



Sri Lanka Institute of Information Technology

“By The Minute Service”

Courier service system

Project Proposal

Information Technology Project (IT2080)

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Abstract

"By the Minute Service" is a courier service based in Sri Lanka that provides door-to-door delivery. Furthermore, there are three branches in Colombo, Galle and Kandy for Sri Lankan sellers to deliver the products ordered by their customers. The owner of the "By the Minute" courier service required a new web-based system that went beyond traditional bookkeeping as it poses several problems such as data incoherence, data unreliability, and so on. He anticipates connecting all branches of the courier service, connecting easily with customers through the system, make the day to day operations easier and faster, keep all the data and information properly and systematically, increase revenue of the company and improve operational efficiencies as a result of this.

As the clients' requirements, we proposed the courier service system for "By the Minute" courier service. Our team chose a set of features to build for this system after discussing it with the client and agreed to create a web application using MERN stack as a response to the existing requirements of the "By the Minute" courier service. Our team has agreed to use JavaScript as the programming language and MongoDB as the database tool and React JS as frontend with the use of Node JS and Express JS as backend web application.

Introduction

Problem Specification:

- Client informed us that he was starting a new courier service and for that he needed a new web based system that goes beyond the book keeping method.
- "By the minute service" need a strong online presence due to the highly competitive market.
- Need for more secure payment methods.
- All the data and information need to be properly and systematically stored.
- Need to get monthly reports to review service progress.

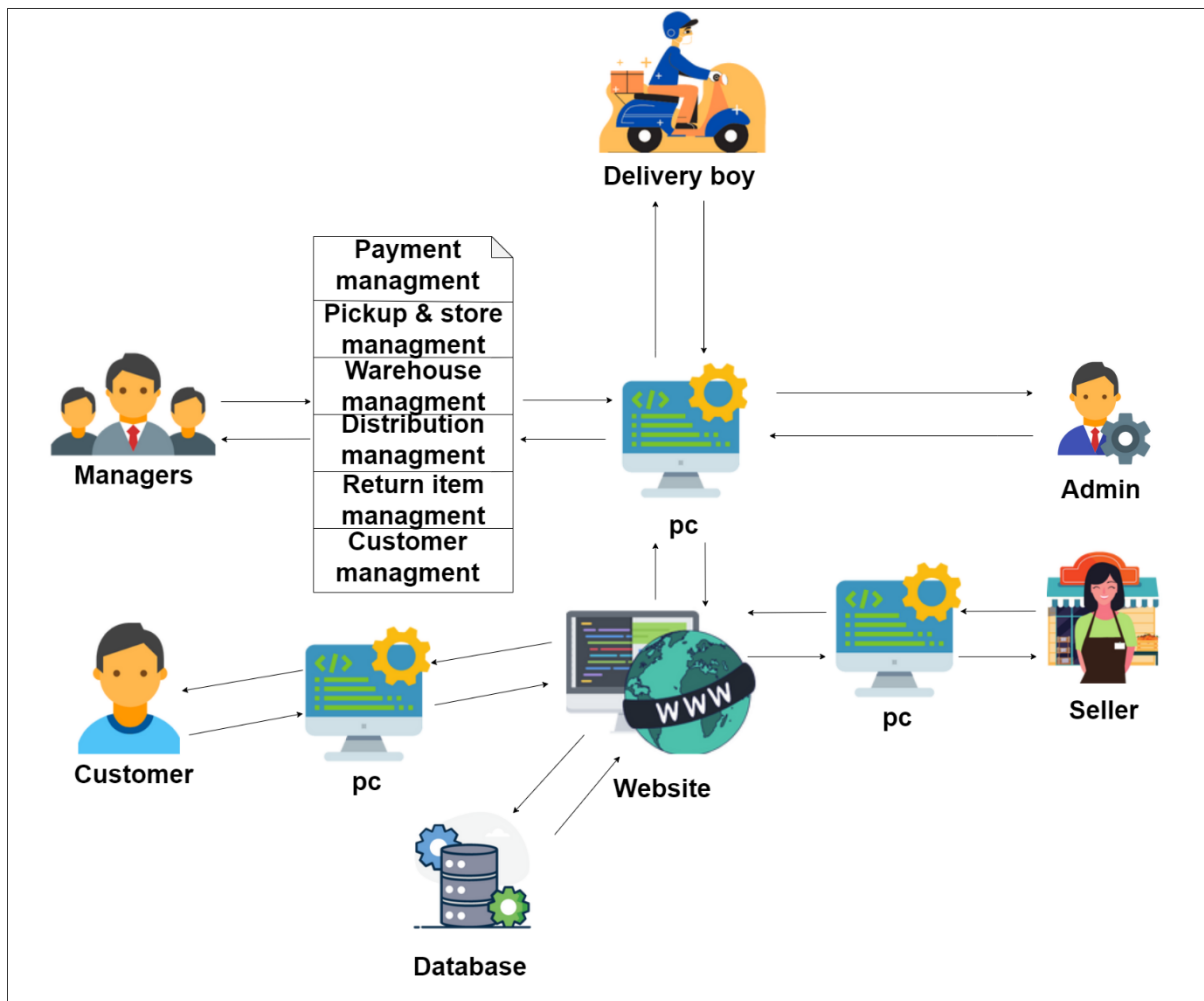
Solutions:

- "By the Minute" courier service system
- Customers can connect easily with service through the website.
- Maintain database to store data and keep up to date.
- Real-time payment status updates and notifications and provide confirmation whether the payment has been processed or not.
- Even in difficult situations, all the customers can be able to connect with the company every time very easily.
- Using the system, they can maintain their databases and all information and reports can be obtained through it.

Benefits:

- System makes the day to day operations easier and faster.#
- Ability to connecting all branches of the courier service.
- Easy to access the system from anywhere through any device.
- Increase revenue of the company and improve operational efficiencies.

System Overview diagram



Functions

Seller Management

Seller management plays one of the key roles in this courier system.

First, the person using this system to send packages must register with the system by filling out the registration form with the essential details.

For example, full name, address, contact information, and password.

After verifying the email, that's the end of the registration process.

Once the customer has registered with the system, the next time they log in, they must fill out the sign-in page with their email address and password. If the customer forgets the password, they can click the "forget password" button and then reset the password through the email.

Also, customers can view their profile and update their personal details or delete them.

If the customer wants to send the package through our website, he must fill in the form that contains the package details. In that form, you must fill in the most required fields, such as

- The branch that is closest to sender.
- the package's final destination.
- Both the sender and receiver's contact details
- The weight of the package depends on the shipping option, like express delivery or no rush delivery.

On that form, we give some conditions to the sender.

For example,

- We do not deliver food items.
- If there are any breakable items, such as glasses, the sender must make a special note of it in the discretion box on the form.
- Upon delivery, the package must be wrapped in accordance with the material of the product. If there is an error in the wrapping, we will not be responsible for the product.
- Before completing this form, the customer must agree to all of the conditions listed above.

After filling in all the required details, the customer can view the order details and, if there is some error with those, they can update the details.

The charge for the delivery will be displayed according to the weight of the package and the distance, as well as the delivery option. After completing all these procedures, the customer can confirm the order.

The administrative manager is the one who checks the package details form and accepts or rejects the order.

Payment Management

Payment management system is the part that deals with all payments. Due to this pandemic situation in our system, we are encouraging to use online methods to make all payments. And, we can handle all credit and debit accounts using payment system. In our system customer has below tasks to do for purchasing an order.

- After select the buy items, customer has to select a payment method.
- There are three options given for selecting a payment method as customer's opinion.
- Those selections are cash on delivery, credit/debit card or PayPal.
- When customer select a credit/debit card as the payment method then customer has to enter the card name, card no and all the other details those are requested.
- Next customer has to save the card details and review the order.
- After review the order, customer has to add the items in order summary.
- After adding the items, customer has to enter the ship and billing details.
- Next customer has to select a payment info and purchase the order.

The service payment management function needs to manage all the above and ensure that payments are accurate and timely. The primary tasks are to:

- Receive, enter and verify all claims for payments.
- Problem management of erroneous payments.
- Reserve money for damaged or repaired items in inventory.
- Deal with customers by updating charges on discounts and concessions.

In this enhanced system we can avoid the above problems using modern technology.

- We will use databases to keep all of the records of transactions.
- There is a possibility of looking into fraudulent transactions and unauthorized transactions and taking action against it.

Pick up and Store Management

After seller complete the order, All the package details will display in a table, to pick up. Each delivery area has delivery boys to collect the packages. Fetch the list of delivery boy from database and show in a drop down and click the assign button to assign a delivery boy for pick up the package, in delivery boy user interface can see the package to be pick up, when delivery boy complete the pick up he will confirm the pick up. Pick up function will be complete after completing the package pick up.

After completing pick up the packages, delivery boy handover the packages to the store. Store manager check the weight and package add to the database as a store in package. While before store manager display the all packages to be checked. After checking packages store in with the first come first serve method.

The packages store out with the delivery type, it is a fast delivery package it will store out in first. The packages that store out are assign to the distribution section.

In this function all about the package pick up and store management.

Distribution Management

Distribution management is one of the most important function in "By the Minute" courier service system.

In the distribution management main task is obtaining data from the main database and sorting it by district and setting up three separate databases according to three main districts. The distribution manager can control and see created all three data bases and develop any time.

Distribution manager dose not change any of the data in the main database when the entering this data and takes the "package Id" as primary key and create three database systems according to the districts. Only admin and ware house manager allows to access these three databases.

Distribution manager can get reports about distribution details, then he can easily find it whether he want to the relevant place or not.

Warehouse Management

According to the warehouse management system, the main tasks are

- Create , edit, update, delete accounts.
- Calculate the salary of each employee.
- Get report.

Subtask is

- Accepts categorization of packages.
- Assign delivery members for packages.

After the admin creates the warehouse operator accounts, Admin gives the privilege to the warehouse operator to create employee accounts.

Then warehouse operator can create employee accounts.

First, create an accounts warehouse operator add a separate user role for them.

ex:- seller manager, store manager, customer manager, delivery manager etc.

If an employee needs to be changed, the warehouse operator can edit and update or delete the employee.

After that, the salary of each employee is calculated.

And another part for those who do OT and calculate the salary for them.

Finally, the admin and warehouse can get reports from the database.

The distribution operator sends packages categorization.

Warehouse operator accepts that categorization check with received packages.

After accepting categorization packages he adds that data to the database.

And also warehouse operator adds the delivery member to the packages.

If any delivery member needs to be changed the warehouse manager can edit and update or delete the delivery member.

Warehouse operators can get daily and monthly reports, with that they can check packages easily.

Delivery Management

Delivery management is done by the delivery person whom are assigned by the store manager.

Store manager assigns the pick up lists for each and every delivery person according to the availability of delivery members.

Delivery person must view the pick up list which is assigned by the store manager to him, with

- Package ID
- Sender's name
- Sender's address
- Sender's contact details

Then he must pick up the packages from relevant places and send them to the store.

After that he must confirm it by clicking a button confirming that he successfully picked up all the packages assigned to him and sent them to the store successfully.

After that there will be a separate list assigned by the warehouse manager for each and every delivery person including

- Package ID
- Receiver's name
- Receiver's address
- Receiver's contact number

Delivery person must view his delivery list relevant to himself

After delivering the package to the relevant address he must confirm that he delivered it successfully clicking a button and he must add it to the database

With the same button clicking he must delete delivery list one by one just after he does the delivery.

If the package was returned the delivery person must return it to the return item manager and add it to the return item database.

Also he must include the reason in the database with the returned package.

Ex:- The delivery person may be unable to find the location.

The delivery person may be unable to contact the package receiver.

Also delivery person is able to edit the reason for returning the package.

Return Item Management

Return item management is one of essential functions in "By the minute" courier service system.

Return item manager's main task is obtain information about packages that have been redirected from the delivery boy's database and make that information subject to our organization's condition, create a new database of those databases and inform the relevant shop owners.

Return item manager add details to the system (return item database) PackageId. reason for return, date time, name of the customer.

As well as return item manager can edit and update the details.

The Return item manager will definitely check if the reason for returning the item is reasonable.

If the reason is not reasonable he will remove it from the database. Therefore, shop owners can easily get information about rejected packages.

Administration

Administration management is one of the most important functions in “By the Minute” courier service system. In the administration management main tasks are creating logging authentication for system users, accepting new seller requests, managing seller accounts and calculating the monthly income. The administrator is the person who has all the control over the system and can see all the databases and develop the system any time.

When the administrator creates logging authentication for system users, the administrator has to give a unique username and password for the relevant users. Also, administrator has to create user-defined roles in the database, such as Warehouse Manager, Store Manager, etc. Afterwards, the relevant privileges like insert, remove, update, create user, change custom data should be given to the relevant users. Only an admin can modify the users’ access. This will restrict access and allow relevant users to engage in their activities only within the relevant limits. This is a very important function in terms of security.

In addition, the admin will consider the requests of the shop owners who have requested to register with the system. Here they will be contacted by admin and the information given by them to register will be verified. Consequently, their requests will be approved or ignored.

According to the administration management, admin can update seller details and remove the sellers from the system. If the administrator intends to make any changes, he/she can update or delete seller details from the system. Therefore, the admin can generate a report about seller details as well as package details.

As another feature, Admin is able to get payment details of the packages and calculate the monthly income by using those payment details. The system calculates gross profit based on the income and expenses of the company. Consequently, admin can generate a monthly gross profit report of the system. It will include all the profit details that happened during the relevant month.

In addition to those tasks, the admin is able to view all the databases in a system and also has access to view all the reports generated in the system.

Customer Management

When the seller fills out the package details form, the system creates a unique package ID for each package, which is displayed on the seller account page. In addition, the package ID emails relevant customers. Customers can track their packages using that package ID.

Customers can see information on their packages, such as the weight, kind, current location, and expected arrival date.

Customers can see information about their sellers, such as their name, shop name, address, phone number, and parcel pick-up date.

If the parcel has arrived at the delivery process, the customer can view the delivery person's information, including name, NIC number, and package delivery vehicle number.

Customers can see and change personal information such as their name, phone number, and email address. However, once the parcel has arrived to the appropriate delivery warehouse, the customer will not be able to change the province of the delivery address.

If a customer wants to alter his or her personal information, he or she must first validate his or her email address. To accomplish this, the system sends a verification link to the customer's email address.

The system calculates estimates the arrival date based on the package's current location as well as some firm asset data such as the number of active delivery members and vehicles.

When a customer updates their personal information, the updated data, previous data, current date and time, and responsible person are all saved in a separate database named "updated customer details" for security reasons.

Tools and Technologies

▪ **React JS**

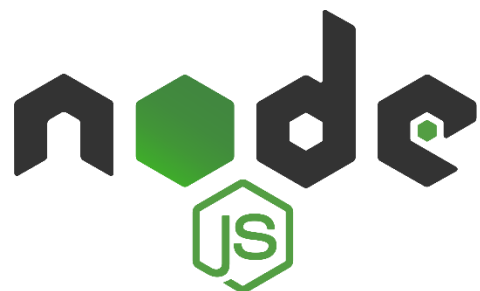
- ✓ React JS is a free and open-source front-end JavaScript library.
- ✓ It's fast, scalable, flexible, powerful and has a robust developer community that's rapidly growing
- ✓ Benefits
 - It's easy to learn
 - It helps to build rich user interfaces
 - It allows writing custom components

It uplifts developers' productivity



▪ **Node JS**

- ✓ Node JS is a free and open-source server environment.
- ✓ It runs on different platforms like Windows, Linux, Mac OS X, etc.
- ✓ It uses JavaScript on the server.
- ✓ Benefits
 - Keeping things simple
 - Faster time-to-market
 - Scalability



▪ **Express JS**

- ✓ Express JS is a free open-source software, and it is a back-end web application framework for Node JS.
- ✓ It is written in JavaScript.
- ✓ Used for designing and building web applications.
- ✓ Benefits
 - Allows you to define an error handling middleware.
 - Allows you to create REST API server.
 - Easy to configure and customize.

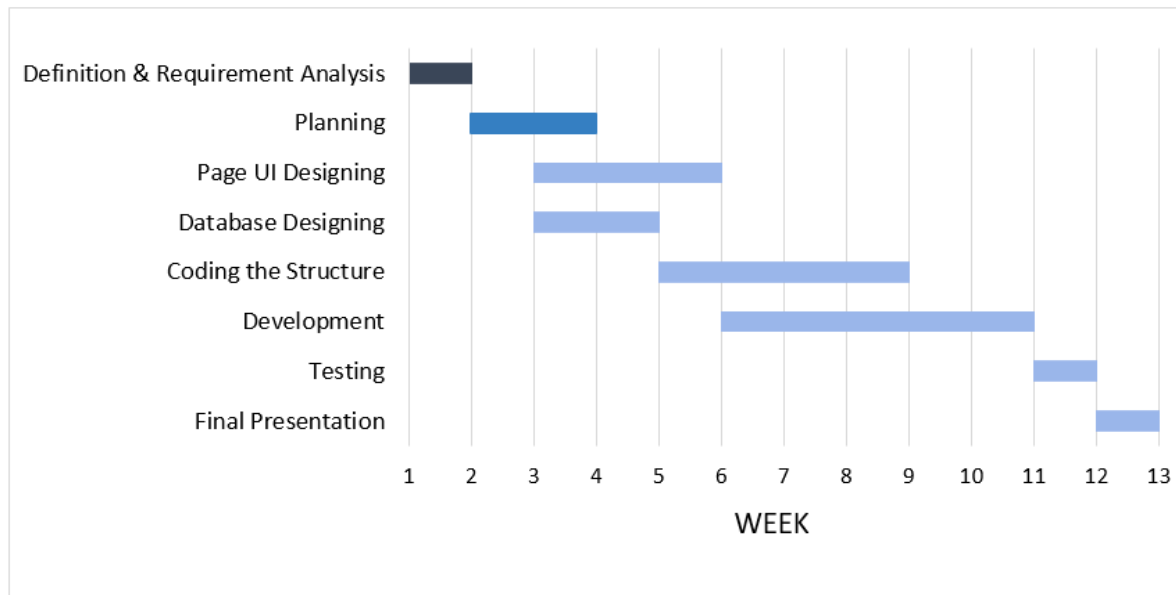


▪ **Mongo DB**

- ✓ Mongo DB is an open-source document-oriented database program.
- ✓ It classified as a NoSQL database program.
- ✓ This is written in C++.
- ✓ Benefits
 - Flexible document schemas
 - Ability to handle large amounts of unstructured data
 - Faster than MySQL



Project Management Plan



The above Gantt chart shows our time allocation for this project. We plan to spend about 12 weeks for our work. According to this chart the grey lines represent the steps which we have completed. And the dark blue lines represent the steps we have started. And the steps we should start soon is represented by the light blue lines. We wish to complete project by 12th week.

Work distribution plan

IT Number	Name with initials	Functions
IT20659226	M.G.K.Chethani	Store Management
IT20660284	W.P Masakorala	Administration Management
IT20651824	K.A.D.D.S Jayawardhana	Customer Management
IT20654658	N.N Nawarathna	Warehouse Management
IT20642778	A.M.A.R De Silva	Delivery Management
IT20658786	M.A.E Wijesinghe	Payment Management
IT20644130	H.R.O.T Vimukthi	Return Item Management & Distribution Management
IT20621124	M.P.C Prabodini	Seller Management