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# Inventory Management System

**1Rishabh gupta, 2Ashish, 3Aman yadav**
**1Student, 2Student, 3Student**
**1Lovely Professional University,**
**2Lovely Professional University,**
**3Lovely Professional University**

## Abstract

Online Inventory Management System is software which is useful for the companies that operate local stores, where store owners keep the records of sales and buy. The problem with the manual system is, it slows the business. This venture disposes of the executive work, human issues, manual postponement and accelerated process. Online Inventory Management System will have the ability to customer detail, track sales and available inventory, tell a store owner when it is time to reorder and how much to buy. Inventory Management System may be a web based application developed for operating the systems which are focused within the area of Inventory control and generates the varied required reports. Inventory management system could be a web application for Windows that focuses on inventory and sales clearance. it absolutely was created for Windows operating systems. The inventory management system includes a number of features. This web application has logical tools for evaluating ideal inventory levels and selecting the acceptable replenishment strategies automatically. It also has capabilities just like the ability to spot stock levels, compute reorder points automatically, and highlight potential stock-outs. This system eliminates the chance of stock-outs of fast-moving goods by minimising delays.

## Introduction

The inventory management system is a software, methods, and technologies for managing and controlling inventories at a shopkeeper warehouse or shop. This software works on an admin system only which focuses on the needs and scale of the shop owner, as well as the capabilities and utility of the management software. Inventory management system software may be a necessary and valuable tool for all firms that affect inventory. It regulates the movement of stock in and out, keeps track of inventory levels for all items and stock, provides access to sales data and analytics, and helps businesses specify specific safety stock requirements. By keeping all the records in the system, admin can keep an eye on how much stock is in and how much stock is out so that they can order the inventory in a timely manner. This system

provides an exact report of the month to an admin and monthly about stocks, sales and expenditure. At last, when the software is created and implemented successfully then it would help businesses to increase their productivity.

## Literature Review

Inventory management system is a web based tool for businesses who want to store data and reflect to their computer for various business purposes [1]. With the help of an online inventory management system we can fulfil shopkeeper requirements and also allow them to download invoices for their customers [2]. Benefit of adopting this system is to review reports of daily, monthly sales and weekly reports using graphs [3]. An automated management system for inventory will increase the productivity of any business and make sure that their business would run efficiently [4]. The system will have an eye on each stock item like how much stock is in and out for each product [5]. The businesses would need pages like login function, dashboard, inventory page which helps to categorise the system [7]. Analysed some non-functional requirements for users is good user experience, usability, reliability, response time, security [8]. To control the stock or inventory we may report the issue like stock out so that an owner can refill the stock in a timely manner [9]. Inventory system will keep all the records of previously sold items month wise [11].

## Problem Statement

In this digital world everyone wants to be digital in any field whether it is online shopping or online payment. So online inventory management is also one of the best things we want to do to cause inventory management by creating more problems. The aim of this project is to create a web application that will make it easier to manage Inventory Online items. Here Admin can add, remove, edit an item in his Inventory for any categories such as Medical item, electronic item, etc. They can generate sales invoices and much more. With the help of this the Internet-Based Assets Manager or Owner can easily see which item is in stock. Which can help owners to analyse their Business and work accordingly.

## Solution

The storekeeper's requirements for creating backup inventory in an exceedingly short amount of your time and with great efficiency led us to develop a computerization solution that supported a desktop. We currently believe that this can be predicated on an answer. However, supporting the lesson learned, it should require some improvement within the future, thus it's the new request from the shopkeeper. This built computer code will include a database that stores and retrieves transaction data similarly as information about the inventory of every product within the shop, manages product releases and storage, and summarises the purpose of sale. This is able to lead to quicker work improvisation with less time and energy. Because the goal of a list Management System is to decrease paperwork and inefficient inventory

management methods, it's expected that this technique will aid in making the most effective inventory management decisions possible.

a) **Invoice Generator**

We can easily generate invoices for each sales required by the customer. It also helps the owner of the shop to keep record of sales and it will increase the productivity of the business.

b) **PDF View**

A shop owner can download the invoice in pdf format for keeping the records in hard copy as well.

c) **Reporting Dashboard**

You can easily see the sales analysis which includes last week sales, last month sales, last day sales and also last 10 day sales graph. In the dashboard, a user can see the total item present in the inventory and total sales in number.

## Methodology

In this Project we have used MERN stack technologies. MERN stands for MongoDB, Express, React, Node, after the four key technologies that make up the stack. **MongoDB** - document database

**Express js** - Node.js web framework

**React js** - a client-side JavaScript framework

**Node js** - the premier JavaScript web server

**How does the MERN stack work?**

The MERN architecture allows you to easily construct a 3-tier architecture (frontend, backend, database) entirely using JavaScript and JSON.

- **React.js Front End**

The main component of the MERN stack is React.js, a JavaScript framework for creating client-side HTML conversion applications. React lets you create complex interactive links using Simple Components, link them to data in your background server, and render them as HTML.

React Solid Suit has a strong, data-driven touch with minimal code and minimal pain, and has all the tools and whistles you can expect in a modern web framework: great form support, error management, events, lists, and more.

- **Express.js and Node.js Server Tier**

The next level down is the Express.js server side template, which runs inside the Node.js server. Express.js charges itself as “the fastest, least mentioned, the smallest Node.js webpage,” and that is exactly what it is. Express.js has powerful URL router models (matching incoming URL and server function), and handling HTTP requests and responses.

By making API Requests or GET or POST from the beginning of your React.js, you can link to Express.js services that enable your application. Those services use MongoDB's Node.js drivers, or by calling back to use Promises, to access and update data on your MongoDB database.

- **MongoDB Database Tier**

If your application stores any data (user profiles, content, comments, uploads, events, etc.), then you're going to want a database that's just as easy to work with as React, Express, and Node.

That's where MongoDB comes in: JSON documents created in your React.js front end can be sent to the Express.js server, where they can be processed and (assuming they're valid) stored directly in MongoDB for later retrieval. Again, if you're building in the cloud, you'll want to look at Atlas. If you're looking to set up your own MERN stack.

**Why do we choose the MERN stack?**

Let's start with MongoDB, a document site at the root of the MERN stack. MongoDB is built to store JSON data natively (technically using the JSON binary version called BSON), and everything from its command line connection to its query language (MQL, or MongoDB Query Language) is built into JSON and JavaScript.

MongoDB works very well with Node.js, and makes storing, decrypting, and representing JSON data throughout your app field extremely easy. For cloud-based applications, MongoDB Atlas makes it even easier, by providing you with a MongoDB automation collection from the cloud provider of your choice, just as easy as the click of a few buttons.

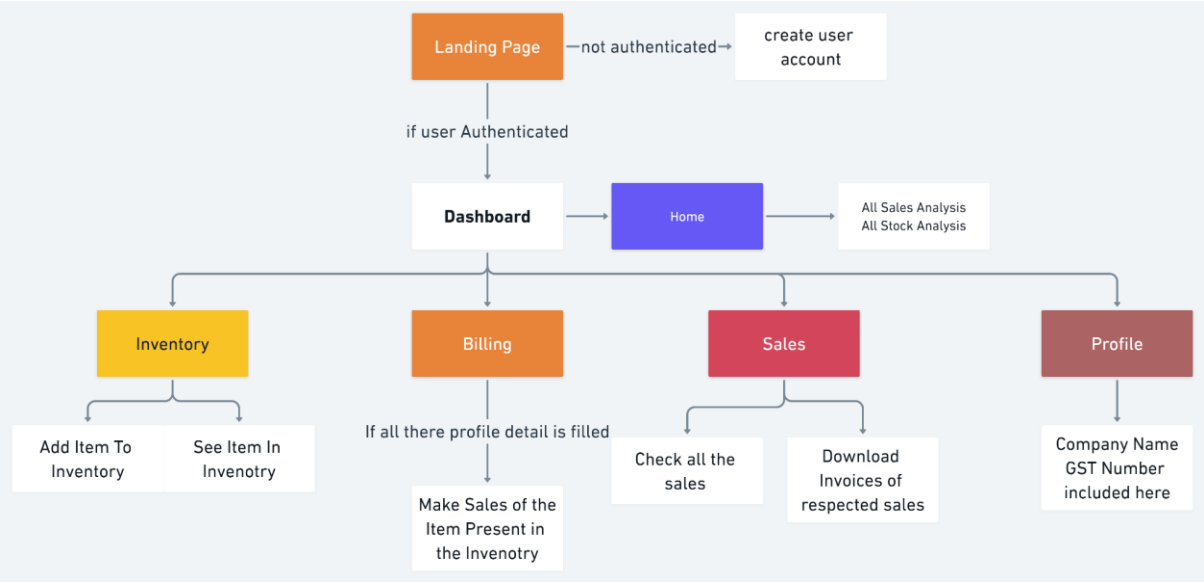
Express.js (works on Node.js) and React.js make the JavaScript / JSON MERN system full of stack, well, full. Express.js is a server-side application framework that collects HTTP requests and responses, and makes it easy to map URLs to server-side activities. React.js is a pre-JavaScript framework for creating interactive user links in HTML, and for remote server communication.

The combination means that JSON data flows naturally from front to back, making it quick to build on and easy to remove. Also, you must know one programming language, as well as the JSON text format, in order to understand the whole program!

MERN is a great choice for modern web developers who want to go fast, especially for those with React.js experience.

# Design and Implementation

Flow Diagram

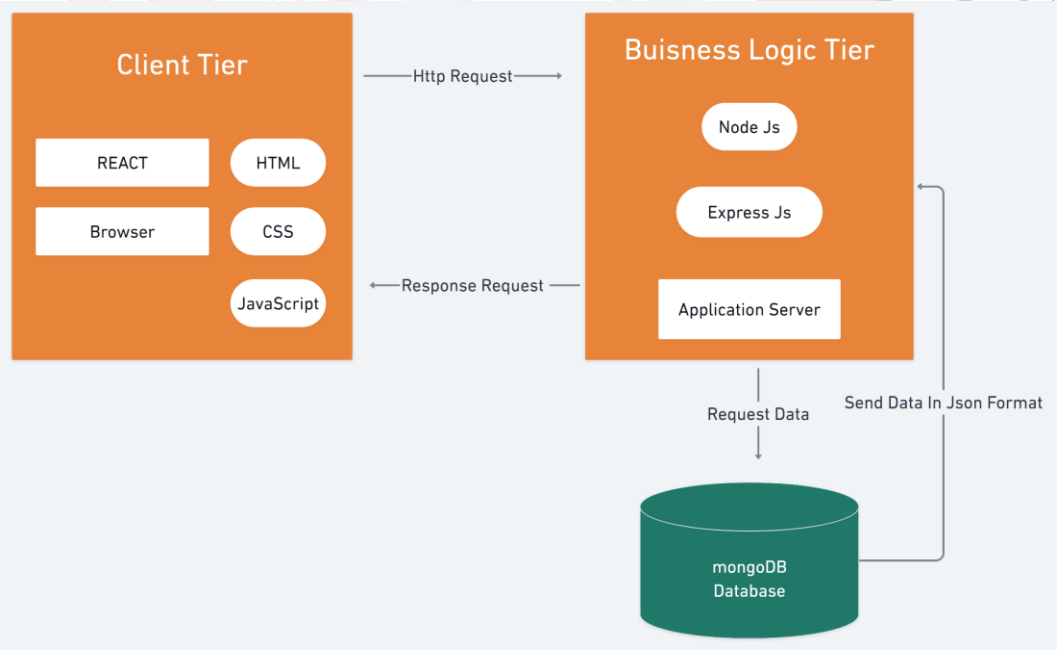



## Implementation

Client side (also Known as Frontend) of this project developed using React js.Basically Client side included all the UI parts that can be seen by user.

Server Side (also Known as Backend) of this project developed using Node and Express js.which include all the app functionality and business logic.

We have used the MongoDb Database.

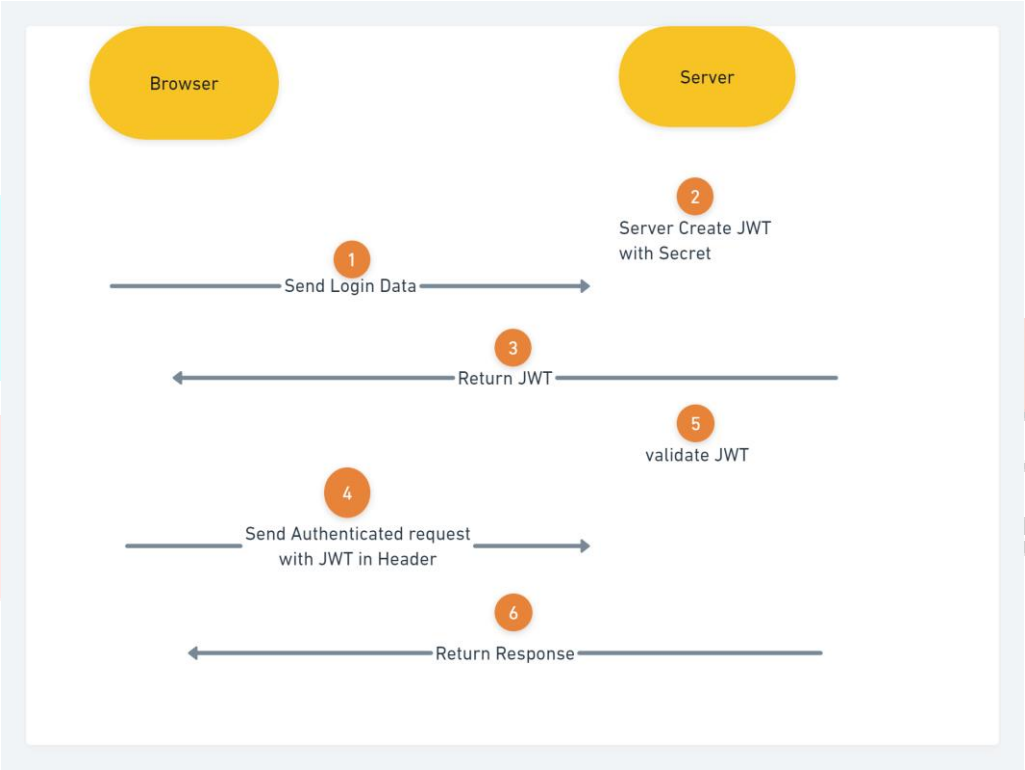


**User Role**

- This Web App has only one user role i.e ADMIN.so only admin can have the access of Inventory.
- For accessing this Application user must have the account.Otherwise they have to create an account.

**Token Based Authentication used**:

Compared to a Session-Based Verification that needs to be saved in a Cookie Session, the great advantage of Token-Based Verification is that we keep the JSON Web (TPAA) Token on the Client: Local Browser Storage, IOS Keychain and SharedPreferences for Android ... So we do not need to build another background project that supports Indigenous Apps or an additional authentication module for Indigenous app users.




**Features:**

- Dashboard with Good UI that can help to understand the Inventory Analysis
- Total item in inventory , total low stock item in inventory, total out of stock item in inventory.
- Present sales , last day sales, last week sales , last 10 days sales chart
- Add Item in Inventory
- Edit Item
- Delete Item
- View Inventory
- Search Item in Inventory
- Low Stock Notification
- Out of Stock Notification

- Billing Functionality ( only possible when you provide gst number and company name in profile section )
- Sales Invoice generator

## Conclusion

To conclude, this inventory management system plays a vital role in keeping data that stores sales data for a specific desktop application. It is a simple desktop application that links to the particular distribution centre, allowing information to be refreshed and confirmed within the store. It also provides sales information on a daily, weekly, and monthly basis. This method makes inventory management a breeze. Increased income, profitability, and an overall boost in customer satisfaction are noticed as a result of the inventory management system.

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