INVENTORY MANAGEMENT SYSTEM

A Second Year Project Report
Submitted to the Faculty
of the
Bennett University

By

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1. INTRODUCTION

An inventory management system is the process to track goods throughout the supply chain, from purchasing to production to end sales. In other words, for the proper management of goods and products there is a need for an inventory in every possible enterprise to ensure a fluent running of the activities. There are several challenges faced by an inventory management system such as using manual inventory tracking procedures including manual documentation of data, risk of inaccurate data collection, the evolving demands of the consumer to the high value inventory needing specific loss prevention strategies and inventory controls., resulting in substantial part of capital being invested in inventories by the organizations every year.

We plan to develop a website to ensure the smooth flow of information and data between the admin, customer and the supplier involved in the Inventory related businesses, which will save the time and efforts of both the customer and the supplier. The main objective of our project is to provide an efficient inventory management system in the market, which is a part of the planning budget, which often falls within the financial boundaries. That is why it is very essential to have proper control and management of the inventory. Our website will provide a visualization of available products and goods through pie charts etc.

1.1. Problem Statement

- Inventory is required to keep track of commodities and products. Every business, no matter how big or small, requires inventory to keep its operations running smoothly.
- Inventory management is essential for preventing leakage, spoilage, deterioration, obsolescence, and material waste. Its goals include better material handling, lower material costs, increased output, and high profitability. Inventory management is an aspect of the budgeting process, which falls under the financial category.

2. BACKGROUND RESEARCH

We began our investigation by determining the organization's need for IMS. Initially, we focused our investigation on determining the broad factors for the requirement for an Inventory Management System. We collected data using a variety of methods that clearly show the overall picture of the application. Interviewing developers, accessing online portals that are given as templates, and visiting a company to check their IMS application were the tactics we employed. The following factors compelled us to create the IMS application:

- ➔ Reliability and price
- ➔ Absence of stock management.
- ➔ Stock transfer and management in a smooth flow.
- ➔ Challenges in stock management supervision.

2.1. Proposed System

- The main purpose is to give inventory-related businesses a web-based web interface where information and data can flow freely between the admin, customers, and suppliers.
- The software also seeks to keep track of when resources expire. If a resource is nearing the end of its shelf life, it will send an email to the administrator with information on the quantity that is about to expire.

2.2. Goals and Objectives

Table 1: Goal and Objectives

#	Goal or Objective
1	To create an application that addresses any manufacturing organization's day-to-day needs.
2	To build an inventory management system that is simple to use.
3	To provide the company a competitive edge.
4	To make inventory management easier and more manageable in the company.
5	To keep track of inventory information such as sales, purchases, and stock balances.

3. PROJECT PLANNING

This section covers the details of the project planning. Selecting the lifecycle of the development, project stakeholders, resources required, assumptions made (if any) are detailed in the sections below.

3.1. Project Setup

Table 2:

#	Decision Description
1	**django, python,html,css, bootstrap**
2	MySQL
3	phpGrid Lite (subgrid) -or- phpGrid Enterprise (Master detail, Grouping)
4	phpChart (for reports)

3.2. Stakeholders

Table 3:

Stakeholder	Role
Person A	Operations

Person B	Sustainability
Person C	Merchandising
Person D	Finance

3.3. Project Resources

>>

Table 4:

Resource	Resource Description	Quantity
Database Server	Each entity(Supplier,Purchasing,Payment,Customer,Inventory)contains primary key and unique keys.	1
Development tools	Visual Studio .NET Framework 4.5 Microsoft SQL server 2008, etc	1
Android Phone	An Android phone to be used as test hardware for the mobile version of the software.	2

3.4. Assumptions

Table 5:

#	Assumption
A1	The cost of stockholding is known and consistent..
A2	That there is a set, predictable cost for ordering.
A3	That demand rates are known.
A4	There is a set price per unit that is known.

A4	It is required that the costs utilized in EOQ calculations be marginal costs. Fixed expenses are not included.
A5	That replenishment occurs in real time, i.e. the entire batch is sent at once.

4. SYSTEM ANALYSIS AND DESIGN

4.1. Overall Description

The project Inventory Management System is a complete desktop application built with Visual Studio Software and.Net technology. The major goal of the project is to create Inventory Management System Model software that will display all of the organization's stock information. It's an intranet-based desktop application with an admin component for inventory management and inventory system maintenance.This desktop programme is centered on an organization's stock management. The application includes a general organization profile, sales information, purchase information, and the organization's remaining stock. There is also an option to update the inventory. This application also shows the stock's remaining balance as well as the details of the transaction's balance.Each new stock is generated and assigned a name and an entry date, and it can be updated at any moment as needed based on the transaction or the sales return in the case of a sale. The login page was established to secure the administration of the organization's stock from threads and misuse of the inventory.

Inventory management system example

Harsh starts a food hamper business. He has a number of suppliers who sell him food in bulk, some of which must then be divided and repackaged.

He creates an Excel spreadsheet that he updates every time he orders more stock, assembles a hamper, or completes a sale. This is his inventory management system, and he is completely reliant on it to know how much stock he currently has, when his food products may expire, how many hampers he can sell, and other information.

Why do you need an inventory system?

Any business that deals with stock will require a system to accurately track and control it. Without one, you'll be working on an ad hoc basis, and you'll quickly find yourself in situations where your company is overstocked or understocked.

Inventory systems tell you how many components or ingredients you'll need to make or assemble your final product. Without this information, you could end up with excess inventory, eroding your bottom line, or insufficient inventory to meet customer demand.

However, while you will require an inventory management system, the one you select is entirely up to you. There are numerous systems to choose from, ranging from simple approaches to comprehensive solutions.

4.2. Users and Roles

User	Description
ON THE USER END:	Users can login in the system through id and password as each user can have a profile. Then the user can View the items that are available in the inventory.
Manager	A manager who is working at inventory on developing the inventory management will be making design decisions based on the data analysis.

Supplier	Description
ON THE SUPPLIER END:	
Admin/ Superuser	An Admin or SuperUser that can have access to all profiles, Information related to products and edit/delete permission , Manage Bills.
Suppliers	Add and Delete their products Edit their products and manage the stocks

	Can add new stocks according to the demand of users. View and Edit their Profiles. Get order details and invoice

4.3. User Stories (Requirements)

4.3.1. **Product Backlog Items**

ID	Feature name	Story points
5	Manage Customer:	3
4	Manage Supplier	3
10	Manage Purchasing	3
17	Check inventory:	8
13	Manage Bills	2
16	Manage New/Existing Stock	2

SPRINT 1

Estimated User Story Points: 2
Actual Completed User Story Points: 2

ID	Added	Description	Status	Story Points	Actual Equivalent Story Points	% Completed
100	Onset	***As a*** *user,* ***I want*** *to login in the system,* ***So that*** *each user can have a profile*	**C**	**2**	**3**	**100%**
Acceptance Criteria			**Verification**			
110	A user cannot register himself without filling out all of the required fields.		**Make a test case to ensure that no fields are empty.**			
111	Information from the form shall be stored in the registration database after form submission		**Create a test case to verify information is stored in the database.**			
112	A confirmation email shall be sent to the user after submitting the form.		**Create test cases to verify sending of acknowledgement email after successful payment.**			
ID	**Tasks**				**Resource**	
1	*Create a registration page with all required fields (FName, LName, organization, Address details, email, credit card details) and register button at the bottom.*				**Team member 1**	
2	*Develop a backend functionality that checks required fields are non-empty when the user clicks on the register button.*				**Team member 2**	
3	*Built a functionality which stores registration data in the database according to the specifications and sends acknowledgement email to the registered email else display payment failure message.*				**Team member 3**	

SPRINT 2

Estimated User Story Points: 8
Actual Completed User Story Points: 8

ID	Added	Description	Status	Story Points	Actual Equivalent Story Points	% Completed
200	Onset	***As a*** *customer,* ***I want to View the item that are available in the inventory*** ***So that*** ***I can choose the product I wish to buy***	**C**	**8**	**8**	**100%**

Acceptance Criteria		Verification
210	given that user must be logged in	**Create test cases to verify if user has logged into their account**
211	given that item is available	Create test cases to verify available item details with the inventory management system
212	Under normal, peak, and recovery situations, the system should perform well.	To see if the system is working properly, perform a usability test.
213	Both the execution time and response time should be negligibly low.	Create test cases to verify the execution time and response time.

ID	Tasks	Resource
1	Develop a method in which users can view the items available.	Team member 1
2	If the items are not available then a message should pop out items not available.	Team member 2
3	Create a cash withdrawal page with a submit button for customers where they can enter the required amount to be paid and press the submit button.	Team member 3

SPRINT 3

Estimated User Story Points: 55
Actual Completed User Story Points: N/A

ID	Added	Description	Status	Story Points	Actual Equivalent Story Points	% Completed
300	Onset	**As a** manager, **I want to** See the details of people who ordered **So that I** can edit the number of products and the items in inventory.	**C**	**8**		
Acceptance Criteria			**Verification**			
310	Manager shall be a registered manager		Create a test case to verify if the manager is a registered manager or not.			
311	Manager shall be able to search the orders .		Create test cases to verify orders.			
312	Manager shall be able to edit the items in inventory.		Create test cases to verify if the items are visible or not.			

ID	Added	Description	Status	Story Points	Actual Equivalent Story Points	% Completed
400	Onset	**As a** manager **I want** to see the complete order **So that** I'm able to print the invoice for the bill that the user requested.	**C**	**13**		
Acceptance Criteria			**Verification**			
410	Manager shall be able to search the order by order number.		Create test cases to verify search order by order number.			

411	Manager shall be able to search the order by request of the user.	Create test cases to verify order by request of the user.

4.4. Design diagrams/ UML diagrams/ Flow Charts/ E-R diagrams

4.4.1. Use Case Diagrams

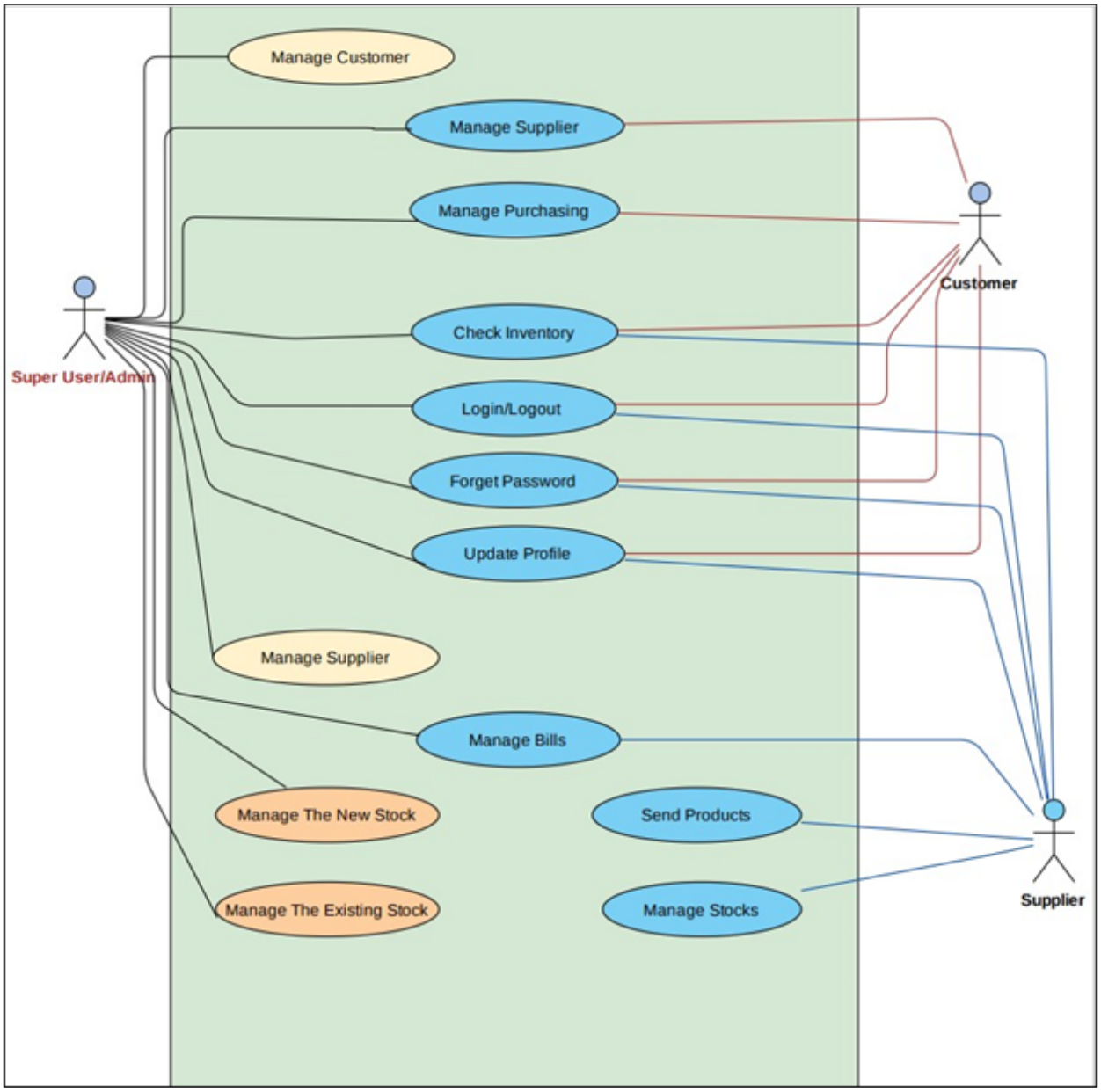

Figure 1: use-case diagram

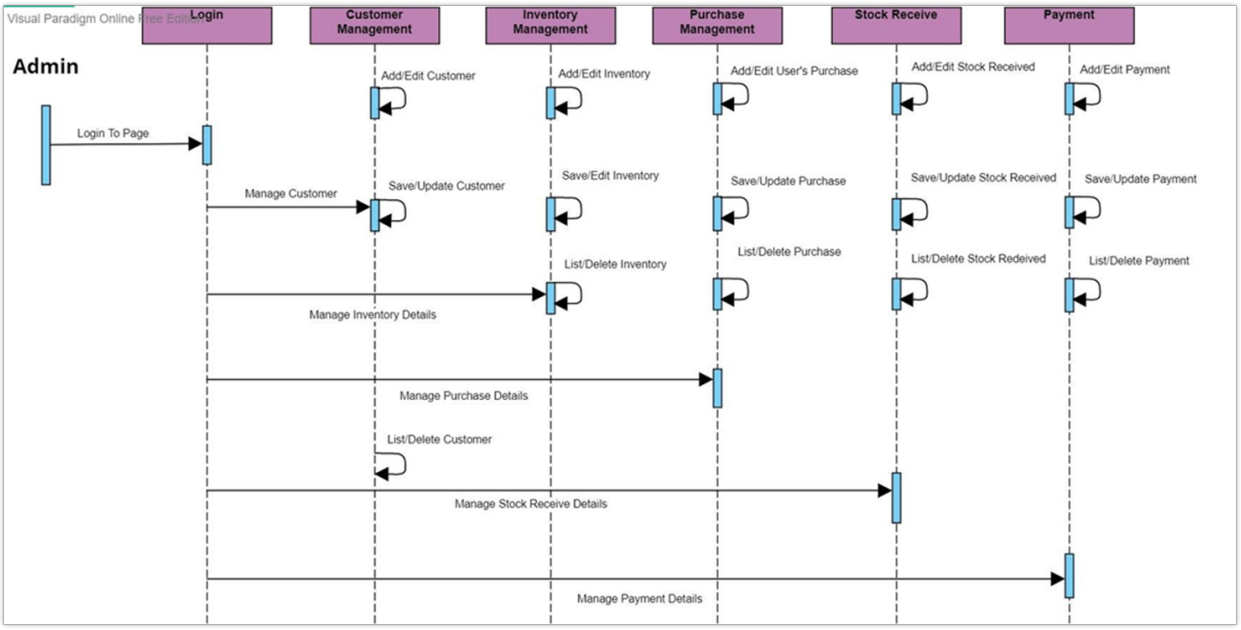

Figure 2:Sequence Diagram

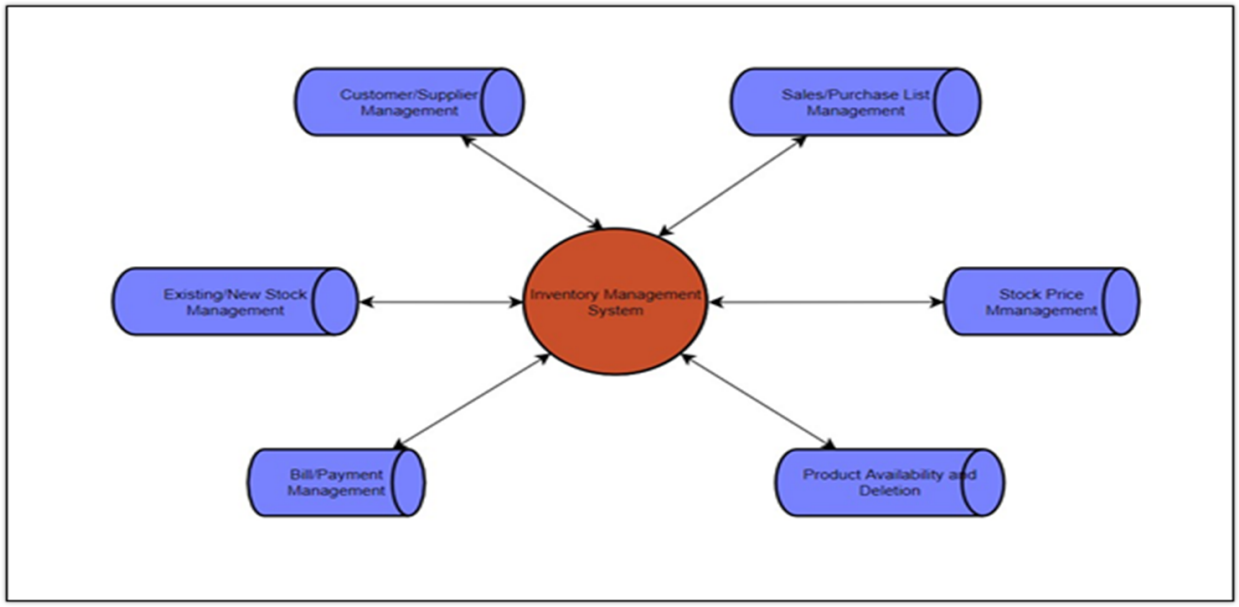

Figure 3:Data Flow Diagram

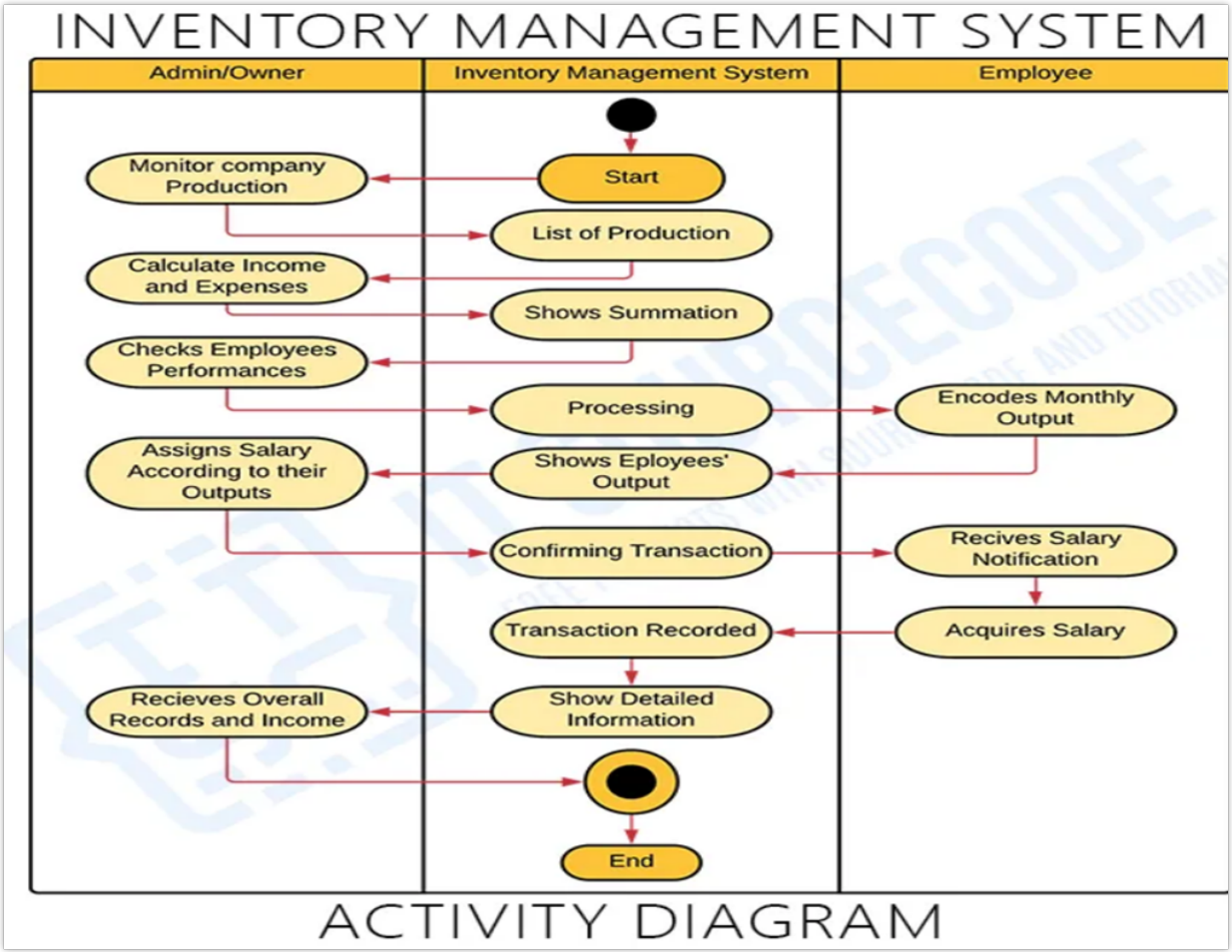

Figure 4: Activity Diagram