Veer Narmad South Gujarat University, Surat.

Department of Information and Communication Technology

M.Sc. (Information Technology) Programme

Project Report

7th Semester

M.Sc. (Information Technology) 5 Year Integrated Course

Year 2023 – 2024

Billing 360

Guided By: Submitted By:

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InfoWeb Solutions

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Veer Narmad South Gujarat University, Surat.

Department of Information and Communication Technology

M.Sc. (Information Technology) Programme

Certificate

This is to certify that **Mr. Om Kamlendu Pandey** with Exam Seat Number: **31** and PG Registration Number: **E20110018000610073** has worked on his/her part time project work entitled **Billing360** at **Info Web Solution** as a partial fulfillment of the requirements for **7th Semester - M.Sc. (Information Technology) [5 Year Integrated course]**, during the academic Year 2023-2024.

Date :- 23/12/2023

Place Department of ICT, VNSGU, Surat

Internal Project Guide M.Sc.(I.T.) 7th Semester Department of I.C.T. Veer Narmad South Gujarat University, Surat Head of the Department
Department of I.C.T.
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Date: 20th December 2023

Certificate

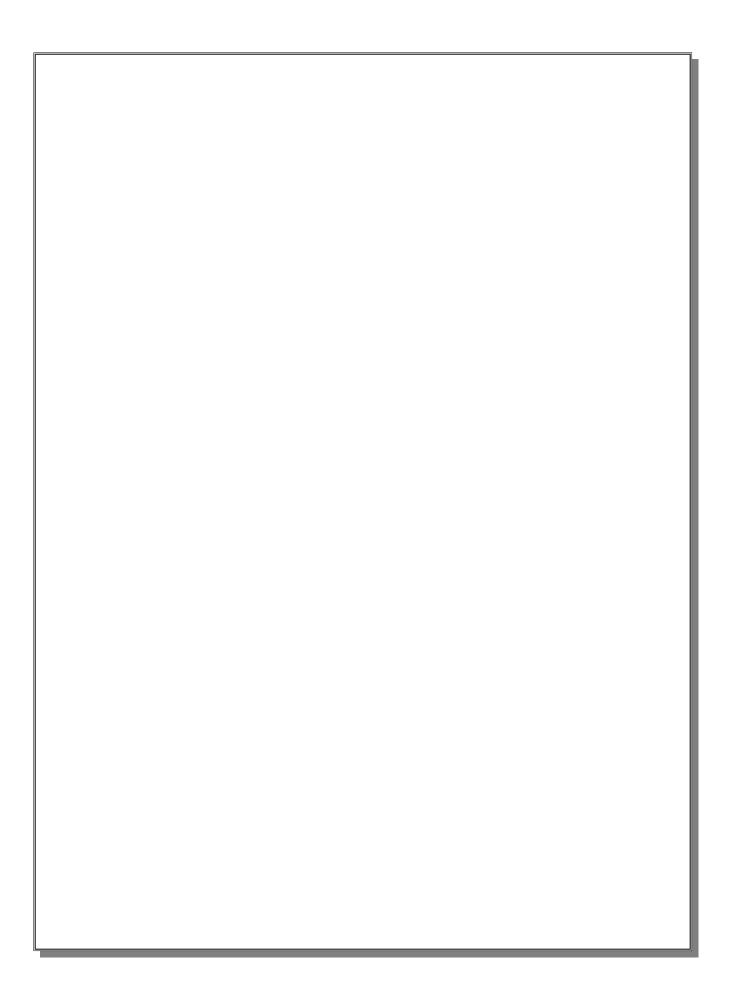
This is to certify that **Om Pandey and Sanjal Desai** has carried out a Website development project at our institute as a part of their academic activity for J.P Dawer Institute of Information Science and Technology.

During this project they developed a **Billing360** using **Angular and .Net Core and SSMS**.

As a part of our policy we do not allow the source code or design documents to have our premises. However as it is an academic project, she shall be allowed to take some design documents for academic purpose to be shown to authority your institute only.

For InfoWeb Solution

Sunny Chevli



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1.) Introduction

1.1 Company Profile



InfoWeb Solution

InfoWeb Solution is the leading IT Solutions company based in Surat, India. Since 2012, InfoWeb Solution is a IT Firm which combines beautiful interactive design with intelligent technology such as .NET and REACT and other JavaScript Framework. Here at Speed Limit, InfoWeb Solution understand that having a great website, a print piece, or even a beautiful logo is just not enough. You need results. InfoWeb Solution is a result-focused company. InfoWeb Solution love's tying in creative marketing campaigns to our great work.

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Contact No.:- +91 99092 84838 Email:- sunnychevli@gmail.com

1.2 Customer Profile

1.2.1 Current System

Billing360 is a software for the process of billing between Retailers and Supplier. The whole project is based on the relation between Supplier and Retailers. In here the main order will be placed by the retailer from the supplier and according to the quantity, price and taxes the whole bill for that request will be generated. Whole project will also involve the registration for company.

The admin/company or supplier can easily maintain the categories of the product and also maintain the products and the bills generated and also maintain the Users data inside the software.

1.2.1 Current System

Admin:

Billing360 is mainly used by the admin which can be the supplier or the company admin who handles all the data of Products, Category, Users and Bills and many more.

Retailer:

This user can easily register itself as a Retailer and can easily explore the products and can also the products and make bills according to the order they want to make.

2.) Proposed System

2.1 Scope

The scope of the proposed billing software system includes capabilities for multiple user types - retailers, suppliers, administrators, and customers. Retailers can manage products, categories, suppliers, purchasing, sales, and billing. Suppliers can manage product offerings and sales to retailers. Administrators oversee the system and user roles. Customers interact with retailers for purchases and billing.

The system will incorporate features for user and access management, product catalogs, inventory control, purchasing workflows, point-of-sale transactions, billing and invoicing, taxation, and reporting. It will automate manual tasks and provide real-time visibility into inventory levels and financial levels.

2.2 Objectives

The main objectives of the billing software system are:

- To automate and streamline billing and retail management workflows.
- To provide accurate, real-time tracking of inventory and transactions.
- To generate instant sales invoices, purchase orders, billing reports.
- To calculate taxes automatically based on product type and location.
- To enable data-driven decision making with dashboard reporting.
- To support multiple user roles with customized access privileges.
- To ensure data security with authentication and authorization controls

2.3 Constraints

2.3.1 Software Constraints

The software technologies used will constrain aspects of the system such as compatibility, interfaces, and scalability. The system will be developed using web technologies including ASP.NET Core Web API, SSMS, JavaScript, and emerging frameworks such as Angular and as a web-based system, performance will rely partially on user internet connectivity and speeds. Supporting a multi-user environment will require optimized database design and indexing. Additional constraints include development timeline, testing requirements, and integration needs.

2.4 Advantages

The proposed retail billing software and management system provides many benefits over traditional manual approaches:

- Saves time by automating repetitive tasks
- Increases accuracy of calculations and reports
- Provides anytime, anywhere access via web interfaces
- Enables real-time inventory tracking and visibility
- Generates instant sales invoices and billing documents
- Simplifies reconciliation with purchase order tracking

2.5 Limitations

There are some limitations in the initial version of the system to consider:

- ⇒ Limited number of predefined reports and dashboards Basic workflows may need customization for some organizations Limited built-in support for barcodes or other inventory tracking technologies
- ⇒ Potential performance constraints handling large inventory catalogs
- ⇒ No native mobile application, mobile experience requires internet browser

Ongoing releases will expand functionality, configurability, integrations, analytics, and optimizations. But the system aims to establish an extensible foundation supporting essential retail management and billing workflows out-of-the-box.

3.) Environment Specification

3.1 Hardware and Software Requirements

The efficient hardware and software configuration require to run the system is as suggest below. The configuration suggested is for better performance. Same functionality or higher configuration will always better:

Dell Vostro-

Hardware Configuration	
Processor	Intel core i5
Memory	16 GB RAM
SSD	1 TB

Apple Mac Book Pro M1-

Hardware Configuration	
Processor	M1 Pro Apple Silicon
Memory	16 GB RAM
SSD	1 TB

3.2 Development Description

Hardware Configuration	
Project Name	Billing360
Project Type	Web Based App
Front End	Angular
Back End	Dot net core WEB API
Database	SQL Server Management Studio
Other Technology	GitHub, Swagger

4.) Environment Specification

4.1 Feasibility Study

A feasibility study for billing software involving both retailers and suppliers Here are some key aspects to consider:

Market Analysis:

- Identify the target market for your billing software.
- Analyze the demand for such a solution among retailers and suppliers.
- Evaluate Potential competitors and their offerings.

User Requirements:

- Conducts Surveys or interviews with retailers and suppliers to understand their specific billing needs.
- Identify the essential features and functionalities required by both user groups.

Technical Feasibility:

- Assesses the technical requirements and constraints for developing the billing software.
- -Determines the feasibility of integrating with existing system used by retailers and the suppliers

Financial Feasibility:

- Estimate the development costs, including software development testing and deployment.
- Analyze potential revenue streams such as licensing fees or subscription models.

User Interface and Experience:

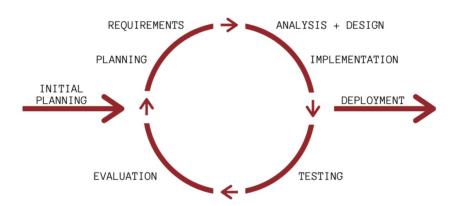
- Design an intuitive and user-friendly interface to carter to users with varying levels of technical expertise.

By thoroughly assessing these aspects, you can determine the feasibility of developing billing software that caters to both retailers and suppliers. This approach will help you create a robust and valuable solution for your target market.

4.2 Software Engineering Model

→ Billing360 follows Iterative model of Soft. Development

ITERATIVE MODEL



- As the name of the model suggests, these repeated cycles are iterative (repeated) and incremental (occurring in short periods).
- The software development process begins with a small set of requirements, and a new set of requirements accompanies each cycle.
- The iterative nature of this model allows the software to continue to evolve and grow as small changes can be made throughout the process as the newest iteration is built off the previous iteration. Developers can make alterations based on the learning of the previous cycles.

4.3 Risk Analysis

4.3.1 Risk Identification

- > The overall size of the software is large
- ➤ We are using angular language to develop our front-end part of the software. And some of the team members are new in that language.
- > Developing modules are added as per the requirement.
- ➤ Sometimes we have to redevelop the module if there are some changes in the requirements of the module.
- ➤ Have to rework on the module because of miscommunication between our guide and the team member.

4.3.1 Risk Mitigation

- > Team members who are new to angular language have done some studies before the start of the development of the software and even when they face some problems and takes help online
- ➤ We are using angular language to develop our front-end part of the software. And some of the team members are new in that language.
- Developing modules are added as per the requirement.
- ➤ Sometimes we have to redevelop the module if there are some changes in the requirements of the module.
- ➤ Have to rework on the module because of miscommunication between our guide and the team member.

5.) Environment Specification

5.1 Detailed SRS

User Module

Description	This module is mainly used to store the users data and this can be used to show data as per users.
Input	Users Details
Events	Display, Insert, Update, Delete, Search
Output	Every Users Data
Validation	Username, Email, Password, Contact and User Types are required.

Category Module

Description	This module is mainly used to store the category data which will be used to add product and this can be used to show data of product as per category.
Input	Category Details
Events	Display, Insert, Update, Delete
Output	Every Category Data
Validation	Category name, common name, cgst, igst, sgst pgst are required

Product Module

Description	This module is mainly used to store the product data and from here user can add the products for bill by taking this as a reference
Input	Product Details
Events	Display, Insert, Update, Delete, Search
Output	Every Product Data
Validation	CatId, User Id, Product Name, Product Brand, Product Measurement, Product Price On Product Packaging Product Quantity all are requried

Supplier Module

Description	This module is mainly used to store the Suppliers data and supplier acts as a admin and can add or delete product and categories accordingly.
Input	Supplier Details
Events	Display, Insert, Update, Delete
Output	Every Supplier Data
Validation	Supplier Name, Address, Contact all are required.

Billing Details Module

Description	This module is mainly used to store the Billing data which will be displayed to the user.
Input	Billing Details
Events	Display, Insert
Output	Every Billing Details
Validation	Product, User, Product Measurement, Price, Quantity, Total Cost, Tax and Grand Total are required

Billing master Module

Description	Mainly used to maintain all the billing data and about the date on which it was issued.
Input	Billing Master Details
Events	Display, Insert, Search
Output	Every Billing Data
Validation	Billing date, Grand Total are mainly require.

Company Module

Description	This module is mainly used to store the company data and from here company can add the products(almost same as supplier)
Input	Company Details
Events	Display, Insert
Output	Every Company Data
Validation	Name, admin, association, address and GST Number is required

Financial Year Module

Description	This module is mainly used to store the Financial Year Data.
Input	Financial Year Details
Events	Display, Insert, Update, Delete, Search
Output	Every Year Data
Validation	Company Id, Start Date, End Date, Is Closed are required

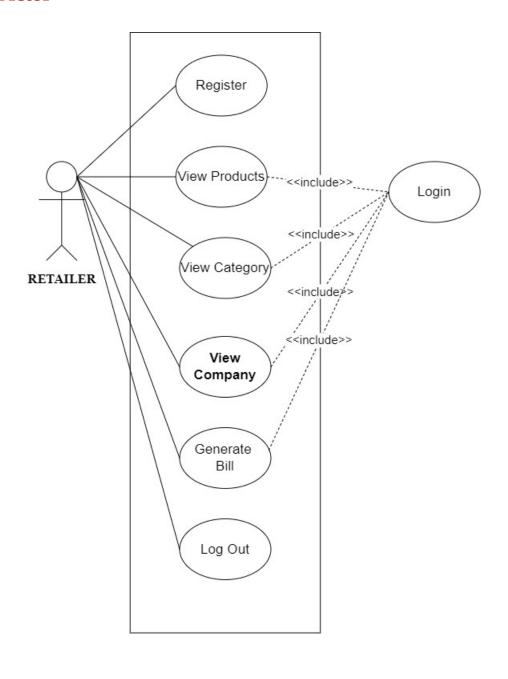
Company Employee Role Module

Description	This module is mainly used to store the Company Employee Roles by which that employee can access everything.
Input	Role Details
Events	Insert
Output	Every Employee Data
Validation	Role Name and Description is Required.

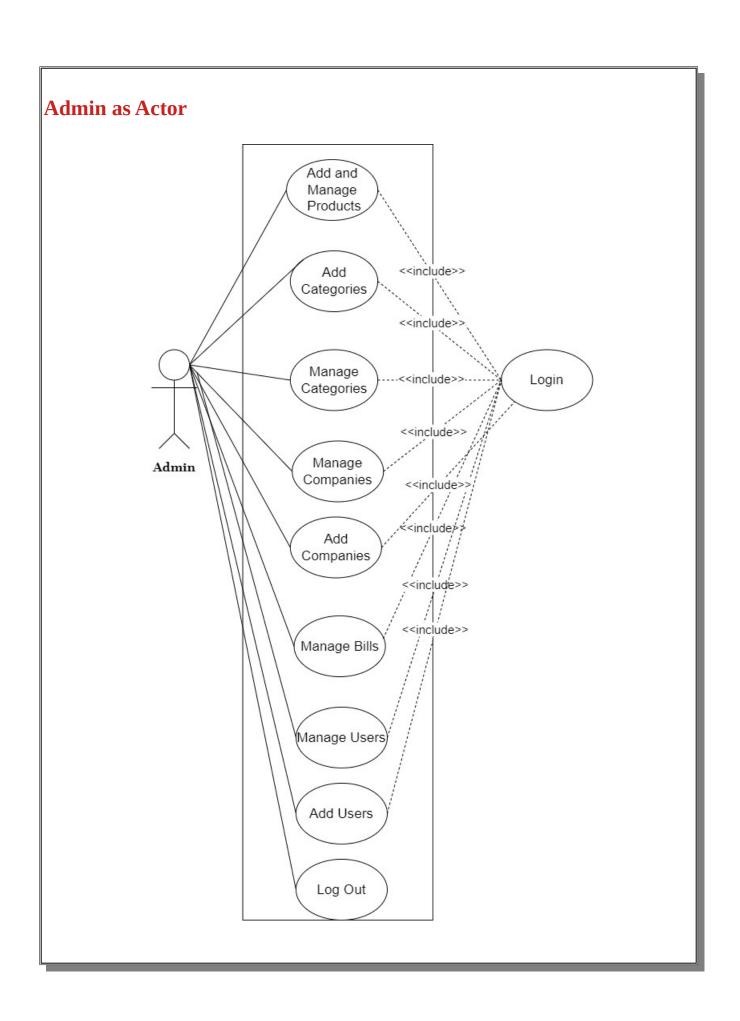
5.2 UML Diagrams

5.2.1 Use Case Diagram

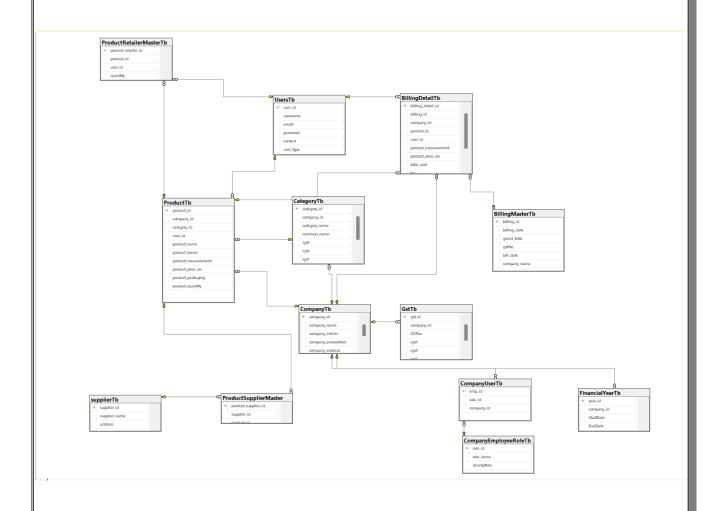
User As Actor

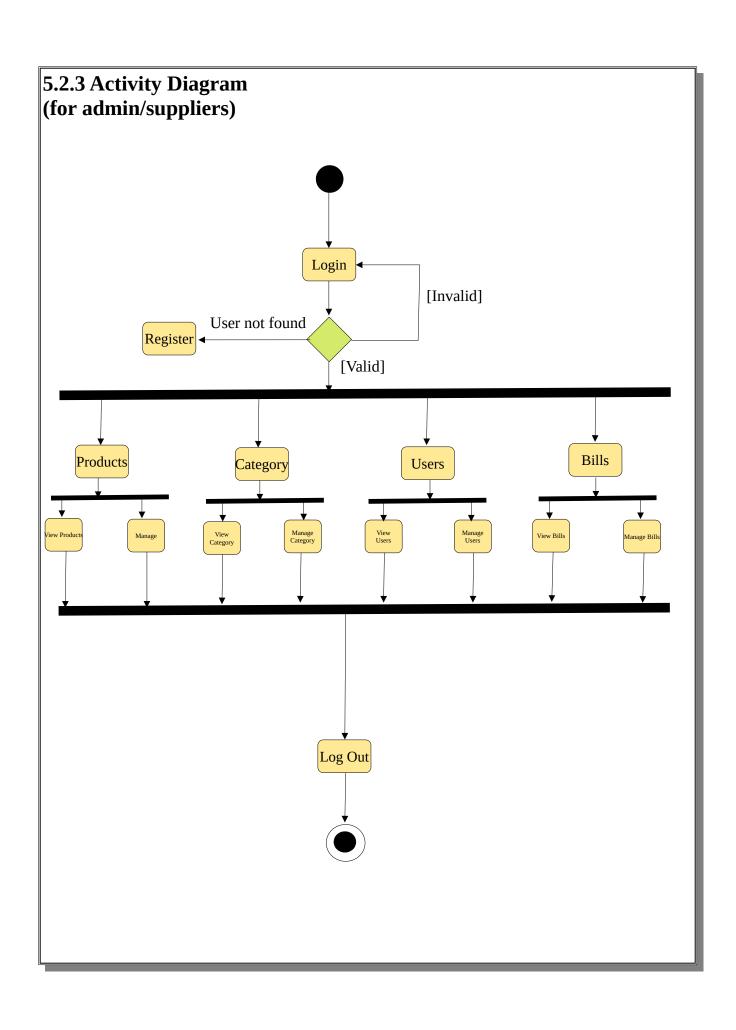


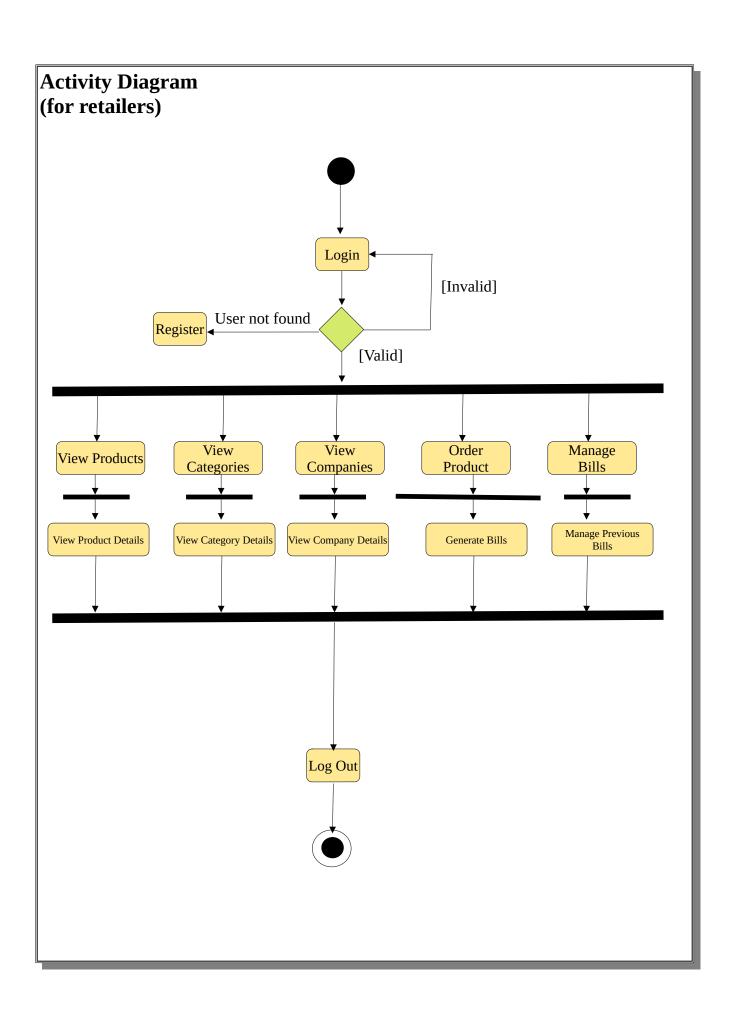
Supplier as Actor Register Add Products '<<include>> Login <<include>> Add Categories Supplier <<include,*> <<include/> View Companies <<include>> Manage Bills (Manage Users) Log Out



5.2.2 Class Diagram







5.3 ERD user_id product_packagi g username contact user_type product_name company_id CategoryTb product_id billing_detail_id billing_id category_name grand_total company_id Can Have billing_date tax billing_id BillingDetailTb gst_id total_cost Billing Master contact supplier_id grand_total company_id company_id Can Have company_id emp_id address Can Have GSTno bill_date EndDate product_retailer_id role_name CompanyEmploy eRoleTb isClosed year_id description company_id role_id

6.) Software Design

6.1 Database Design

<u>usersTb</u>

Element Name	Description	Data Type	Constraints	Reference
user_id	User Id	Int	Primary Key	-
Username	Name of the user	Varchar	Not Null	-
Email	Email of the user	Varchar	Not Null	-
Password	User Password	Varchar	Not Null	-
Phone number	Contact	Varchar	Not Null	-
User Type	Types of User	Varchar	Check Constraint	-

CompanyTh

Element Name	Description	Data Type	Constraints	Reference
company_id	Company Id	Int	Primary Key	-
company_name	Name of the company	Varchar	Not Null	-
company_admin	admin of the company	Varchar	Not Null	-
company_associa tion	Company Association	Varchar	Not Null	-
company_address	Address	Varchar	Not Null	-
GST No.	GST Number	Varchar	Not Null	-

GSTth

Element Name	Description	Data Type	Constraints	Reference
company_id	Company Id	Int	Foreign Key	companytb
GST no.	GST no. of company	Varchar	Primary Key	-
SGST	SGST	Int	Not Null	-
CGST	CGST	Int	Not Null	-
IGST	IGST	Int	Not Null	-
PGST	PGST	Int	Not Null	-

CategoryTh

Element Name	Description	Data Type	Constraints	Reference
category_id	Category Id	Int	Primary Key	-
category_name	Name of the category	Varchar	Not Null	-
common_name	Common name of the category	Varchar	Not Null	-
CGST	CGST	Int	Not Null	-
IGST	IGST	Int	Not Null	-
PGST	PGST	Int	Not Null	-
SGST	SGST	Int	Not Null	-
Total_tax	Total tax	Int	Not Null	-

ProductTb

Element Name	Description	Data Type	Constraints	Reference
product_id	Product Id	Int	Primary Key	-
cat_id	Category Id	Varchar	Foreign Key	CategoryTb
user_id	User ID	Int	Foreign Key	UsersTb
product_name	Product name	Varchar	Not Null	-
product_brand	Product Brand	Varchar	Not Null	-
product_measureme nt	Measureme nt	Varchar	Not Null	-
product_price_on	Price Of Product	Int	Not Null	-
product_packaging	Packaging	Varchar	Not Null	-
product_quantity	Quantity	Int	Not Null	-

SupplierTb

Element Name	Description	Data Type	Constraints	Reference
supplier_id	Supplier Id	Int	Primary Key	-
Supplier Name	Name	Varchar	Not Null	-
Address	Address	Varchar	Not Null	-
Contact	Contact	Varchar	Not Null	-

BillingDetailsTh

Element Name	Description	Data Type	Constraints	Reference
billing_detail_id	Detail Id	Int	Primary Key	-
product_id	Product Id	Int	Foreign Key	ProductTb
user_id	User Id	Int	Foreign Key	UsersTb
company_id	Company Id	Int	Foreign Key	CompanyTb
product_measure ment	Measuremen t	Varchar	Not Null	-

			I	
Price	Price	Int	Not Null	-
Total Cost	Total	Float	Not Null	-
Tax	Tax	Int	Not Null	-
Grand Total	Grand Total	Float	Not Null	-
Billing Date	Date of Billing	DateTime	Not Null	

FinancialYearTh

Element Name	Description	Data Type	Constraints	Reference
company_id	Company Id	Int	Foreign key	CompanyTb
year_id	Year Id	Int	Primary Key	-
Start Date	Start Date	DateTime	Not Null	-
End Date	End Date	DateTime	Not Null	_
IsClosed	Year ended or not	Boolean	Not Null	

CompanyEmployeeRoleTb

Element Name	Description	Data Type	Constraints	Reference
role_id	Role Id	Int	Primary Key	-
role_name	Role Name	Varchar	Not Null	-
Description	Role Description	Varchar	Not Null	-

CompanyEmployeeRoleTb

Element Name	Description	Data Type	Constraints	Reference
emp_id	Employee Id	Int	Primary Key	-
role_id	Role Id	Int	Foreign Key	CompanyEmp loyeeRoleTb
company_id	Company Id	Int	Foreign Key	companyTb

6.2 Interface Design

USER SIDE

Login

Login With Validation

billing360

your billing solution

Login

* Email is required

Password

* Password is required

Login

Don't have an account? Register here

Activate Windows Go to Settings to activate Windows.

Registration With Validation

Registration

billing360

your billing solution

Register

Username*

*Username required

Email*

*Email required

Password*

*Password required

Phone Number*

*Contact required

User Type*

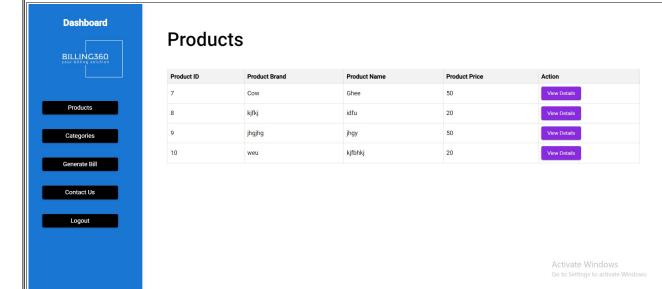
*User Type required

Already have an account? Login here

Activate Windows
Go to Settings to activate Windows.

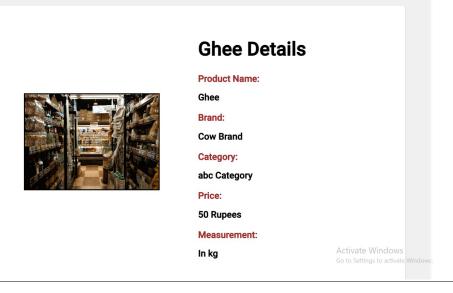
Dashboard Shows Every Available things Dashboard Welcome to Billing360 Dashboard Your allen-one solution for efficient billing and invoicing. Categories Generate Bill Logout Activate Windows Go to Settings to activate Windows.

Viewing Products



Product Details Tab





Viewing Categories

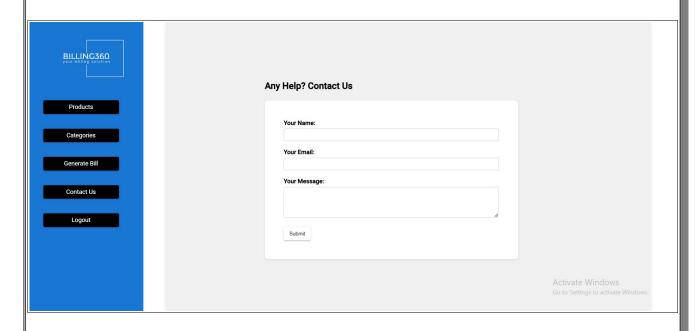


Category

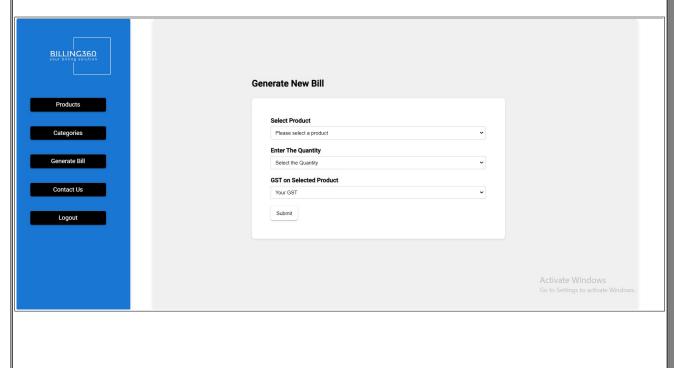
Category ID	Category Name	Common Name	SGST	CGST	IGST	PGST	Total tax
1	abc	def	2	2	2	2	11
2	HOME	HOME	2	3	4	5	14
3	myCat	Му	2	2	2	2	8
4	myCat	Му	2	2	2	2	8
5	jhg	jh	1	2	3	4	10
6	abc	abc	2	2	3	4	11
7	jygfjy	qwkefjb	2	2	2	2	8
8	jgrh	kjgb	2	3	2	1	8

Activate Windows
Go to Settings to activate Windows

Contact Us Page



Generate Bill Page



Bill Details Page



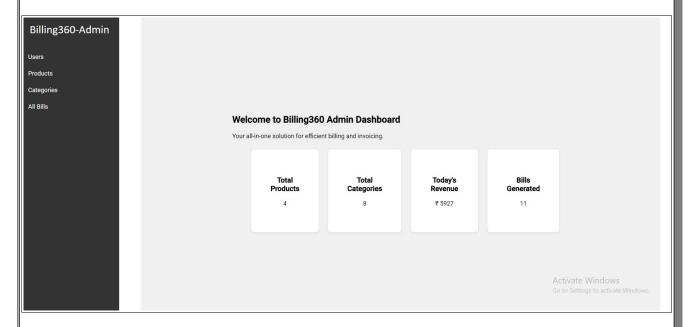
Your Bills ompandey

Bill Id	Username	Product Name	Quantity	Tax	Grand Total
9	ompandey	Ghee	10	5 %	502.5
12	ompandey	Ghee	10	5 %	502.5
13	ompandey	Ghee	20	8 %	1004
14	ompandey	idfu	10	5 %	201

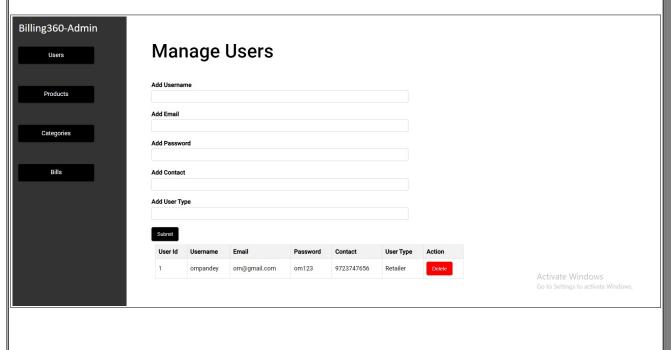
Activate Windows
Go to Settings to activate Windows

ADMIN SIDE

Admin Side Dashboard with all Information



User Management



Product Management Billing360-Admin **Manage Products** Users Products Category Categories Bills Product Name Measurement Activate Windows Billing360-Admin User ID Users Categories Price Bills Packaging Activate Windows idfu kjfkj 20

Category Management Billing360-Admin **Manage Category** Users Company name Products Category name Common name Bills State GST Central GST International GST Activate Windows Union Territory GST Central GST Billing360-Admin Users International GST Products Union Territory GST Categories Company Id Category Name SGST CGST IGST UTGST Action 2 abc def HOME HOME 3 5 myCat 2 myCat Му jhg abc abc Activate Windows 2

Bill Management



Manage Bills

Bill Id	Username	Product Id	Quantity	Tax	Grand Total	Bill Date	Action
11	om	8	5	8	101.6	2023-12-22T00:00:00	Delete
12	ompandey	7	10	5	502.5	2023-12-22T00:00:00	Delete
13	ompandey	7	20	8	1004	2023-12-22T00:00:00	Delete
14	ompandey	8	10	5	201	2023-12-22T00:00:00	Delete

Activate Windows
Go to Settings to activate Windows.

7.) Unit Testing

Test Case for Login

Test Case Id	Test Field	Condition	Executed Result	Actual Result
1	Email	Empty	Email Required	Error message
2	Password	Empty	Password required	Error message

Test Case for Registration or Adding User

Test Case Id	Test Field	Condition	Executed Result	Actual Result
1	Username	Empty	Username Required	Error message
2	Email	Empty	Email required	Error message
3	Password	Empty	Password Required	Error Message
4	Contact	Empty	Contact Required	Error Message
5	User Type	Empty	User Type Required	Error Message

Test Case for Adding Products

Test Case Id	Test Field	Condition	Executed Result	Actual Result
1	CompanyId	Empty	Select Company	Error message
2	CategoryId	Empty	Select Category	Error message
3	UserId	Empty	User Id Required	Error Message
4	Product Name	Empty	Name Required	Error Message
5	Brand	Empty	Brand Required	Error Message
6	Measurement	Empty	Measurement Req	Error Message
7	Price	Empty	Price Required	Error Message
8	Quantity	Empty	Quantity Required	Error Message

Test Case for Adding Categories

Test Case Id	Test Field	Condition	Executed Result	Actual Result
1	CompanyId	Empty	Select Company	Error message
2	Category Name	Empty	Name Required	Error message
3	Common Name	Empty	Name Required	Error Message
4	Product Name	Empty	Name Required	Error Message
5	SGST	Empty	SGST Required	Error Message
6	CGST	Empty	CGST Required	Error Message
7	IGST	Empty	IGST Required	Error Message
8	PGST	Empty	PGST Required	Error Message

Test Case for Generating Bill

Test Case Id	Test Field	Condition	Executed Result	Actual Result
1	Product Name	Empty	Select Product	Error message
2	Quantity	Empty	Select Quantity	Error message
3	Tax	Empty	Add Tax	Error Message

Test Case for Supplier Entry

Test Case Id	Test Field	Condition	Executed Result	Actual Result
1	Supplier Name	Empty	Name Required	Error message
2	Address	Empty	Address Required	Error message
3	Contact	Empty	Contact Required	Error Message

Test Case for Financial Year Entry

Test Case Id	Test Field	Condition	Executed Result	Actual Result
1	companyId	Empty	Company Required	Error message
2	StartDate	Empty	Start Date Required	Error message
3	EndDate	Empty	End Date Required	Error Message

8.) Future Enhancement
For Billing360 we have planned some new things as follows:-
1) To add all the graphs inside the admin panel so it will be easy to see every day's revenue
2) To add update Functionality to the admin side.
3) To generate bill as per the tax on categories
4) A dynamic Platform for suppliers to measure their own revenue.

9.) References https://www.google.com/ https://stackoverflow.com/ https://vyaparapp.in/https://www.youtube.com/