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Simplex Textile

Project Proposal

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Submitted by:

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1. Background

Simplex is a business that has been engaged in the textile business for 74 years in the Matara area, which provides much better service, not only for the Matara area but also for island-wide customers. Our client believes that spreading the branches in the respective areas is possible to reach customers all over the island. However, because it will incur a huge cost, apart from the technology currently available, this can be spread more effectively through the internet. They have an idea to make their service more popular and provide better service to the customers in the future. Our client has understood that there is a slow nature in the development of the business, even though it has been 74 years since the clothing store started, and it has not kept pace with technology.

They realized that they needed a software system as the solution to provide better customer care service by avoiding the above problems and many more. So, this system can overcome those problems with the current manual system by providing optimal service.

2. Problem and Motivation

Most companies had been digitalized and converted to an online form, significantly impacting the global economy over the previous couple of years. Covid 19 epidemic made people more concise about their health and safety; we were made to make sacrifices and be precautionary after many decades because of air borne contagious disease. Most firms had to move to internet platforms or go out of business due to social pressure. Recently, we connected with our client Simplex Textiles in Kamburupitiya, who required business digitization and implementation as an eCommerce management system running concurrently with the actual business area. This company has served its customers over the years and hired a sizeable number of staff members.

They want to reach more people because the COVID 19 pandemic significantly reduced the number of people who could visit their stores. By deploying this system, they can improve the range of services they offer. Before putting the system into place, we must comprehend the challenges and concentrate on finding solutions for how the firm is now

operating.

- Higher costs due to countries' current bankruptcy - inflation caused by the dollar rate generates electricity, rent, and fuel prices to skyrocket
- Consumers expect more in the modern world - they hope to save time, get more discounts, get a more vivid experience with less effort, etc.
- Difficulties faced by staff in handling large data sets with regards to items in the store - From inventory to purchase or delivery of every product.

Lack of a customer feedback section - It is crucial to maintain a close relationship with customers and refer to their feedback to improve necessary services. Currently, there is no available delivery system. This calls for the implementation of a delivery system for products as it is more popular in modern society.

- Product handling efficiency - Even if many employees are skilled at dealing with consumers, systematized methods can increase efficiency and greatly minimize manual work.

The client contacted us to install an eCommerce management system to present business patterns to improve the consumer experience while avoiding challenges and offering cutting-edge solutions for an ever-changing environment.

3.Aim and Objective

Keeping the above-mentioned problem in mind, a target analysis was done for them. The following are the goals to be achieved by our project to resolve the issues discussed there. The primary objective of e-commerce is to reach the maximum number of customers at the right time to increase the sales and profits of the business. The functions of e-commerce include buying and selling of goods and exchanging money over the Internet. Strategically manage online sales costs

When you start selling online, the investment cost of starting and running a business is reduced. However, you can start your business absolutely free with zero investment, with various companies that help with that. By setting up an e-commerce store, you literally don't need a physical presence in your store and save some fixed expenses – rent, hire, stock maintenance and more; you are allowed to do just that to manage your e-commerce

business efficiently.

To increase sales

Reaching more people is the only purpose you have to take your business online or start your business online. To thrive in the e-commerce industry, you need to grow your business and increase your ROI. But, to do so, you must follow market strategies that have worked well for you! Design your marketing plan to boost your growth, increase your sales and generate more leads for your business in just a few clicks. By combining marketing tactics and innovative solutions, grab your customers' attention and get them into your sales funnel.

Improve customer loyalty

Every business strategy revolves around customers. You can make your customers your focus and interact with them to give them an incredible experience. This allows you to manage your loyal customers and generate new leads for your business. Ready to build your brand credibility to sell more and earn more? turn up.

Identify the right target audience

An e-commerce store from various companies helps you target an audience that is genuinely interested in buying your products. But how do you know that? By analyzing your audience you can learn various parameters like age, gender, income and more. With the help of these demographics, build your customer personas and target customer groups relevant to your products. This data will help you establish future product launches and a long-term marketing plan. For this, access the right tools and do more with your online business.

The steps to be completed to achieve the objective are the requirements analysis was carried out keeping the following objectives in mind:

1. Identify the need.
2. As well as gathering information, the other one,
3. Evaluation of feasibility system concept.

1. Identifying the need:

The success of the system largely depends on how accurately a problem is defined, thoroughly investigated and implemented properly through the selection of the solution.

Users need identification and analysis is concerned with what the user needs rather than what he/she needs. Until the problem is identified, defined, and evaluated, the analyst should not think about solutions and whether or not the problem is worth solving.

2. Collection of Information:

A key part of system development is the need to gather information. The analyst must know what information to look for, where to find it, how to collect it, and how to use it. Proper use of data collection tools is the only key to a successful analysis.

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3. Feasibility Study Ability

Feasibility study is conducted to check whether the proposed system is viable in terms of economy, education, technology and resource availability. Therefore, given more resources and more time, all projects are possible. But, such results and time are not available in real life situations. It is therefore both necessary and prudent to assess the feasibility of the project as early as possible to avoid unnecessary time, effort and professional inconvenience due to an improperly designed system.

4. System Overview

Functional Requirement	Non-Functional requirement	Technical Requirement
<u>Profile Management</u> Register Login Logout View account details Edit account details User authentication and authorization	Security Usability Privacy Data integrity and retention	Pc Tablet Mobile Internet connection
<u>Product Management</u> Search item View item Add , update and delete product related details(price,availability,description,discount)	Performance Accessibility	Pc Tablet Mobile Internet connection

<u>Order management</u> Place Order Cancel order Return item View, update Order details Add item to cart Change, update & view cart Payment management Refund management	Speed of the web service Search SEO availability	Pc Tablet Mobile Internet connection
<u>Inventory management</u> Check and update the availability Notify the stock levels Add , update ,delete and view suppliers details Add , update ,delete and view item details Upload listing	Accessibility Speed of the web service Availability	Pc Tablet Mobile Internet connection
<u>Dashboard and reporting tool Management</u> Display the admin dashboard Generate the item selling report Generate the all bill Generate the return invoices	Availability	Pc Tablet Mobile Internet connection
<u>Customer support & Services Management</u> FAQ page Realtime chat portal Chat bot Contact us page Shop location service Add the product rating User comment feed back and submission	Availability Privacy	Pc Tablet Mobile Internet connection
<u>Notifications & Recommendations</u> Management Product Recommendation Product Comparing E-mail notification Send order details via SMS Push notification function	Privacy Accessibility	Pc Tablet Mobile Internet connection

<u>Delivery Management</u> Tracking update Tracking view	Privacy Accessibility Usability	Pc Tablet Mobile Internet connection
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5.Literature review

Application of physical store “simplex textiles” to the online platform and digitization of the processes currently ongoing in the business in the growing e-commerce technology has become a bare necessity in the modern day. Different services offer implementation processes of the system like Wix eCommerce, Ecwid, Shopify, etc. While major league technological companies offer Microsoft Azure and Dynamics 365 commerce that requires more experience and understanding to carry out operations of the business. With the advance in technology adapting to changes must be done to survive in the modern day. These involve several advantages as well as disadvantages as follows.

Advantages

- Most of the services like Wix eCommerce, and ecwid have inbuild templates where the store can be implemented easily
- The systems can drive more online traffic and take advantage of market-leading knowledge.
- Microsoft Dynamics 365 consist of sales intelligence, integration of email with Outlook 365 and connections to CRM (customer relationship management) and an activity log, and many more features like the smart search function.

Disadvantages

- The services are usually priced at different rates according to the availability of required features, these services are billed monthly, and storage and SEO facilities are charged proportionally. Therefore, when considering the cost factor, the business has to pay on a long-term basis for lifetime usage
- Inadequate privacy to business’s data-these services tend to risk personal and business-related data via attacks through simple account malfunctioning.
- Although Microsoft Dynamics 365 offers an advanced integrated system there are complications like storage restrictions, reduced degree of upgrade process control that a user must face when using the services

The disadvantages make a customized application for the store more favorable. There would be very few performance difficulties because it is completely focused on the client. Despite the high initial cost of obtaining the application for the store, there are no ongoing monthly fees, with the exception of minor improvements. This in turn improves the customized application more reliable.

Users, including workers, will no longer be able to obtain information and engage with it in the same way because the organization will be able to assign individual users the responsibility of seeing and altering data.

In conclusion, the system not only improves the customer-business relationship but also the employee-business role, as an improved, optimized system is developed to fulfill the client needs.

6.Methodology

6.1 Requirement Engineering

6.1.a

Interviewing: A qualitative research technique known as an interview depends on gathering data by asking questions.

6.1.b

Observation: Observation is a method of acquiring information by keeping an eye on behavior, events, or recording physical traits in their natural environment.

There are some main reasons to select the interviewing and observation as requirement engineering methods.

- The observation approach is simple because it typically doesn't call for technical expertise.
- Since the observer interacts directly with the object being seen, the observation method offers excellent accuracy.
- The respondent must cooperate as little as possible with the observation approach.
- Provide information about candidates
- Easier to evaluate a candidate's nonverbal behavior
- Interviews are a great source of information since they provide insight into stakeholders and investors.
- Interviews offer a chance for conversation.

6.2Requirement Specification

- Requirement specification method: Graphical notation
- Alternative: Natural language, Design description language,

Mathematical notation

- Justification: Graphical Notation is easy to understand and implement
- Graphical notation: User Stories
- Alternative: UML
- Justification: In Agile software development, user stories are tools

6.3 Design method

- Design method : Object oriented design
- Alternative : Function oriented design , Data Flow – Oriented Design , Level Oriented design
- Justification : Object Oriented design is promises to reduce the development time, reduce the time and resource, reduce the time and increase the code reuse.

6.4 Tools and Technology

Tools and technology	Usage	Alternative	Justification
HTML	Create a Structure of the web page		
CSS	Style to the web page		
Bootstrap	Style to the web page	Tailwind	Bootstrap is Not need to use css preprocessor
Java script	Create a dynamic interactive web pages		
React js	To Create a UI	Angular , Vue	React is Easy to learn & Fast
Redux	As a state Management	Mob x, Graph ql	Redux is highly maintainable
Node js	As a java script runtime Environment	Dino	Node js use the packge manger
Express js	To create a	Spring boot	Express is Minimal and

	backend		flexible
Mongo DB	To store data	Fire base	Mongo db can handle big data and high performance
My SQL	To store data	MS SQL server	My SQL is cross platform application & Relational database
VS code	As a code editor	Note pad, Note pad++	VS code has built in git support and many extension to done project
Draw.io	Design Wireframe	Figma	Draw.io is easier to use
Git and GitHub	As a version Control	Subversion, Mercurial	Branching and merging easy in git
Post man	API testing	Insomnia, Fiddler	Postman users can access their files seamlessly by logging into their account on a device with the Postman application installed or Postman browser extension.

6.5 Testing

6.5a Unit Testing

The process of testing individual software parts or components is known as unit testing. The goal is to confirm that each piece of software code operates as intended. Developers do unit testing when creating an application (the coding phase). Unit tests isolate a specific piece of code and validate its accuracy. An singular function, method, process, module, or object might be considered a unit.

React Testing Library is a set of helpers that let you test React components without relying on their implementation details. This approach makes refactoring a breeze and also nudges you towards best practices for accessibility. Although it doesn't provide a way to "shallowly" render a component without its children, a test runner like Jest lets you do this by mocking.

Mocha is a feature-rich JavaScript test framework running on Node.js and in the browser, making asynchronous testing *simple* and *fun*. Mocha tests run serially, allowing for flexible and accurate reporting, while mapping uncaught exceptions to the correct test cases. Hosted on GitHub. [1]

6.5b Integration Testing

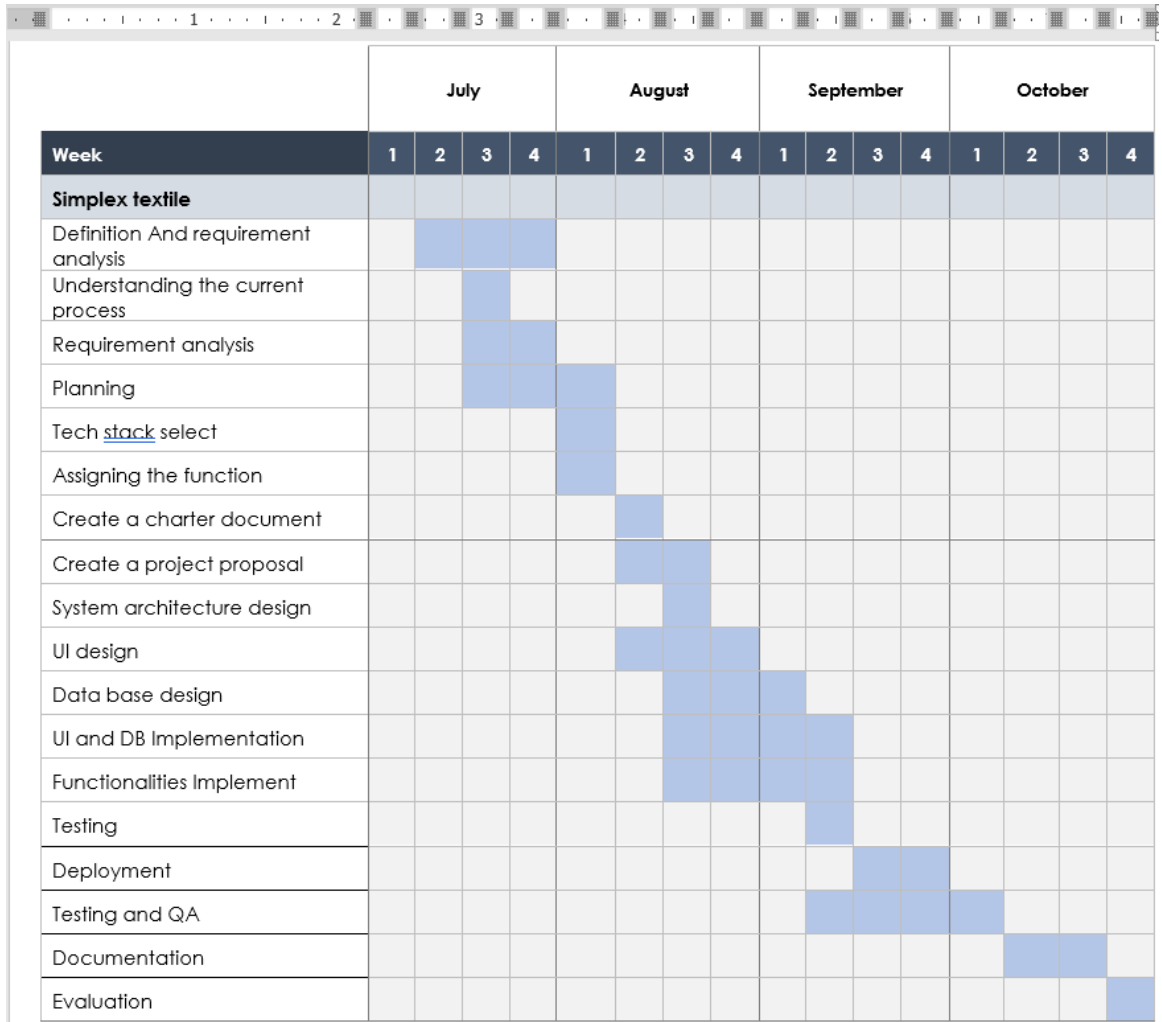
After unit testing, the software testing process moves on to integration testing. Units or individual software components are checked collectively during this testing. The integration testing level's primary objective

6.6 Integration

Automation is a core principle for achieving DevOps success and CI/CD is a critical component. CI/CD comprises of continuous integration and continuous delivery or continuous deployment. Put together, they form a “CI/CD pipeline”—a series of automated workflows that help DevOps teams cut down on manual tasks:

- Continuous integration (CI) automatically **builds, tests, and integrates** code changes within a shared repository; then
- Continuous delivery (CD) automatically **delivers** code changes to production-ready environments for approval; or
- Continuous deployment (CD) automatically **deploys** code changes to customers directly. [2]

6.7 Gantt chart



6.8 Work breakdown structure

Name with Initials	Function
Bandara K.M.H.G.S.S	Inventory management
Weerasekara D.A	Profile Management
Galhenage K.H.P	Product Management
Yapa L.N.S	Order management
Gamage I.D	Dashboard and reporting tool Management
Dasath Y.V.A.T.	Customer support & Services Management
Subasinghe S.K.S.C	Notifications & Recommendations Management

7.Reference

- [1] "mochajs," [Online]. Available: <https://mochajs.org/>. [Accessed 19 08 2022].
- [2] "resources.github," [Online]. Available: <https://resources.github.com/ci-cd/>. [Accessed 19 08 2022].

8.Appendix