An Undergraduate Internship on Inventory Management Systems

By

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Dissertation submitted for the fulfillment of the degree of Bachelor of Science in Computer Science and Engineering

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Attestation

This is to certify that this report, titled “An Undergraduate Internship on Inventory Management Systems”, was completed by Writban Alim, of the IUB ID 1821035, submitted as required for the fulfillment of the degree of Bachelor of Science in Computer Science and Engineering under the department of Computer Science and Engineering of Independent University, Bangladesh (IUB).

This was completed under the supervision of Ms. Romasa Qasim of IUB as the internal supervisor, and Mr. Mushtaque Ahmed of CentroTex as the external supervisor.

I further certify that none of the work that has been done in this report is plagiarized. Any resources used are mentioned in the reference section of the report.

_____ _____

Signature Date

Writban Alim

_____

Name

Acknowledgement

I'd like to thank my father, for paying the exorbitant costs of a university degree to further my education and improve my professional and social prospects in life, and for being a pillar in my life on whom I could always rely.

I'd like to thank my brother, for always being there for me, and cheering me on with more faith in me than I had myself.

I'd like to thank my chhotomama and mami, for providing me with a shelter and assistance in any way or form I needed during this trying and tumultuous time that was my 4 years and 4 months in university, living away from my family, completely alone.

I'd like to thank my IUB internal supervisor and mentor, Ms. Romasa Qasim who has had faith in me and believed I could achieve more than I could, pushing me on to greater heights.

And I'd like to thank CentroTex Ltd., the company that that provided me with the opportunity to experience a taste of corporate life via this internship, I'd like to thank its head of IT, Mr. Mushtaque Ahmed, who acted as my external supervisor in this course, forming my path in the company.

Writban Alim,

1821035

Student of SECS, CSE

Letter of Transmittal

12th May 2022

Ms. Romasa Qasim

Lecturer

Department of Computer Science and Engineering

School of Engineering, Technology and Sciences

Independent University, Bangladesh

Subject: Internship report on Inventory Management Systems, under CentroTex Ltd.

Dear Ma'am,

With all due respect I would like to state that it is a great pleasure to submit my report on my internship at CentroTex Ltd. I have tried my best to narrate my project works, achievements, and experiences in this report.

During the internship period, I have served at CentroTex for three months where I have not only gained real life work experience but learned about the corporate world. I also got an insight on how the companies are dealing with the ongoing COVID-19 pandemic. This report includes a detailed review of the company as well as the functionalities of the department I worked in.

I have thus compiled this report with all the relevant information I had on hand, and to the best of my abilities under the current circumstances. I hope it will meet your expectations and not leave you disappointed. I also would like to convey my gratitude for giving me the opportunity to submit this report and complete my internship.

Sincerely,

Writban Alim

ID: 1821035

Evaluation Committee

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Signature

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Name

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Supervisor

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Convener

Abstract

CentroTex Ltd., as implied by the “Tex” in its name, deals in textiles. Specifically, it is an RMG, or Ready-Made Garments company, specializing in export quality goods, having exclusive deals with brands such as Primark. It is now a multinational company, having an office in the UK and in Bangladesh.

However, I found it does not have an in-house software for keeping track of all their products and the companies they deal with. I thus decided to make a web application that would address all of their needs. However, as there were pressing obstacles such as a lack of employees and an imminent office relocation, I was advised to shorten my own expectations.

Thus, after discussion with my external and internal supervisors, I came to the conclusion of building a spine of a project, that future employees may base a full web application on, and build upon my work to have a fully functional app that would be worth paying for on the company’s behalf.

This project, thus, addresses those problems and seeks to remedy them.

This report summarizes that experience, and attempts to provide an informative look on what has been achieved.

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Chapter 1

Introduction

For any company that deals in mass amounts of product coming in and going out, management of resources is of paramount importance. I felt the current system in place for CentroTex Ltd. was lacking any such management, thus sought to make the bones of one myself.

The inventory management service (IMS) that I created and that this report is based on, is a web-based application to help the management of resources and information, including the stock of items present, stock of items sold, and a history of purchases.

The project is rather large, and due to being a solo developer making it in my off time, no beautification was done.

1.1 Overview/Background of the Work

Bangladesh's economy is heavily reliant on readymade garments, to the extent that its exports are our principal source of foreign money inflow. It is a massive industry employing a huge amount of people and dealing with the comings and goings of even larger numbers of products; finished garments, raw materials, dyes etc.

As time marches on, technology is becoming indispensable in the management of resources and inventories; physical records are clunky, take up space to store, hard to sort through, cannot be accessed from multiple places, and prone to damage. It is also much less safe, as the records are more easily tampered with.

As such, a digital inventory management system, I think, would do such companies good as they could keep track of everything coming and going, and only authorized personnel would have the power to change important information, while all the employees could make entries as needed of products coming and going. These records would be available remotely to anyone with the credentials, and would be safe from any tampering as well.

CentroTex Ltd. is a readymade garments company, which is the principal export of Bangladesh. As such, it fits the description provided above, and has large amounts of products being purchased and sold on a regular basis. As such, the inventory management software that I made, with further development, should provide a degree of increased utility.

1.2 Objectives

The core objective of this project is to make the management of the company's resources easier. To make it possible to manage the comings and goings of products, as well as what is currently in stock and what is not.

While primarily it focuses on the products, it also secondarily provides a concise way to have all employees listed in one place according to rank and clearance as well.

1.3 Scopes

The system serves to ease the management for a company in such a competitive industry. Efficiency is key in large businesses, as even little mismanagements can cause massive losses.

So,

- Adding new product types
- Adding new companies
- Changing units
- Adding product stock to inventory
- Removing products from inventory
- Adding users according to rank
- Removing users no longer in employ or in the same rank

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

Throughout the undergraduate studies, from ‘Hello World’ to solving complex mathematical equations, were the basics of understanding how the real-world applications work in general. To have the opportunity to do that and find the relevance of the project with some of the courses that are taught throughout the 4-year undergraduate course in IUB was simply exemplary.

Since the project is a web-based applications courses such as the CSE 203- Data Structure, CSE 211- Algorithm were the building blocks of understanding how a project data can be handled. The tools learnt from courses such as CSE 309- Web Application and Internet, CSE 317 – System Analysis, CSE 303 – Database Management and CSE 213- Object Oriented Programming helped me to build and code the entire project. Finally courses like CSE 451- Software Engineering helped me how to handle a project from start to bottom. It should be said most of the courses that has been taught had some sort of contribution to my knowledge in the building part of the project.

2.2 Related Works

There are three examples I would like to talk about. (All concise lists taken from https://www.investopedia.com/)

The first related work I'd like to mention is Orderhive.

It provides plans to meet the needs of companies in most industries, from large enterprises to start-ups. It stands out by offering unlimited stock-keeping units (SKUs) and hundreds of integrations in its feature-rich plans, making Orderhive the clear winner for best overall inventory management software.

As a web-based software tool, Orderhive works in all major browsers, but the company recommends using Chrome and Firefox for a seamless experience. It supports the first in, first out (FIFO) method and uses the Kanban approach for reordering or replenishing stock.

A concise list of its pros and cons are provided below.

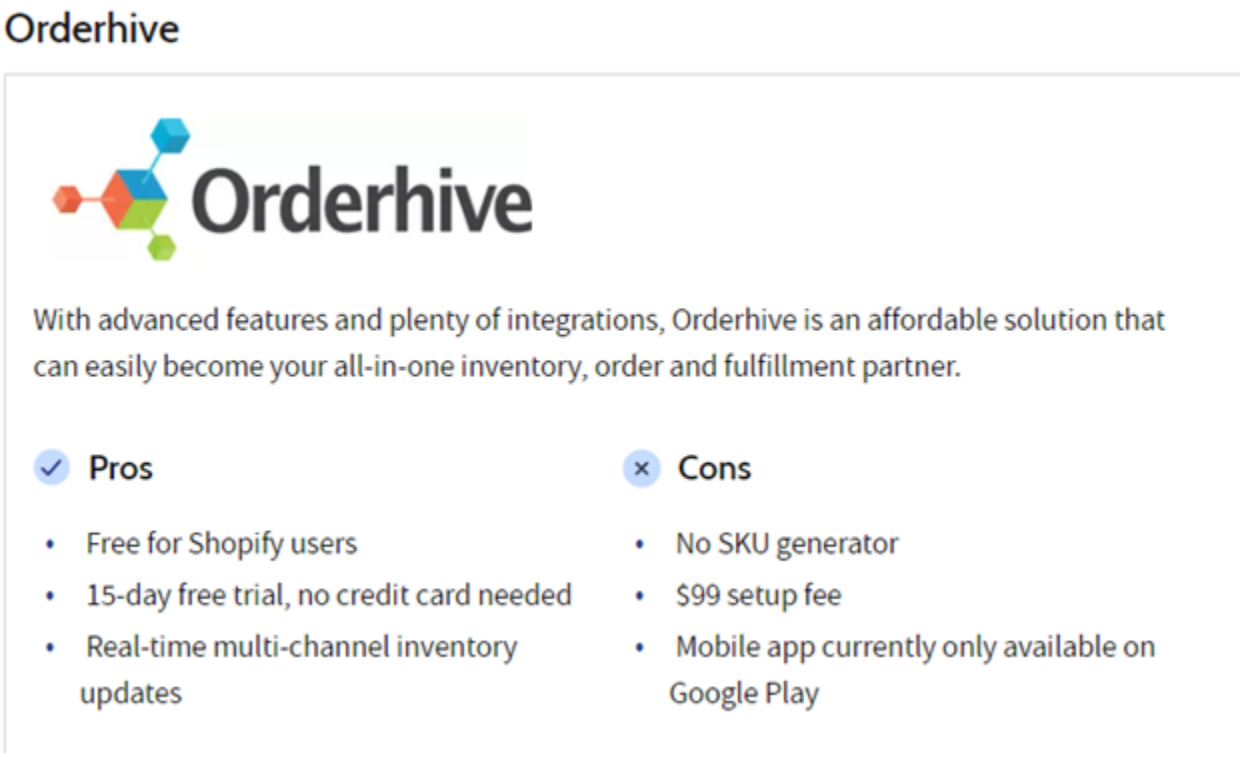


Figure 2.2.1: Orderhive

Next is inflow.

Here, you get simple yet powerful software for manufacturers, B2B wholesalers, online sellers and retailers. Its robust reporting capabilities and shoppable B2B showrooms make it the best choice for B2B companies.

The inFlow software is web-based (inFlow Cloud) or computer-based (inFlow Premise), and offers an intuitive app for Android and iOS devices. It supports FIFO, moving average and last in, first out (LIFO) methods.

Again, a concise list of pros and cons are given below.

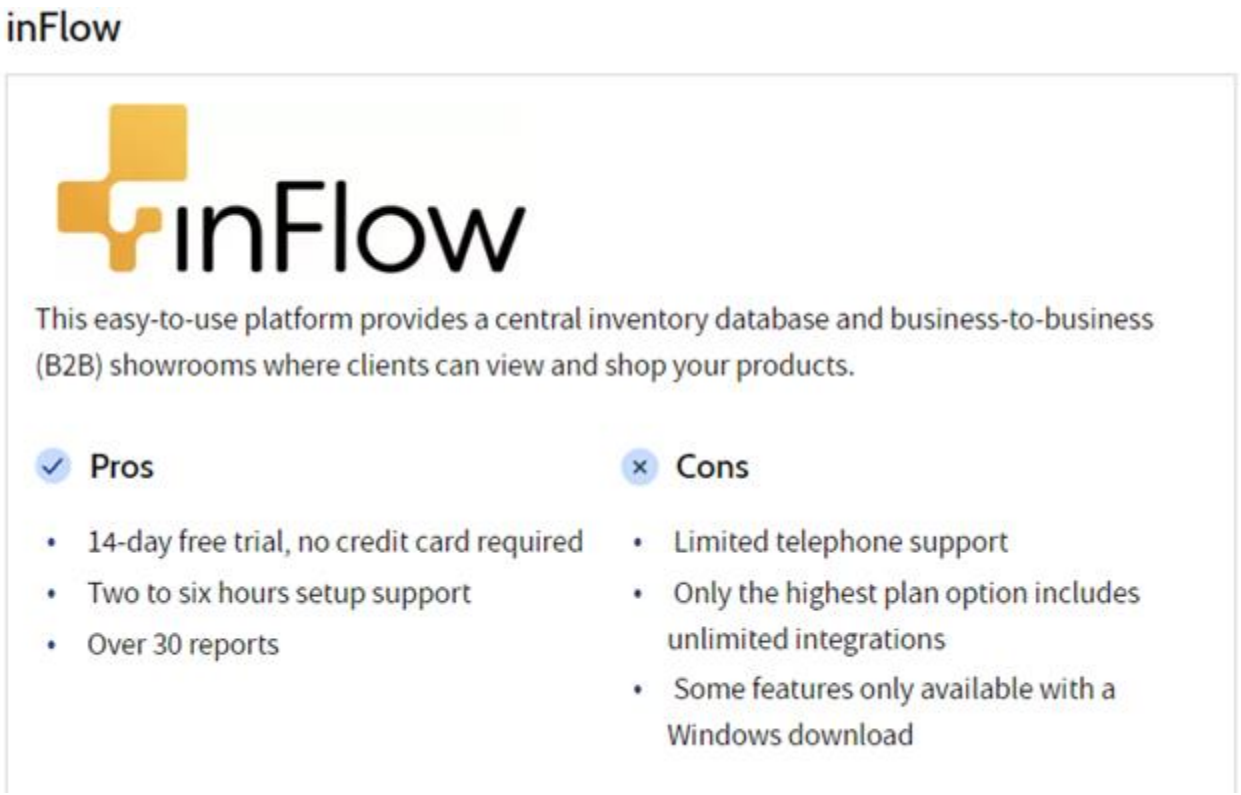


Figure 2.2.2: inFlow

A third example would be Lightspeed Retail.

Lightspeed Retail is a web-based inventory management tool designed to meet brick and mortar and e-commerce stores' needs. Its industry-specific options and in-store sales functionality earns it the top spot in our best for retail stores category.

The Lightspeed Retail program is cloud-based and comes with an iPad version to check out customers on your sales floor quickly. It supports average cost and FIFO methods.

Again, a concise list of pros and cons is given below.

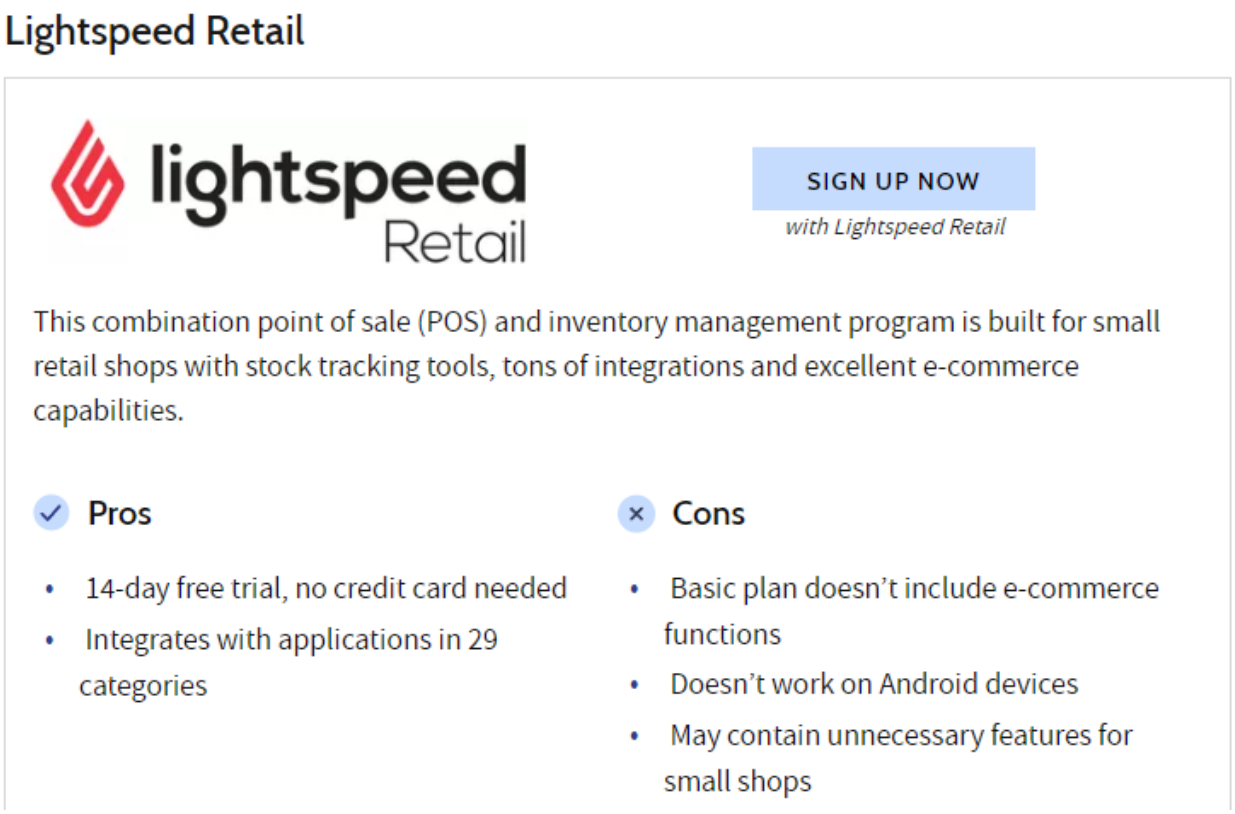


Figure 2.2.3: Lightspeed Retail

Chapter 3

Project Management and Financing

3.1 Work Breakdown Structure

A work breakdown structure is an important project deliverable that divides the work into digestible chunks. It's also known as a hierarchical deconstruction of the whole scope of the work that the project team must complete to meet the project's objectives and establish the project. A top-down approach was followed while creating the WBS for my project.

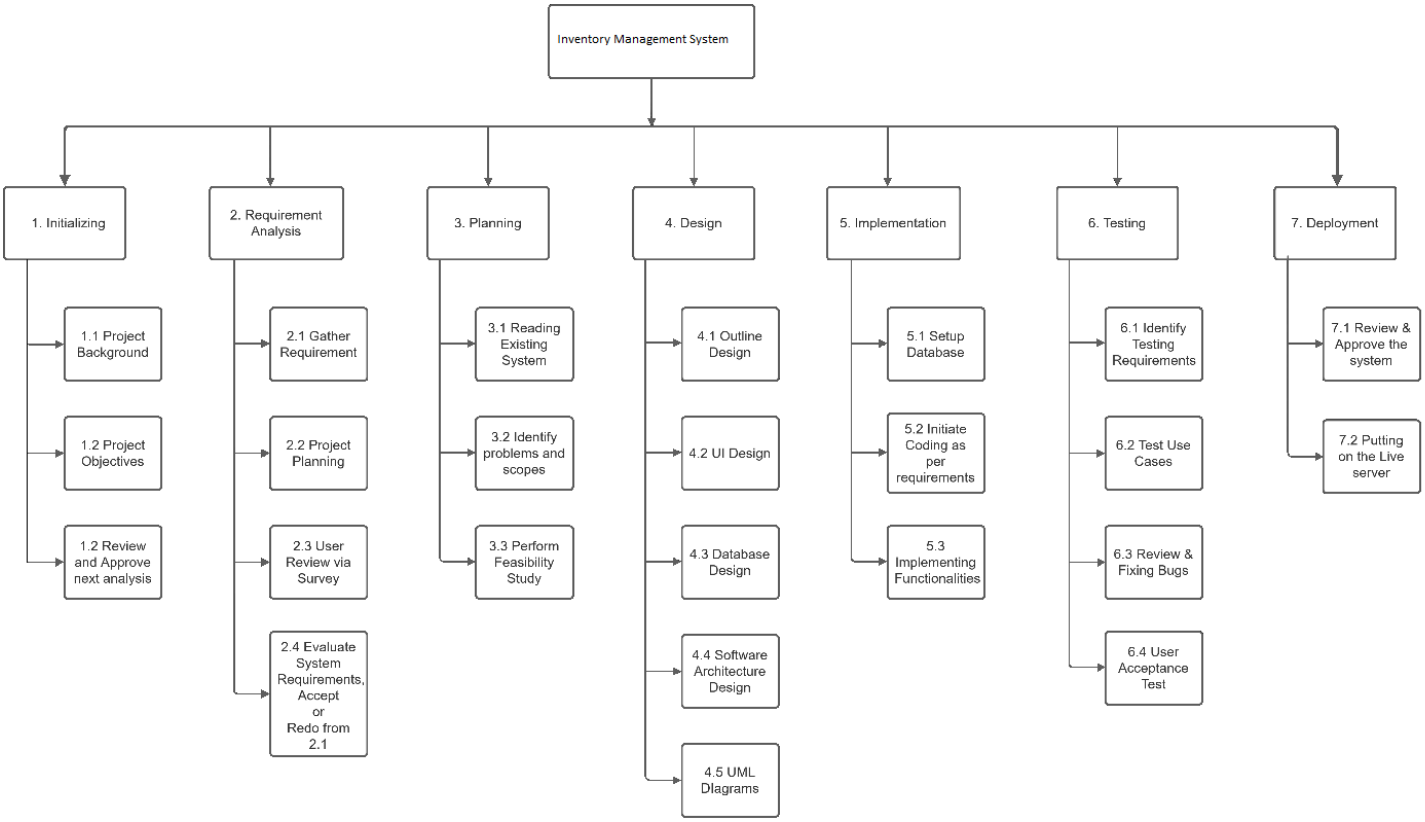


Figure 3.1.1 WBS

3.2 Process/Activity wise Time Distribution

For each part shown in the WBS Diagram above, we allocated a certain amount of time, as required to complete the tasks. The Table below shows them in detail.

Task	Days	Work Percentage(%)
Initializing	5	7.14
Requirement analysis	7	10
Planning	10	14.29
Design	11	15.71
Implementation	19	27.14
Testing	6	8.57
Deployment	12	17.14
Total	70	

3.3 Gantt Chart

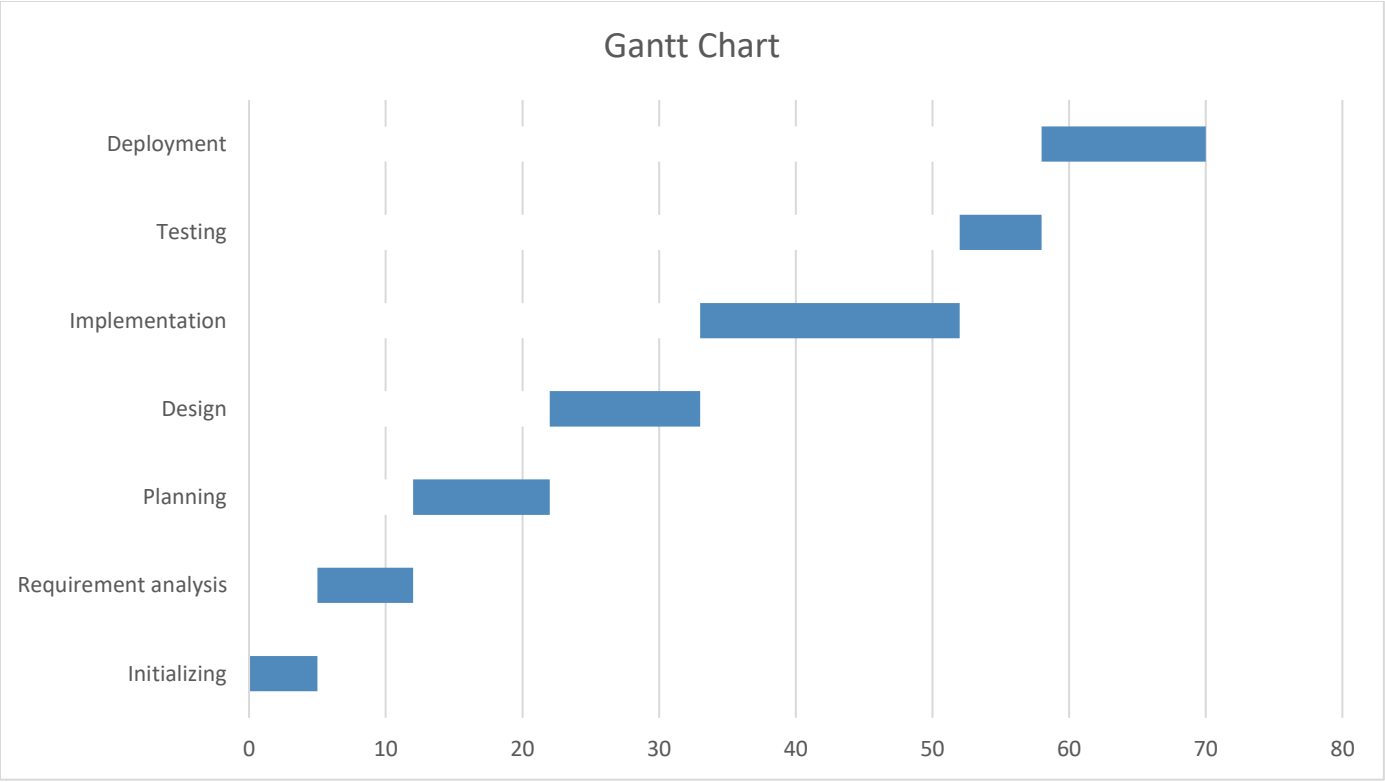


Figure 3.3.1 Gantt Chart

3.4 Process/Activity wise Resource Allocation

The web-application was made for use throughout the company but I myself had to often work on it in my own personal time, as during office hours there was other work present. As such, time was a scarce resource, and energy scarcer. So, resource allocation became an important focus. These resources included my desktop computer, my laptop, softwares including XAMPP and VS Code, as well as the development languages PHP and MySQL, and HTML as well of course.

▪ Initiating: This is the first step of the Development, where a the problems I wanted to address were found and listed, and taken to the supervisor for discussion.

▪ Requirement Analysis: I then had to sit down and decide what language to use, how helpful the internet would be, how much time I could spare, and account for situations outside my control.

▪ Planning: The next phase was taking all of that and developing a plan with directions, and leaving enough wiggle room such that a missed deadline would not become disastrous.

▪ Design: The designing phase is where we designed the features, users and functionality of the system to a few mainstream diagrams to show us the bigger picture of the whole scenario.

▪ Implementation: This is where the development started. Every week there were goals to reach, however plans are seldom perfectly aligned with real. So, it slowed down my process bit by bit. And of course, in usual development there are always new work to be done.

▪ Testing: Testing was done simultaneously as we proceeded to develop the application because we could predict that the implementation phase was taking longer than usual. The errors were being fixed as we were also developing new features in the application.

▪ Deployment: The web-app deployment was delayed as it was a solo undertaking. But it was finally achieved before the final deadline.

3.5 Estimated Costing

As a software, it would of course have a purchase price itself. And as a continually used web-application, it would have costs to keep running as well. So, estimates of these costs are given below:

Item	Cost(BDT)
Development	45000
Server cost per year	40000
Maintenance cost per year	60000

Chapter 4

Methodology

For developing any web-application, it is important to follow the right steps. As there is a risk of failure, which can be quite expensive. It is unlikely to finish a large project in one go without the risk of failure. So, it is very convenient to break a large project's work into small units and simplify the design process. The “Iterative” methodology provides a similar way of developing a web application. Iterative methodology is based on a cyclic process of prototyping, designing, testing, analyzing, and refining a website. There are five stages of iterative methodology.

Stage 1: Planning: The project begins with a comprehensive plan according to established requirements. To identify requirements, user feedback needs to be collected and analyzed.

Stage 2: Analysis and Design: It is time to figure out the project's business logic when planning is finished. Business logic allows the database and end-users to communicate with each other. Job assignment and task listing are carried out during this step. Setting deadlines for each work is also critical.

Stage 3: Implementation: The development process is started based on the requirements and feedback from users. The development team and the client decide the priority and details of the tasks before starting each iteration. Normally, all code modifications are initially uploaded to a test server.

Stage 4: Testing: After the coding has been completed, testing is required to identify and correct any bugs or errors. Testing the product is not enough; quality assurance engineers provide input on the product and its documentation.

Stage 5: Evaluation: The last step of the iterative methodology is evaluation. Client along with the development team evaluates the prototype and verify if all the requirements are met.

This process is repeated until satisfactory results are achieved.

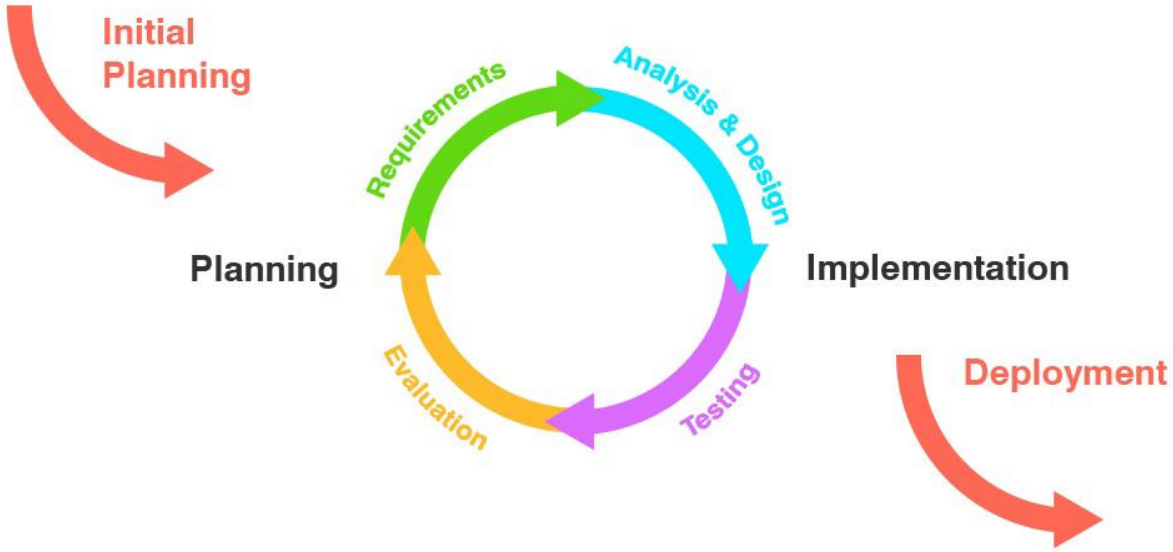


Figure 4.0.0: Iterative Methodology

Chapter 5

Body of the Project

5.1 Work Description

As the sole tech intern at CentroTex Ltd. during this time, the entire development effort was on my shoulders. Meaning I had to handle both the front and the back end. The front end, thus, had less effort put into it as there was a lack of manpower. But what is built was made with HTML and CSS of course. PHP was used in the back end. The database functions using MySQL.

5.2 Requirement Analysis

Users' expectations for a new or generally advertised product are determined through this requirements analysis, which is also known as requirements engineering. In order to determine and frame the requirements of the proposed system, it is necessary to take into account the requirements of the clients as well as their existing system of operation. As such, opinion gathering and verbal surveys regarding the previous system were taken

- It is expected that employees will be able to update the inventory remotely without having to go to specific locations.
- Any deals with new companies should be facilitated immediately via admin users, who have the clearance to add new companies.
- New products being brought in can immediately be added to the database by any admin user.
- Any product being wholly removed can also be removed from the database itself without any issues
- Any new employees can be added to the system with a new password and username as necessary
- Current stocks can be checked any time by checking the table of currently listed items.

5.3 System Analysis

5.3.1 Six Element Analysis

Process	System Roles					
	Human	Non-computing Hardware	Computing Hardware	Software	Database	Communication and Network
Login	Employee or admin enters credentials into login screen	N/A	Desktop/Laptop, keyboard, mouse	Web browser	MySQL	Internet
Track purchases	Employee adds a new product under the purchase table	N/A	Desktop/Laptop, keyboard, mouse	Web browser	MySQL	Internet
Track sales	Employee adds a new product under the sales table	N/A	Desktop/Laptop, keyboard, mouse	Web browser	MySQL	Internet
Create new user	Admin enters new user's credentials, and clicks create new user	N/A	Desktop/Laptop, keyboard, mouse	Web browser	MySQL	Internet
Create new company	Admin enters new company name and address, and clicks create new company	N/A	Desktop/Laptop, keyboard, mouse	Web browser	MySQL	Internet

5.4.2 Feasibility Analysis

An important thing to check during this primary investigation is whether or not the system requested is feasible. Feasibility study is carried out to select the best system that meets the performance requirements. Feasibility study is both necessary and prudent to evaluate the feasibility of the project at the earliest possible time. It involves preliminary investigation of the project and examines whether the designed system will be useful to the organization. Months or years of effort, large sums of money, and most importantly, massive professional embarrassment can be averted if an ill-conceived system is recognized early in the definition phase. The three types of feasibility are: Technical feasibility, Operational feasibility, and Economical feasibility.

Technical Feasibility:

Technical Feasibility deals with the hardware as well as software requirements. Technology is not a constraint to type system development. We must find out whether the necessary technology and the proposed equipment together have the capacity to hold the data, which is used in the project, should be checked to carry out this technical feasibility. This technical feasibility study gives report whether there exists correct required resources and technologies which will be used for project development. Along with this, feasibility study also analyzes technical skills and capabilities of technical team, existing technology can be used or not, maintenance and up-gradation is easy or not for chosen technology etc.

Operational Feasibility:

The proposed system offers greater level of user-friendliness. Currently the web-app runs using XAMPP, but ideally, it would be on a live server, and the user would need to have a web interface with reliable connection which through he/she will get access to the application. Users can easily view all the lists that they have clearance for. The proposed system produces best results and gives high performance. It can be implemented easily. So, this project is operationally feasible.

Economic Feasibility:

Economic Feasibility deals about the economic impact faced by the organization to implement a new system. Financial benefits must equal or exceed the costs. The cost of conducting a full system, including software and hardware cost for the class of application being considered should be evaluated. By evaluating the overall application system, we came to learn that the cost to conduct a full system investigation is possible.

There is no additional manpower requirement. There is no additional cost involved in maintaining the proposed system.

5.4.3 Problem Solution Analysis

Problem solution analysis is the process of understanding what problems we face, and how we can solve them. Problem solving identifies solutions that conform to the needs and constrains of the problem. Much of what is done in designing and building information systems is to solve problems, even though the objective of the system may be seen as improving existing systems or taking advantage of market opportunities.

As the goal of any project is to solve a collection of problems, problem solution analysis boils down at least some part of the essence of the project.

The first problem I faced was, trying to do too much. I had my sights set on a good, working project, but did not have due regard for the fact that I am a solo intern with many other responsibilities around the office that I had taken too much on my plate, and proverbially bit off more than I could chew.

This resulted in the pre-assessment board actually putting my project on hold until I reduced it to workable size.

Which was the solution; to learn to pick my fights, and not immediately jump on whatever target seems the most interesting.

The second problem was, isolating what the office needed.

The office was in a kind of balanced chaos; everything was chaotic, but it was just functional enough to work.

As such, isolating the needs and requirements of the office employees was difficult, because not only was everything so chaotic, but the employees were also unwilling to speak a lot of the time, thinking these questions were some clever ploy to get them to speak badly about the current system and then deny them promotions or raises.

This was solved by approximation and direct discussion with the external supervisor; I put my faith in the hypothesis that as the IT head, he would know what is and isn’t going on with the technological requirements of the office and hedged my bets on that in order to solve this issue of avoidance.

5.4.4 Effects and Constraint Analysis

A constraint is like a limiting factor, a metaphorical leash. It's a restriction on the degree of freedom a company can have in providing a solution. Constraints are effectively global requirements, such as limited development resources or a decision by senior management that restricts the way the development team develop a system. Constraints can be economic, political, technical, or environmental and pertain to project resources, schedule, target environment, or to the system itself.

Constraint 1: Manpower.

Manpower constraints are when you have fewer employees to work on a project than ideal. A metaphorical lack of soldiers to fight battles.

This had a big effect on me. The company had no other interns, or employees, that worked on this project. As it was a completely solo project, I had no one to regularly consult or discuss with, or pitch my ideas to. I very soon got tunnel vision and was having trouble breaking out of my own headspace.

Constraint 2: Time.

Time constraints are the easiest to understand; it's when there's too much work and not enough time. This can be due to the time given being too little, or because of external influences that lower efficiency, making the project take longer than it should.

The effect of this one on me is visible. I had many sleepless nights and struggled to meet my own deadlines.

Constraint 3: Technical.

Technical constraints are when your equipment is inadequate. When they cannot measure up and thus hold you back from something.

The effect of this came from my laptop. Laptops, understandably, are usually much less capable than desktops. They are of course much more mobile, which is why we need them, but my laptop's low specs caught up to me, and it would often even have trouble running XAMPP.

5.4 System Design

The system is designed for two types of users; the basic user, which will be all general employees of the company, and admins, which will be anyone with the clearance and authority to handle all the data, including adding and removing them.

In general, though, the design aspect is the most creatively challenging phase of a project's development process to be involved in. The design phase of the development phase of any engineered product or system is the very first step in the process of creating the product or system. The overall efficiency of a system is greatly influenced by the effectiveness of its design. System design is a method for approaching the development of a new system in an organized and systematic manner. It is also known as system engineering. When creating a physical specification for something, system designers must translate an abstract logical representation of what needs to be done into a physical specification. A physical representation of reality is created as the specification is transformed into a physical representation of reality.

Rich picture

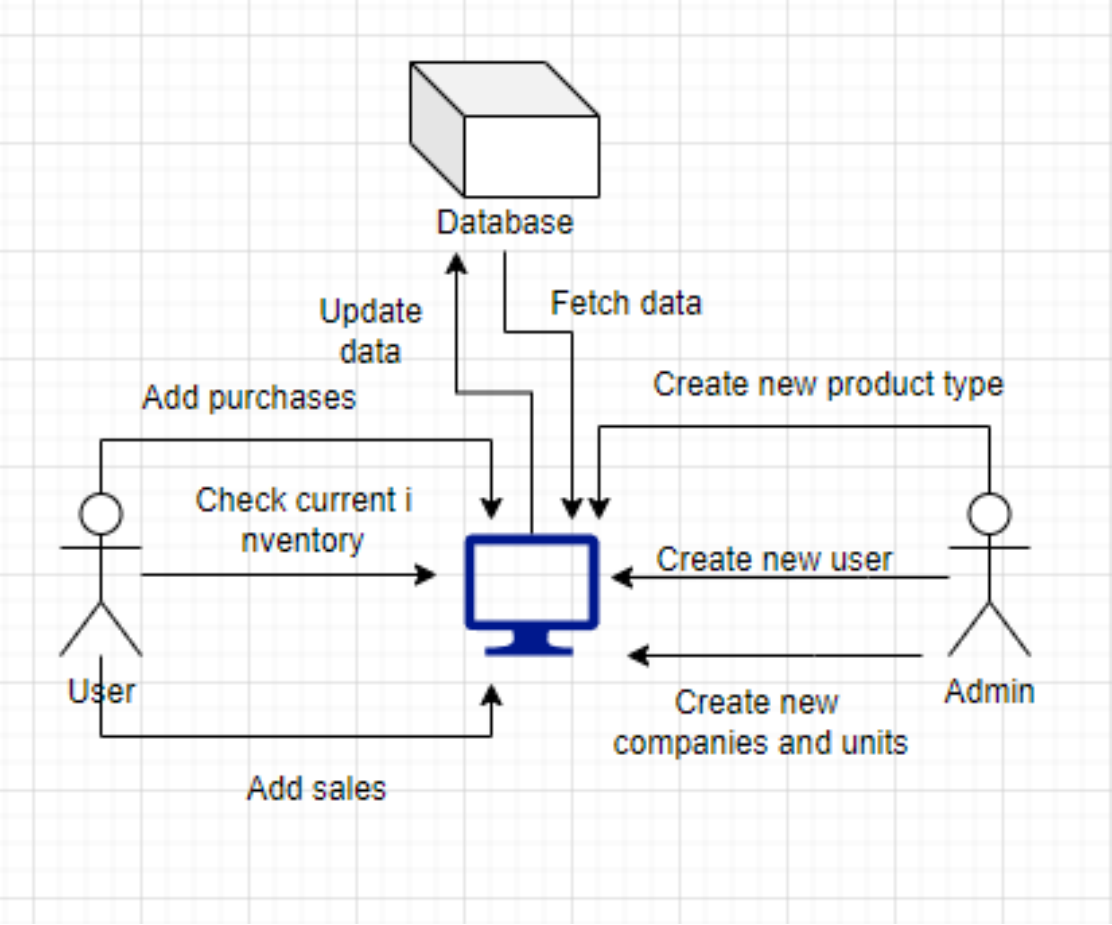


Figure 5.4.1 Rich picture

5.5 Implementation

The basic skeleton was made using HTML, with basic beautification done with CSS.

The database was made using MySQL and all connected with PHP.

It was implemented with a local host, launched using XAMPP, as it works on a local server.

Figure: Home page

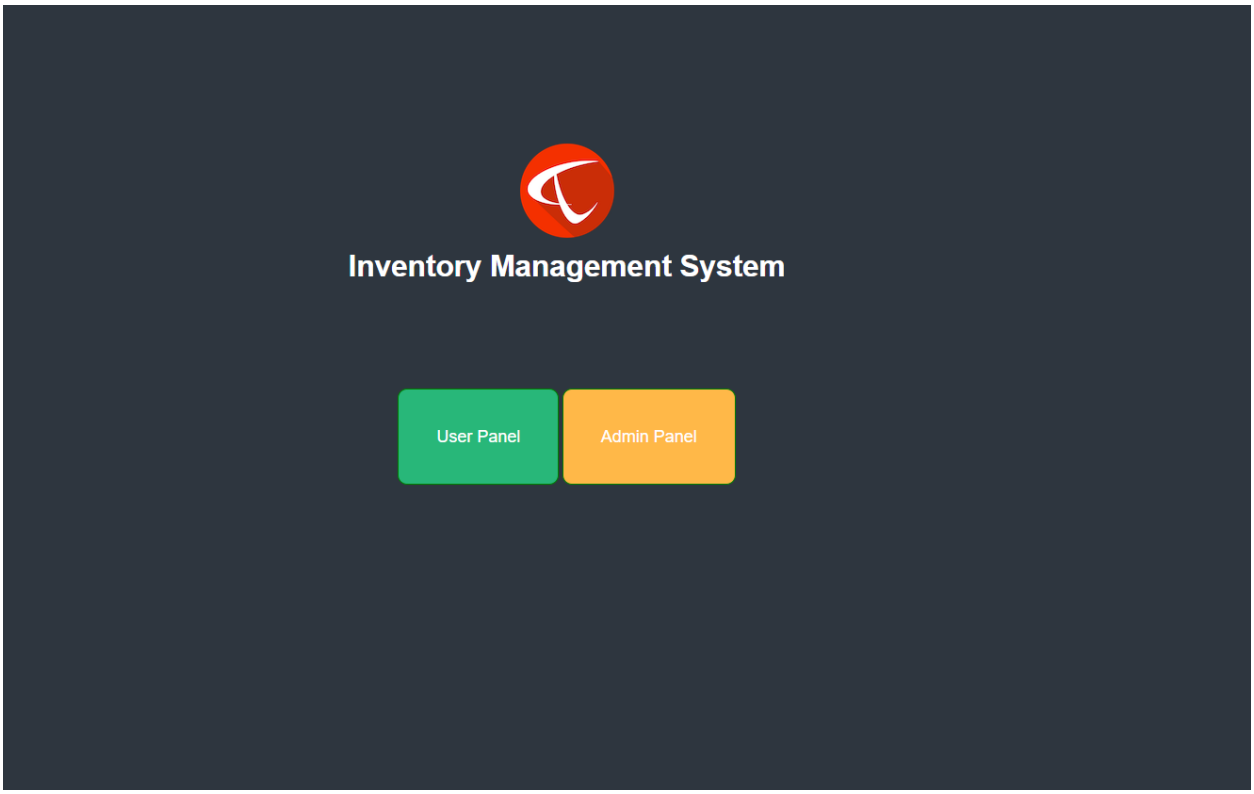


Figure: Login page 1

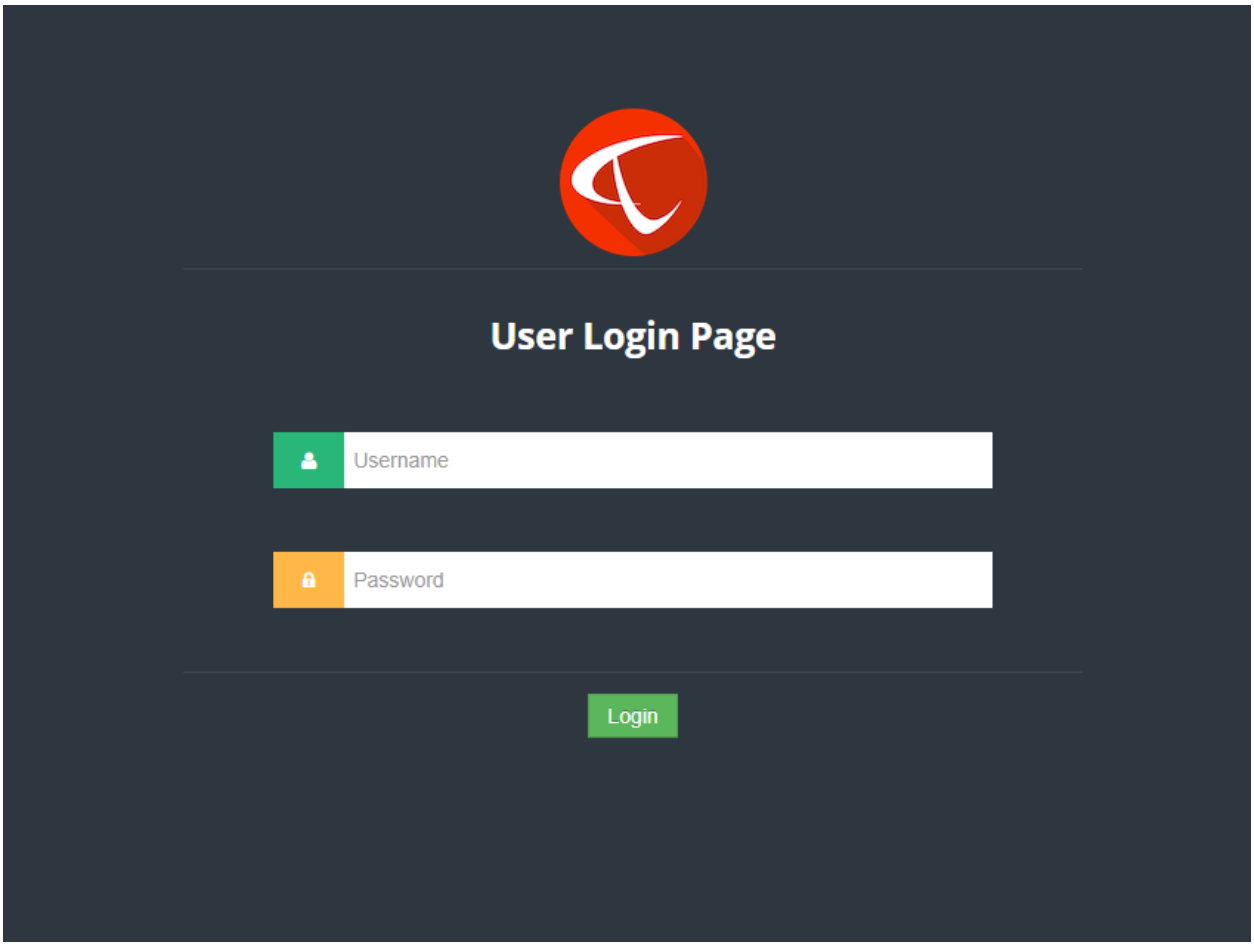


Figure: Login page 2

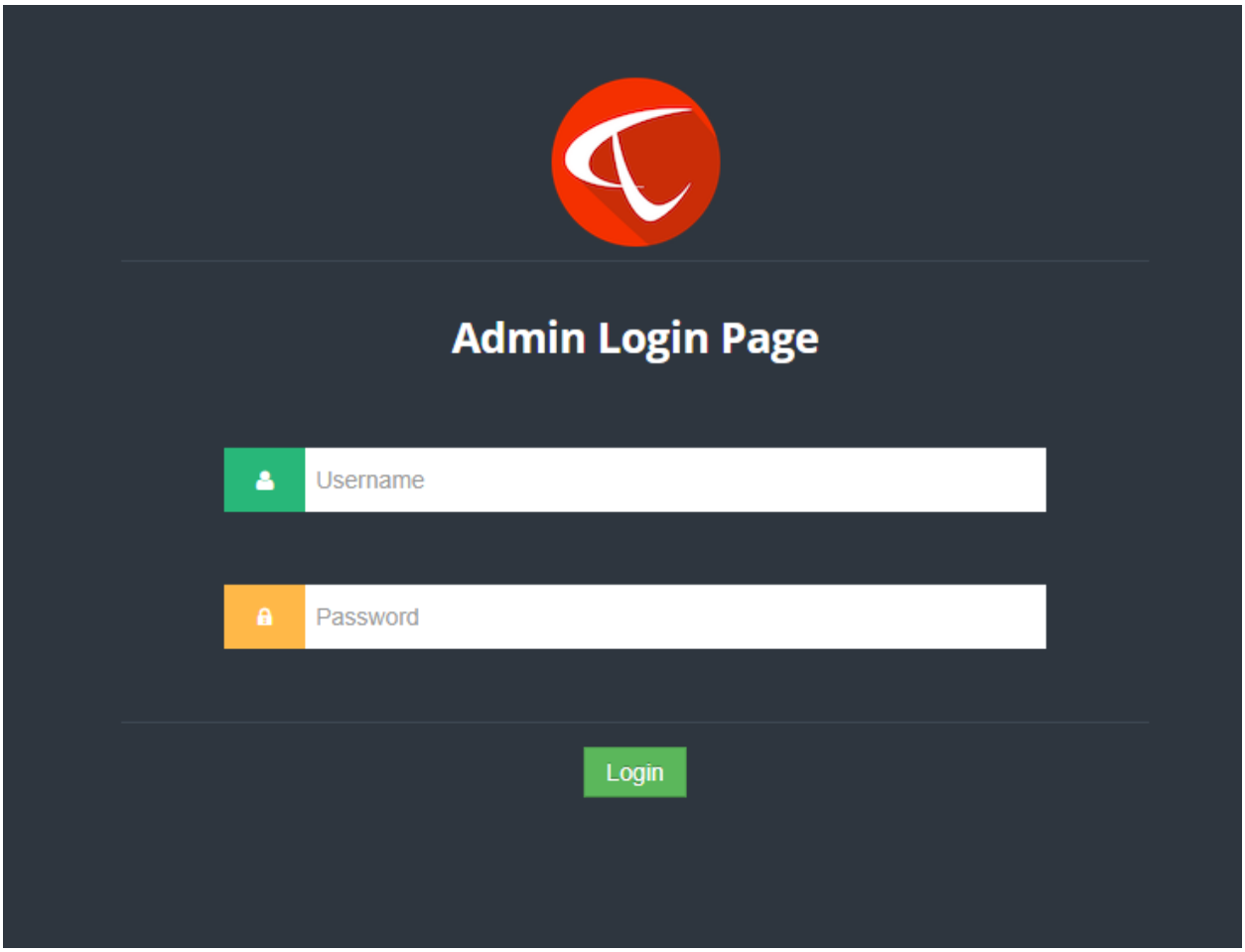


Figure: Admin dashboard

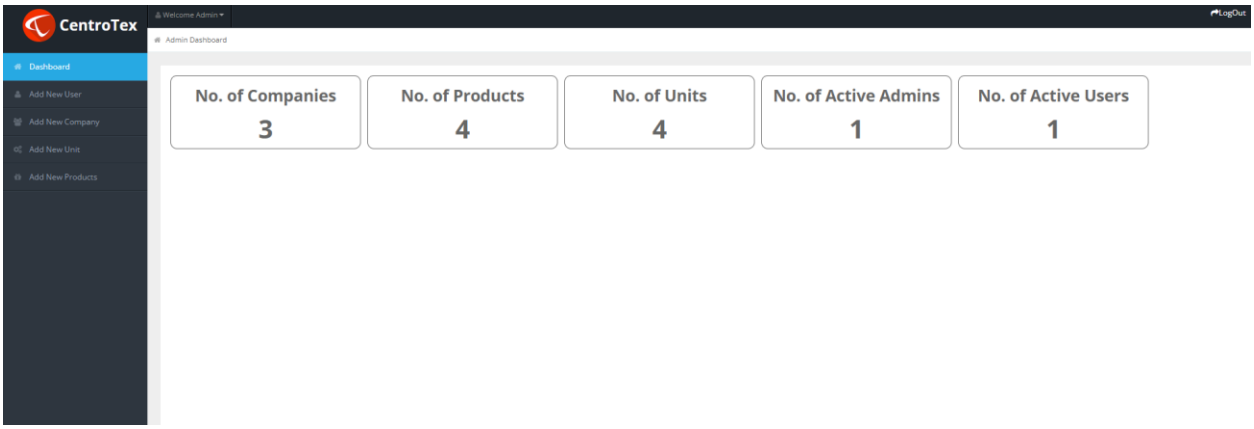


Figure: Admin adding new user

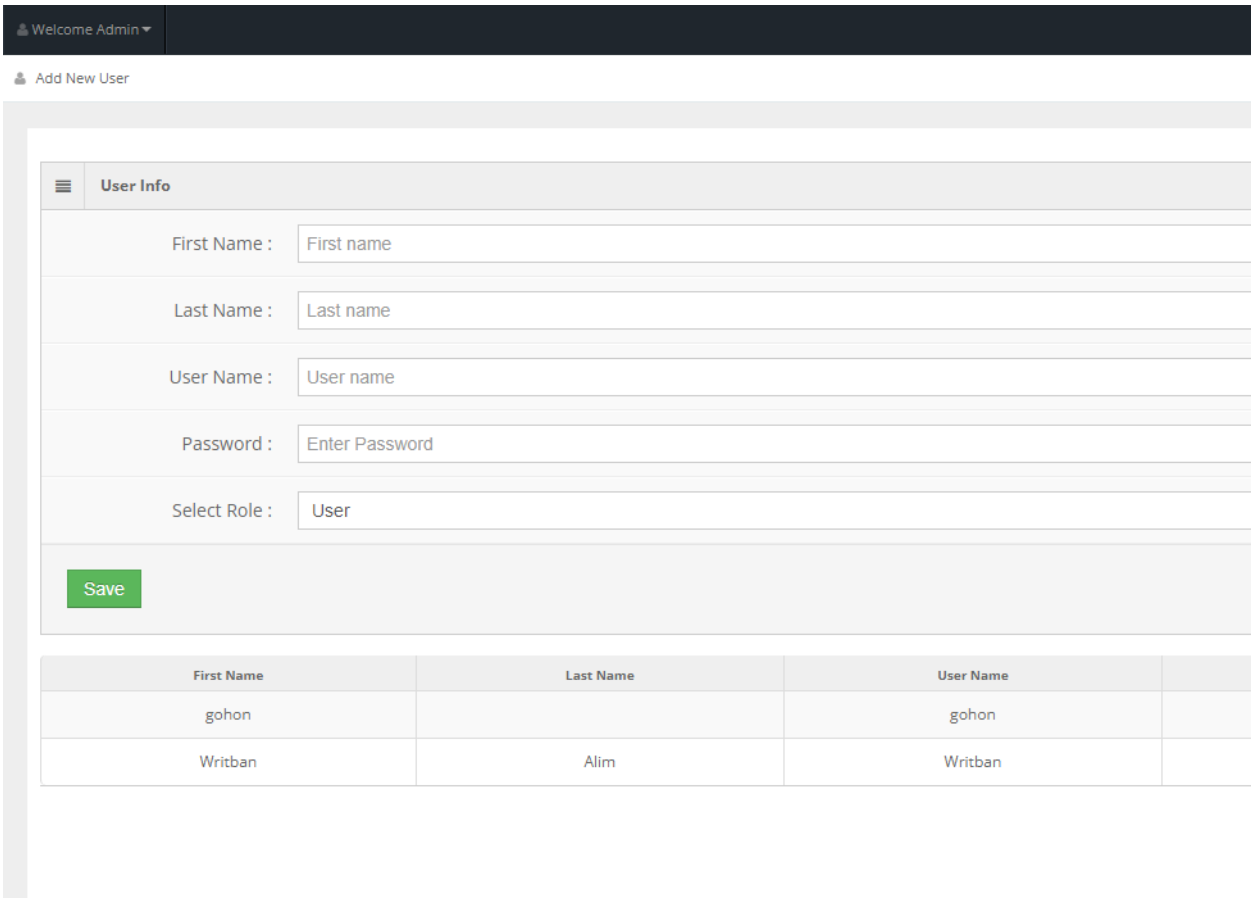
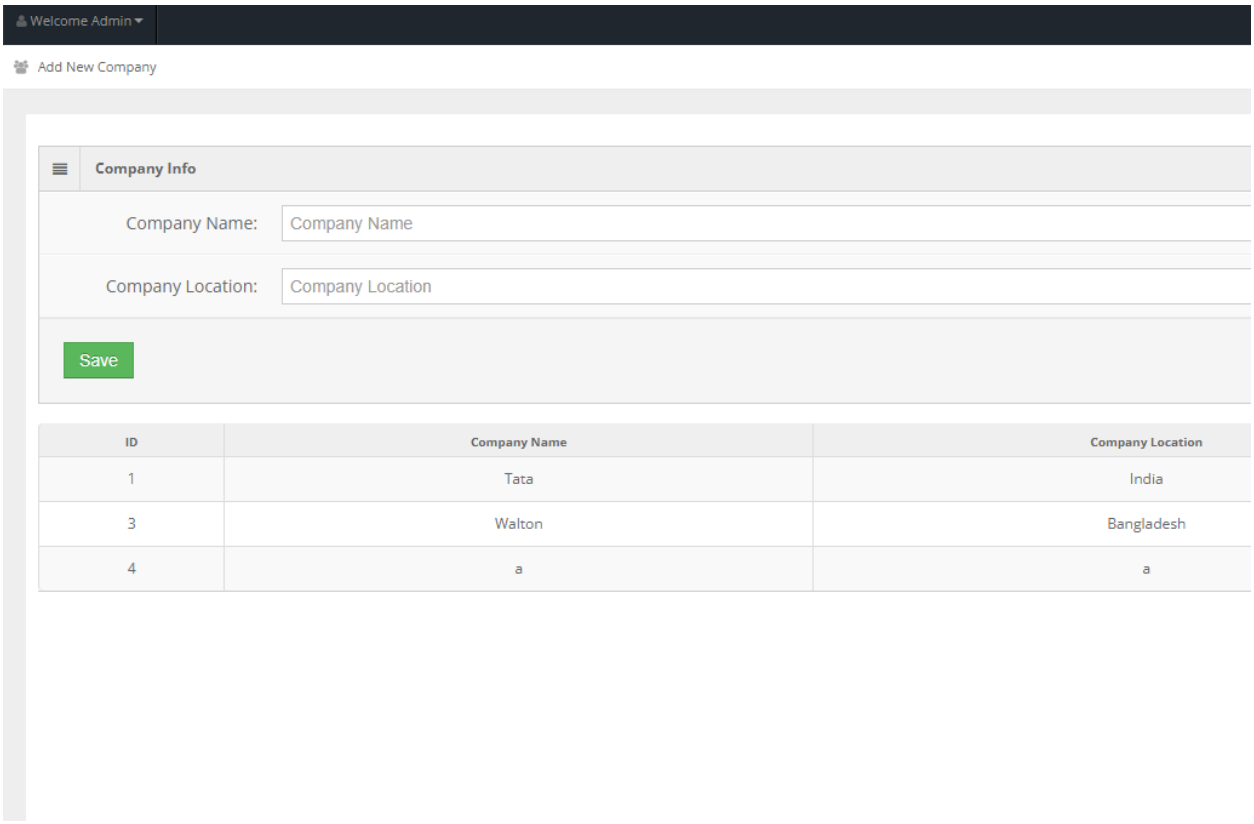


Figure: Admin adding new company



5.6 Testing

All of the functionalities stated:

- Admin adding new admins
- Admin adding new users
- Admin adding new companies
- Admin adding new products
- User enlisting purchases
- User enlisting sales
- Basic traversal from page to page

were tested personally to see if it all worked.

Firstly, troubles often arise due to XAMPP if either the Apache or the MySQL module or both are not successfully launched. This may be due to permissions issues or other internal problems.

Second, there was a problem where clicking on other pages on the navigation bar did take us to that page, but would not highlight it on the navigation bar itself, instead keeping “Dashboard” highlighted still. This was thus addressed and fixed.

Third, this is a very simple and basic web-application, meaning most errors will be human errors, as the application is not complex enough to compensate for things like typos.

Chapter 6

Results and Analysis

6.1 Overview

The overall work was difficult and oftentimes confusing for a solo developer. However, as I was only building a skeleton of the final system rather than the whole thing, it was more bearable.

Meetings with the external supervisor led me to believe trial and error was the way to go, and that the goal for this project is not service, but rather to lay the groundwork for future such projects.

6.2 Trial Results

As a completely inexperienced web developer, I went through multiple phases of trial and error, especially for the UI. Many of the lower level employees were sparsely educated, and English directions are not legible for them.

Thus, conversations with them took place multiple times, going back and forth to determine solutions, and in the end, the simplistic barebones style is what saved the day.

6.3 Testing Results

Testing yielded finding my own bugs, feelings of failure and inadequacy, and eventually solutions to those bugs.

The application, however small it may be, survived the testing and came out more functional in its own right. It serves the purpose it was intended for, as a skeleton for future projects, and it did not have enough bugs to go back to the iterative cycle of development.

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

This is a sector with some cons as well as pros; while I am certain the designs I have made, and the system itself is perfectly sustainable, with no extra strenuous functions t hat take up too many resources, it is however, built on PHP, a rather aging language that may or may not survive the tests of time.

So, that is to say, that while the program itself is sustainable, its model may not be. This can of course be remedied in future builds, however, as it is intended as a groundwork layer, I think this is a non issue.

7.2 Social and Environmental Effects and Analysis

Social effect: The employees at the office were rather untouched by technology. They had very limited experience with digitization or cloud based information management.

As such, I feel that due to this project, they are more likely to familiarize themselves with technology, and feel how much easier life can be with it.

Thus, small steps for further familiarization with tech were taken with this small web application project.

Environmental effect: Physical records are labor intensive, prone to damage, and harmful to the environment. The paper production fuels deforestation, and the trash heaps grow larger every day.

Not to mention that since physical copies are not remotely available, unlike cloud based ones, multiple copies have to be made, further polluting the environment. And most of these are short term use, then only serving to fill a waste paper basket and then a landfill.

I believe that by making this project, I have helped reduced the strain on the environment, or at least help nudge society in that general direction.

7.3 Addressing Ethics and Ethical Issues

The ethics of such a project, I believe, are not on shaky grounds. All this project does is manage company information.

However, the current build does not have a strong security by any means. The username and password authentication is just a basic cross check with the database to see if the values are correct.

As such, if anyone were to use this as is, sensitive company information would be at risk. And that is an ethical issue.

To address that, I would say future builds need to have actually secure credentials, and have its info stored off-site, to ward off any would be prowlers looking for the company's information.

Chapter 8

Lesson Learned

I believe this was one of my most educational “courses” in my IUB life, and perhaps one of my most educational experiences overall.

Throughout these three months, I have learned about myself in ways I had not considered. I learned about how I feel about corporate life, about my time, my freedom, and my work.

I learned about my own sense of completion and how I work under pressure in non-academic fields, and how I respond when push comes to shove.

8.1 Problems Faced During This Period

There were many problems and hurdles that I came across during this experience.

Time management: Juggling office, commuting tiredness, other course work, and then this project was draining to say the least. Time is something that becomes very difficult to manage, for me at least, when under pressure and burned out, especially in a city like Dhaka.

Manpower: Due to being the only intern in the office, I had to handle the whole project myself, barebones as it is. There was no teamwork, nor any crutch to fall back on. When I got injured, that was that; development came to a huge pause because I had no support to fall back on.

Unpolished skillset: Learning academically and actually having to put it to practice are different. While I had done quite well in my web development course, it did not prepare me for actually making a web application by myself.

8.2 Solutions of those Problems

One either finds time management skills or time management skills find them, with lessons learned through many failures.

I was in the latter group, having to reschedule many times just because I couldn't keep up. But eventually, time management was somewhat learned.

As for the lack of manpower, that did not really have a solution. Problems two and three were solved the same way; online tutorials.

Learning is a never ending process, and sometimes the circumstances stack up against you. As engineers and scientists, it is our job to pick up our own slack in such times, and handle it via learning. Which is, I think, what I managed to do.

Chapter 9

Future Work and Conclusion

9.1 Future Works

This project was a skeleton model; it is what the future iterations will be built on. What it provides is a raw idea of what the web application can do.

Firstly, future versions should have separate compartmentalized versions of this same functionality for each group. That is to say, each separate grouping of clothes under the same management, should have its own separate management compartment. This is so that, shall we say, the Primark and Haze & Finn collections don't mix up and interfere with each other.

It should also extend to groups being raw materials versus finished products versus waste, as that too is often sold as filler.

Second, the security should be improved quite a bit.

As it stands, the project is completely insecure, as the credentials are currently simply cross referenced against the database.

Meaning anyone with the skills to access a database can find these credentials. As such, no sensitive company data can be stored in this currently.

Third, beautification should be a concern.

As it is a solo barebones project, I did not focus on it much as it is cosmetic. However, for any application, aesthetics matter. The UI is currently completely basic, and any amount of beautification work should serve it well.

Fourth, a third user called supplier and a fourth called buyer should be added, so they can queue orders in advance.

9.2 Conclusion

In conclusion, this report and project on an inventory management software was a very educational experience that taught me a lot and helped me grow as a person.

It taught me about myself, about my strengths and my weaknesses, about how I handle stress, how I handle being alone without any support structure, how I handle catastrophes like injuries while work is due, and how I should focus on how I should behave rather than how I do behave.

It also taught me about corporate life, about how businesses are surviving and now thriving through the Covid 19 pandemic, 2 years since the first paranoia outbreak. About how they work internally, how colleagues interact, and how people sit and work for 12 hours while we as students tire after 1.5.