oversees all of the testing in the functionality test to ensure that the output is correct. During the user acceptance test, the supervisor and external industry personnel play the role of the user, doing all essential tests in accordance with the test cases, as well as a few proposed test cases to find additional faults or errors.

6.2.2 Test Environment

All testing is done in the development environment, including unit testing, integration testing, and system testing. As a result, the hardware specifications and firmware settings of personal computers are identical to those used in development environments. It is explained in Chapter 2.4.2. Before deploying to Heroku's cloud server, all testing is done in a LAN-based environment with access to the internet.

6.2.3 Test Schedule

All testing activities are scheduled to be finished between 19th of July until 27th of August 2021, according to the test plan. Table 6.1 illustrates the test schedule, which shows when each primary module and sub-module of the system will be tested. All of the testing activities on the first day consist of running all of the test cases at least once, with some test cases being run at least twice to clarify the detected bugs. Once the patch is complete, all of the test cases that failed on the first day should be performed on the second testing day, which is also known as regression testing.

No.	Module	Duration	Schedule
1.	Reseller Module	13 days	19/7 - 1/8
2.	Customer Module	12 days	1/8 - 13/8
3.	Stock Management Module	2 days	13/8 - 15/8
4.	Tracker Module	6 days	15/8-21/8
5.	Distributor Module	6 days	21/8 - 27/8

UNIVERSITI TEK Table 6.1: Test Schedule

6.3 Test Strategy

The test strategy used during the testing phase is discussed in this section. A test strategy combines many types of test case design methodologies to build a well-

structured series of stages that ensure software testing success. Testing experts, such as testing specialists, software engineers, and project managers, are often in charge of developing test strategies.

A **Bottom-up** method with **Black-Box Test** classes and a **Big Bang Approach** was chosen as the test technique. Bottom-up testing begins with the most fundamental component testing, such as unintegrated submodule testing, and advances to main module testing. The testing phase next comprises integration and system testing. Unit testing is the most fundamental form of testing. It examines the smallest unit of the system, which could be a module or component. Because unit testing can contribute to system testing and is required by test strategy, the smallest module, which can be the lowest collection of lines of code, is the unit of each unit testing. A **White-Box Test** is a term used to describe unit testing.

Integration testing is carried out after more than one tested unit has been combined to form a larger structure. Integration testing is usually focused on the interfaces between components and modules. If the quality attribute of components cannot be assessed effectively, integration testing is performed on the broader structure that is being combined by more than one component or module. System testing aims to do an end-to-end quality check of the entire system. This testing is done in accordance with the system's functional and required specifications. Non-functional quality attributes, such as performance, reliability, and usability, are also assessed during system testing (Chauhan & Singh, 2014).

Black-box testing is a technique used by testers to check the functionality of a component without knowing how the component's internal workings work (Khan & Khan, 2014). The primary purpose of black-box testing is to determine how well a system meets its given requirements. Black box testing does not demand complete understanding or comprehension of the system's core logical structure because testers just test the relevant features of the system. The black-box testing determines whether all inputs and outputs are accepted and produced correctly (Chauhan & Singh, 2014).

6.3.1 Classes of Tests

Following the acceptance of a set of suitable input, a functionality test is run to see if the described system features are working as intended and producing correct output. All of the functionality-related test cases are explained in the next section, Chapter 6.4. Web service sessions are subjected to security testing and identifying an id for a procedure that involves critical and sensitive data will be encrypted to ensure its integrity, including one-way encryption of account passwords.

6.4 Test Design

Every module's test case is described in this portion of the test description. It also includes the test data that was utilized to execute the test cases.

6.4.1 Test Description

This section designs and documents test case identification, use case testing, test cases, and expected results for each module.

6.4.2 Use Case Testing (Black Box Testing)

Use Case Testing is a software testing technique that aids in the identification of test cases that span the full system from beginning to end on a transaction-bytransaction basis. Interactions between users and software applications are called test cases. Use case testing identifies holes in software applications that would otherwise go undetected if individual software components were tested. This testing consists of the following modules: login, register, manage products (insert new product), manage job (insert new job), request shipment (insert shipment cart), manage product serial number (insert new serial number), shop (filter product), e-track parcel, manage profile, manage address (insert new address), manage cart, e-RMA and manage repair.

6.4.2.1 Use Case Testing: Login Module

Main Success Scenario	Step	Description
A: Actor	1	A: Enter Email & Password
S: System	2	S: Validate Email
	3	S: Validate Password
	4	S: Allow Account Access
Extensions	2a	Email not valid
		S: These credentials do not match our records.
	3a	Password not valid
		S: These credentials do not match our records.

Table 6.2: UCT: Login Module



6.4.2.2 Use Case Testing: Register Module

Table 6.3: UCT: Register Module

Main Success Scenario	Step	Description
A: Actor	1	A: Enter Name, Email, Password & Confirm
S: System	4	Password
a a	2	S: Validate Name
UNIVERSITI TI	EK3IIK	S: Validate Email A MELAKA
	4	S: Validate Password
	5	S: Validate Confirm Password
	6	S: Allow Account Access & Creation
Extensions	2a	Name not valid
		S: The name field is required.
	3a	Email not valid
		S: The name field is required.
	3b	Email incorrect format
		S: Please include an @ in the email address.
	3c	Email not complete
		S: Please enter a part following @. Email is
		incomplete.

4a	Password not valid
	S: The name field is required.
4b	Password length less than 8
	S: The password must be at least 8 characters.
5a	Confirm password does not tele with
	password
	S: The password confirmation does not match.

6.4.2.3 Use Case Testing: Manage Products (Insert New Product) Module

Main Success Scenario	Step	Description
A: Actor	1	A: Enter Product Name, Product No, Product
S: System	-	Price, Product Link, Image File, Brand
EKN	KA	Distributor (Reseller), Warranty Duration,
		Product Category, Product Brand & Product
and the second sec		Stock.
anna	2	S: Validate Product Name
ملىسىا ملاك	3	S: Validate Product No
	4	S: Validate Product Price
UNIVERSITI TI	<u> </u>	S: Validate Product Link
	6	S: Validate Image File
	7	S: Validate Brand Distributor (Reseller)
	8	S: Validate Warranty Duration
	9	S: Validate Product Category
	10	S: Validate Product Brand
	11	S: Validate Product Stock
	12	S: Allow New Product Creation
Extensions	2a	Product Name not valid
		S: Please enter product name.
	3a	Product No. not valid
		S: Please enter serial number.

Table 6.4: UCT: Manage Products (Insert New Product) Module

	4a	Product Price not valid
		S: This field is required.
	5a	Product Link not valid
		S: This field is required.
	6a	Product Image File not valid
		S: This field is required.
	7a	Brand Distributor (Reseller) not valid
		S: This field is required.
	8a	Warranty Duration not valid
		S: This field is required.
	9a	Product Category not valid
		S: This field is required.
ALAYSI	10a	Product Brand not valid
Out the set		S: This field is required.
	11a	Product Stock not valid
		S: This field is required.
Aller	_	

6.4.2.4 Use Case Testing: Manage Job (Insert New Job) Module

	100	100	No. of Concession, Name			1 and 1 and 1	Pr. mer.	ALC: NOTE: N
r	Table	6.5:1	UCT:	Manage Jo	ob (Inse	rt New	Job) Mc	dule
				\mathcal{O}	(/	
A REALIZED AND	100 A 100 A	10 A 10	1 1 M IV		A A I A 3	100 B B	A REAL OF	1. 1. 1. 1.

Main Success Scenario	Step	Description
A: Actor	1	A: Enter Job Name, Job Salary, Job Type &
S: System		Job Location
	2	S: Validate Job Name
	3	S: Validate Job Salary
	4	S: Validate Job Type
	5	S: Validate Job Location
	6	S: Allow New Job Creation
Extensions	2a	Job Name not valid
		S: Please input all fields with relevant
		information.
	3a	Job Salary not valid

	S: Please input all fields with relevant
	information.
4a	Job Type not valid
	S: Please input all fields with relevant
	information.
5a	Job Location not valid
	S: Please input all fields with relevant
	information.

6.4.2.5 Use Case Testing: Request Shipment (Insert in Shipment Cart) Module

Main Success Scenario	Step	Description
A: Actor	1	A: Enter Brand Distributor, Product Brand,
S: System	KA	Product & Product Quantity.
	2	S: Validate Brand Distributor
and the second s	3	S: Validate Brand
	4	S: Validate Product
مليسيا ملاك	5	S: Validate Product Quantity
	6	S: Allow Insert Product in Shipment Cart
Extensions	2a	Brand Distributor not valid
		S: Please input all fields with relevant
		information.
	3a	Product Brand not valid
		S: Please input all fields with relevant
		information.
	4a	Product not valid
		S: Please input all fields with relevant
		information.
	5a	Product Quantity
		S: Please input all fields with relevant
		information.

Table 6.6: UCT: Request Shipment (Insert in Shipment Cart) Module

6.4.2.6 Use Case Testing: Manage Product Serial Number (Insert New Serial Number) Module

Main Success Scenario	Step	Description
A: Actor	1	A: Enter Product, Batch & Product Serial
S: System		Number
	2	S: Validate Product
	3	S: Validate Batch
	4	S: Validate Product Serial Number
	5	S: Allow Insert New Product Serial Number
Extensions	2a	Product not valid
WALAYS/A		S: Please input all fields with relevant
ast the		information.
No.	3 3a	Batch not valid
		S: Please input all fields with relevant
L'age		information.
Allin	4a	Product Serial Number not valid
ahmen all	14	S: Please input all fields with relevant
	0	information.
UNIVERSITI TI	EKNIK	AL MALAYSIA MELAKA

Table 6.7: UCT: Manage Product Serial Number (Insert New Serial Number) Module

6.4.2.7 Use Case Testing: Shop (Filter Product) Module

Main Success Scenario	Step	Description
A: Actor	1	A: Enter Brand, Category & Price
S: System	2	S: Validate Brand
	3	S: Validate Category
	4	S: Validate Price
	5	S: Allow Product Filtration
Extensions	2a	Brand not valid
		S: Please input brand or category or price.

Table 6.8: UCT: Shop (Filter Product) Module

3a	Category not valid
	S: Please input brand or category or price.
4a	Price not valid
	S: Please input brand or category or price.

6.4.2.8 Use Case Testing: e-Track Parcel Module

Main Success Scenario	Step	Description
A: Actor	1	A: Enter Tracking Number
S: System	2	S: Validate Tracking Number
	3	S: Allow Searching for Current Tracking
MALAYSIA 4		Status
Extensions	2a	Tracking Number not valid
E C	K N	S: Please input tracking number.

Table 6.9: UCT: e-Track Parcel Module

6.4.2.9 Use Case Testing: Manage Profile Module

all

Table 6.10: UCT: Manage Profile Module

Main Success Scenario	Step	AL MALAYS Description
A: Actor	1	A: Enter Name & Email
S: System	2	S: Validate Name
	3	S: Validate Email
	4	S: Allow Update Profile Information
Extensions	2a	Name not valid or same
		S: Please make some changes to the input to
		make changes.
	3a	Email not valid or same
		S: Please make some changes to the input to
		make changes.
	3b	Email incorrect format
		S: Please include an @ in the email address.

3c	Email not complete
	S: Please enter a part following @. Email is
	incomplete.

6.4.2.10Use Case Testing: Manage Address (Insert New Address) Module

Main Success Scenario	Step	Description
A: Actor	1	A: Enter Name, Address, Phone No., Postcode,
S: System		Longitude & Latitude
	2	S: Validate Name
	3	S: Validate Address
MALAYSIA 4	4	S: Validate Phone No.
E N	5	S: Validate Postcode
	86	S: Validate Longitude
	7	S: Validate Latitude
Sugar	8	S: Allow Insert New Address
Extensions	2a	Name not valid
مليسيا ملاك	كل	S: Please enter name.
	- 3a	Address not valid
UNIVERSITI	ENDIP	S: Enter address.
	4a	Phone No. not valid
		S: Please enter phone number.
	4b	Phone No. length more than 11
		S: Please enter no more than 11 characters.
	5a	Postcode not valid
		S: This field is required / Please enter a valid
		number.
	5b	Postcode length more than 6
		S: Please enter no more than 6 characters.
	6a	Longitude not valid
		S: This field is required.

Table 6.11: UCT: Manage Address (Insert New Address) Module

7a	Latitude not valid
	S: This field is required.

6.4.2.11 Use Case Testing: Manage Cart Module

Table 6.12:	UCT:	Manage	Cart	Module
-------------	------	--------	------	--------

Main Success Scenario	Step	Description
A: Actor	1	A: Enter Quantity
S: System	2	S: Validate Quantity
	3	S: Allow User to Place Order
Extensions	2a	Quantity not valid
		S: Stock is around {total stock} only.

6.4.2.12Use Case Testing: e-RMA Module

Main Success Scenario	Step	Description
A: Actor	12	A: Enter Address, Date of Purchase, Proof of
S: System	0	Purchase, Brand, Product, Serial Number,
UNIVERSITI TI	EKNIK	Confirm Serial Number & Comments
	2	S: Validate Address
	3	S: Validate Date of Purchase
	4	S: Validate Proof of Purchase
	5	S: Validate Brand
	6	S: Validate Product
	7	S: Validate Serial Number
	8	S: Validate Confirm Serial Number
	9	S: Validate Comments
	10	S: Allow User to Submit RMA Request
Extensions	2a	Address not valid
		S: Please input all fields with relevant
		information.

Table 6.13: UCT: e-RMA Module

3a	Date of Purchase not valid
	S: Please fill out this field.
4a	Proof of Purchase not valid
	S: Please attach proof of purchase in PDF
	form.
5a	Brand not valid
	S: Please input all fields with relevant
	information.
6a	Product not valid
	S: Please input all fields with relevant
	information.
7a	Serial Number not valid
ALAYSI	S: Please enter serial number.
8a	Confirm Serial Number not valid
E Star	S: Please enter serial number confirmation.
#8b	Confirm Serial Number not tele with Serial
E.S.	Number
S BAININ	S: SN does not match !
4 No 19a	Comments not valid
	S: Please enter reason.
UNIVERSITI TEKNIK	KAL MALAYSIA MELAKA

6.4.2.13 Use Case Testing: Manage Repair Module

Main Success Scenario	Step	Description	
A: Actor	1	A: Enter Update Status, Receive At, Tracking	
S: System		No. & Remark	
	2	S: Validate Tracking No.	
	3	S: Validate Remark	
	4	S: Allow to Alter Repair Information	
Extensions	2a	Tracking No, not valid	
		S: Please input all fields with relevant	
		information for Tracking No. and Remark.	

3a	Remark not valid	
	S: Please input all fields with relevant	
	information for Tracking No. and Remark.	

6.4.3 Test Case

Each test case is shown in this section. References are provided as each test case will be referenced to an appendix.

Test Case (Module)	Reference	Page
Login	Appendix A	1
MALAY Register	Appendix B	2 – 4
Manage Products	Appendix C	4 – 8
Manage Job	Appendix D	8-9
Request Shipment	Appendix E	9 – 11
Manage Product Serial Number	Appendix F	12 – 13
Shop	Appendix G	13 – 14
e-Track Parcel	Appendix H	9 14 - 15
Manage Profile	Appendix I	15 – 16
Manage Address	Appendix J	^{LA} 16 – 19
Manage Cart	Appendix K	19 – 21
e-RMA	Appendix L	21 – 23
Manage Repair	Appendix M	24 – 25
Manage Users	Appendix N	26
Manage Orders	Appendix O	27 – 29

Table 6.15: Test Case

6.4.4 Test Data

Each test case's test data is shown in this section. Tick signifies that the obtained real result of a test case matches the predicted outcome in the following sections.

Test Case (Module)	Reference	Page
Login	Appendix A	1
Register	Appendix B	2 – 4
Manage Products	Appendix C	4 – 8
Manage Job	Appendix D	8 – 9
Request Shipment	Appendix E	9 – 11
Manage Product Serial Number	Appendix F	12 – 13
Shop	Appendix G	13 – 14
e-Track Parcel	Appendix H	14 – 15
Manage Profile	Appendix I	16
Manage Address	Appendix J	17 – 19
Manage Cart	Appendix K	20 - 21
یکنیک e-RMA مالاک	Appendix L	9 22 - 24
Manage Repair	Appendix M	25 - 26
Manage Users	Appendix N	27
Manage Orders	Appendix O	28-30

Table 6.16: Test Data

6.4.5 Integration Testing (Big Bang Approach)

Integration testing is a sort of testing in which software elements are logically linked and tested as a unit. A typical software project is made up of several software modules written by various programmers. The goal of this level of testing is to find flaws in how these software modules interact when they are put together. This testing consists of the following modules: login, register, manage products, manage job, request shipment, manage product serial number, shop, e-track parcel, manage cart, e-RMA and manage orders.
6.4.5.1 Integration Testing: Login Module

Test Case ID	Test Case Objective	Test Case Description	Expected Result
LOGINT1	Check the interface	Enter login credentials	To be redirected
	link between Login	and click on login	to the user
	and User Dashboard	button.	dashboard.
	module.		
LOGINT2	Check the interface	Click on "Reset Here"	To be redirected
	link between Login	link.	to the forgot
	and Forgot Password		password page.
	module.		

Table 6.17: Integration Testing: Login Module

6.4.5.2 Integration Testing: Register Module

40.

Table 6 18.	Integration T	Cesting: R	Pegister	Module
Table 0.10.	integration i	coung. r	register	would

Test Case ID	Test Case Objective	Test Case Description	Expected Result
REGINT1	Check the interface	Enter all fields and click	To be redirected
Stantes States	link between Register	on submit button.	to the user
ch l (and User Dashboard	/	dashboard and
ا ملاك	module.	رىيۇىر،سىتى ئىر	registered as a
LINIVER	SITI TEKNIKAL I		new user.

6.4.5.3 Integration Testing: Manage Products Module

Table 6.19:	Integration	Testing:	Manage	Products	Module
10010 0.17.	integration	rosung.	manage	TToducts	wiodule

Test Case ID	Test Case Objective	Test Case Description	Expected Result
MPINT1	Check the interface	Enter all fields and click	To be redirected
	link between Manage	on submit button.	to the manage
	Products and Manage		product page and
	Product (Insert New		new product
	Product) module.		should appear in
			list of products.

6.4.5.4 Integration Testing: Manage Job Module

Test Case ID	Test Case Objective	Test Case Description	Expected Result
MJINT1	Check the interface	Enter all fields and click	To be redirected
	link between Manage	on submit button.	to the manage job
	Job and Manage Job		page and new job
	(Insert Job) module.		should appear in
			list of jobs
			available.

Table 6.20: Integration Testing: Manage Job Module

6.4.5.5 Integration Testing: Request Shipment Module

Test Case ID	Test Case Objective	Test Case Description	Expected Result
MRSINT1	Check the interface	Enter all fields and click	To be redirected
TEK	link between Request	on add to list button.	to the manage
E	Shipment and Manage		shipment page
OU BAIN	Shipment module.		and new shipment
the last			is created
ا ملاك	كنيكل مليسب	رىيۇم سىتى ئىھ	according to its
UNIVER	SITI TEKNIKAL I	MALAYSIA MELAK	current status.

Table 6.21: Integration	Testing:	Request	Shipment Module
-------------------------	----------	---------	-----------------

6.4.5.6 Integration Testing: Manage Product Serial Number Module

Table 6.22: Integration Testing: Manage Product Serial Number Module

Test Case ID	Test Case Objective	Test Case Description	Expected Result
MPSNINT1	Check the interface	Enter all fields and click	To be redirected
	link between Manage	on insert button.	to the manage
	Product Serial		product serial
	Number and Manage		number page and
	Product Serial		new product serial
	Number (Insert New		number is created.
	Product Serial		
	Number) module.		

6.4.5.7 Integration Testing: Shop Module

Test Case ID	Test Case Objective	Test Case Description	Expected Result
SINT1	Check the interface	Click on add to cart	To be redirected
	link between Shop	button at the desired	to the manage cart
	and Manage Cart	product.	page and selected
	module.		product is added
			to cart.

Table 6.23: Integration Testing: Shop Module

6.4.5.8 Integration Testing: e-Track Parcel Module

Table 6.24:	Integration	Testing:	e-Track	Parcel	Module
1 4010 0.24.	megration	resung.	C ITACK	1 arcor	mouule

Test Case ID	Test Case Objective	Test Case Description	Expected Result
eTPINT1	Check the interface	Fill in tracking number	To be redirected
	link between e-Track	and click on search	to the result of
TEK	Parcel and Input	button.	current tracking
E	Tracking Number		status page.
SUNE	module.		

6.4.5.9 Integration Testing: Manage Cart Module

(Payment) module.

Table 6.25: Integration Testing: Manage Cart Module						
Fest Case ID	Test Case Objective	Test Case Description	Expected Result			
MCRTINT1	Check the interface	Click on PayPal button.	To be redirected			
	link between Manage		to the thank you			
	Cart and Manage Cart		page after			

او دو .

payment is

is created.

success and order

6.4.5.10 Integration Testing: e-RMA Module

Test Case ID	Test Case Objective	Test Case Description	Expected Result
eRMAINT1	Check the interface	Enter all fields and click	Should appear at
	link between e-RMA	on submit button.	user dashboard
	and Manage Repair		page in "My
	module.		RMA Requests"
			section.

Table 6.26: Integration Testing: e-RMA Module

6.4.5.11 Integration Testing: Manage Orders Module

Table 6.27:	Integration	Testing:	Manage	Orders	Module
1 4010 0.27.	megration	resung.	manage	Orders	wiodule

Test Case ID	Test Case Objective	Test Case Description	Expected Result
MORDINT1	Check the interface	Click on track icon.	To be redirected
2	link between Manage		to the parcel
LEK.	Orders and e-Track		tracking view.
E	Parcel module.		
MORDINT2	Check the interface	Click on eye icon.	To be redirected
ch L (link between Manage		to the order
ا ملاك	Orders and Order	رىيۇم سىتى ئىھ	detail's view.
	Details module.		^
MORDINT3	Check the interface	Click on receipt icon.	To be redirected
	link between Manage		to the e-Receipt
	Orders and e-Receipt		view.
	module.		
MORDINT4	Check the interface	Click on arrow up icon.	To be redirected
	link between Manage		to the insert
	Orders and Manage		product serial
	Orders (Insert Product		number for an
	SN) module.		order view.
MORDINT5	Check the interface	Click on printer icon.	To be redirected
	link between Manage		to the new
	Orders and Manage		

	Orders (Generate		generated airway
	Airway Bill) module.		bill view.
MORDINT6	Check the interface	Click on red cross icon.	Selected order
	link between Manage		should appear in
	Orders and Manage		the Cancelled
	Orders (Cancel Order)		section.
	module.		

6.5 **Test Results and Analysis**

According to the results of the test cases in Chapter 6.4, more than 90% of the test cases passed with the intended output being produced appropriately in testing phase 1. While, in testing phase 2 all of the test cases passed 100% with expected output. Users were actively involved in the testing process by working with testers to complete all test cases. Overall, the user is pleased with the completed project because the majority of the test cases return good results, indicating that the defined requirements have been effectively implemented and met in this project.

ويبور سيني به Testing Result Phase 1 for Test Case 6.5.1

I able 0.28: Testing Result Phase T					
Test Case ID	Pass/Fail	Remark	Tested By		
		Login Module			
LOGIN1	PASS	System working as intended	Zulazri		
LOGIN2	PASS	with expected output.	Zulkarnain		
	Register Module				
REG1	PASS	System working as intended			
REG2	PASS	with expected output.	Akmal Khairi		
REG3	PASS				
REG4	PASS				
Manage Products Module					
PROD1	PASS	System working as intended			
PROD2	PASS	with expected output.	Akmal Sabri		

PROD3	PASS			
PROD4	PASS			
	L	Manage Job Module		
JOB1	PASS	System working as intended	Zulazri	
JOB2	PASS	with expected output.	Zulkarnain	
	R	Request Shipment Module		
SHIP1	PASS	System working as intended		
SHIP2	PASS	with expected output.	Akmal Sabri	
SHIP3	PASS			
SHIP4	PASS			
	Manage	Product Serial Number Module		
SN1	PASS	System working as intended	Adi Iman	
SN2	PASS	with expected output.		
ST	1907	Shop Module		
SHOP1	PASS	System working as intended		
SHOP2	PASS	with expected output.	Akmal Khairi	
SHOP3	PASS			
e-Track Parcel Module				
TRACK1	PASS	System working as intended	اوس	
TRACK2	PASS	with expected output.	Akmal Sabri	
TRACK3	PASS	(NIKAL MALAYSIA MEL	AKA	
		Manage Profile Module		
UP1	PASS	System working as intended	Zulazri	
UP2	PASS	with expected output.	Zulkarnain	
Manage Address				
ADDRESS1	PASS	System working as intended		
ADDRESS2	PASS	with expected output.	Akmal Khairi	
ADDRESS3	PASS			
ADDRESS4	PASS			
Manage Cart Module				
CART1	FAIL	Product is not deleted; the URL		
		is added with PayPal parameters	Adi Iman	

		which leads to invalid product	
		deletion.	
CART2	PASS	System working as intended	
CART3	PASS	with expected output.	
CART4	FAIL	PayPal does not capture	
		recipient address, subtotal, and	
		all of the products for a current	
		order.	
	L	e-RMA Module	
RMA1	PASS	System working as intended	Zulazri
RMA2	PASS	with expected output.	Zulkarnain
IA I	AYSIA	Manage Repair Module	
REPAIR1	PASS	System working as intended	
REPAIR2	PASS	with expected output.	Adi Iman
REPAIR3	PASS		1
1.66		Manage Users Module	
USR1	PASS	System working as intended	
USR2	PASS	with expected output.	Akmal Khairi
USR3	PASS		
UNIVER	RSITI TEP	Manage Orders Module	AKA
ORDER1	FAIL	System does not give the	
		expected result output. Tracking	Akmal Sabri
		number is not updated.	
ORDER2	FAIL	System still updates even	
		though data is null.	
ORDER3	PASS	System working as intended	
ORDER4	PASS	with expected output.	
ORDER5	PASS		
ORDER6	PASS		
ORDER7	PASS		

PASS OR FAIL PERCENTAGE TESTING PHASE 1



Figure 6.2: Pie-Chart for Testing Phase 1



Figure 6.3: Bar-Chart for Testing Phase 1

6.5.2 Testing Result Phase 2 for Test Case

Test Case ID	Pass/Fail	Remark	Tested By		
	Manage Cart Module				
CART1	FAIL PASS	System working as intended with	Adi Iman		
CART4	FAIL PASS	expected output.			

Manage Orders Module			
ORDER1	FAIL PASS	System working as intended with	Akmal Sabri
ORDER2	FAIL PASS	expected output.	

PASS OR FAIL PERCENTAGE TESTING PHASE 2



Figure 6.5: Bar-Chart for Testing Phase 2

6.5.3 Integration Testing Result

Test Case ID	Pass/Fail	Remark	Tested By
LOGINT1	PASS		
LOGINT2	PASS		Ismat Azmy
REGINT1	PASS		
MPINT1	PASS		
MJINT1	PASS		
MRSINT1	PASS		
MPSNINT1	PASS	System working as intended with	
SINT1	PASS	expected result. All of the process	
eTPINT1	PASS	is smoothly executed without any	Izzati Suhaimi
MCRTINT1	PASS	hiccups.	
eRMAINT1	PASS		
MORDINT1	PASS		
MORDINT2	PASS		
MORDINT3	PASS		
MORDINT4	PASS	C. C	1
MORDINT5	PASS	بيۇر،سىيى بېھىيە	91
MORDINT6	PASS	NIKAL MALAYSIA MELAH	A

Table 6.30: Integration Testing Results

6.6 Conclusion

This chapter outlines and discusses the various testing phases and tests that are carried out to evaluate and validate the system's e-Techify module upgrades. The next chapter presents the project's conclusion, as well as the project's prospective improvements and contributions.

CHAPTER 7: CONCLUSION

7.1 Observation on Weaknesses and Strengths

One of the advantages of the e-Techify system is that customers may pay with confidence. All payments will be processed through a secure transaction managed by PayPal. PayPal's payment flexibility makes it simple for anyone with a Visa, MasterCard, or American Express card to make a payment. Regardless matter whether you use a credit or debit card, I believe money should be easy to obtain and spend. That's why PayPal's services are tailored to fit into our daily routines in order to make things as simple as possible. The e-Techify system provides these services to customers in order to attract more customers, increase revenue, and make every transaction as smooth as butter.

Second, this project's development includes additional features such as the ability to view all of the data in various forms of interactive graphs. This will allow resellers and distributors to see or see data in a more organized manner. Every process that runs through a function that uses graphs will immediately update the graph to reflect the most recent data and summarize a large data set in visual form without any hitches. Each data is distributed according to their category and frequency distribution.

Third, the graphical user interface has been modified to reflect modern web technologies, including responsive design and compatibility for many types of screen displays. Before being displayed to the user, the designs, photos, and phrases will be changed to fit the screen resolution. Aside from allowing display on various screens, the website's entire appearance has been updated, with the font and backdrop modified to make them more readable and pleasant to look at. Every element is designed to be exactly where it should be, and it is also user friendly.

This enhancement also includes a few minor enhancements to the existing functions. When a reseller or distributor adds new data, for example, input validation and user input checking are introduced. When a user attempts to add existing data to the system, a validation check is performed to ensure that the data request is valid. All of these validation capabilities help users avoid making mistakes while inputting data into the system, avoiding data redundancy and data management errors.

Despite the development introduces few strength, it also consists of some weaknesses. One of the major weakness is, e-Techify system is not designed for mobile. The user interface is not responsive for a small resolution screen which could give a hard time for user during their surfing time to the system.

Finally, once public access to the system is granted, the system's security must be considerably enhanced and maintained. The existing security measures in place in the e-Techify system are insufficient to protect it against hacking or hostile intruder attacks. More techniques should be used to validate each user's identification, with 2-Step Verification, often known as two-factor authentication, being a good example. This method adds an additional degree of security to the user account, allowing attackers to be kept out even if they know the user password. The security aspect, which ensures the integrity, availability, and confidentiality of all data, must be given top attention in future development.

The development of this system should not cease with the completion of this project; rather, it should continue in the future to guarantee that the system's strengths are preserved, and its shortcomings are enhanced or at the very least mitigated.

7.2 Propositions for Improvement

I have a few ideas for improvements that I'd like to enlighten here. First and foremost, because this is a multi-platform system with multiple sorts of systems, it requires its own mobile application. In order to make it easier for users to utilize either the mobile or online platform, both the mobile platform and the web platform must have the same capabilities.

In addition, one of the flaws stated in the previous section is security, which must be addressed and enhanced in order for the system to run properly and accurately while also protecting data from unwanted access.

7.3 **Project Contribution**

The project's main contribution is to Xmiryna Technology by supplying all of the knowledge about all of the processes that are required to automate the present system from start to finish. Each procedure is described in detail, providing a clearer picture of how to construct e-Techify. However, with the new implementation of e-Techify it can provide lots of benefits for each users of the system. This project also benefits the environment by reducing the reliance on paper through the use of digital forms. Receipts and order information can be created as softcopy, such as photos or webpages, and delivered across multiple platforms and devices. As a result, this initiative can not only assist save money but also conserve the environment by reducing paper usage.

7.4 Conclusion

This project complied with all of Xmiryna Technology's criteria, including the addition of modules to enhance the current system. This project was a success, and it should be further extended and enhanced in the future. I am grateful because this project has the potential to advance the automation of the current system to the point where every individual or user involved would benefit from the system's functions.



REFERENCES

- Ramadan, M. (n.d.). The web application hacker's handbook. Web Application Hackers Handbook. Retrieved June 24, 2021, from <u>https://www.academia.edu/40654302/The_web_application_hackers_handbook</u>
- Chauhan, R. K., & Singh, I. (n.d.). Latest Research and Development on Software Testing Techniques and Tools - Inpressco. Latest Research and Development on Software Testing Techniques and Tools. Retrieved July 28, 2021, from <u>http://inpressco.com/latest-research-anddevelopment-on-software-testing-techniques-and-tools/</u>
- Khan, M., & Khan, F. (n.d.). Importance of Software Testing in Software Development Life Cycle. Retrieved July 28, 2021, from http://ijcsi.org/papers/IJCSI-11-2-2-120-123.pdf
- Stress Testing | Software Testing. (2019, April 18). GeeksforGeeks. https://www.geeksforgeeks.org/stress-testing-software-testing/
- Software Testing | Security Testing GeeksforGeeks. (2019, May 10).
 GeeksforGeeks. <u>https://www.geeksforgeeks.org/software-testing-</u>
- Step 1: Create your first S3 bucket Amazon Simple Storage Service. (n.d.). Create Your First S3 Bucket. Retrieved August 4, 2021, from <u>https://docs.aws.amazon.com/AmazonS3/latest/userguide/creating-</u>

bucket.html

APPENDICES

APPENDIX A: TC: Login Module

Test	Test Case	Pre-Requisite		Test Step	Test Data	Expected Result	Status
Case ID	4	Y YE		_	_		(P/F)
LOGIN1	Users' login with	User must be registered.	1.	Go to site	Email	Users should be able	Р
	valid credentials.			https://etechify.herokuap	address:	to login into system	
	-			<u>p.com/login</u>	ismatazmy	and redirect to user	
	10	à	2.	Enter email and	@live.com	dashboard.	
		S Aller		password.	Password:		
		an .	3.	Click login button	12345678		
	5	Molundo	4			ial	
LOGIN2	Users' login with	User is not registered.	1.	Go to site	Email	Users should not be	Р
	invalid			https://etechify.herokuap	address:	able to login into	
	credentials.	VIVERSITI TEI	KNII	p.com/login	ismat@live.	system and an error	
			2.	Enter email and	com	"These credentials	
				password.	Password:	do not match our	
			3.	Click login button	123456789a	records."	
					bcd123		

Test	Test Case	Pre-Requisite	Test Step	Test Data	Expected Result	Status
Case ID		ALAYSIA				(P/F)
REG1	All fields are	User must fill in all the	1. Go to site	Name:	User account will be	Р
	filled with correct	blanks or fields with	https://etechify.herokuap	Ismat Azmy	successfully	
	format.	correct format.	p.com/register	Email address:	registered and will	
	1	•	2. Enter name, email,	ismatazmy@live.	redirected to user	
	1	A	password and confirm	com	dashboard.	
		·	password.	Password:		
		Alko :	3. Click submit button	12345678		
		61 (1	1/ ./ "	Confirm		
	2	Sha hundo	, Singu	Password:	191	
		44 44	• • •	12345678	-	
REG2	Not all fields are	User does not fill in all	1. Go to site	Name:	Account registration	Р
	filled or not in	the blanks or fields	https://etechify.herokuap	-	will be rejected, and	
	correct format.	with correct format.	p.com/ register	Email address:	errors will appear	
			2. Fields are left empty or	ismatazmy@live.	"The	
			not in correct format such	com	name/email/passwor	
				Password:		

APPENDIX B: TC: Register Module

				as name, email, password	12345678	d/confirm password	
				and confirm password.	Confirm	is required."	
			3.	Click submit button	Password:		
		WALAYSIA .			12345		
REG3	Email is existed	Email have already	1.	Go to site	Name:	An error will appear	Р
	in the system.	been registered	2	https://etechify.herokuap	Wan Ismat	"The email has	
	EK	previously with an	P	p.com/ register	Email address:	already been taken."	
	-	account in the system.	2.	Enter name, email,	admin@etechify.	and account	
	1	à		password and confirm	com	registration is	
		No.		password.	Password:	rejected.	
		in .	3.	Click submit button	12345678		
	2	مليسيا ملال	کل	, تيڪنيڪ	Confirm Password:	اوز	
					12345678		
REG4	Incorrect format	User input email in a	EKI	Go to site	Name:	Errors for email will	Р
	for email and	wrongly format.		https://etechify.herokuap	Ismat Azmy	appear "Please	
	password length.			p.com/register	Email address:	include an @ in the	
			2.	Enter email without @ or	ismatazmy@live.	email address." and	
				with @ but without any	com	"Please enter a part	

Image: star star star star star star star star			connection, password,	Password:	following @".
Image: Second			confirm password length	12345	While errors for
3. Click submit button. Password: confirm password 12345 will appear "The			less than 8 and name.	Confirm	password and
12345 will appear "The		MALAYSIA .	3. Click submit button.	Password:	confirm password
		24 ME		12345	will appear "The
password must be at		2			password must be at
least 8 characters."	54 11	>			least 8 characters."

APPENDIX C: TC: Manage Products Module

Test Case ID	Test Case 🚽	Pre-Requisite	Test Step	Test Data	Expected Result	Status (P/F)
PROD1	All fields are	User must fill in all	1. Go to site	Product Name:	A new product will	Р
	filled with correct	the blanks or fields	https://etechify.herokuap	Any name	be added into the	
	format for insert	with correct format.	p.com/product/insertProd	Product No.:	system.	
	new product.		uct	Any product no.		
				Product Price:		
				Any product prices		

			2.	Enter all fields with	Product Link:			
				correct information and	Any product links			
				format.	Image File:			
		MALAYS/4	3.	Click submit button	Any image files			
		SY.	80		Brand Distributor			
	1	7	E.		(only for reseller):			
	EK		P		Any brand			
	-				distributor			
		à 📃			Warranty Duration:			
		A ALL			Any warranty			
		in .			duration			
	و	ليسيا ملال	o J	تنكنك	Product Category: Any category	اون		
			_		Product Brand:			
	U	NIVERSITI	TEM	KNIKAL MALA	Any brand ELA	KA		
					Product Stock:			
					Any number			
PROD2	Not all fields are	User does not fill in	1.	Go to site	Product Name:	System	validation	Р
	filled with correct	all the blanks or		https://etechify.herokuap	Any name	will reject	ct the new	

format for insert	fields with correct		p.com/product/insertProd	Product No.:	request and errors	
new product.	format.		<u>uct</u>	Any product no.	such as "This field is	
		2.	Fields are left empty or	Product Price:	required" will	
	MALAYSIA		not in correct format.	Any product prices	appear.	
	S.	3.	Click submit button	Product Link:		
and	1	E.		Any product links		
E C		Ż		Image File:		
F				Any image files		
1	à 📰			Brand Distributor		
	S SALL			(only for reseller):		
	in a second			Any brand		
5	Malul	. 1	G:G:	distributor	ial	
_		0	a a	Warranty Duration:	2	
				**		
U	NIVERSITI	TEK	NIKAL MALA	Product Category:	KA	
				-		
				Product Brand:		
				-		
				Product Stock:		

					-		
PROD3	Delete existing	The product must	1.	Go to site	Click bin icon in	Selected product will	Р
	product in	be existed in the		https://etechify.herokuap	actions column.	be deleted, and a	
	system.	system. LAYSIA		p.com/product/managePr		success message will	
		SY .	80	oduct		appear.	
	4	7	2.	Click bin icon in actions			
	1 A A A A A A A A A A A A A A A A A A A		, A	column for each row of			
	-			product.			
	5	à ==					
PROD4	Alter product	The product must	1.	Go to site	Product Name:	Product information	Р
	information for a	be existed in the		https://etechify.herokuap	NZXT Kraken Z63	is altered, and a	
	specific product.	system.	. 1	p.com/product/managePr	Product SN:	success message will	
	_	سب مارد	C a	oduct	RL-KRZ63-01	appear.	
			2.	Click pencil icon in	Product Picture:		
	U	NIVERSITI	TEK	actions column for each	Any picture	KA	
				row of product and a	Stock:		
				modal will pop-up	3		
				retrieving the current	Price:		
					RM 1115.00		
1							

	selected product	Dealer Price:	
	information.	RM 1005.00	
	3. Enter the desired fields		
MALAYSIA	with correct information		
1 m	and format.		
	4. Click save changes		
E	button.		

APPENDIX D: TC: Manage Job Module

Test Case ID	Test Case	Pre-Requisite	کل	Test Step	Test Data	Expected Result	Status (P/F)
JOB1	All fields are	User must fill in all the	1.	Go to site	Job Name:	A new job will be	Р
	filled with correct	blanks or fields with	EK	https://etechify.herokuap	Any job names	inserted, and it will	
	format for insert	correct format.		<u>p.com/job/new-job</u>	Job Salary:	be listed in a	
	new job.		2.	Enter all fields with	Any job salary	collection of job that	
				correct information and	Job Type:	is existed in the	
				format.	Any job types	system.	

			3.	Click submit button	Job Location:		
					Any job location		
JOB2	Not all fields are	User does not fill in all	1.	Go to site	Job Name:	System validation	Р
	filled with correct	the blanks or fields		https://etechify.herokuap	-	will reject the new	
	format for insert	with correct format.	2	p.com/job/new-job	Job Salary:	request and an error	
	new job.		2.	Fields are left empty or	Any job salary	"Please input all	
	EK		P	not in correct format.	Job Type:	fields with relevant	
			3.	Click submit button	Any job types	information" will	
	1	à			Job Location:	appear.	
		S SAINS	_				

APPENDIX E: TC: Request Shipment Module

Test	Test Case	Pre-Requisite	Test Step	Test Data	Expected Result	Status
Case ID	U	NIVERSITI T	EKNIKAL MALAY	SIA MELA	KA	(P/F)
SHIP1	All fields are	User must fill in all the	1. Go to site	Brand	A new shipment	Р
	filled with correct	blanks or fields with	https://etechify.herokuap	Distributor:	request will be	
	format for insert	correct format.	p.com/shipment/new-	Any brand	created in the system	
			<u>shipment</u>	distributor	and product will be	

	new item in		2.	Enter all fields with	Brand:	added in cart section.	
	shipment cart.			correct information and	Any brand	Shipment will be	
				format.	Select Product:	changed to	
		MALAYSIA .	3.	Click add to list button	Any product	"Requested" status.	
		S X	2		Select Product		
	100	7	E.		Quantity:		
	EX.		A		Any product		
	-				quantity		
SHIP2	Not all fields are	User does not fill in all	1.	Go to site	Brand	System validation	Р
	filled with correct	the blanks or fields		https://etechify.herokuap	Distributor:	will reject the new	
	format for insert	with correct format.		p.com/shipment/new-	-	request and an error	
	new item in	Molinelo	14	shipment	Brand:	"Please select input	
	shipment cart.		2.	Fields are left empty or	5.02	brand and product"	
				not in correct format.	Select Product:	will appear.	
	U	NIVERSITI T	3.	Click add to list button	SIA MELA	KA	
					Select Product		
					Quantity:		
					Any product		
					quantity		

SHIP3	Delete product in	The product must be	1.	Go to site	Click bin icon in	Selected product will	Р
	shipment cart.	existed in the system.		https://etechify.herokuap	actions column.	be deleted, and a	
				p.com/shipment/new-		success message will	
		MALAYSIA		shipment		appear.	
		N	2.	Click bin icon for which			
	1	7	E.	product we want to			
	EK		A	remove.			
	F						
SHIP4	Request new	Selected items must be	1.	Go to site	Click "Yes,	A shipment request	Р
	shipment with	inside the cart.		https://etechify.herokuap	submit it!" button	will be submitted,	
	product in cart.	in .		p.com/shipment/new-	in a confirmation	and a success	
	5	Malula	14	shipment	pop-up.	message will appear.	
		syn unun	2.	Click request shipment	5.00	Current shipment	
				button and respond to the	10	will be changed to	
	U	NIVERSITI T	EKĮ	alert by clicking "Yes,	SIA MELA	"Waiting Approval"	
				submit it!".		status.	

Test	Test Case	Pre-Requisite		Test Step	Test Data	Expected Result	Status
Case ID		ALAYSIA					(P/F)
SN1	All fields are	User must fill in all the	1.	Go to site	Select Product:	A new product serial	Р
	filled with correct	blanks or fields with	5	https://etechify.herokuap	Any product	number will be	
	format for insert	correct format.	3	p.com/distributor/insert-	Select Batch:	inserted, graph will	
	new product			product	Any batch	be updated, and it	
	serial number.		2.	Enter all fields with	Insert SN	will be listed in a	
		2		correct information and	Product:	collection of serial	
		Alko .		format.	Any product	number that is	
		LI (1	3.	Click insert button	serial number	existed in the system.	
	2	Sho hundo	14	Zin Su,	ومرست	او د	
SN2	Not all fields are	User does not fill in all	1.	Go to site	Select Product:	System validation	Р
	filled with correct	the blanks or fields	EKI	https://etechify.herokuap	Any product	will reject the new	
	format for insert	with correct format.		p.com/distributor/insert-	Select Batch:	request and an error	
	new product			product	Any batch	"Please input all	
	serial number.		2.	Fields are left empty or	Insert SN	fields with relevant	
				not in correct format.	Product:	information" will	
					-	appear.	

APPENDIX F: TC: Manage Product Serial Number Module

	3. Click insert button		

APPENDIX G: IC: Shop Module									
Test	Test Case	Pre-Requisite	The second	Test Step	Test Data	Expected Result	Status		
Case ID	E K	•	P				(P/F)		
SHOP1	Add product to	The product must be	1.	Go to site	Click "Add to	The selected product	Р		
	cart.	existed in the system.		https://etechify.herokuap	cart" button.	will be added to user			
		N SAIN		p.com/product/items		cart and a success			
			2.	Click add to cart button		message "You have			
	5	Molundo	14	on a product that we want	and an	added this product to			
			5	to purchase.	5.09.	your cart!" will			
						appear.			
SHOP2	Add product that	Product must be	E M 1.	Go to site	Click "Add to	System will disable	Р		
	is out of stock	existed in the system		https://etechify.herokuap	cart" button.	the "Add to cart"			
	into cart.	but no stock available.		p.com/product/items		button for a product			
						that is out of stock.			

APPENDIX G: TC: Shop Module

SHOP3	Filter product	The product must be	1.	Go to site	Select Brand:	System will filter the	Р
	based on brand,	existed in the system.		https://etechify.herokuap	Any brand	products that is	
	brand category			p.com/product/items	Select Brand	existed in the system	
	and price.	MALAYSIA	2.	Choose which data that	Category:	to match the	
		87 1	2	we want to filter in the	Any brand	keywords that have	
	2	7	Z.	dropdown.	category	been chosen.	
	EK	-	3.	Click apply filters button	Select Price:		
	-				Any price range		
		APPE	ENDIX	H: TC: e-Track Parcel Mod	lule		

			1 . 1 .		<i></i>			
Test	Test	Case 🤳	Pre-Requisite	14	Test Step	Test Data	Expected Result	Status
Case ID				-			2	(P/F)
TRACK1	Search	for	Tracking number must be	1.	Go to site	Tracking No.:	System will show the	Р
	existing	tracking	existed in the system.	KNI	https://etechify.herokuap	32550903038	current parcel status.	
	number	in			p.com/tracking/parcel			
	system.			2.	Fill in tracking number.			
				3.	Click search button			

TRACK2	Search for a non-	Tracking number is not	1.	Go to site	Tracking No.:	An error will appear	Р
	existing tracking	existed in the system.		https://etechify.herokuap	143093211531	"Tracking is not	
	number in			p.com/tracking/parcel		exist in the system."	
	system.	MALAYSIA .	2.	Fill in a non-existing		and no result found.	
		N 40		tracking number.			
	1	7	3.	Click search button			
	EK		P				
TRACK3	Empty value in	User does not enter any	1.	Go to site	Tracking No.:	A pop-up of an error	Р
	tracking search	value in the field.		https://etechify.herokuap		will appear "Please	
	bar.	143 m	=	p.com/tracking/parcel		input tracking field".	
		sullin .	2.	Click search button			
	5	M. L.	12		. ÷	1.1	
	_	and and a second)_	- will be a construction of the second secon	in Ng.	0.91	
				-			

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Test	Test Case	Pre-Requisite		Test Step	Test Data	Expected Result	Status
Case ID		ALAYS/A					(P/F)
UP1	Alter data either	Account is exists in	1.	Go to site	Name:	System will update	Р
	user name or	the system.	5	https://etechify.herokuap	Any names	to latest data and a	
	email address.		K.	p.com/user/profile	Email address:	success message	
			2.	Alter data either user	Any email	"Profile is updated."	
	1	<u>ا ا ا</u>		name or email address	address	will appear.	
		\$ <u>}</u>		with correct format.			
		Alkn .	3.	Click submit button			
		1.1 (1	1				
UP2	Submit the same	User does not change	1.	Go to site	Name:	System validation	Р
	data to update	any existing value.	~	https://etechify.herokuap	Ismat Azmy	will reject the new	
	current data.		EK	p.com/user/profile	Email address:	request and an error	
	0		2.	Fields are filled with the	ismatazmy@live.	"Please make some	
				same current data.	com	changes to the input	
			3.	Click submit button		to make changes."	
						will appear.	

APPENDIX I: TC: Manage Profile Module

Test	Test Case	Pre-Requisite		Test Step	Test Data	Expected Result	Status
Case ID		ALAYS/A					(P/F)
ADDRE	All fields are	User must fill in all the	1.	Go to site	Name:	A new address will	Р
SS1	filled with correct	blanks or fields with	5	https://etechify.herokuap	Any names	be inserted, and it	
	format for insert	correct format.	KA	p.com/user/address	Address:	will be listed in a	
	new address.		2.	Enter all fields with	Any address	collection of address	
	14	<u>ا</u>		correct information and	Phone No.:	that is existed in the	
		·		format.	Any phone	system for a specific	
		AINO .	3.	Click submit button	number	user.	
		LI (1	1		Postcode:		
	2	Sho hundo	14	-indu	Any postcode or	او د	
		44 44)	27 27 L	system		
		NIVERSITI T	FK		generated.	KΔ	
)			the mount of	Longitude:		
					System		
					generated.		
					Latitude:		

APPENDIX J: TC: Manage Address Module

					System		
					generated.		
ADDRE	Not all fields are	User does not fill in all	1.	Go to site	Name:	System validation	Р
SS2	filled with correct	the blanks or fields		https://etechify.herokuap	-	will reject the new	
	format for insert	with correct format.	2	p.com/user/address	Address:	request and an error	
	new address.	7	2.	Fields are left empty or	-	"Please make some	
	E A	-	A	not in correct format.	Phone No.:	changes to the input	
	1		3.	Click submit button		to make changes."	
		à			Postcode:	will appear.	
	0	S ALL			Any postcode or		
					system		
	5	Molundo	14		generated.	101	
			5	a1 a1	Longitude:	2	
					System		
	U	NIVERSITI T	EKI	VIKAL MALAY	generated.	KA	
					Latitude:		
					System		
					generated.		

ADDRE	Delete address in	The address must exist	1.	Go to site	Click cross icon in	The selected address	Р
SS3	the list.	in the system.		https://etechify.herokuap	actions column.	will be removed, and	
				p.com/user/address		a success message	
		MALAYSIA	2.	Click cross icon for		will appear to	
		S	2	which address we want to		indicate a success	
	1	7	E.	remove.		deletion.	
	EK	-	A				
ADDRE	Set an existing	The address must exist	1.	Go to site	Click "Submit"	A success message	Р
SS4	address as a	in the system.		https://etechify.herokuap	button in a	"Your default status	
	default address.	18 m		p.com/user/address	confirmation pop-	has been updated"	
		anno .	2.	Click update button for	up and click	will appear and	
		M.C.L.	14	which address we want to	"Okay".	default address will	
	_	متسب مارد	5	make it as a default	يوم سيج	be set to the chosen	
				shipping address.	4.9	one.	
	U	NIVERSITI T	EK	IKAL MALAY	SIA MELA	KA	

Test	Test Case	Pre-Requisite	Test Step	Test Data	Expected Result	Status
Case ID		ALAYS/A				(P/F)
CART1	Delete product in	The product must be in	1. Go to site	Click bin icon in	Selected product will	Р
	cart.	cart and existed in the	https://etechify.herokuap	actions column.	be deleted, and a	
	Ku	system.	p.com/product/cart		success message will	
	L.	•	2. Click bin icon for which		appear.	
	5		product we want to			
		·	remove.			
		AINO .				
CART2	Alter product	The product must be	1. Go to site	Increase and	System will	Р
	quantity.	existed in the system.	https://etechify.herokuap	decrease quantity	automatically update	
		44 44	p.com/product/cart	using spinner.	merchandise subtotal	
			2. Increase and decrease	eAVSIA MELA	according to the total	
	0		quantity by using spinner.	OIA MILLA	quantity in spinner.	
CART3	Input product	User input more	1. Go to site	Quantity (total	A pop-up error	Р
	quantity more	quantity than total	https://etechify.herokuap	stock - 3):	"Stock is around X	
	than total stock.	stock quantity.	p.com/product/cart	10	only" will appear,	

APPENDIX K: TC: Manage Cart Module

			2.	Increase and decrease		PayPal button will be		
				quantity by using spinner			hidden, and quantity	
				or by inputting more than			reset to 1.	
		MALAYSIA		total stock quantity.				
		2	2					
CART4	Complete order	At least one item is in	1.	Go to site	Click	"PayPal"	System will open a	Р
	by doing payment	cart.	P	https://etechify.herokuap	button.		small pop-up to let	
	using PayPal.			p.com/product/cart		I I V.	user to complete the	
	Ŧ	à	2.	Click PayPal button.		111	payment and once	
		No.					payment is	
	- Nn						succeeded, system	
	2	مليسيا ملاك	کل ا	إنتكنيك	بۇنرسىتى	will redirect user to a		
						thank you page and		
					**		order will be created.	

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Test	Test Case	Pre-Requisite	Test Step		Test Data	Expected Result	Status
Case ID		ALAYS/A					(P/F)
RMA1	All fields are	User must fill in all the	1. Go to site		Select Address:	A new RMA request	Р
	filled with correct	blanks or fields with	https://etec	hify.herokuap	Any address	will be added into the	
	format.	correct format.	p.com/rma	/new-request	Date of Purchase:	system.	
	1		2. Enter all fi	elds with	Any date of		
	5		correct info	ormation and	purchase		
		·	format.		Proof of		
		AINO	3. Click subm	nit button	Purchase:		
	4	del (I		1/ ./ "			
	1	ملىسىا مالال	, Dan	- w	purchase in	191	
		44 44	· ·		form of pdf.		
	U	NIVERSITI T	EKNIKAL	MALAY	Brand: Any brand	KA	
					Product:		
					Any product		
					Serial Number:		

APPENDIX L: TC: e-RMA Module
					Any product		
					serial number		
					Confirm Serial		
		MALAYSIA .			Number:		
		2	2		Must be the		
	1	1	2		same as serial		
	E C		P		number.		
	-				Comments:		
	Y	à 📰			Any comments		
RMA2	Not all fields are	User does not fill in all	1. Go to	site	Select Address:	System validation	Р
	filled with correct	the blanks or fields	<u>https:</u>	//etechify.herokuap	Any address	will reject the new	
	format. 🤳	with correct format.	p.con	n/rma/new-request	Date of Purchase:	request and errors	
			2. Fields	s are left empty or	5	such as "This field is	
			not in	a correct format.	Proof of	required" and a pop-	
	U	NIVERSITI T	3. Click	submit button	Purchase:	up "Please input all	
					-	fields" will appear.	
					Brand:		
					-		
					Product:		



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Test	Test Case	Pre-Requisite	Test Step	Test Data	Expected Result	Status
Case ID		ALAYSIA				(P/F)
REPAIR	All fields are	User must fill in all the	1. Go to site	Update Status:	The selected RMA	Р
1	filled with correct	blanks or fields with	https://etechify.herokuap	Any status	request will be	
	format.	correct format.	<u>p.com/user/userdash</u>	Receive At:	updated by the	
	1		2. Click on wrench icon in	Any date but not	system according to	
	1	<u>ا</u>	RMA request section and	the day after.	the latest data.	
		2	a modal will pop-up.	Tracking No.:		
		Alka	3. Enter all fields with	Any tracking		
		1 L L	correct information and	numbers		
	2	ملىسىا ملاك	format.	Remark:	191	
		44 44	4. Click update button	Any remark	-	
	11	NIVERSITI T	ΕΚΝΙΚΔΙ ΜΔΙ ΔΥ		KΔ	
REPAIR	Not all required	User does not fill in all	1. Go to site	Update Status:	System validation	Р
2	fields are filled	the blanks or fields	https://etechify.herokuap	Any status	will reject the update	
	with correct	with correct format.	p.com/user/userdash	Receive At:	request and errors	
	format.			Any date but not	such as a pop-up	
				the day after.	"Please input all	

APPENDIX M: TC: Manage Repair Module

				2.	Click on wrench icon in	Tracking No.:	required fields" will	
					RMA request section and	-	appear.	
					a modal will pop-up.	Remark:		
			MALAYSIA .	3.	Required fields are left	-		
			ST A	0	empty or not in correct			
		100	1	"Za	format.			
		E Se		>4.	Click update button			
		here						
REPAIR	Check	tracking	Tracking number must	1.	Go to site	Click a button	System will pop-up a	Р
3	status.	0	exist in the system.		https://etechify.herokuap	with a tracking	small window and	
			N/n		p.com/user/userdash	number under	fetch all tracking	
		5	M. L.	2.	Click at "Tracking No."	"Tracking No."	data for the specific	
		_	syco unus	5	column for each row of	column.	tracking number by	
					RMA case in RMA	4.9	using Tracking.my	
		U	NIVERSITI T	EKI	requests section.	SIA MELA	API.	

Test	Test Case	Pre-Requisite	Test Step	Test Data	Expected Result	Status
Case ID		ALAYSIA				(P/F)
USR1	Edit user	~ 4	APPENDIX I: MANAGE PRO	FILE MODULE		Р
	information.		2			
USR2	Delete user.	User is exist in the	S1. Go to site	Click "Delete"	Selected user will be	Р
	F	system.	https://etechify.herokuap	button under	deleted, and a	
	5		p.com/admin/users	actions column.	success message will	
		eg	2. Click delete button		appear.	
		AINO .				
USR3	Alter an account	User is exist in the	1. Go to site	Choose 1 or more	System will update	Р
	role.	system.	https://etechify.herokuap	from the 3 roles	current user role	
		44 - 44	p.com/admin/users/{id}/e	that is existed in	according to the	
	U	NIVERSITI T	2. Select one or more of the	the system.	selection at the checkboxes.	
			roles listed at the			
			checkboxes.			

APPENDIX N: TC: Manage Users Module

Test	Test Case	Pre-Requisite	Test Step	Test Data	Expected Result	Status
Case ID		ALAYS/A				(P / F)
ORDER1	Update parcel	Tracking number is	1. Go to site	Tracking Status:	A new tracking	Р
	tracking status.	exist in the system and	https://etechify.herokuap	Processing	status will be added	
	Ku	not in delivered status.	p.com/ tracking/track-	Order	into the system.	
	H F	· · · · · · · · · · · · · · · · · · ·	parcel/{id}			
	1		2. Enter all fields with			
		2	correct information and			
		Allin .	format.			
	5	Juni) all	3. Click submit button	وم ست	اوز	
ORDER2	Update parcel	User does not fill in all	1. Go to site	Tracking Status:	System validation	Р
	tracking status	the blanks or fields	https://etechify.herokuap		will reject the new	
	with incorrect	with correct format.	p.com/tracking/track-	SIA MILLA	request and errors	
	format or null		parcel/{id}		such as a pop-up	
	value.		2. Fields are left empty or		"Please input all	
			not in correct format.		fields with relevant	

APPENDIX O: TC: Manage Orders Module

			3.	Click submit button		information" will	
						appear.	
ORDER3	View order in	Customer orders must	1.	Go to site	Click eye icon	Order details of a	Р
	detail.	exist in system.		https://etechify.herokuap	button.	specific order will	
		SY 1	2	<u>p.com/</u>		show.	
	â		7	order/purchase/{id}			
	E K		A				
ORDER4	View receipt for		1.	Go to site	Click paper icon	e-Receipt will be	Р
	an order.	à		https://etechify.herokuap	button.	generated for the	
		S Aller		<pre>p.com/ order/receipt/{id}</pre>		specific order.	
		in .					
ORDER5	Insert serial	Malala	12	Go to site	Insert SN:	Serial number will	Р
	number for		5	https://etechify.herokuap	A6TX0IC2K014	be assigned to each	
	products in a			p.com/order/insert-prod-	6H27	of the respective	
	specific order. 📋	NIVERSITI T	EK	sn/{id}	SIA MELA	product.	
			2.	Drag the related serial			
				number from the			
				suggested SN and drop to			
				the respective product			

				according to total			
				quantity for each product.			
ORDER6	Print airway bill	MALAYSIA	1.	Go to site	Click arrow up	System will generate	Р
	(AWB)	2	0	https://etechify.herokuap	icon button.	an airway bill	
	consignment.	7	E.	<u>p.com/</u>		consignment for a	
	EX.		A.	order/purchase/awb/{id}		parcel that belongs to	
	F					an order.	
ORDER7	Cancel an order.	à	1.	Click on the wrong cross	Click wrong cross	An order will be	Р
		" di Bar		button.	icon button.	canceled unless the	
		www.				order status have	
	2	مليسيا ملاك	کل	أتيكنيك	يۇنرىسىتى	reached processing order.	

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

APPENDIX P: Sample Source Code



Attachment 1: PayPal JS code



Attachment 2: Laravel Blade code



Attachment 3: Soft delete Laravel code