Gujarat Technological University
Chandkheda, Ahmedabad

A Report on
Inventory Management System

Under Subject of
Design Engineering
B.E III , Semester – VI
(Computer Engineering & Computer Science Engineering)

Submitted By

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Academic Year
2021-2022

Abstract

In this “Inventory Mangement System” project, We made Software .In which first thing users need to do is authenticate themselves. This Software lets you Enter price values and user will get the output from calculating System. Our app will benefit the Current market and shop owners .It can be called as record keeping System.

Acknowledgement

I would like to express my thanks of gratitude to this department for the academic achievement that it has provided us during last three years and finally provided us the golden opportunity to do this wonderful project. And my special thanks to professor Mital Sarvaiya, who also helped me in during a lot of research and I come to know about so many new things, I really thankful to her.

We are pleased to present this report on the project, “Inventory Mangement System” developed of B.H Gardi College of engineering as the computer department based on Gujarat Technological University.

B.H. GARDI COLLEGE OF ENGINEERING

CERTIFICATE

This is to certify that the "Inventory Management System" has been carried out by Prashant Rai, Enrollment No.(190040131512) under guidance in fulfilment of the subject Design Engineering in COMPUTER SCIENCE & ENGINEERING (6th semester) of Gujrat Technological University, Ahmedabad during the academic year 2022.

DATE: 16-3-2022

GUIDE:

Project Guide — **Prof.Mital Sarvaiya**

Head of the Department — **Prof.Hemal Rajyaguru**

B.H. GARDI COLLEGE OF ENGINEERING

CERTIFICATE

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DATE: 16-3-2022

GUIDE:

Project Guide **Head of the Department**

Prof.Mital Sarvaiya **Prof.Hemal Rajyaguru**

B.H. GARDI COLLEGE OF ENGINEERING

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DATE: 16-3-2022

GUIDE:

Project Guide	**Head of the Department**
Prof.Mital Sarvaiya	**Prof.Hemal Rajyaguru**

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Ch 1 – Introdution

Project Summary

This project will make inventory system fast and easy to use and it will integrate inventory with database.This project will help marketing and business people save time . instead of using books for record and going through each destinations it helps identifies items.

1.1 Goals and Objectives

Main goal of this project is to save time and be flexible using this software and do less interactions with system and get instant results. one of the major objective of this project is ,that it calculate Bills and has SQLite3 database system to manage data and at the end of process user will receive a printed slip.

1.2 Scope

To make inventory system easy and flexible to user.
To make software that is user recognible and easy to use.
To save time calculating and managing database.

Ch 2 – System Requirement and study

User characteristics

With This software users can manage

inventory system .The role of a entity :

- **Users :**

Users are the part of this desktop app who will use all the features included in this Software like Login/Signup, generate bill, Add employee , Registration , OTP functionality for forgotten password etc.

2.1 Hardware and Software Requirements

Software Requirements

- POS
- Web Browser
- VS Code
- Com
- Operation System (Any)
- System Storage

Hardware Requirements

- Desktop or Laptop (Device To run Software on)
- 512MB Ram
- 200MB Free Storage Space
- Printer

Ch 3 – System Analysis

Feasibility Study

The feasibility study is the important step in any project development process. This is because it makes analysis of different aspects like cast required for developing and executing the system. The time required for each phase of the system and so on. In this important factors which are not analyzed, that defiantly would have impact on the organization and development of the system would be a total failure.

- **Technical feasibility** : The development of the system is technically feasible as the various technology needs for the development and deployment are fulfilled. The system is to be developed using familiar software and hardware environment tools(windows 10,various text editors, Python ,SQLLITE3).

- **Economic feasibility** : economic feasibility is important as it gives an idea if the project to be developed can be completed at the enough cost, affordable for both the client and the developer. The system is undertaken for the development as the part of the degree course curriculum development course is to be change for project. Thus the system is economical feasible for the developer. The required software are available with company. So the project is economically feasible for the developer as well as the client.

- **Operational feasibility** : operational feasibility states that it should work under condition for it to be operationally feasible. In order to make the system easy to use for user, the user interface of the system proposed has been kept extremely simple. So that any one with little knowledge of operating, working on the computer can easily carry out the job. By doing so there is no need for the company either to recruits some special individual. Thurs the project is operationally feasible.

3.2 Data Modelling

3.2.1 Admin

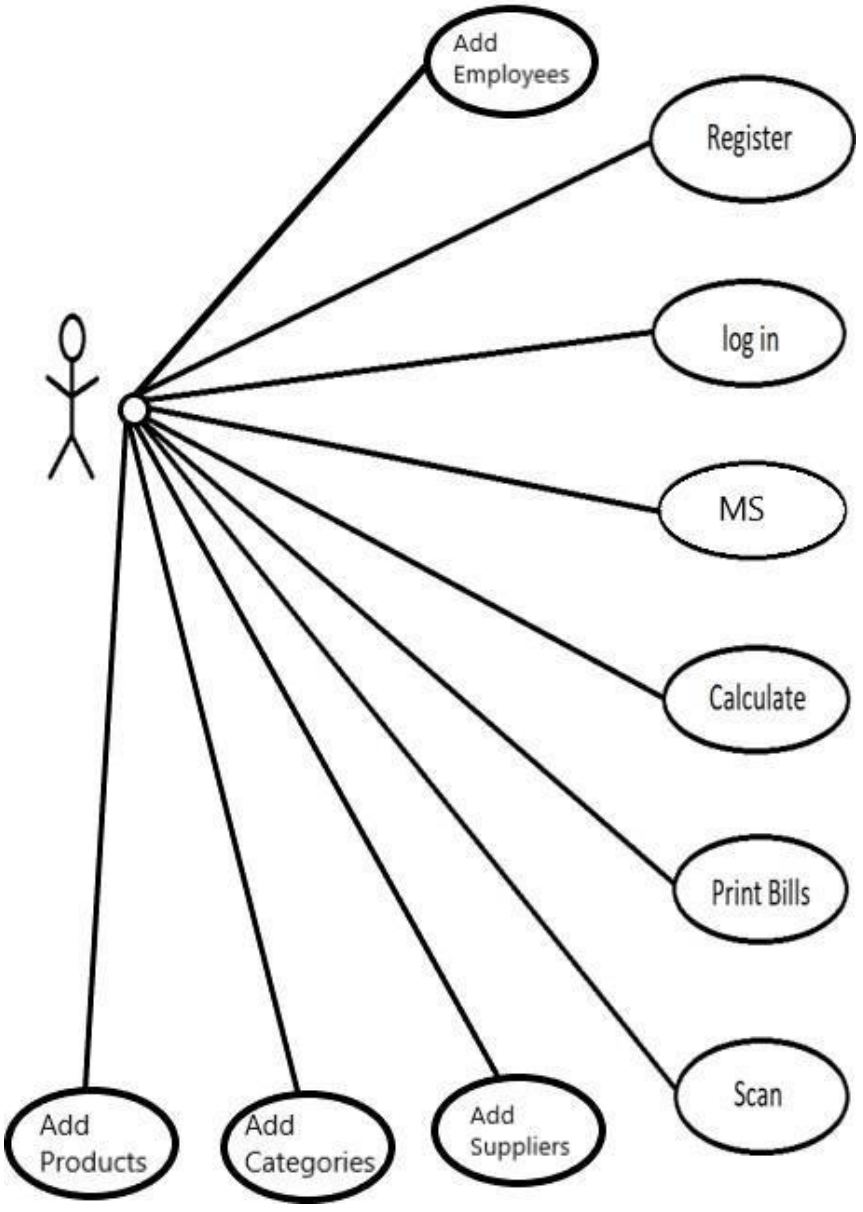


Fig 3.2.1 User case diagram (Admin)

3.2.2 E-R Diagram (user)

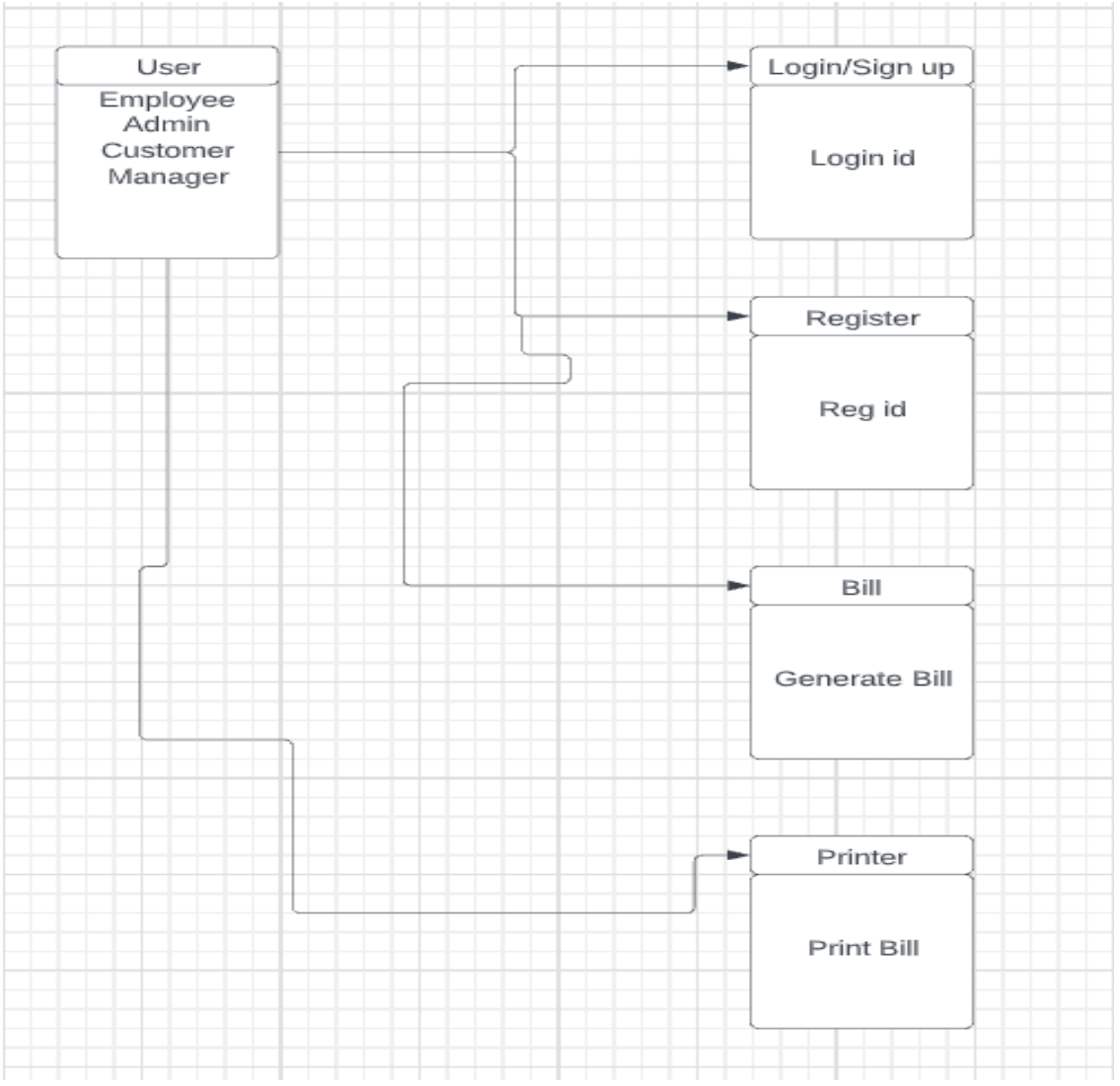
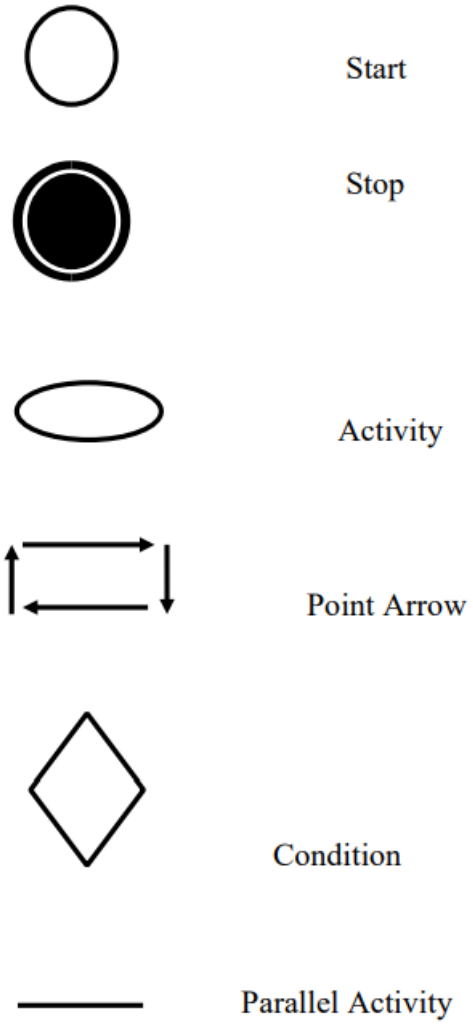


Fig 3.2.2 E-R Diagram

3.2.3 Activity Diagram Notations



3.2.3 Activity Diagram (user)

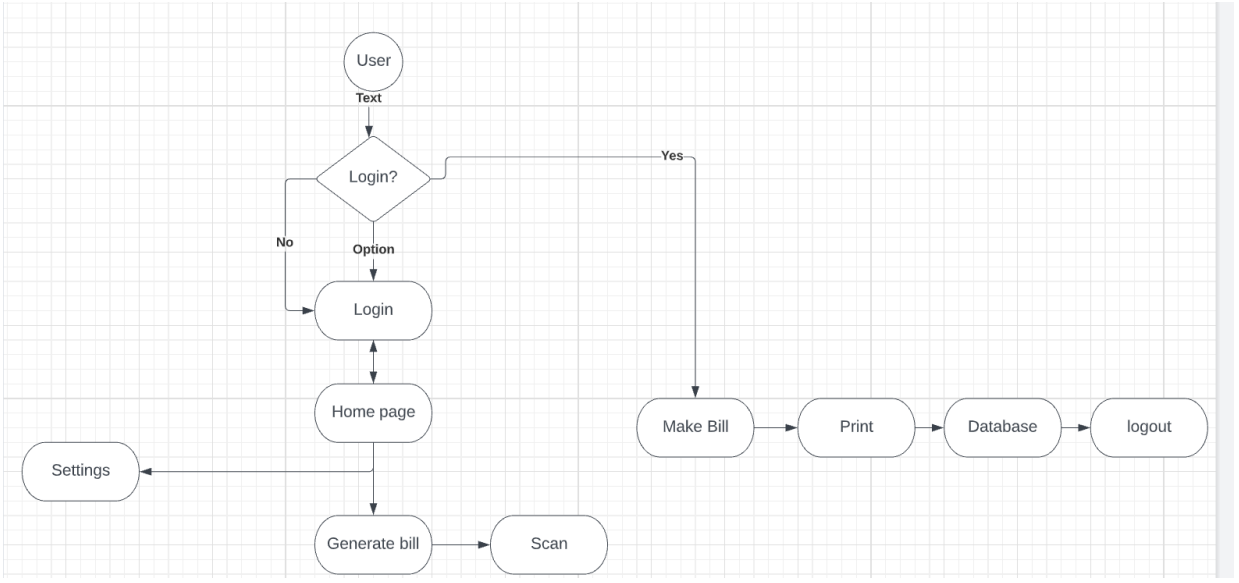
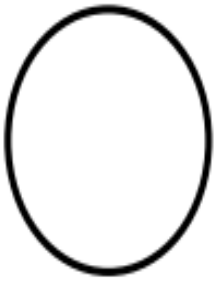


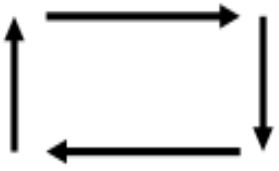
Fig 3.2.3 Activity Diagram

3.2.4 Data flow diagram notations

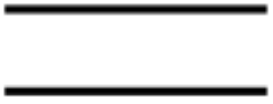
Entity / User



Process / Function



Connector



Data Storage

3.2.4 Data Flow Diagram

- **DFD Level 0**

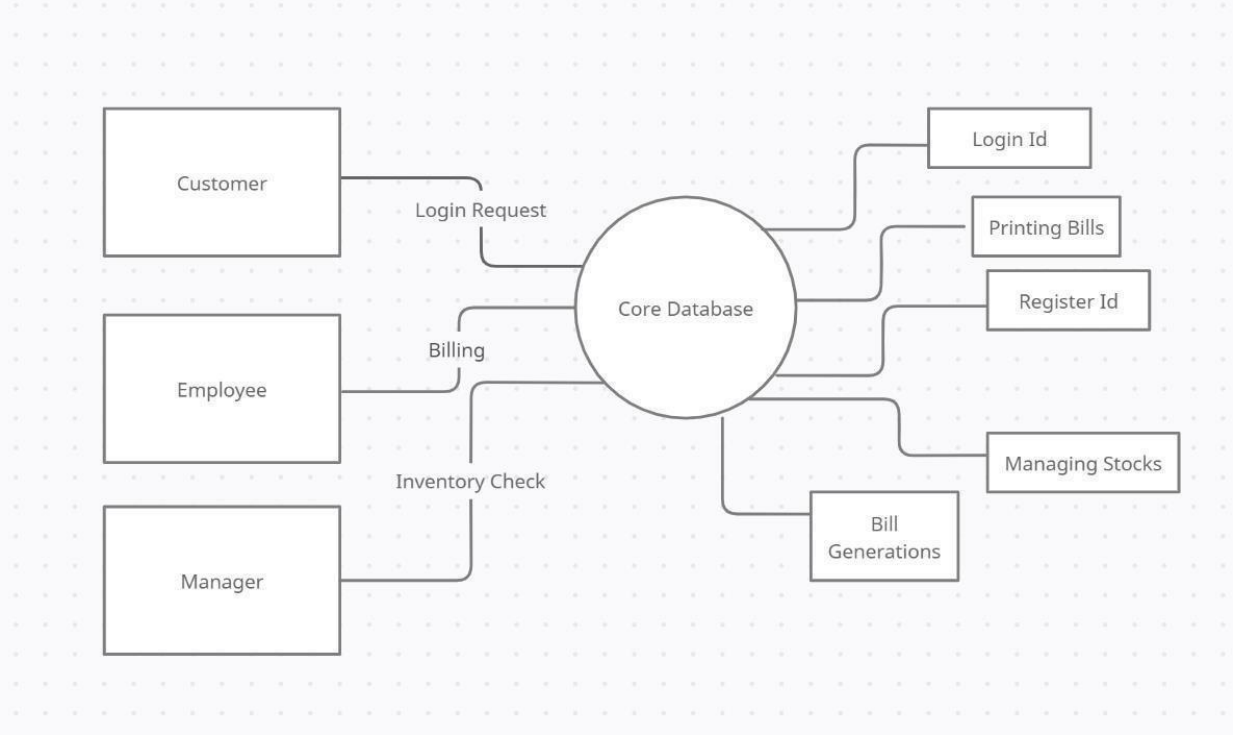


Fig 3.2.4 Data Flow Diagram

3.2.5 Sequence Diagram

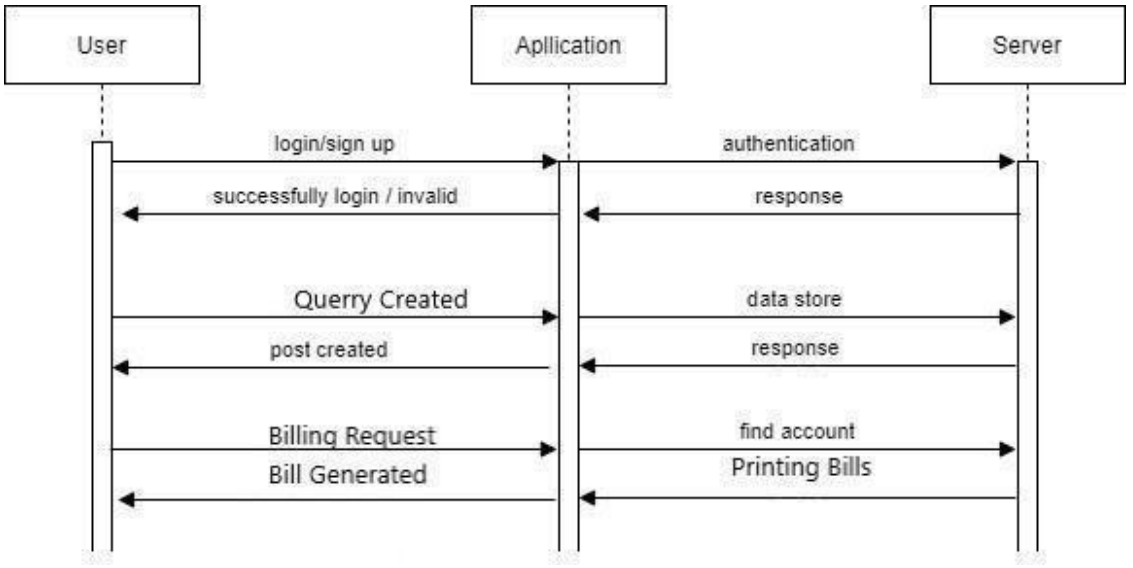


Fig 3.2.5 Sequence Diagram

Ch 4 – System Implementation

4.1 Implementation Environment

Home Page

Fig:4.1.1 Home Page

Supplier Details Page

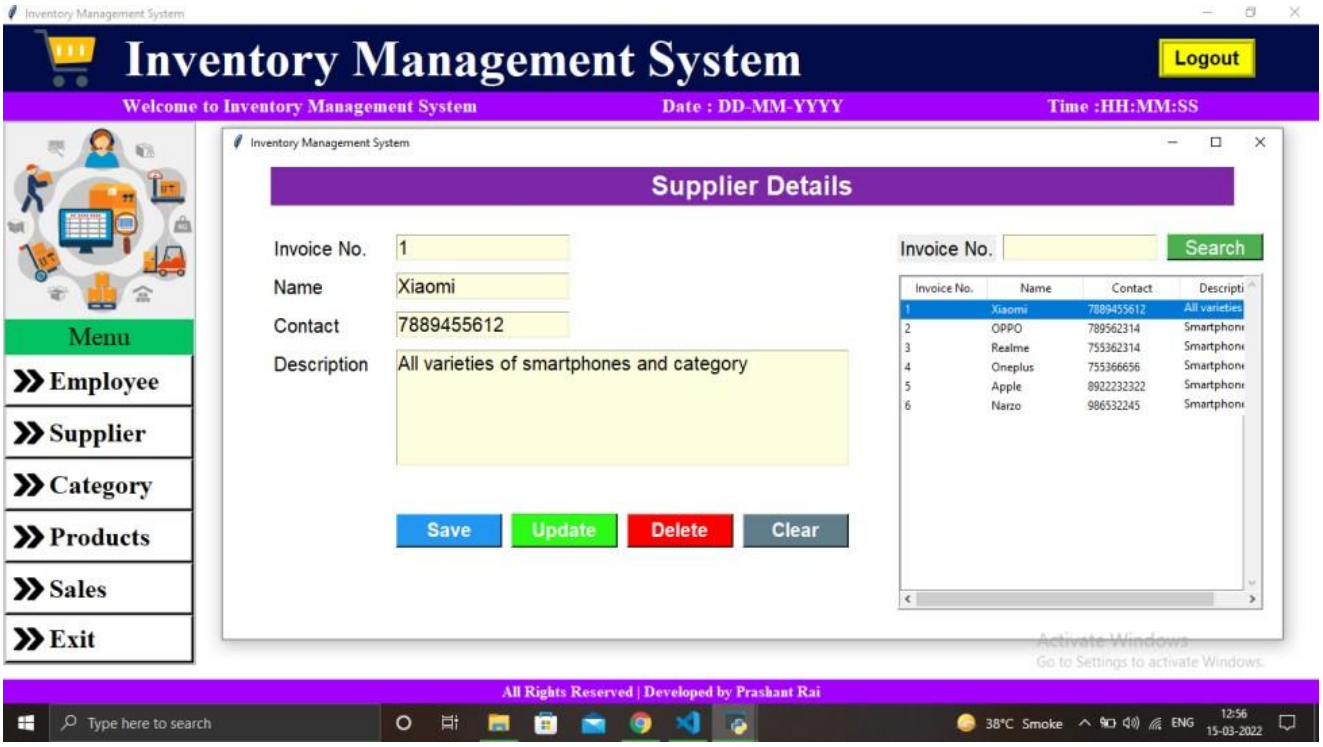


Fig:4.1.2 Supplier Detail Page

Employee Details Page

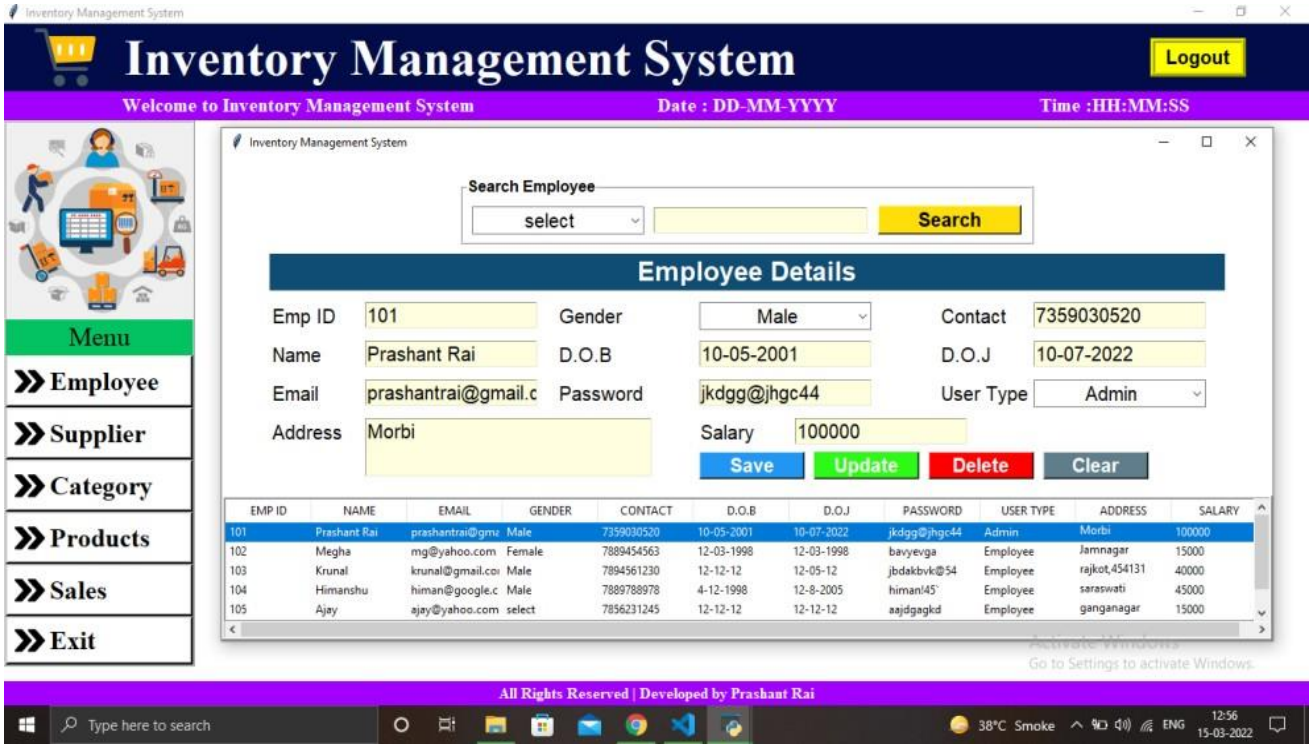


Fig:4.1.3 Employee Detail Page

Manage product Details Page

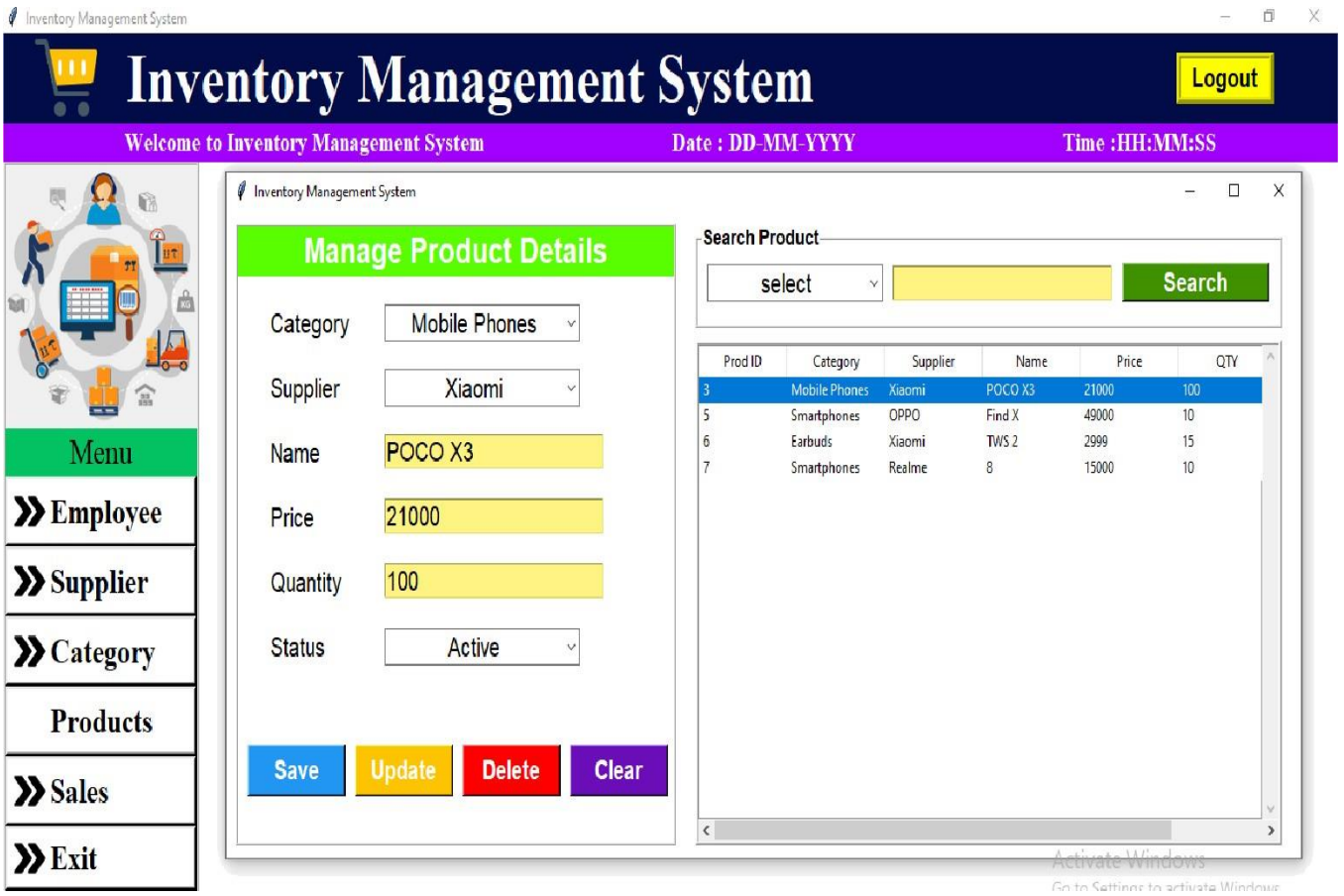


Fig: 4.1.4 Manage Product Details Page

Product Category

Fig: 4.1.5 Product Category

Manage Product Category

Fig:4.1.6 Product Category

Manage Product Category

Fig: 4.1.7 Product Category

Employee Details

Table: employee

Filter in any column

	eid	name	email	gender	contact	dob	doj	pass	utype	address	salary
	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
1	101	Prashant Rai	prashantrai@gmail.com	Male	7359030520	10-05-2001	10-07-2022	jkdgg@jhgc44	Admin	Morbi ...	100000
2	102	Megha	mg@yahoo.com	Female	7889454563	12-03-1998	12-03-1998	bavyevga	Employee	Jamnagar...	15000
3	103	Krunal	krunal@gmail.com	Male	7894561230	12-12-12	12-05-12	jbdakbvk@54	Employee	rajkot,454131 ...	40000
4	104	Himanshu	himan@google.com	Male	7889788978	4-12-1998	12-8-2005	himan!45`	Employee	saraswati nagar,rajkot...	45000
5	105	Ajay	ajay@yahoo.com	select	7856231245	12-12-12	12-12-12	aajdgagkd	Employee	ganganagar ...	15000
6	106	Eshnat	fcnhff xdfg xdx	select	9865321245	21+++65066	6+6562	nvihgvisht	Admin	xhgh...	45000

1 - 6 of 6

Go to: 1

Fig:4.1.8 Employee detail Table

4.1 Coding Standard

- A coding standard gives a uniform appearance to the codes written by different engineers. It improves readability, maintainability of the code end it reduces complexity also. It helps in code reuse and helps to detect error easily. It prompts sounds programming, practice and increase efficiency of programmers.

4.2 Coding Standard

Main Window Source Code

```
from tkinter import*
from PIL import Image,ImageTk
from employee import EmployeeClass
from supplier import SupplierClass
from category import CategoryClass
from product  import ProductClass
from sales import SalesClass
from exit import ExitClass

class IMS:
   def _init_(self,root):
      self.root=root
      self.root.geometry('1350x700+0+0')
      self.root.title("Inventory Management System")
      self.root.config(bg="white")

      #----------Title and Header 1----------
      self.icon_cart=PhotoImage(file="Stock Images/logo1.png")

lbl_title=Label(self.root,image=self.icon_cart,compound=LEFT,padx=30,text="I
nventory Management System",font=("times new
roman",40,"bold"),bg="#010c48",fg="white",anchor="w").place(x=0,y=0,heigh
t=70,relwidth=1)

btn_logout=Button(root,text="Logout",font=("Imperial",15,"bold"),bd=5,relief
=RIDGE,cursor='hand2',bg='yellow').place(x=1200,y=15,height=40, width=100)

      #----------Title and Header 2----------
      self.lbl_clock=Label(self.root,text="Welcome to Inventory Management
System\t\t\tDate : DD-MM-YYYY\t\t\tTime :HH:MM:SS",font=("goudy old
style",15,"bold"),bg="#a200ff",fg="white").place(x=0,y=70,height=30,relwidth=
1)

      #----------Left Menu Frame----------
      self.left_icon=Image.open("Stock Images/menu_im.png")
      self.left_icon=self.left_icon.resize((200,200),Image.ANTIALIAS)
      self.left_icon=ImageTk.PhotoImage(self.left_icon)
      left_menu=Frame(self.root,bd=2,relief=RIDGE,bg='white')
      left_menu.place(x=0,y=100,width=200,height=565)
```

```
        lbl_left_icon=Label(left_menu,image=self.left_icon)
        lbl_left_icon.pack(side=TOP,fill=X)

        #-------------BUTTON & LABEL-------------
        lbl_menu=Label(left_menu,text="Menu",font=("times new
roman",20),bg="#02c262").pack(side=TOP,fill=X)
        self.icon_side=PhotoImage(file="Stock Images/side.png")

btn_employee=Button(left_menu,image=self.icon_side,compound=LEFT,padx=5
,anchor="w",text="Employee",font=("times new
roman",20,"bold"),bd=3,bg="white",cursor="hand2",command=self.employee)
.pack(side=TOP,fill=X)

btn_supplier=Button(left_menu,image=self.icon_side,compound=LEFT,padx=5,
anchor="w",text="Supplier",font=("times new
roman",20,"bold"),bd=3,bg="white",cursor="hand2",command=self.supplier).
pack(side=TOP,fill=X)

btn_category=Button(left_menu,image=self.icon_side,compound=LEFT,padx=5,
anchor="w",text="Category",font=("times new
roman",20,"bold"),bd=3,bg="white",cursor="hand2",command=self.category
).pack(side=TOP,fill=X)

btn_product=Button(left_menu,image=self.icon_side,compound=LEFT,padx=5,a
nchor="w",text="Products",font=("times new
roman",20,"bold"),bd=3,bg="white",cursor="hand2",command=self.product).
pack(side=TOP,fill=X)

btn_sales=Button(left_menu,image=self.icon_side,compound=LEFT,padx=5,anc
hor="w",text="Sales",font=("times new
roman",20,"bold"),bd=3,bg="white",cursor="hand2",command=self.sales).pac
k(side=TOP,fill=X)

btn_exit=Button(left_menu,image=self.icon_side,compound=LEFT,padx=5,anch
or="w",text="Exit",font=("times new
roman",20,"bold"),bd=3,bg="white",cursor="hand2",command=self.exit).pack
(side=TOP,fill=X)

        #-------------Content and Dashboard-------------
        self.lbl_employee_block=Label(self.root,text="Total Employees\n[ 0
]",bd=5,relief=RIDGE,bg="#33bbf9",fg="white",font=("goudy old
style",20,"bold"))
        self.lbl_employee_block.place(x=300,y=120,height=150,width=300)
```

```
        self.lbl_supplier_block=Label(self.root,text="Total Suppplier\n[ 0
]",bd=5,relief=RIDGE,bg="red",fg="white",font=("goudy old
style",20,"bold"))
        self.lbl_supplier_block.place(x=650,y=120,height=150,width=300)

        self.lbl_category_block=Label(self.root,text="Total Category\n[ 0
]",bd=5,relief=RIDGE,bg="#2aff12",fg="white",font=("goudy old
style",20,"bold"))
        self.lbl_category_block.place(x=1000,y=120,height=150,width=300)

        self.lbl_product_block=Label(self.root,text="Total Products\n[ 0
]",bd=5,relief=RIDGE,bg="#607d8b",fg="white",font=("goudy old
style",20,"bold"))
        self.lbl_product_block.place(x=300,y=300,height=150,width=300)

        self.lbl_sales_block=Label(self.root,text="Total Sales\n[ 0
]",bd=5,relief=RIDGE,bg="#ffc107",fg="white",font=("goudy old
style",20,"bold"))
        self.lbl_sales_block.place(x=650,y=300,height=150,width=300)

        #------------Footer--------------
        self.lbl_footer=Label(self.root,text="All Rights Reserved | Developed by
Prashant Rai",font=("goudy old
style",12,"bold"),bg="#a200ff",fg="white").pack(side=BOTTOM,fill=X)


#=====================================================
=================================================
    def employee(self):
        self.new_win=Toplevel(self.root)
        self.new_obj=EmployeeClass(self.new_win)

    def supplier(self):
        self.new_win=Toplevel(self.root)
        self.new_obj=SupplierClass(self.new_win)

    def category(self):
        self.new_win=Toplevel(self.root)
        self.new_obj=CategoryClass(self.new_win)

    def product(self):
        self.new_win=Toplevel(self.root)
        self.new_obj=ProductClass(self.new_win)
```

```
    def sales(self):
        self.new_win=Toplevel(self.root)
        self.new_obj=SalesClass(self.new_win)

    def exit(self):
        self.new_win=Toplevel(self.root)
        self.new_obj=ExitClass(self.new_win)


if _name=="main_":

    root=Tk()
    obj=IMS(root)
    root.mainloop()
```

4.3 Coding Standard

Database source code

```
import sqlite3

def create_db():
    con=sqlite3.connect(database=r'ims.db')
    cur=con.cursor()
    cur.execute("CREATE TABLE IF NOT EXISTS employee(eid
INTEGER PRIMARY KEY AUTOINCREMENT,name text,email
text,gender text,contact text,dob text,doj text,pass text,utype
text,address text,salary text)")
    con.commit()

    cur.execute("CREATE TABLE IF NOT EXISTS supplier(invoice
INTEGER PRIMARY KEY AUTOINCREMENT,name text,contact
text,description text)")
    con.commit()

    cur.execute("CREATE TABLE IF NOT EXISTS category(cid
INTEGER PRIMARY KEY AUTOINCREMENT,name text)")
    con.commit()

    cur.execute("CREATE TABLE IF NOT EXISTS product(pid
INTEGER PRIMARY KEY AUTOINCREMENT,category text,
supplier text,name text, price text, qty text, status text)")
    con.commit()

create_db()
```

4.4 Bill Receipt

Welcome Fast Bill Retail

Bill No. : 1349
Customer Name : Prashant Rai
Phone Number : 4214684645

==========

Products	QTY	Price
Food Oil	23	4140
Sprite	23	920

Grocery Tax	Rs. 414.0
Cold Drinks Tax	Rs. 46.0
Total Bill :	Rs. 5520.0

Ch 5 – Testing

5.1 Testing Planning, Objectives and Stratagies

- **Testing Planning**

We planned to catch the errors by try and catch blocks. Then we solve the errors one by one. I also keep the record of all the errors so that in feature it will be helpful to us. Software testing is an important is an important technique for assessing the quality of a software product. Software testing is the process of analysis a software item to detect the differences between existing and required condition and to evaluate the features of the software item. Software testing is an activity that should be done throughout the whole development process. Software testing is one of the "verification and validation" or V&V, software process. Made such that the product build is not what the customer asked for; validation always involves comparison against requirement.

- **Testing Objectives**

Black box testing should make use of randomly generated input, to eliminate any guess work by the tester as to the methods of the function.

- Data outside of the specified input range should be tested to check to robustness of the program.
- Boundary cases should be tested to make sure that highest and lowest allowable inputs produce proper output.
- The number zero should be tested when numerical data is to beinput.
- Stress testing should be performed (try to overload the program with input to see where it reaches its maximum capacity), especially with real time systems.
- Crash testing should be performed to see what it takes to bring the system down.
- Other functional testing technique include: transaction testing, syntax testing, domain testing, and logic testing, and start testing. Finite state machine models can be used as a guide to design functionaltests.

- **Objective of testing:**

The main purpose of testing and information system is to find the errors and correct them. A successful test is one find and errors.

- To discuss the distinctions between validation testing and defect testing.
- To describe the principles of system and component testing.
- To describe strategies for generating system test cases.
- To understand the essential characteristics of tool used for test automation.
- Testing is a process of executing a program with the intent of finding an error. A good test case is one that has a high probability of finding an undiscovered error.
- To ensure customer satisfaction, enhance business and set a good reputation for the software developer.

Ch 6 - Limitation and Features

6.1 Limitations

- Barcode scanning will be introduced in future and is notavailable yet.
- Funtionalities can be enhanced in future with seeing the market trend.

6.2 Future Enhancement and Scope

- User Friendly
- Registrations
- Add Products
- Login/Sign-in
- Add Employees
- Generate Bills
- Some advancements in security ,etc

Ch 7 – References

Refrences

https://www.w3schools.com/

https://www.tutorialspoint.com/index.htm

https://www.udemy.com/topic/python/

https://www.sqlite.org/index.html

https://devguide.python.org/documenting/

Ch 8 - Conclusion

Conclusion

This Python GUI desktop application focuses on the ease of using the software for all the stakeholders and users And also by providing all the necessary functionalities which are already present in the market like printing and generating bills for the retail customers along with that our project comes with the managing the inventory features which is a big problem solver for any retail shop or supermarket. User can maintain his own inventory by getting all the required access as an admin and making all the required changes afterwards.for safety and privacy purpose we also have a login panel in our software which is required for one time to get you verified. This project is a complete overview of billing software and inventory software and thus it can be differentiated from others applications.