

**A  
PROJECT REPORT  
ON**

**INVENTORY MANAGEMENT SYSTEM**

**SUBMITTED BY**

**JHAVERI AARYAN K.  
PALA VIRAJ V.**

**ACADEMIC YEAR 2022-23**

**T.Y B.C.A. SEM - 6**

**UNDER THE GUIDANCE OF**

**MR. SHAUNAK PUROHIT & MS. SANDHYA KAMADIA**

**SMT. C.Z.M GOSRANI B.C.A. COLLEGE  
JAMNAGAR**

**SUBMITTED TO**



**SAURASHTRA UNIVERSITY  
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OSHWAL EDUCATION TRUST MANAGED  
**Smt.Chandramaniben Zaverchand Meghji Gosrani B.C.A. College**

Shah Bhagwanji Kachra Education Complex, Near Octroi Post, Indira Gandhi Marg, Jamnagar- 361004, India

Web: [czmgbca.oshwaleducationtrust.org](http://czmgbca.oshwaleducationtrust.org) Email: [info.czmgbca@oshwaleducationtrust.org](mailto:info.czmgbca@oshwaleducationtrust.org)

Tel : +91 -288-2563885, 2563886 Telefax : +91-288-2567124

AFFILIATED TO SAURASHTRA UNIVERSITY, RAJKOT & MEMBER OF COMPUTER SOCIETY OF INDIA

**CZMG/022/2022-23/1**

**Date: 04/03/2023**

## **CERTIFICATE OF PROJECT COMPLETION**

*This is to certify that*

*Jhaveri Aaryan K.  
&  
Pala Viraj V.*

*of BCA Semester 6 of Smt. C.Z.M.G. BCA College affiliated to Saurashtra University Rajkot, have completed the project on "Billing Software " based on institute requirements during Semester 6.*

*Mr. Shaunak Purohit*  
**CODE GUIDE**

*Ms. Sandhya Kamadia*  
**DOCUMENT GUIDE**

**EXAMINER NAME & SIGN**

## **ABSTRACT**

Inventory Management System (IMS) is a GUI based web application useful for the business to manage their inventories.

Currently, some people are maintaining their inventory manually and some people are using the software which is difficult to use because it doesn't have a user-friendly interface.

Main objective of IMS is to provide user-friendly GUI interface which can be made with minimal time and less effort and can be accessible without the internet connection.

## **ACKNOWLEDGEMENT**

We feel great pleasure in submitting this project report as a part of our B.C.A. Semester 6 curriculum. A practical study plays an important role.

For the successful completion of our project, we would especially like to thank our parents for their support and unconditional help. We would also like to thank our Project Guide Mr. Shaunak Purohit and Ms. Sandhya Kamadia for their constant support and help in implementation of this project.

We are also thankful to our Principal Ma'am, Ms. Hetal G. Savla for all the facilities they provided throughout our semester and for encouraging us to take up this activity.

Lastly, we would also like to thank the faculties and staff members of Smt. C.Z.M. Gosrani B.C.A. College, Jamnagar.

## PROJECT PROFILE

STUDENT INFORMATION	
<b>Name</b> Jhaveri Aaryan K. Pala Viraj V.	<b>Enrollment Numbers</b> 00320320835 00320320871
PROJECT DETAILS	
<b>Project Title</b>	Inventory Management System
<b>Duration</b>	4 Months
<b>Name of Project</b>	DigiFirm
<b>Platform</b>	Python MySQL
<b>Team Size</b>	2
GUIDE INFORMATION	
<b>Name of Guide</b>	Mr. Shaunak Purohit Ms. Sandhya Kamadia

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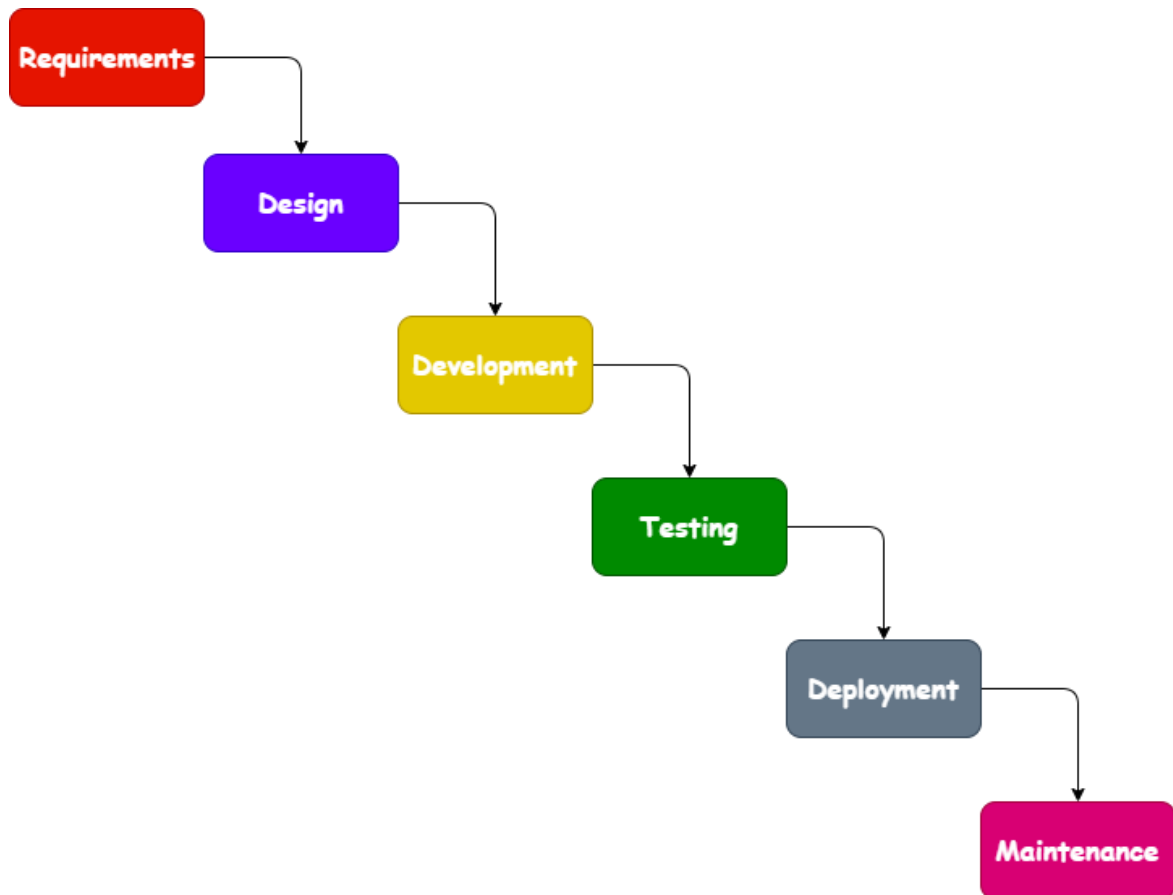
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## **CHAPTER 1**

### **OVERVIEW OF THE ACCEPTED SDLC MODEL**



### **Waterfall Model**

- Each step of the SDLC lifecycle is followed in a linear approach.
- Upon the completion of the step, next step is started.
- Cannot go to the previous step.

## **CHAPTER 2**

### **REQUIREMENT GATHERING AND ANALYSIS**

#### **2.1 Organization details**

➤ **Name of organization:**

- Pixel Solutions

➤ **Brief details of the organization:**

- Pixel Solutions is a reputed software development company.  
They've been operating since the year 2001.

#### **2.2 Meetings**

➤ **Meeting with an Owner:**

- **Name of the Owner:**
  - Mr. Rohan Shah
- **Requirements of the owner in their own words:**
  - There should be 2 types of users i.e., Admin and Employee.
  - There should be one stop solution for the admin to manage the whole inventory of the company.
  - Employees should be able to make invoice by login their allotted credentials.

### **2.3 Type of project**

- The system will be in the form of a GUI Web Application and accessible without the Internet Connection.

### **2.4 Method of collecting requirements**

- The requirements of the system will be collected by interviewing the owner and user of the proposed system.

## **CHAPTER 3**

### **SYSTEM REQUIREMENT SPECIFICATION**

#### **3.1 Introduction**

- **Inventory Management System** is a GUI based web application that helps the owner to manage the whole inventory of the company and allows the employee to make the invoices.

##### **3.1.1 Purpose**

- The main purpose of this system is to provide an user friendly interface to the organizations to manage their inventory digitally.

##### **3.1.2 Scope**

- This system will be used by the Pixel Solutions and can be used by any organizations.

##### **3.1.3 Operating Environment**

- **Admin-side requirements:**
  - Operating System: Windows 7 or higher
  - Memory: 2 GB or higher
  - Storage: 64 GB or higher
  - Server Software: Python and MySQL

- **Employee-side requirements:**
  - Operating System: Windows 7 or higher
  - Memory: 2 GB or higher
  - Storage: 64 GB or higher
  - Server Software: Python and MySQL

### **3.1.4 User Classes**

- **Administrators**
  - Can add, update and remove employees, suppliers, categories, products and other administrators.
  - Can make, modify and delete all the invoices.
- **Employees**
  - Can make invoices of the products which are added by the administrator.

## **3.2 System Modules**

### **➤ Authentication**

- Admins and Employees can login into the system by entering proper credentials.

### **➤ Manage Employees**

- Available to only administrators.
- Administrators can view, add, update and delete employees.

➤ **Manage Suppliers**

- Available to only administrators.
- Administrators can view, add, update and delete suppliers.

➤ **Manage Categories**

- Available to only administrators.
- Administrators can view, add, update and delete product categories.

➤ **Manage Products**

- Available to only administrators.
- Administrators can view, add, update and delete products.

➤ **Manage Invoices**

- Available to only administrators.
- Administrators can view, make, modify and delete invoices.

➤ **Manage Other Administrators**

- Available to only administrators.
- Administrators can view, add, update and delete other administrators.

### **3.3 External Interface Requirements**

#### **3.3.1 Hardware Interface Requirements**

- 512 MB+ RAM
- Keyboard and Mouse
- 1.0+ GHz Processor
- Monitor

#### **3.3.2 Software Interface Requirements**

- Operating System: Microsoft Windows 7 or Above
- Front End Tools: Python, Tkinter
- Back End Tools: MySQL

#### **3.3.3 User Interface**

- Admins can add the employees and other admins. Once the admin adds employees and other admins in the database, he/she can login by the provided credentials.

### **3.4 Non-functional Requirements**

#### **3.4.1 Performance Requirements**

- Overall system should be fast, secure, error-free and user friendly.
- It should have a built-in calculator.
- The system should be able to handle large amounts of data.

### **3.4.2 Security Requirements**

- User must have proper permission to perform tasks.
- Administrators has more rights than employees.



## CHAPTER 4

### SYSTEM ANALYSIS AND MODELLING

#### 4.1 Normalization

- It is the process of reducing the redundancy of data in the table and also improving the data integrity.

##### 4.1.1 D-Normalization Form

Email	Password
abc@xyz.com	Aar@123
def@xyz.com	Vir@123

##### 4.1.2 1<sup>st</sup> Normalization Form

###### ➤ category

name
Mobile
Laptop
Tablet

###### ➤ employee

name	email	gender	contact	dob	doj	password
Aaryan	abc@xyz.com	Male	1234567890	19/11/2002	18/11/2020	Aar@123
Viraj	def@xyz.com	Male	0987654321	21/02/2002	20/02/2020	Vir@123

Heer	ghi@xyz.com	Male	1478523690	15/02/2003	14/02/2021	Hee@123
------	-------------	------	------------	------------	------------	---------

utype	address	salary
Admin	Jamnagar	100000
Admin	Jamnagar	100000
Employee	Jamnagar	55000

➤ **product**

category	supplier	name	price	qty	status
Mobile	Aaryan	Samsung M53	24000	146	Active
Laptop	Viraj	Dell G95	80000	97	Active
Tablet	Heer	Samsung A8	17000	48	Inactive

➤ **supplier**

name	contact	descr
Aaryan	1234567890	150 units of Samsung M53 Mobile
Viraj	0987654321	100 units of Dell G95 Laptop
Heer	1478523690	50 units of Samsung A8 Tablet

### 4.1.3 2<sup>nd</sup> Normalization Form

#### ➤ category

cid	name
1	Mobile
2	Laptop
3	Tablet

#### ➤ employee

eid	name	email	gender	contact	dob	doj
1	Aaryan	abc@xyz.com	Male	1234567890	19/11/2002	18/11/2020
2	Viraj	def@xyz.com	Male	0987654321	21/02/2002	20/02/2020
3	Heer	ghi@xyz.com	Male	1478523690	15/02/2003	14/02/2021

password	utype	address	salary
1234567890	Admin	Jamnagar	100000
0987654321	Admin	Jamnagar	100000
1478523690	Employee	Jamnagar	55000

#### ➤ product

pid	category	supplier	name	price	qty	status
1	Mobile	Aaryan	Samsung M53	24000	146	Active
2	Laptop	Viraj	Dell G95	80000	97	Active
3	Tablet	Heer	Samsung A8	17000	48	Inactive

#### ➤ supplier

sid	name	contact	descr
1	Aaryan	1234567890	150 units of Samsung M53 Mobile
2	Viraj	0987654321	100 units of Dell G95 Laptop
3	Heer	1478523690	50 units of Samsung A8 Tablet

#### 4.1.4 3<sup>rd</sup> Normalization Form

##### ➤ category

cid
1
2
3

##### ➤ employee

eid
1
2
3

##### ➤ product

pid
1
2
3

➤ **supplier**

sid
1
2
3

## 4.2 Data Dictionary

### 4.2.1 category

Sr. No.	Column	Type	Null
1	cid (Primary)	int(20)	No
2	name	varchar(255)	Yes

### 4.2.2 employee

Sr. No.	Column	Type	Null
1	eid (Primary)	int(20)	No
2	name	varchar(255)	Yes
3	email	varchar(255)	Yes
4	gender	varchar(255)	Yes
5	contact	varchar(255)	Yes
6	dob	varchar(255)	Yes
7	doj	varchar(255)	Yes
8	password	varchar(255)	Yes
9	utype	varchar(255)	Yes
10	address	varchar(255)	Yes
11	salary	varchar(255)	Yes

### 4.2.3 product

Sr. No.	Column	Type	Null
1	pid (Primary)	int(20)	No
2	category	varchar(255)	Yes
3	supplier	varchar(255)	Yes
4	name	varchar(255)	Yes
5	price	varchar(255)	Yes
6	qty	varchar(255)	Yes
7	status	varchar(255)	Yes

### 4.2.4 supplier

Sr. No.	Column	Type	Null
1	sid (Primary)	int(20)	No
2	name	varchar(255)	Yes
3	contact	varchar(255)	Yes
4	descr	text	Yes

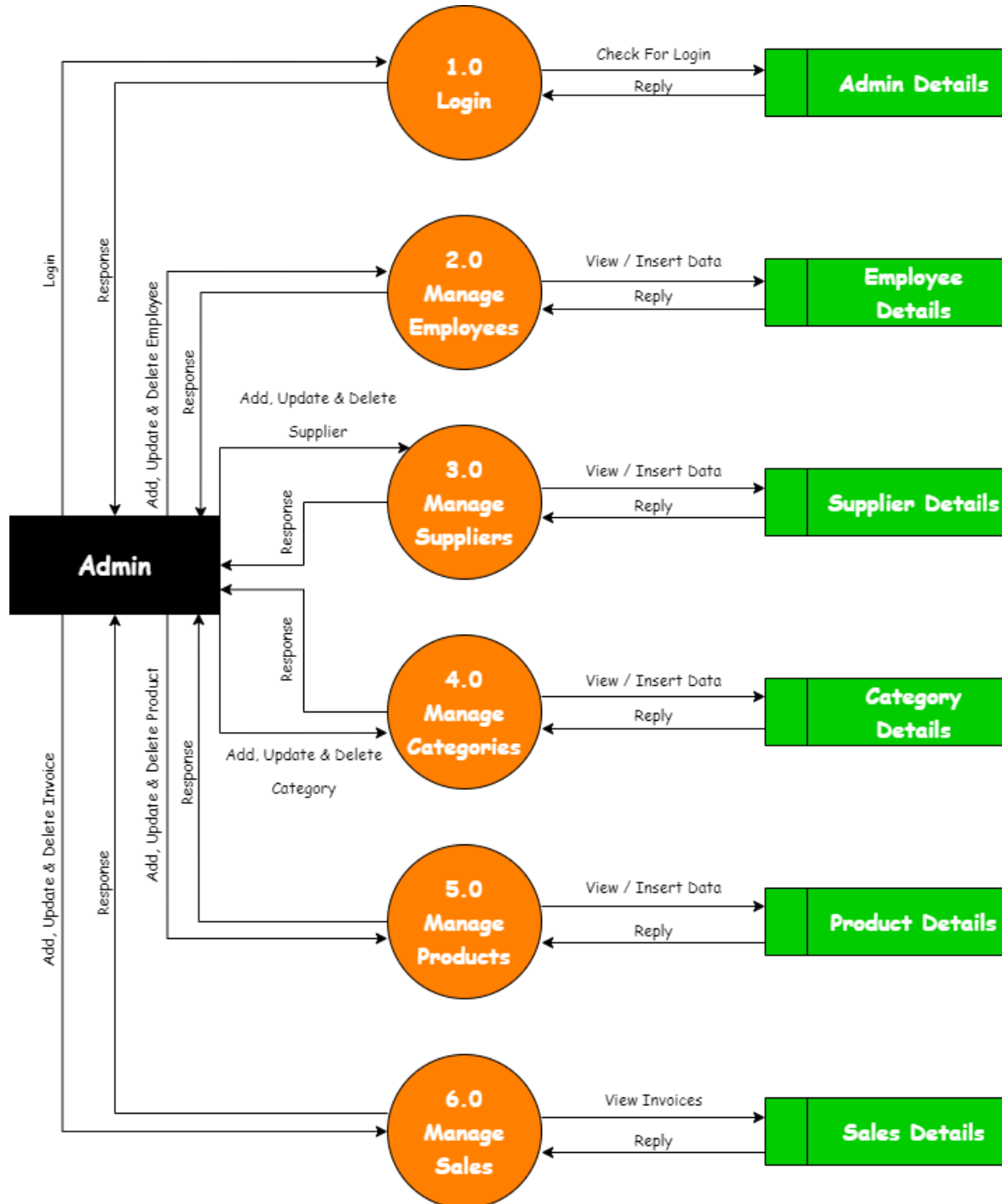
## 4.3 Data Flow Diagram

### Context Level

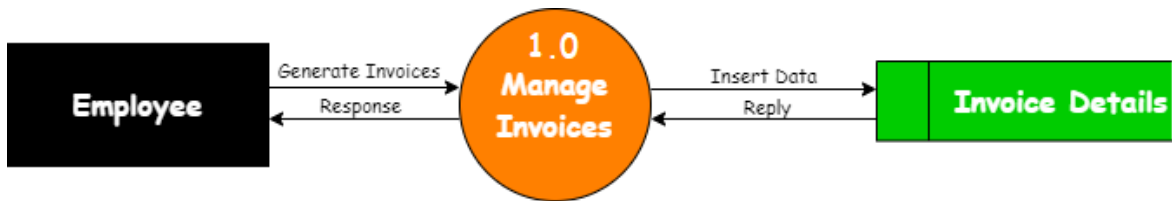


## First – Level

### ➤ Admin

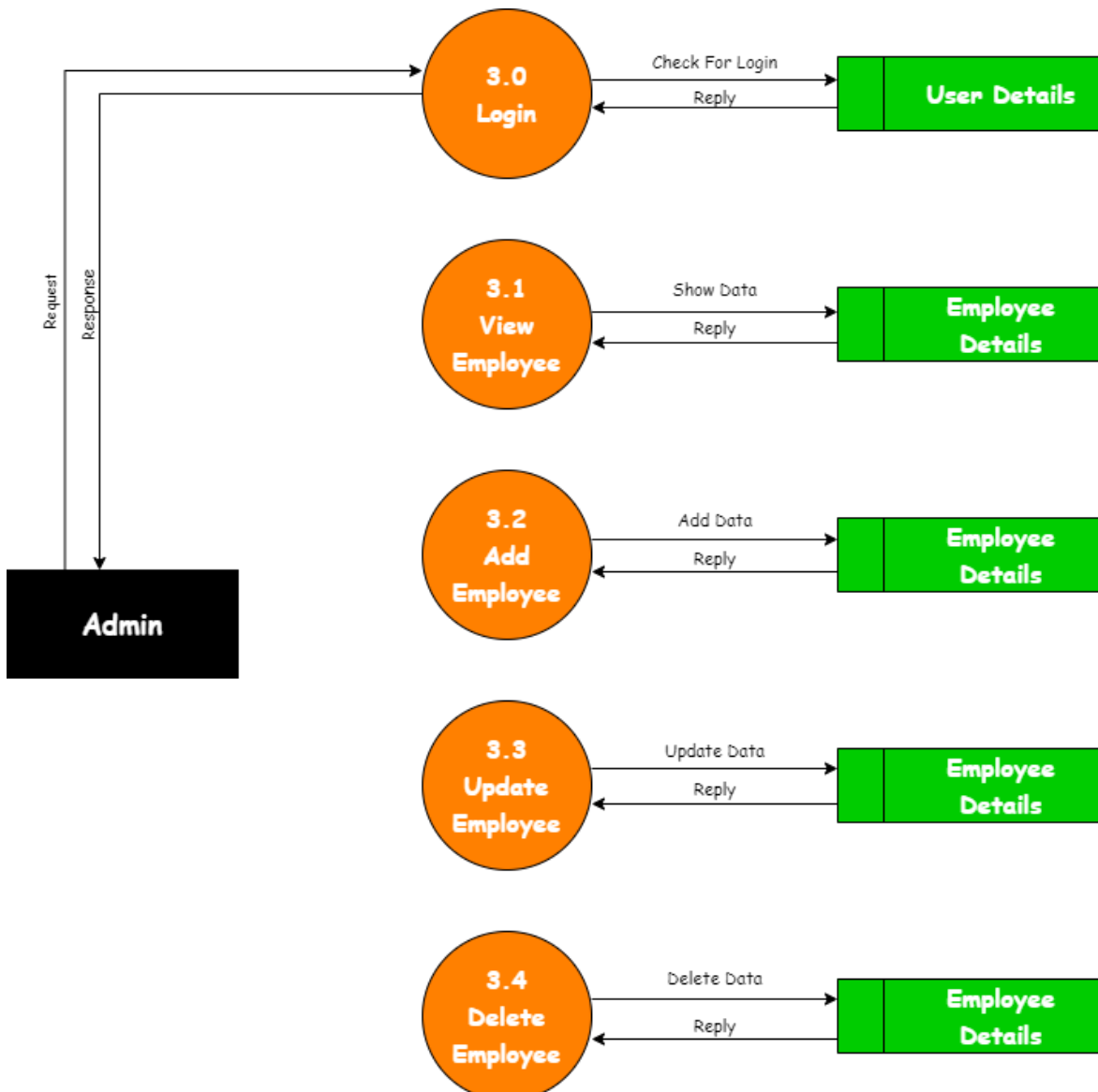


➤ Employee



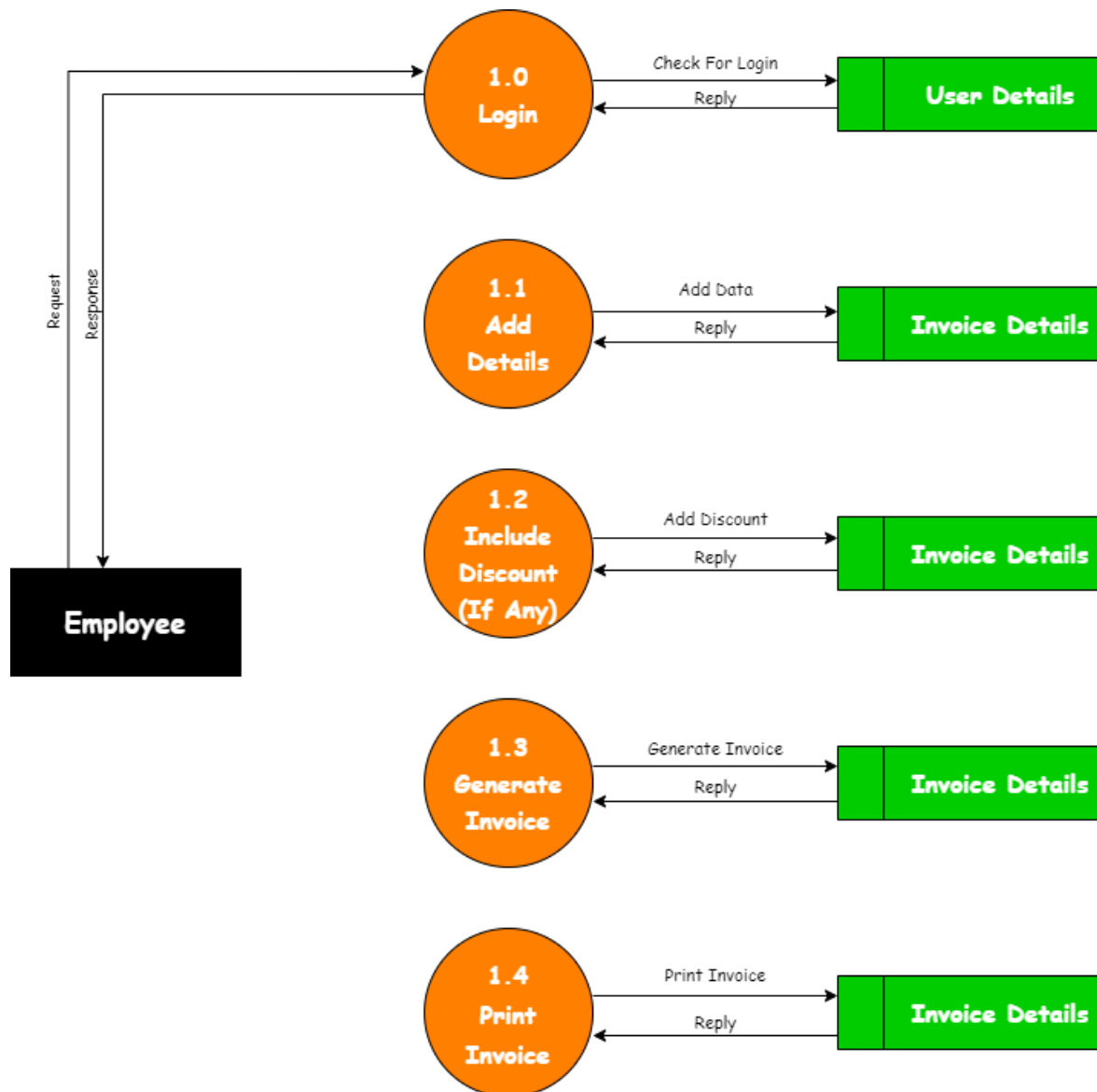
Second – Level

➤ Admin

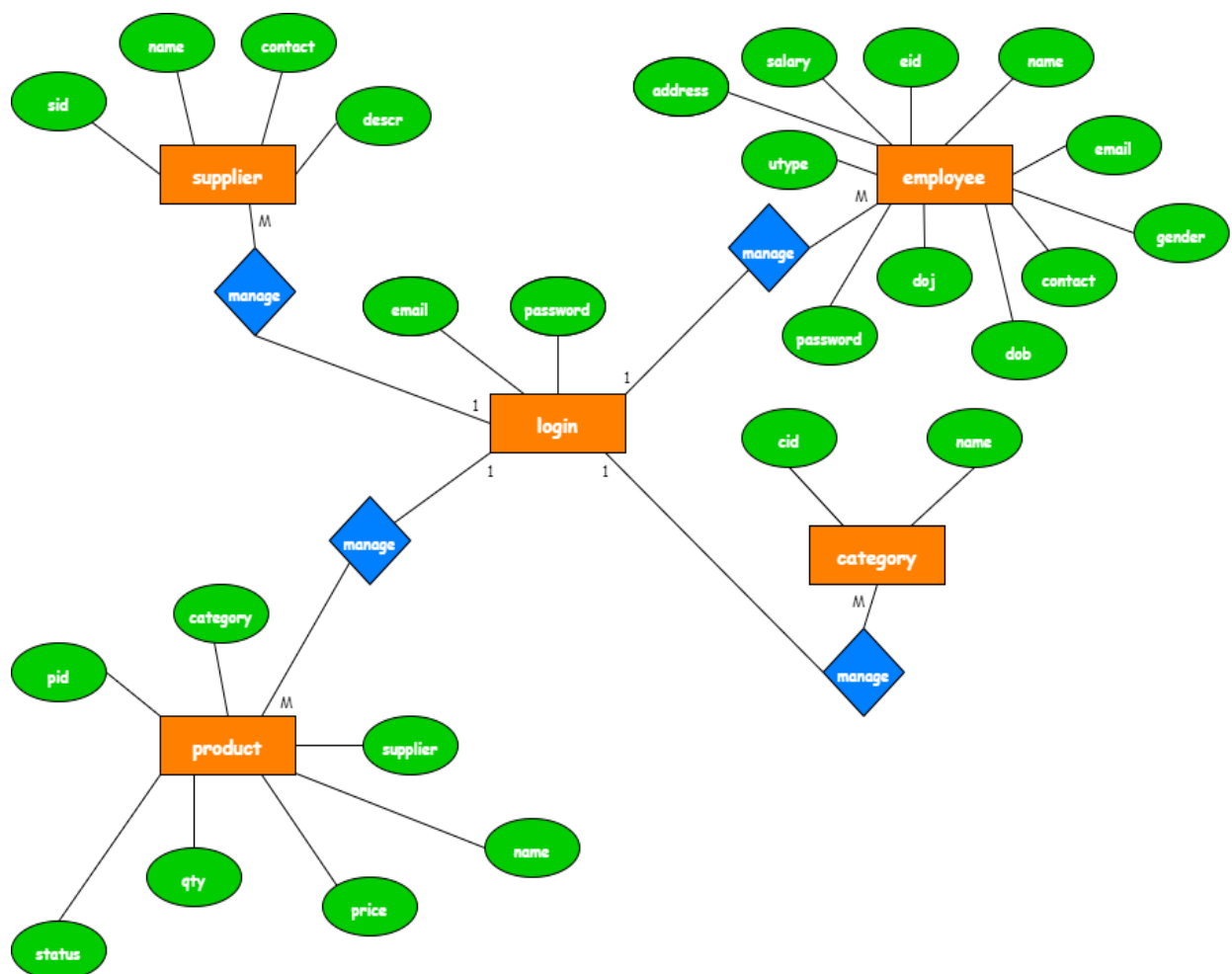




➤ Employee

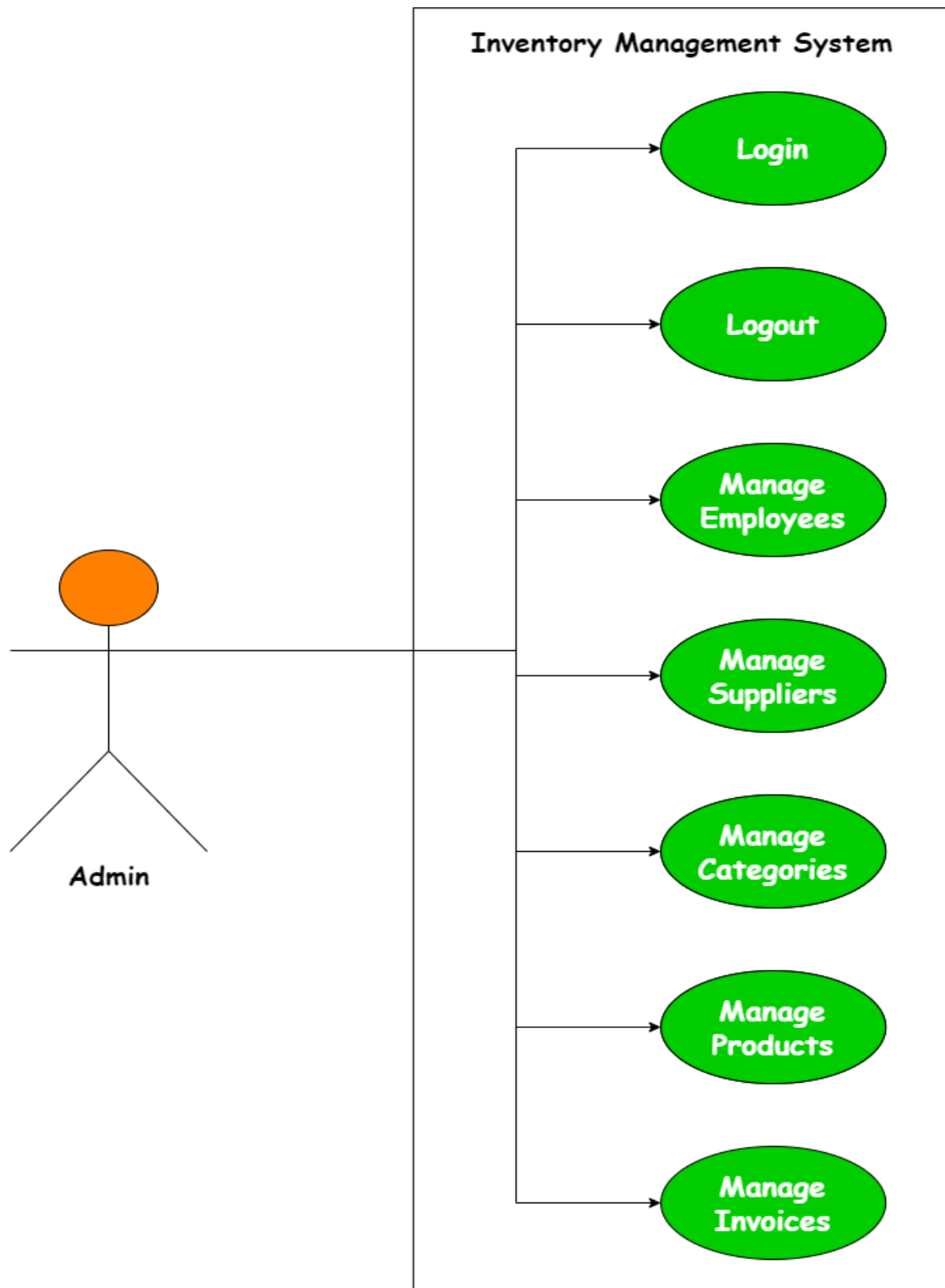


## 4.4 E-R Diagram

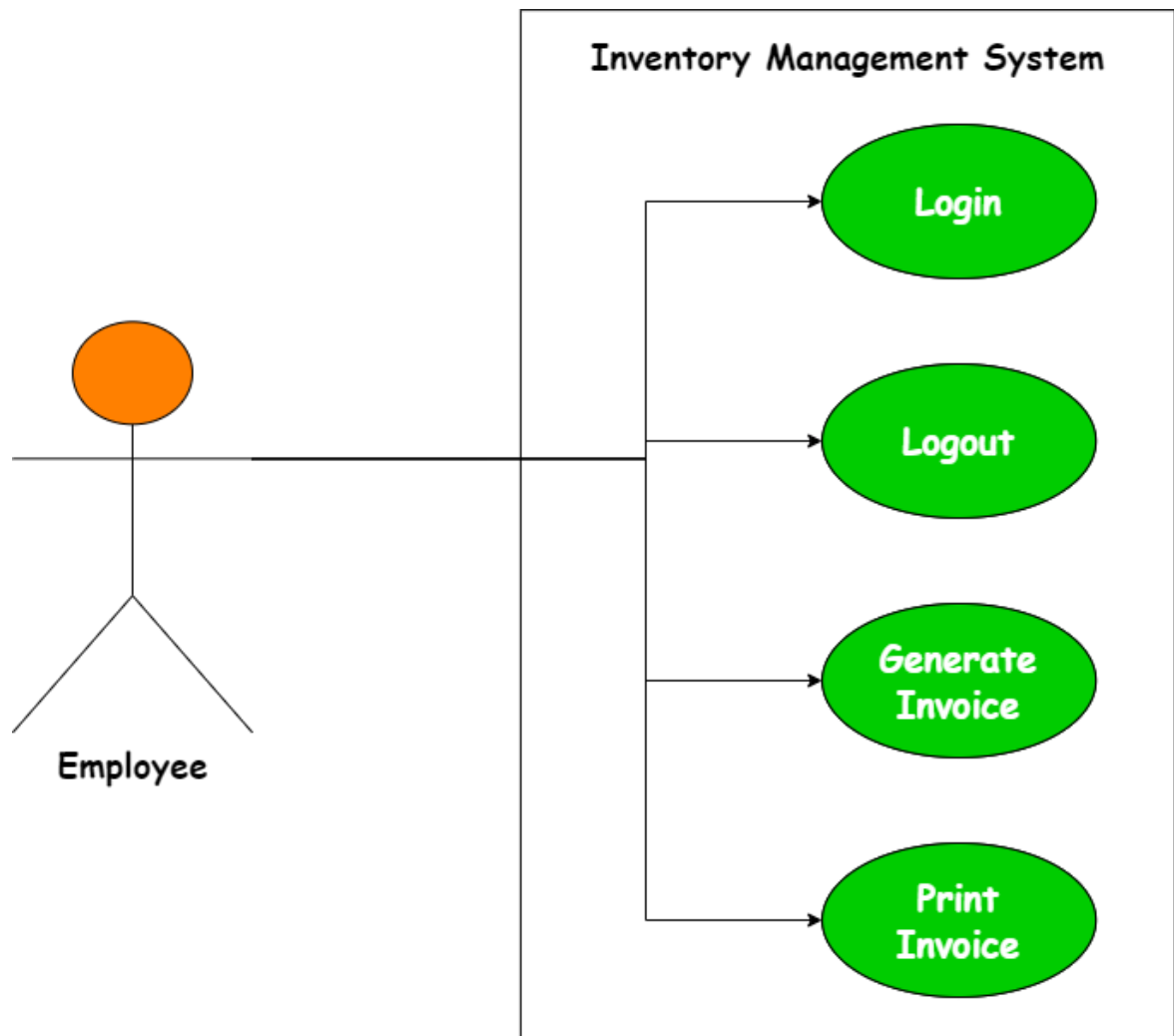


## 4.5 Use – Case Diagram



### ➤ Admin



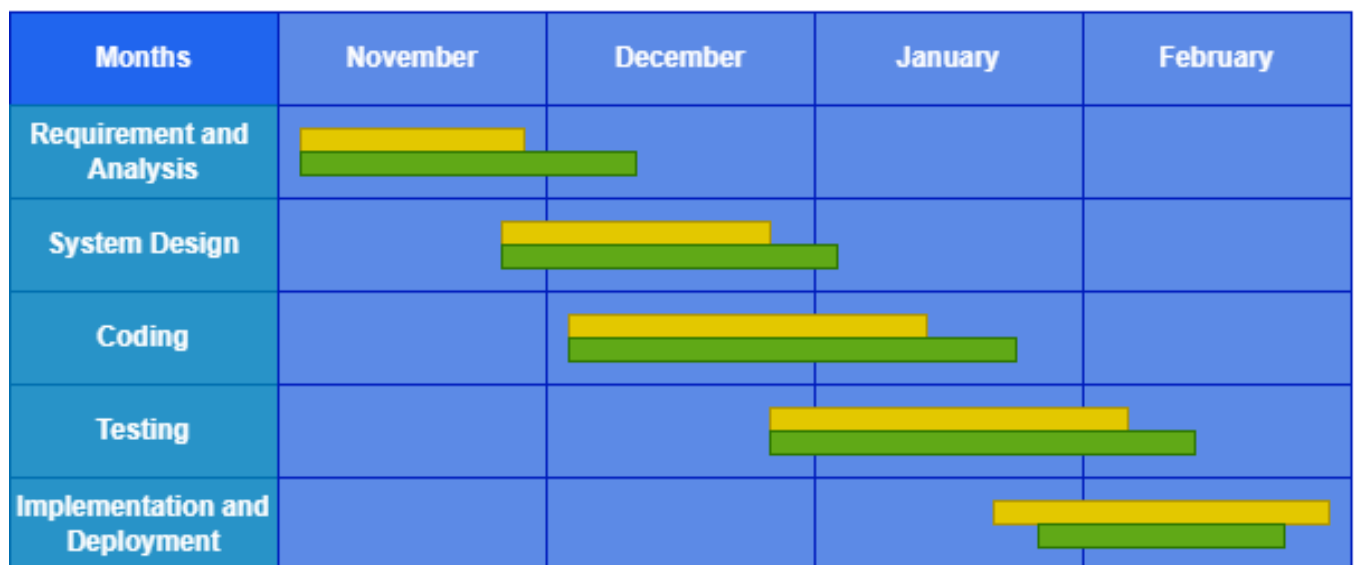
➤ **Employee**



## 4.6 Gantt Chart

 Expected Time  
 Real Time

Inventory Management System



## **CHAPTER 5**

### **TEST CASES**

#### **5.1 Login**

TEST CASE						
TEST CASE NO.: 1				TEST CASE DESIGN DATE:		
				02-Feb-2023		
TEST TITLE: Login Test				TEST CASE EXAMINATION DATE:		
				02-Feb-2023		
DESCRIPTION: In this test login form of project will be tested.						
PRECONDITION: Login form must be working.						
DEPENDENCIES: Application framework and database.						
STEP NO.	TEST STEP	TEST DATA	EXPECTED RESULT	ACTUAL RESULT	STATUS (PASS/FAIL)	NOTES
1	Navigate to login page	Login activity	Login in the page	Login in the page	Pass	
2	Enter email and password	abc@xyz.in	Login successful	Invalid email	Fail	Email and password must be authorized
3	Click login button	Button click	Check credentials	Same as expected	Pass	

## 5.2 Manage Employees

TEST CASE						
TEST CASE NO.: 2				TEST CASE DESIGN DATE:		
				02-Feb-2023		
TEST TITLE: Management Test				TEST CASE EXAMINATION DATE:		
				02-Feb-2023		
DESCRIPTION: In this test managing the employees will be tested.						
PRECONDITION: Management of employees must be done properly.						
DEPENDENCIES: Application framework and database.						
STEP NO.	TEST STEP	TEST DATA	EXPECTED RESULT	ACTUAL RESULT	STATUS (PASS/FAIL)	NOTES
1	Navigate to dashboard	Dashboard activity	Open dashboard	Open dashboard	Pass	
2	Click button employee	Button click	Open Page	Open Page	Pass	
3	Add details	Employee entry	Successfully entered details	This employee id is already assigned, try different	Fail	Id should be not be repeated
4	Click save	Button click	Employee added successfully	Same as expected	Pass	

### 5.3 Manage Suppliers

TEST CASE						
TEST CASE NO.: 3				TEST CASE DESIGN DATE:		
				02-Feb-2023		
TEST TITLE: Management Test				TEST CASE EXAMINATION DATE:		
				02-Feb-2023		
DESCRIPTION: In this test managing the suppliers will be tested.						
PRECONDITION: Management of suppliers must be done properly.						
DEPENDENCIES: Application framework and database.						
STEP NO.	TEST STEP	TEST DATA	EXPECTED RESULT	ACTUAL RESULT	STATUS (PASS/FAIL)	NOTES
1	Navigate to dashboard	Dashboard activity	Open dashboard	Open dashboard	Pass	
2	Click button supplier	Button click	Open Page	Open Page	Pass	
3	Add details	Supplier entry	Successfully entered details	This supplier id is already assigned, try different	Fail	Id should be not be repeated
4	Click save	Button click	Supplier added successfully	Same as expected	Pass	



## 5.4 Manage Categories

TEST CASE						
TEST CASE NO.: 4				TEST CASE DESIGN DATE:		
				02-Feb-2023		
TEST TITLE: Management Test				TEST CASE EXAMINATION DATE:		
				02-Feb-2023		
DESCRIPTION: In this test managing the categories will be tested.						
PRECONDITION: Management of categories must be done properly.						
DEPENDENCIES: Application framework and database.						
STEP NO.	TEST STEP	TEST DATA	EXPECTED RESULT	ACTUAL RESULT	STATUS (PASS/FAIL)	NOTES
1	Navigate to dashboard	Dashboard activity	Open dashboard	Open dashboard	Pass	
2	Click button category	Button click	Open Page	Open Page	Pass	
3	Add details	Category entry	Successfully entered details	Category already present, try different	Fail	Category should be not be repeated
4	Click save	Button click	Category added successfully	Same as expected	Pass	

## 5.5 Manage Products

TEST CASE						
TEST CASE NO.: 5				TEST CASE DESIGN DATE:		
				02-Feb-2023		
TEST TITLE: Management Test				TEST CASE EXAMINATION DATE:		
				02-Feb-2023		
DESCRIPTION: In this test managing the products will be tested.						
PRECONDITION: Management of products must be done properly.						
DEPENDENCIES: Application framework and database.						
STEP NO.	TEST STEP	TEST DATA	EXPECTED RESULT	ACTUAL RESULT	STATUS (PASS/FAIL)	NOTES
1	Navigate to dashboard	Dashboard activity	Open dashboard	Open dashboard	Pass	
2	Click button product	Button click	Open Page	Open Page	Pass	
3	Add details	product entry	Successfully entered details	Product already present, try different	Fail	Product should be not be repeated
4	Click save	Button click	Product added successfully	Same as expected	Pass	

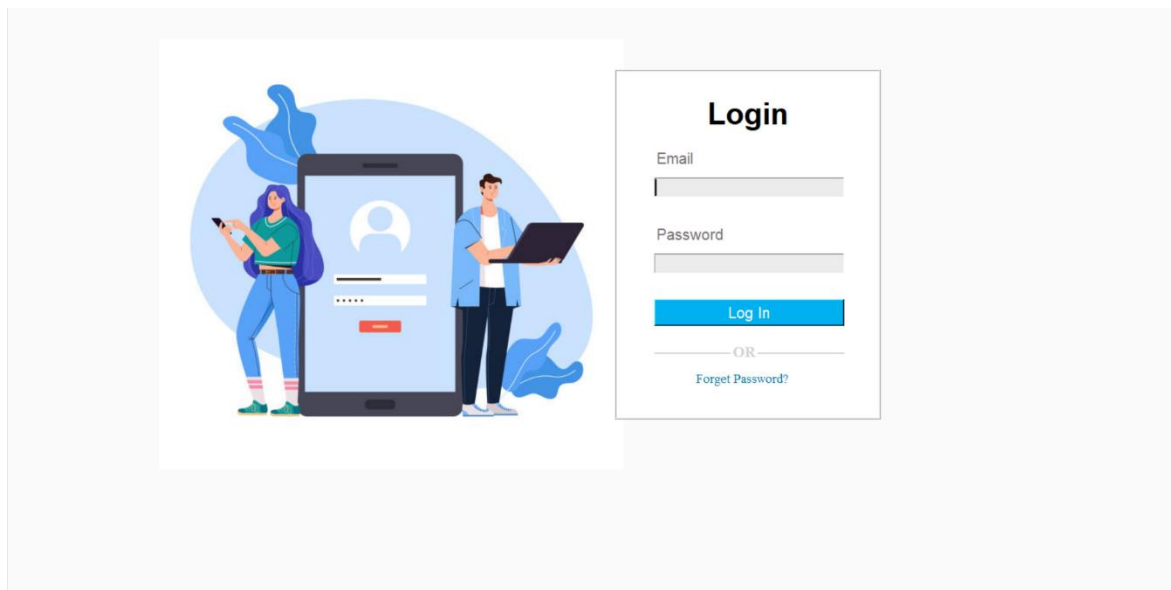
## 5.6 Making Invoices

TEST CASE						
TEST CASE NO.: 6				TEST CASE DESIGN DATE:		
				02-Feb-2023		
TEST TITLE: Invoice generation and printing test				TEST CASE EXAMINATION DATE:		
				02-Feb-2023		
DESCRIPTION: In this test generation and printing of invoice will be tested						
PRECONDITION: Generation and printing of invoice must be done properly.						
DEPENDENCIES: Application framework and database.						
STEP NO.	TEST STEP	TEST DATA	EXPECTED RESULT	ACTUAL RESULT	STATUS (PASS/FAIL)	NOTES
1	Employee Login	Login activity	Open billing page	Open billing page	Pass	
3	Add details	Invoice entry	Bill has been generated	Invalid quantity	Fail	Quantity should be there.
4	Click print	Button click	Bill is printing	Same as expected	Pass	

## CHAPTER 6

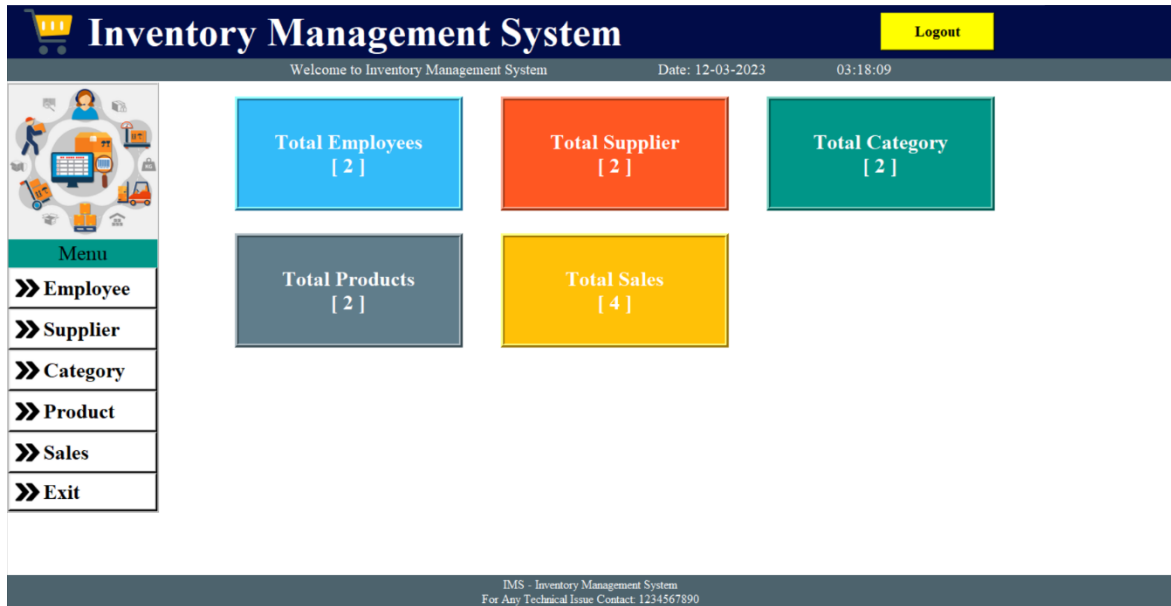
### SCREENSHOTS

#### 6.1 Login Page



- This is user login page.

## 6.2 Dashboard



- This is admin dashboard.

## 6.3 Employee Page

**Search Employee**

Select  **Search**

**Employee Details**

Emp ID  Gender  Contact

Name  D. O. B.  D. O. J.

Email  Password  User Type

Address  Salary

**Save** **Update** **Delete** **Clear**

EMP ID	NAME	EMAIL	GENDER	CONTACT	D. O. B.	D. O. J.	PASSWORD	USER TYPE	ADDRESS	SALARY
1	Aaryan	abc@xyz.com	Male	1234567890	19/11/2002	18/11/2020	Aar@123	Admin	Jamnager	100000
2	Viraj	def@xyz.com	Male	0987654321	21/02/2002	20/02/2020	Vir@123	Admin	Jamnager	100000

- Admin can manage employees from this page.

## 6.4 Supplier Page

### Supplier Details

Supplier Id

Name

Contact

Description

Save

Update

Delete

Clear

Supplier Id

Search

Supplier Id	Name	Contact	Description
1	Aaryan	9033202558	From Jammu
2	Viraj	9499547887	From Jammu

• Admin can manage suppliers from this page.

## 6.5 Category Page

### Manage Product Category

Enter Category Name

Add

Delete

Category ID	Name
1	Mobile
3	Laptop





- Admin can manage categories from this page.

## 6.6 Product Page

**Manage Products**

Category:

Supplier:

Name:

Price:

Quantity:

Status:

**Search Employee**

Product ID	Category	Supplier	Name	Price	Qty
1	Mobile	Aaryan	Samsung M53	24000	96
2	Laptop	Viraj	Dell G95	80000	49

- Admin can manage products from this page.

## 6.7 Sales Page

**View Customer Bills**

Invoice No.

4122478.txt  
4122928.txt

**Customer Bill Area**

- Admin can manage sales invoices from this page.

## 6.8 Billing Page

**Inventory Management System** Logout

Welcome to Inventory Management System Date: 12-03-2023 03:51:09

**All Products**

Search Product | By Name Show All

Product Name  Search

P ID	Name	Price	QTY	Status
1	Samsung M53	24000	96	Active
2	Dell G95	80000	49	Active

Note: Enter 0 Quantity to remove product from the cart

**Customer Details**

Name  Contact No.

**Calculator**

7	8	9	+
4	5	6	-
1	2	3	*
0	C	=	/

**Cart** Total Product:[0]

P ID	Name	Price
------	------	-------

Product Name  Price Per Qty  Quantity

In Stock Clear Add | Update Cart

**Customer Bill Area**

Bill Amount [0]	Disconnt [5%]	Net Payment [0]
<span>Print</span>	<span>Clear All</span>	<span>Generate Save Bill</span>

IIMS - Inventory Management System

- Employee can generate and print invoice from this page.



## **CHAPTER 7**

### **LIMITATIONS AND FUTURE ENHANCEMENTS**

#### **7.1 Limitations**

- Bank account should be maintained manually.
- Only one company can be run at one time.

#### **7.2 Future Enhancements**

- Maintenance of bank account can be done digitally.
- Multiple companies can be run at one time.

## **CHAPTER 8**

### **CONCLUSION**

- At last **Inventory Management System** is a GUI based web application which allows the owner to maintain complete inventory of his/her firm.
- In this system, admin and employee can login by using their credentials.
- Admin can maintain the whole inventory digitally whereas employee can only generate and print the invoices.

## **CHAPTER 9**

### **REFERENCES AND BIBLIOGRAPHY**

- All the references listed below were used to develop and design this GUI based web application and were also used for documentation.
- We are thankful to each and every person who helped us and supported us for this project completion.

#### **9.1 References**

- [www.javatpoint.com](http://www.javatpoint.com)
- [www.youtube.com](http://www.youtube.com)

#### **9.2 Bibliography**

- [www.ttkbootstrap.readthedocs.io](http://www.ttkbootstrap.readthedocs.io)