MINISTRY OF EDUCATION AND TRAINING

UNIVERSITY OF ECONOMICS AND FINANCE

PROJECT REPORT

DESKTOP APPLICATION DEVELOPMENT

TOPIC

PUB MANAGEMENT SOFTWARE

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Minor: **Software Engineering**

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ABSTRACTS

Currently, technology is present in all fields of industry, becoming a popular, use ful labor tool and playing a very important role in life.
Talking about technology, there are hundreds of applications and utility systems. Among them can be mentioned information management systems and services. Through that system, we can easily batch manage a database efficiently, easily, and quickly. It helps users save time thoroughly and avoid unnecessary mistake.

Therefore, we have implemented the topic 'Pub Management Software' to quickly implement tasks for users, there is no need to use too much ink and paper for statistics in the pub business.

The software is formed to the support tools such as: SQL Server Management Studio 19, Microsoft Visual Studio 2022.

We sincerely thank Mr Hiếu for teaching us useful knowledge and helping us complete the topic. However, our knowledge is still limited and has many shortcomings and is not 100% complete. We hope you can understand and give us more suggestions so that we can have more ideas and solid knowledge to optimize as much as possible for this management software as well as the next topics.

CHAPTER 1: OVERVIEW

1. Why did we choose this topic?

Opening 1 pub requires many factors: financial, material, geographical, favourable to help the business develop. Besides, how to manage your pub is also 1 question that needs to be solved. So how is the pub managed? What needs to be managed? How to manage to be the most convenient, less laborious, and highly effective. That is 1 of the reasons that we decided to choose this topic.

2. Research Objectives

The software supports the management of operations such as billing, statistics, employee management... Pub management software makes it easy for users to use, save time, simple operation.

- Build a system that is suitable, easy to understand, easy to use for users. Understand the sales management system, what areas need to be managed to build applications to suit practical needs.

- Help manage the system better, manage it easier and more convenient.

- Help yourself have more creativity, thinking through user interface design, applying your knowledge into practice.

3. Research Tasks

This software was created with the hope of bringing convenience to users as well as helping shop owners to review in general the business situation of their shops.

Software also brings economic benefits as a solution that makes management simple and user-friendly.

4. Objects of Study and Research Subjects

Objects of study: Pub management software.

Research subjects: People who need pub business needs shop management software, sales operations, the operating process of 1 regular pub.

Research Facilities

Study the theoretical basis of information systems analysis and design.

SQL database management system 2019.

5. Research methodology and scope of research

a. Research methodology

Refer to, study more documents on google, YouTube.

b. Scope of research

The scope revolves around sales operations, following the management of 1 pub, ensuring the full main functions of the software and exploit new relevant functions to help utility software.

CHAPTER 2: THEORETICAL FOUNDATIONS OF THE TOPIC

1. Database and SQL Server 2019

2.1.1 Database:

It is a data warehouse organized according to 1 certain principle. It's a collection of interrelated files, designed to minimize data redundancy, ensuring reliability when retrieving data. These files contain information representing objects in 1 real-world application.

SQL Server 2019:

Microsoft SQL Server is a relational database management system that provides a way to organize data by saving them to tables. Relational data is stored in tables, and those relationships are defined between tables. Users access data on the server through the application. The database administrator accesses the server directly to perform configuration functions, administer and perform database maintenance operations.

SQL is used to control all the functions that a database management system has offers to users include:

o Data definition: SQL provides the ability to define databases, data storage and organization structures as well as relationships between data components.

o Data retrieval and manipulation: With SQL, users can easily perform operations to retrieve, add, update, and remove data in databases.

o SQL-access control can be used to allocate and control user operations on data, ensuring database security.

o Data integrity assurance: SQL defines integrity constraints in the database thereby ensuring validity and accuracy of data against update operations as well as system errors.

Functions of a database management system:

-Data saving.

- Create and maintain database

- Allows multiple users to access simultaneously.

- Supports security and privacy.

- Allows viewing and processing stored data.

- Allows updating and storing data after updating.

- Provides an efficient indexing mechanism for quick access to selected data.

- Provides consistency between different records

- Protect data from loss with backup and recovery processes.

2. Microsoft Visual Studio 2022

Microsoft Visual Studio is an integrated development environment from Microsoft. It used to develop computer programs for Microsoft Windows, as well as websites, web applications and web services. Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. It can produce both machine language and managed code. Visual Studio includes an editor that supports IntelliSense as well as improvements source code currency. The built-in debugger operates both as a source and code level debugger machine level debugging. Other integration tools include a building form design template build application interface, web design, class design and database schema design.

It accepts plug-ins that enhance functionality at most levels including additional support for version control systems (like Subversion) and adds new toolkits such as editing and visual design for specific language domains or civil toolkits for other aspects of the software development process.

CHAPTER 3: SALE SYSTEM ANALYSIS AND DESIGN

1. Entities

3.1.1 Employee Entity

NHANVIEN

	Column Name	Condensed Type	Nullable
🔑	MaNV	char(10)	No
	TenNV	nvarchar(50)	Yes
	Gioitinh	nchar(10)	Yes
	SDT	char(20)	Yes
	Chucvu	nvarchar(50)	Yes
	Ngaysinh	date	Yes

FIGURE 3.1 DESIGN OF TABLE NHANVIEN

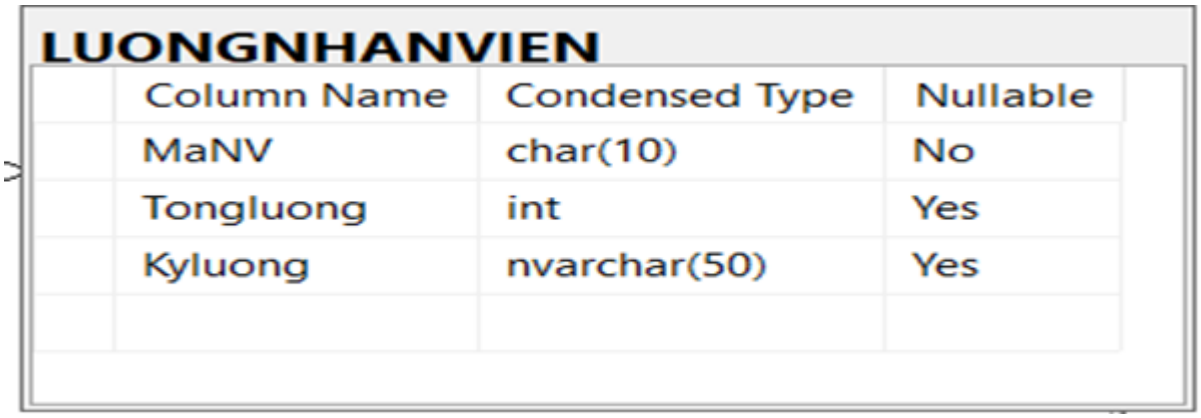
- Entity name: NHANVIEN
- Primary key: MaNV
- Entity attributes:

+ MaNV: Employee code
+ TenNV: Employee name
+ Gioitinh: Gender
+ SDT: Phone number

+ Chucvu: Position

+ Ngaysinh: Day of birth

3.1.2 Employee salary entity



LUONGNHANVIEN

Column Name	Condensed Type	Nullable
MaNV	char(10)	No
Tongluong	int	Yes
Kyluong	nvarchar(50)	Yes

FIGURE 3.2: DESIGN OF TABLE LUONGNHANVIEN

- Entity name: LUONGNHANVIEN

- Primary key: Null

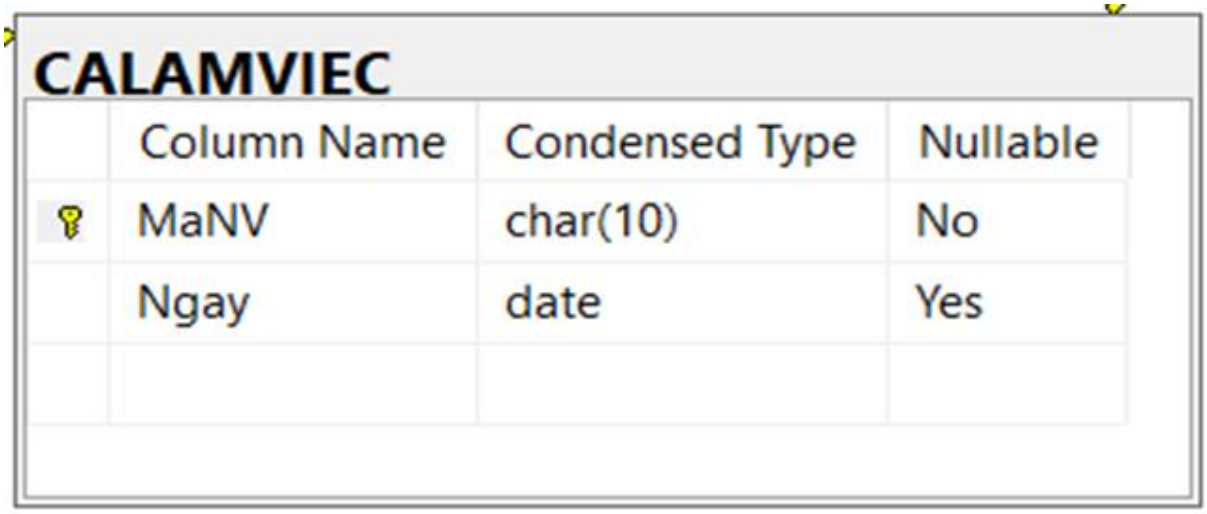
- Entity attributes:

+ MaNV: Employee code

+ Tongluong: Total salary

+ Kyluong: Salary period

3.1.3 Shift entity



CALAMVIEC

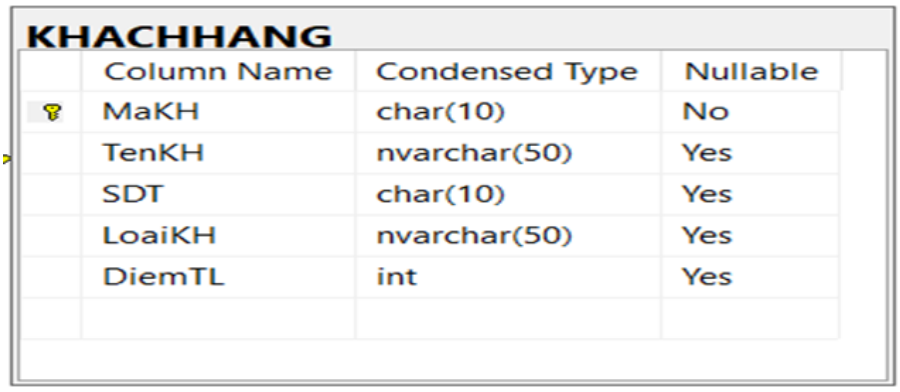
	Column Name	Condensed Type	Nullable
🔑	MaNV	char(10)	No
	Ngay	date	Yes

FIGURE 3.3: DESIGN OF TABLE CALAMVIEC

- Entity name: CALAMVIEC
- Primary key: MaNV
- Entity attributes:

+ MaNV: Employee code
+ Ngay: Date

3.1.4 Costumer entity



KHACHHANG

	Column Name	Condensed Type	Nullable
🔑	MaKH	char(10)	No
	TenKH	nvarchar(50)	Yes
	SDT	char(10)	Yes
	LoaiKH	nvarchar(50)	Yes
	DiemTL	int	Yes

FIGURE 3.4: DESIGN OF TABLE KHACHHANG

- Entity name: KHACHHANG

- Primary key: MaKH

- Entity attributes:

+ MaKH: Costumer code

+ TenKH: Costumer name

+ SDT: Phone number

+ LoaiKH: Costumer type

+ DiemTL: Accumulated points

3.1.5 Bill of sale entity

HOADONBANHANG

Column Name	Condensed Type	Nullable
MaHDBH	char(10)	No
MaNV	char(10)	Yes
Tenban	nvarchar(10)	Yes
MaKH	char(10)	Yes
NgayHDBH	datetime	Yes
Thanhtien	int	Yes
VAT	int	Yes
DiemTL	int	Yes
Giamgia	int	Yes
Tongtien	int	Yes

FIGURE 3.5: DESIGN OF TABLE HOADONBANHANG

- Entity name: HOADONBANHANG

- Primary key: MaHDBH

- Entity attributes:

+ MaHDBH: Bill of sale code

+ MaNV: The employee code performing the transaction

+ Tenban: Table name performing the transaction

+ MaKH: Customer code performing the transaction

+ NgayHDBH: Date performing the transaction

+ Thanhtien: Cash value before calculating VAT and discounts

+ VAT: Tax

+ DiemTL: Accumulated points are obtained after payment

+ Giamgia: Discount

+ Tongtien: Total amount

3.1.6 Menu entity

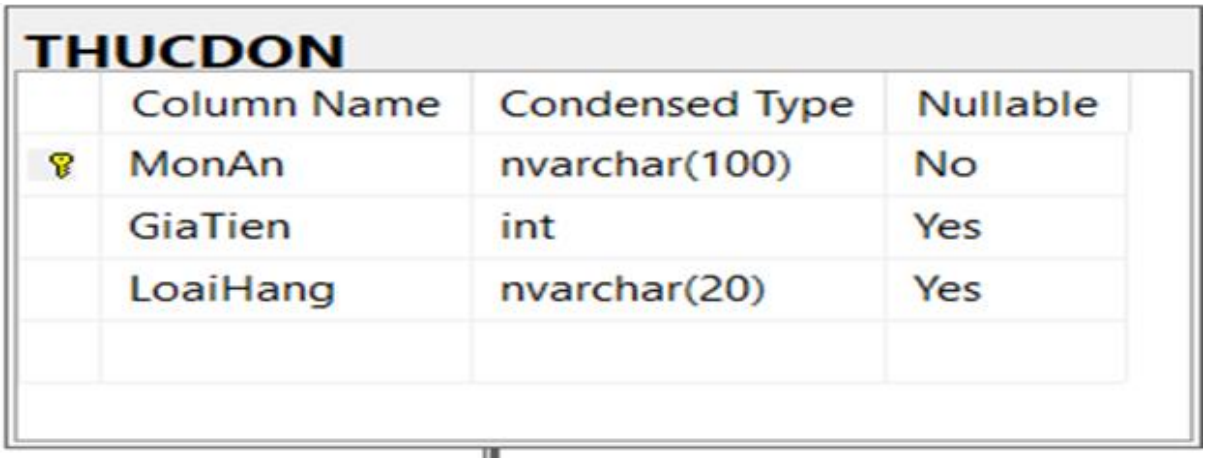


FIGURE 3.6: DESIGN OF TABLE THUCDON

- Entity name: THUCDON

- Primary key: MonAn

- Entity attributes:

+ MonAn: Food name

+ Giatien: Price of food

+ Loaihang: Sectors(Food or Drink)

3.1.7 Table entity

BAN

	Column Name	Condensed Type	Nullable
🔑	Tenban	nvarchar(10)	No
	Trangthai	nvarchar(20)	Yes

FIGURE 3.7: DESIGN OF TABLE BAN

- Entity name: BAN

- Primary key: Tenban

- Entity attributes:

+ Tenban: Table name

+ Trangthai: Status(Empty or Occupied)

3.1.8 Order entity

DATHANG

Column Name	Condensed Type	Nullable
Tenban	nvarchar(10)	No
SDT	char(11)	Yes
MonAn	nvarchar(50)	Yes
SoLuong	int	Yes
Giatien	int	Yes
Thanhtien	int	Yes

FIGURE 3.8: DESIGN OF TABLE DATHANG

- Entity name: DATHANG
- Primary key: Null
- Entity attributes:

+ Tenban: Table name
+ SDT: Phone number of costumer
+ MonAn: Food name
+ Soluong: Quantity
+ Giatien: Price of food
+ Thanhtien: Cash value

3.1.9 Food sold entity

MONANDABAN

Column Name	Condensed Type	Nullable
MaHDBH	char(10)	No
MonAn	nvarchar(100)	Yes
SoLuong	int	Yes
GiaTien	int	Yes

FIGURE 3.9: DESIGN OF TABLE MONANDABAN

- Entity name: MONANDABAN
- Primary key: Null
- Entity attributes:

+ MaHDBH: Bill of sale code
+ MonAn: Food name
+ Soluong: Quantity
+ Giatien: Price of food

3.1.10 Account entity

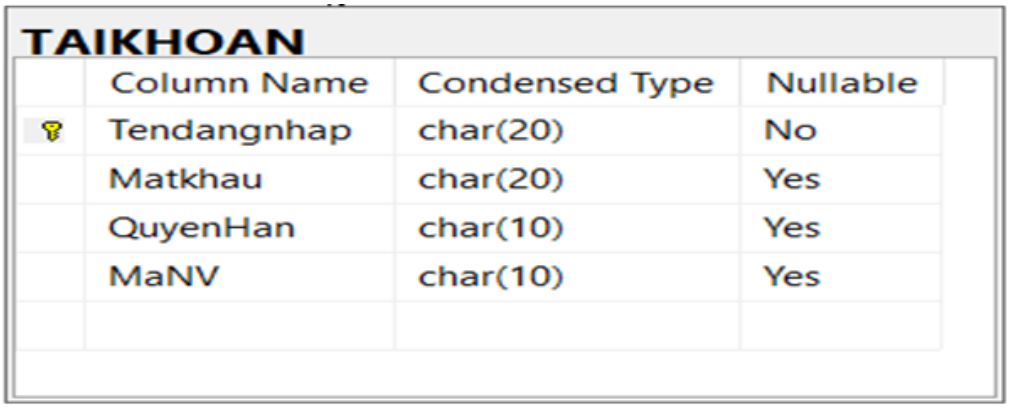


FIGURE 3.10: DESIGN OF TABLE TAIKHOAN

- Entity name: TAIKHOAN

- Primary key: Tendangnhap

- Entity attributes:

+ Tendangnhap: User name

+ Matkhau: Password

+ Quyenhan: Power

+ MaNV: Employee code

2. Associate foreign keys of entities

3.2.1 Associate foreign keys of THUCDON-MONANDABAN

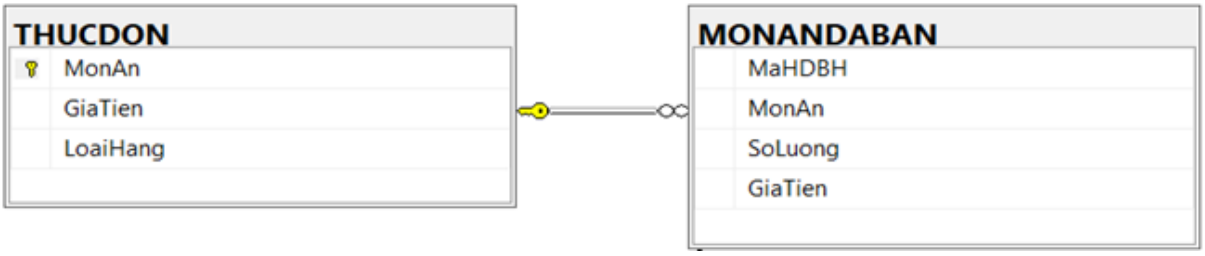


FIGURE 3.11: RELATIONSHIP OF THUCDON-MONANDABAN

- Entities join: THUCDON,MONANDABAN

- Foreign key of link: THUCDON.MonAn and MONANDABAN.MonAn

- Interpretation: the food sold will have many food and the food will have to be on the menu.

3.2.2 Associate foreign keys of MONANDABAN-HOADONBANHANG

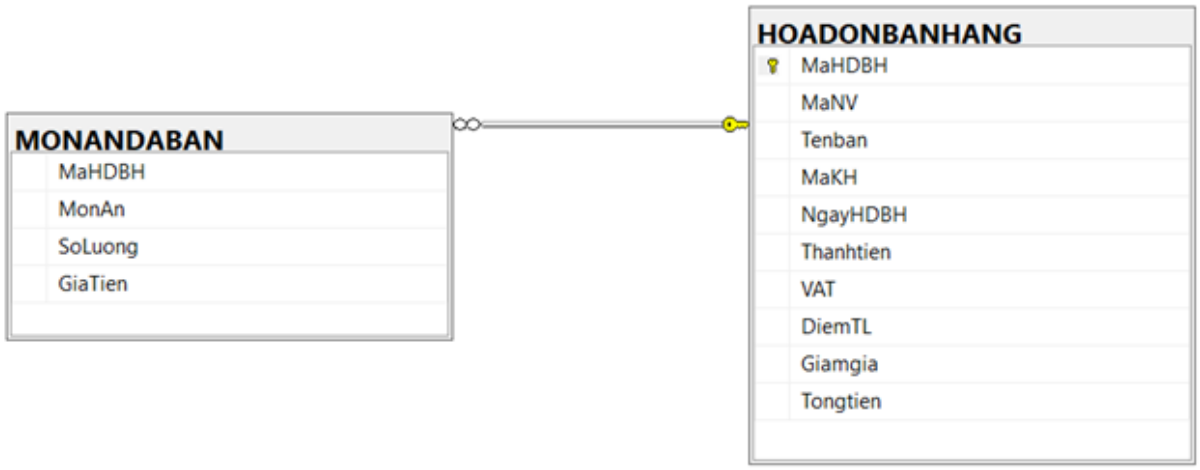


FIGURE 3.12: RELATIONSHIP OF MONANDABAN-HOADONBANHANG

- Entities join: MONANDABAN, HOADONBANHANG

- Foreign key of link: MONANDABAN.MaHDBH and HOADONBANHANG.MaHDBH

- Interpretation: In the food sold, there are many foods and sales invoices sold and that sales invoice must be included in the sales invoice.

3.2.3 Associate foreign keys of HOADONBANHANG-KHACHHANG

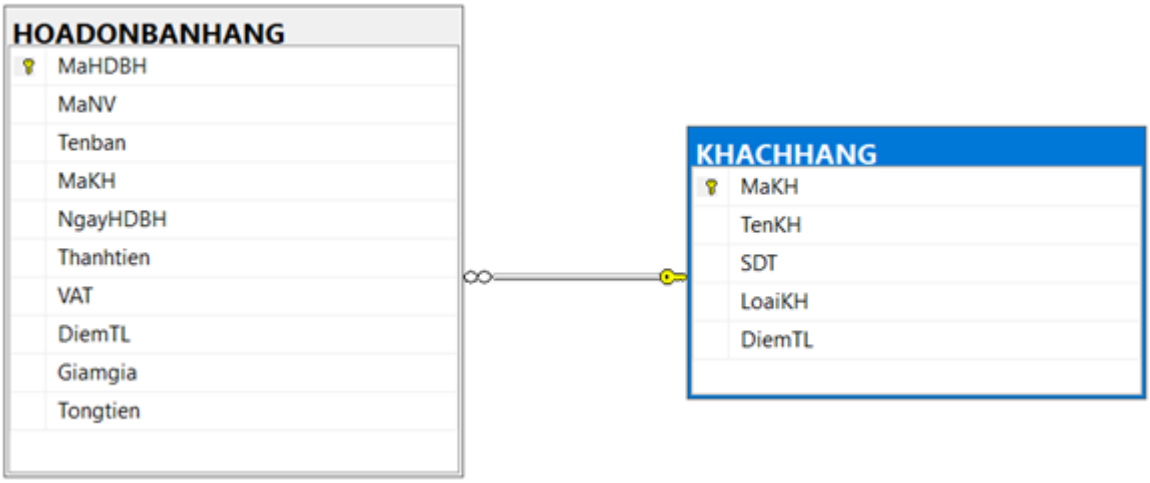


FIGURE 3.13: RELATIONSHIP OF HOANDONBANHANG-KHACHHANG

- Entities join: HOADONBANHANG,KHACHHANG

- Foreign key of link: HOADONBANHANG.MaKH and KHACHHANG.MaKH

- Interpretation: In the sales invoice, there will be many sales invoices sold and the customer code must exist in the customer table.

3.2.4 Associate foreign keys of BAN-HOADONBANHANG

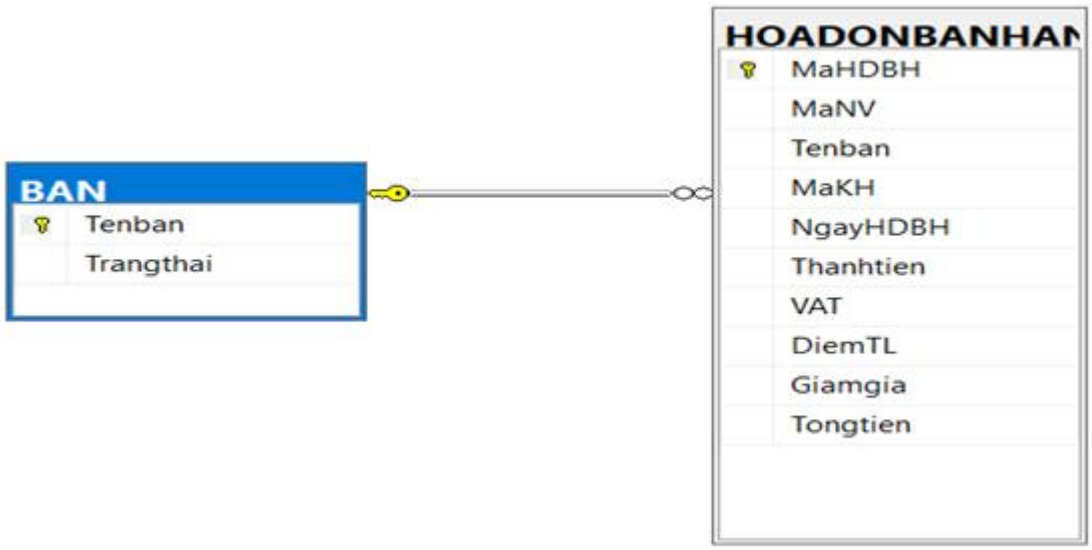


FIGURE 3.14 : RELATIONSHIP OF BAN-HOADONBANHANG

- Entities join: BAN,HOADONBANHANG

- Foreign key of link: BAN.Tenban and HOADONBANHANG.Tenban

- Interpretation: Sales invoices can only have table names that exist in the table table.

3.2.5 Associate foreign keys of HOADONBANHANG-NHANVIEN

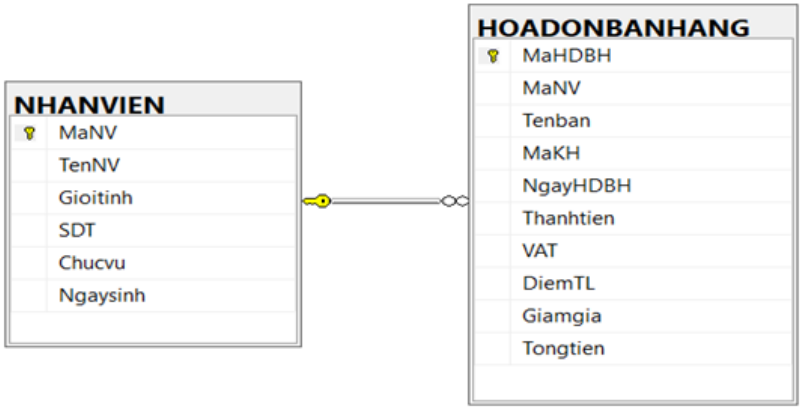


FIGURE 3.15: RELATIONSHIP OF HOADONBANHANG-NHANVIEN

- Entities join: HOADONBANHANG,NHANVIEN

- Foreign key of link: HOADONBANHANG.MaNV and NHANVIEN.MaNV

- Interpretation: The employee charges the customer and must exist in the employee table.

3.2.6 Associate foreign keys of BAN-DATHANG

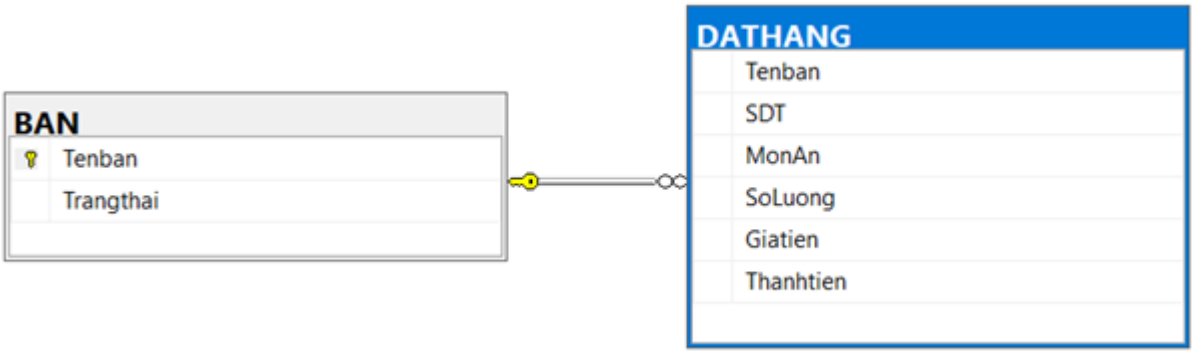


FIGURE 3.16: RELATIONSHIP OF BAN-DATHANG

- Entities join: BAN,DATHANG

- Foreign key of link: BAN.Tenban and DATHANG.Tenban

- Interpretation: DATHANG is a table used to save a list of dishes used at that table, so that table must exist in the table table to be able to store the list of dishes at that table.

3.2.7 Associate secondary keys of NHANVIEN-LUONGNHANVIEN

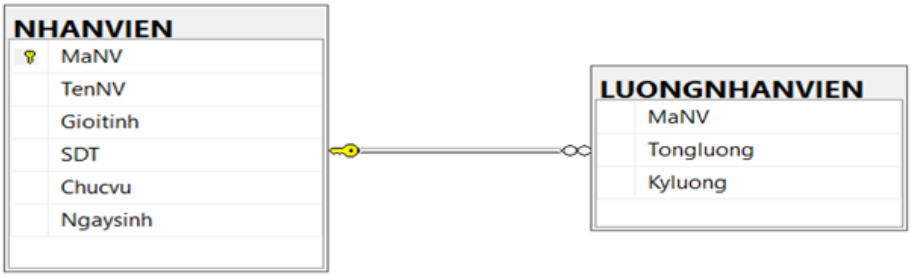


FIGURE 3.17: RELATIONSHIP OF LUONGNHANVIEN-NHANVIEN

- Entities join: LUONGNHANVIEN,NHANVIEN

- Foreign key of link: LUONGNHANVIEN.MaNV and NHANVIEN.MaNV

- Interpretation: LUONGNHANVIEN is calculating the salary of a certain employee, so that employee must exist in the employee table to calculate salary.

3.2.8 Associate secondary keys of TAIKHOAN-NHANVIEN

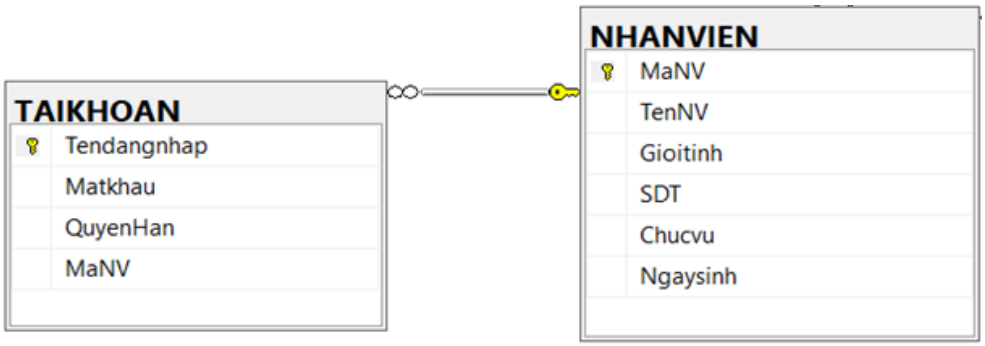


FIGURE 3.18: RELATIONSHIP OF TAIKHOAN-NHANVIEN

- Entities join: TAIKHOAN,NHANVIEN
- Foreign key of link: TAIKHOAN.MaNV and NHANVIEN.MaNV
- Interpretation: The account is created for employees to use to log into the application with certain permissions, so that employee must exist in the employee table.

3.2.9 Associate secondary keys of CALAMVIEC-NHANVIEN

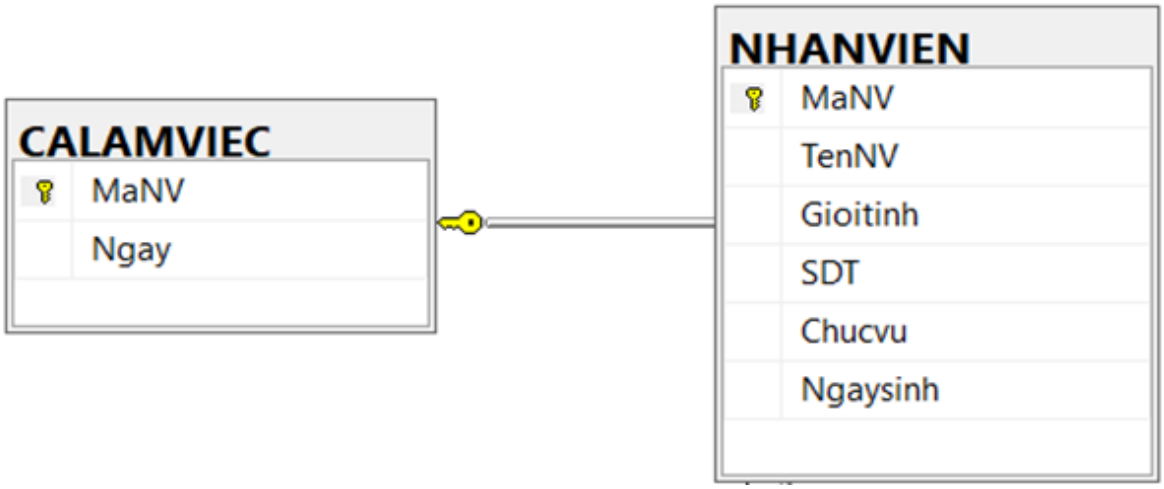


FIGURE 3.19 : RELATIONSHIP OF CALAMVIEC-NHANVIEN

- Entities join: CALAMVIEC,NHANVIEN
- Foreign key of link: CALAMVIEC.MaNV and NHANVIEN.MaNV
- Interpretation: The employee code must exist before shifts can be assigned.

3.2.10 Associate secondary keys of LUONGNHANVIEN-CALAMVIEC

FIGURE 3.20: RELATIONSHIP OF LUONGNHANVIEN-CALAMVIEC

- Entities join: LUONGNHANVIEN,CALAMVIEC
- Foreign key of link: LUONGNHANVIEN.MaNV and CALAMVIEC.MaNV
- Interpretation: Only if an employee has a shift to work will their salary be calculated.

3. Design models of internal entities database

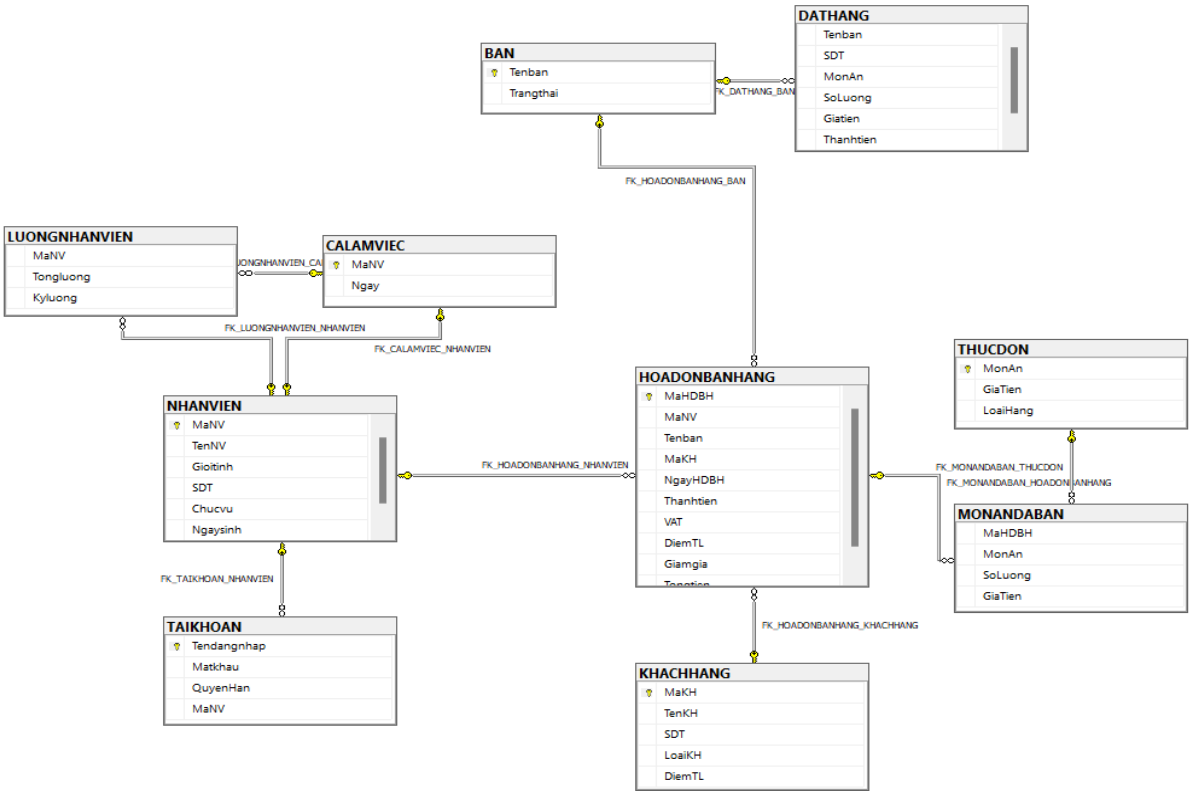


FIGURE 3.21: DATABASE MODEL

This is a model that describes entities with primary and foreign keys for the purpose of data storage and data management for pub management software programs.

3.3.1 Employee

Ordinal Number	Property	Data Type	Primary key	Foreign key	Allow Null
1	MaNV	char (10)	X		Not null

2	TenNV	nvarchar (50)			Null
3	Gioitinh	nchar (10)			Null
4	SDT	char (20)			Null
5	Chucvu	nvarchar (50)			Null
6	Ngaysinh	date			null

3.3.2 Shift work

Ordinal Number	Property	Data Type	Primary key	Foreign key	Allow Null
1	MaNV	char (10)	X		Not null
2	Ngay	date			Null

3.3.3 Employee salary

Ordinal Number	Property	Data Type	Primary key	Foreign key	Allow Null

1	MaNV	char (10)			Not null
2	Tongluong	int			Null
3	Kyluong	nvarchar (50)			Null

3.3.4 Costumer

Ordinal Number	Property	Data Type	Primary key	Foreign key	Allow Null
1	MaKH	char (10)	X		Not null
2	TenKH	nvarchar (50)			Null
3	SDT	char (10)			Null
4	LoaiKH	nvarchar (50)			Null
5	DiemTL	int			Null

3.3.5 Bill of sale

Ordinal Number	Property	Data Type	Primary key	Foreign key	Allow Null
1	MaHDBH	char (10)	X		Not null
2	MaNV	char (10)			Null
3	Tenban	nvarchar (10)			Null
4	MaKH	char (10)			Null
5	NgayHDBH	datetime			Null
6	Thanhtien	int			Null
7	VAT	int			Null
8	DiemTL	int			Null
9	Giamgia	int			Null
10	Tongtien	int			Null

3.3.6 Menu

Ordinal Number	Property	Data Type	Primary key	Foreign key	Allow Null
1	MonAn	nvarchar (100)	X		Not null
2	GiaTien	int			Null
3	LoaiHang	nvarchar (20)			Null

3.3.7 Table

Ordinal Number	Property	Data Type	Primary key	Foreign key	Allow Null
1	Tenban	nvarchar (10)	X		Not null
2	Trangthai	nvarchar (20)			Null

3.3.8 Order

Ordinal Number	Property	Data Type	Primary key	Foreign key	Allow Null
1	Tenban	nvarchar (10)			Not null
2	SDT	char (11)			Null
3	MonAn	nvarchar (50)			Null
4	SoLuong	int			Null
5	Giatien	int			Null
6	Thanhtien	int			Null

3.3.9 Food sole

Ordinal Number	Property	Data Type	Primary key	Foreign key	Allow Null
1	MaHDBH	char (10)			Not null

2	MonAn	nvarchar (100)			Null
3	SoLuong	Int			Null
4	GiaTien	int			Null

3.3.10 Account

Ordinal Number	Property	Data Type	Primary key	Foreign key	Allow Null
1	Tendangnhap	char (20)	X		Not null
2	Matkhau	char (20)			Null
3	QuyenHan	char (10)			Null
4	MaNV	char (10)			Null

CHAPTER 4: USER INTERFACE

FIGURE 4.1: A TREE DIAGRAM SHOWING THE FUNCTIONS OF A PROGRAM RUN

4.1.1 Login Interface

This is the first step to enter the system. User enters login name and password stage. If you enter the correct account information, the system will display the functional interface main sales. If incorrect, a "Sai tai khoan hoac mat khau" message box will appear re-login.

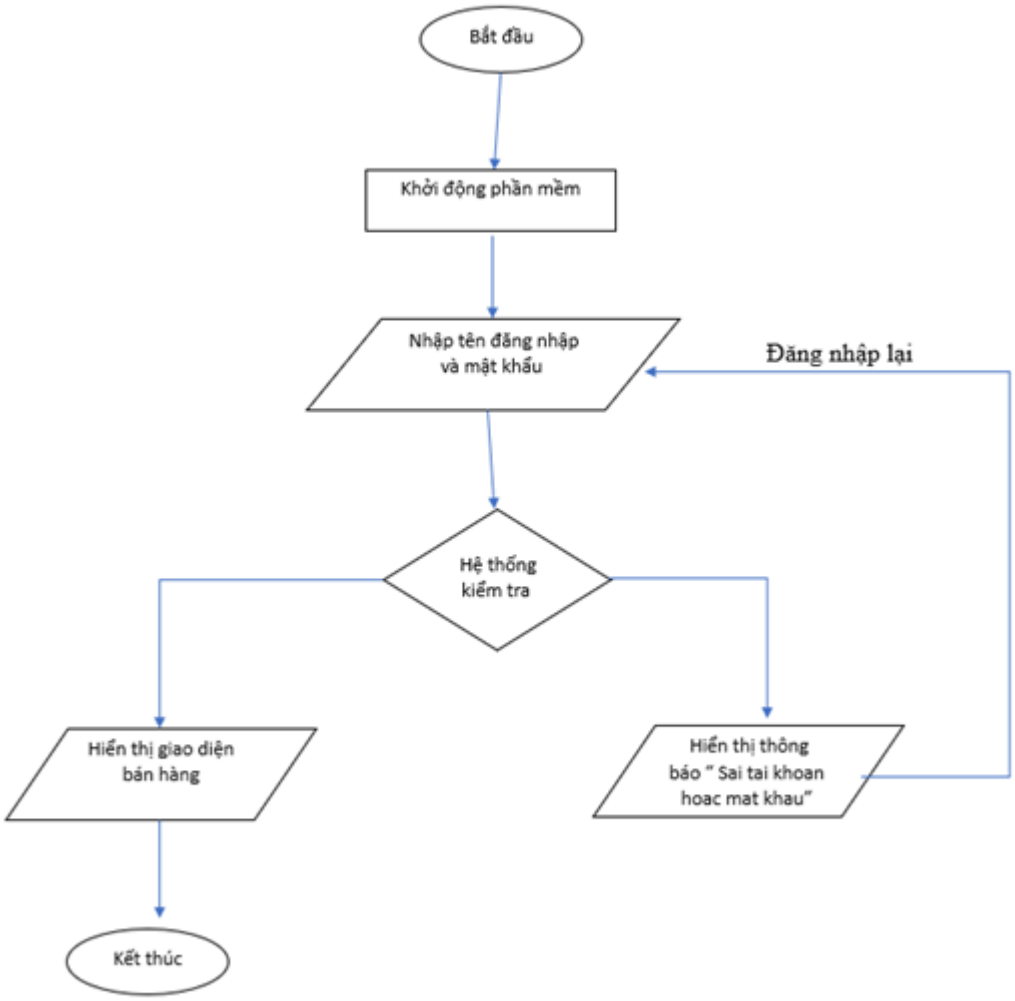


FIGURE 4.2: LOGIN DIAGRAM

The login program is based on the employee's username and password. After being granted an account, each employee can change the password to log into the system.

- User name of Admin: manh - Password: 123
- User name of Staff: tuyen – Password: 456
- User name of Staff: ngoc – Password: 456
- User name of Staff: nhu – Password: 456

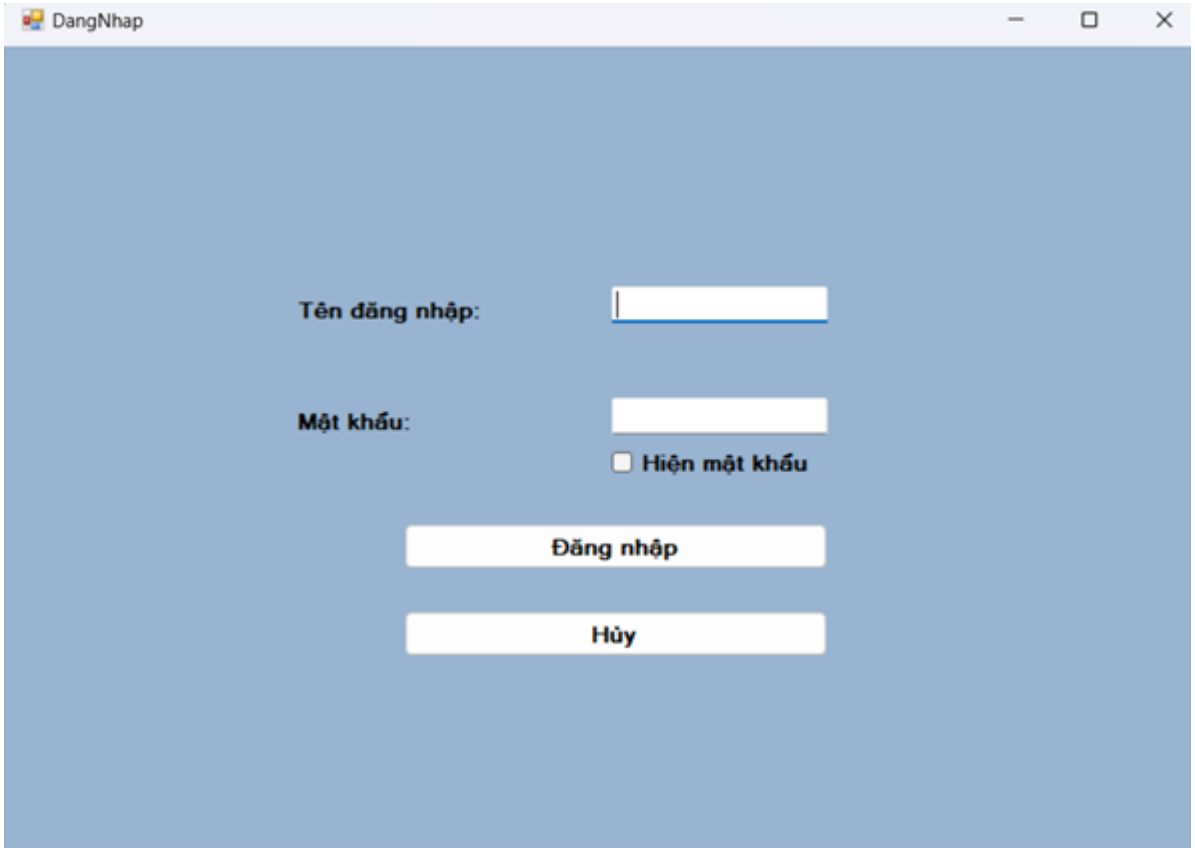


FIGURE 4.3: LOGIN INTERFACE

When user want to log in, you must enter the correct username and password. The password will be encrypted into a "•" sign, so it will prevent others from seeing and stealing information.

When logging in incorrectly, the message "Sai tai khoan hoac mat khau" will be displayed and will be re-entered.

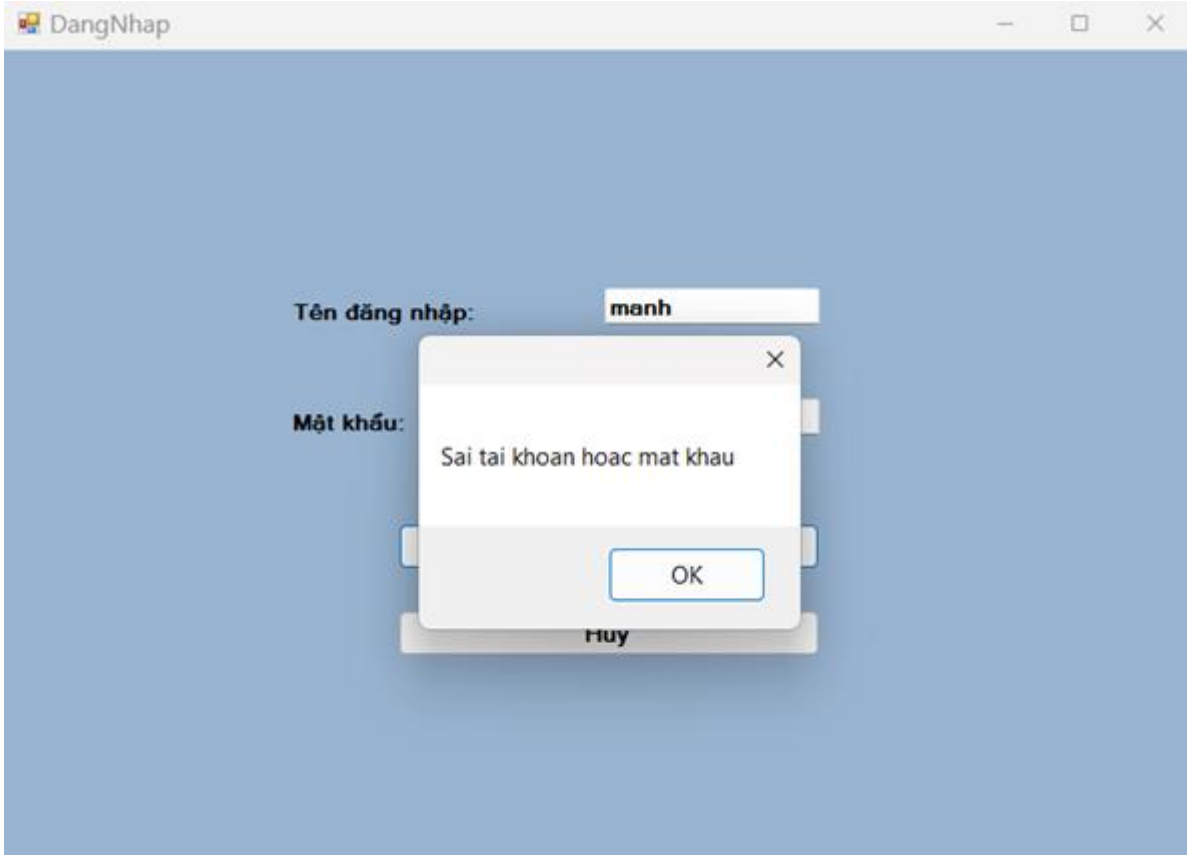


FIGURE 4.4: LOGIN INTERFACE FAILED

After successfully logging in, the main interface of the program will open. The system will check the employee's authority. If you are an Admin, the main screen will open all functions in the program; otherwise, if you are an employee, you will Only sales, desk management and customer management functions can be displayed.

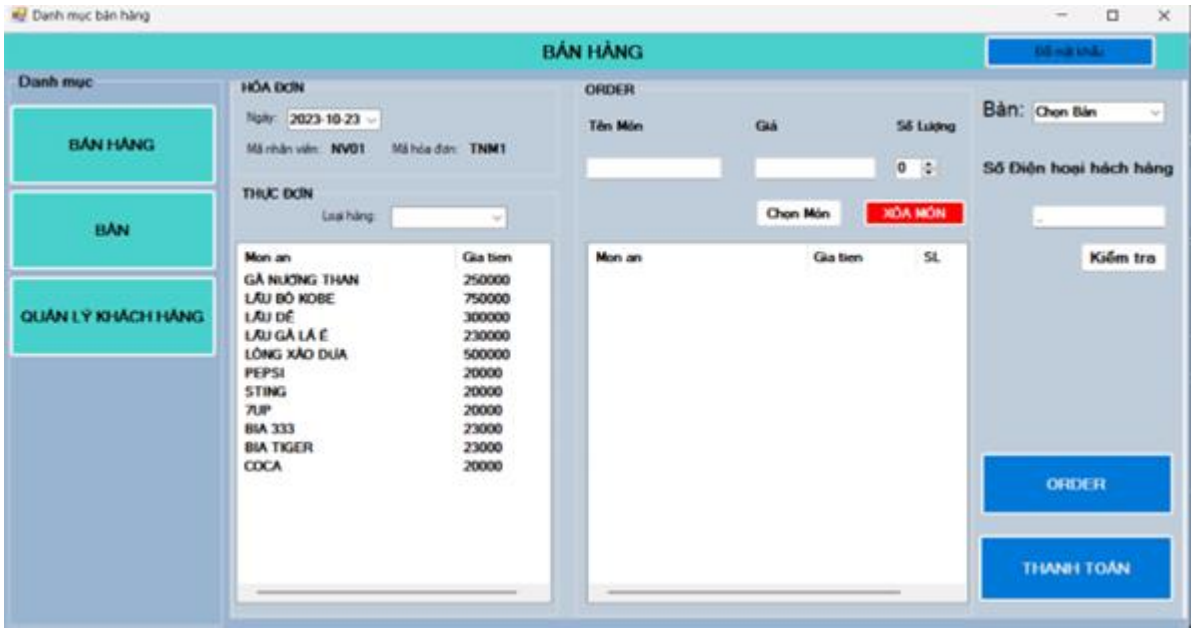


FIGURE 4.5: LOGIN INTERFACE UNDER STAFF RIGHTS

Logging in as an employee will limit many functions, only displaying necessary functions.

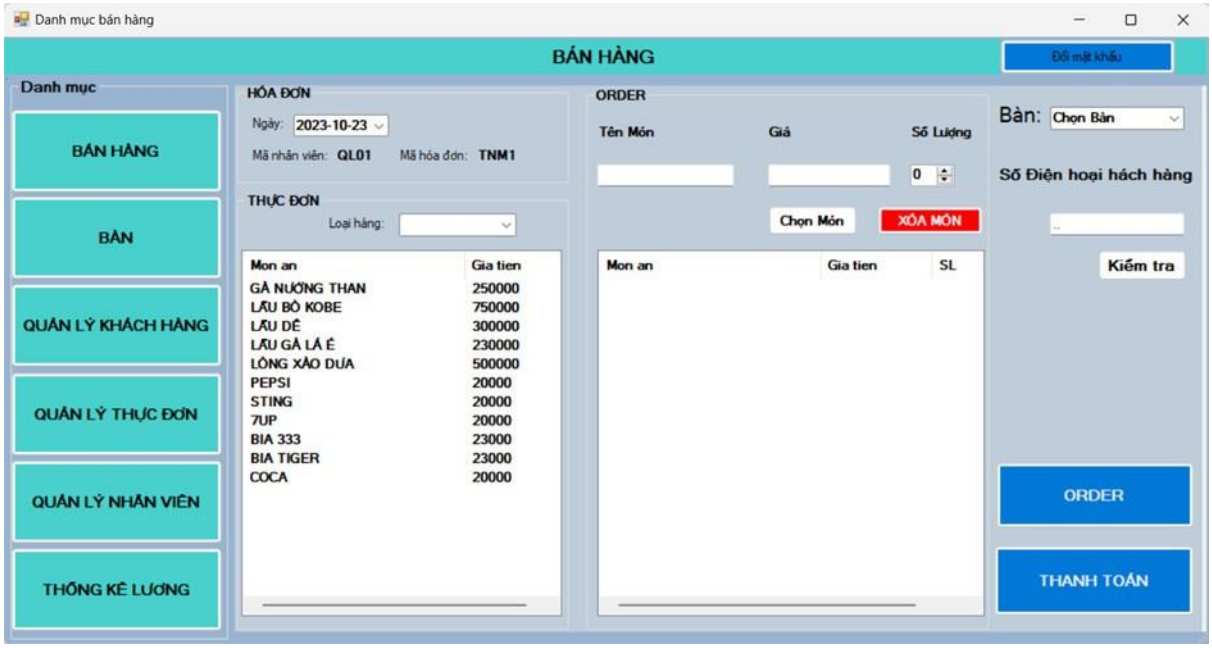


FIGURE 4.6: LOGIN INTERFACE UNDER ADMIN RIG

Logging in as admin will display all restaurant management, employee management and customer management positions.

In the top right corner of the main screen there will be a change password section. Click here and a password change form will appear.

FIGURE 4.7: FORM CHANGE LOGIN PASSWORD

Here,if user want to change the password, the employee must enter all of the above information and press "Cập nhật" to display the message " Da doi mat khau thanh cong Vui long dang nhap lai " and the login form will open.

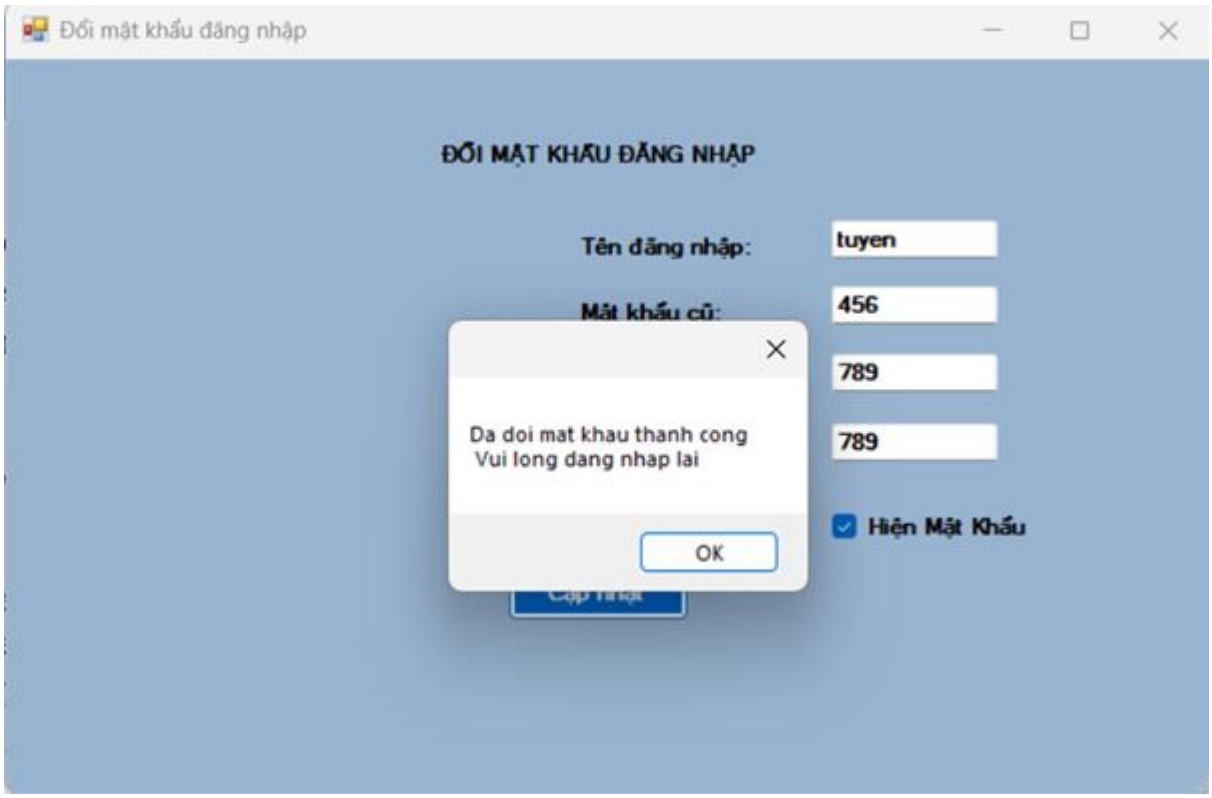


FIGURE 4.8: FORM CHANGE LOGIN PASSWORD SUCCESSFULLY

4.1.2 Sales function

- Sales management, also known as sales function, in this function employees can open when there are customers, add items to invoices, delete items, Order and Pay.

- Invoice Groupbox includes DateTimePicker Date, Employee Code, Invoice Code.

- Groupbox Menu includes item type combobox, ListView Dishes and Price.

- Groupbox Order includes Item Name, Price, Quantity, ListView Dishes, Price, Quantity.

- Combobox, box to check customer phone number.

- Order and Payment button.

Figure 3.4 and 3.5

Operations:

+ Click on the dish you want to choose then press "Chọn món" and the data will be saved in the ListView below.

+ If you want to delete the selected dish, click on that dish and select "Xóa món" then the dish will be removed from the ListView.

+ Then select "Bàn" and press the "ORDER" button, all selected data will be saved at that table.

+ In the Payment section, it will be for "Khách vãng lai" or take-away customers. When you click Pay, the system will display the payment interface.

+ The payment interface will display all dishes, drinks, quantity, total amount ordered by that table and can edit or cancel payment.

+ After clicking Payment, the customer invoice interface will open and select "In hóa đơn", then in the "Quản lý bàn" section, the data of that table will be deleted.

4.1.3 Table management function

- In the sales interface, select Table and the table form will open displaying Table name, Availability or occupied status. Combobox Status allows us to filter out which tables are empty and which tables are occupied and will be displayed via the ListView on the right.

- After ordering, the "Status" of the table ListView will display "Có người" and if there are no customers, it will display "Trống".

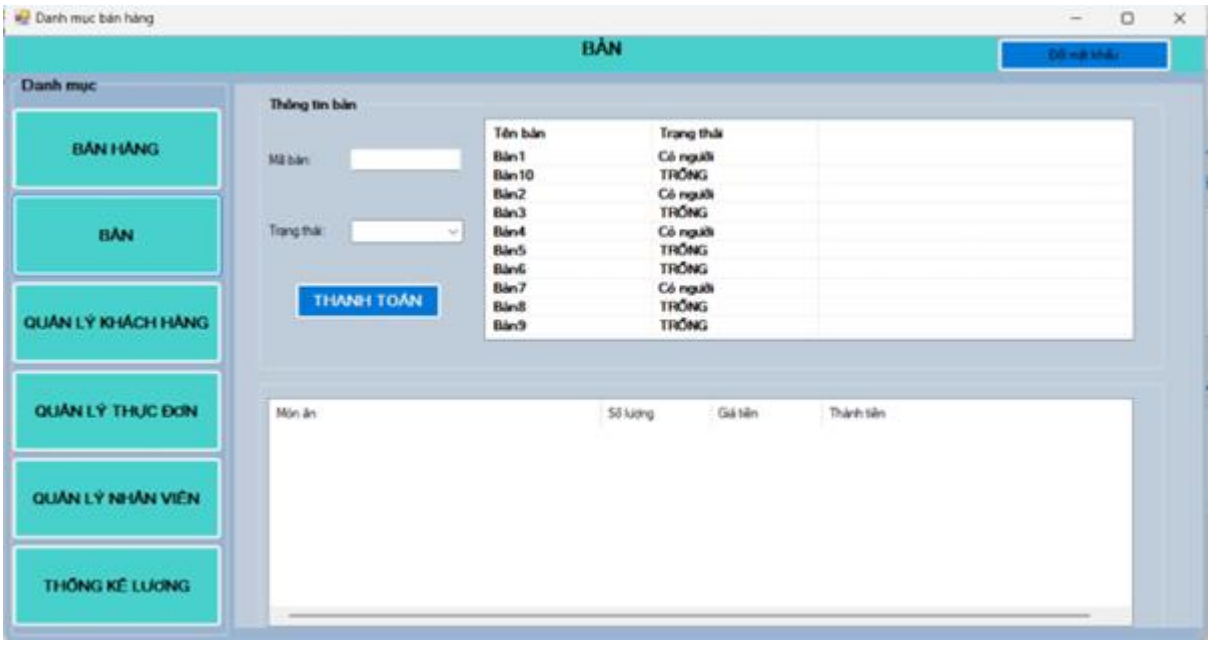


FIGURE 4.9: FORM DESK MANAGEMENT

Operations:

+ When clicking on that table, the table information ListView will display information about what customers are ordering at that table.

+ Below the Status combobox is the Payment button. When clicked, the Payment Form will appear. If you choose to pay, the Billing form will be opened, select Print invoice, the table status will return to Blank and delete that table information.

4.1.4 Customer management function

After clicking on the CUSTOMER MANAGEMENT button in the sales interface, the customer interface will open.

- Combobox for customer type, customer search box.

- Groupbox customer information includes: Customer code, Customer name, phone number, accumulated points.

- ListView customer information and transaction history.

- Here, we can Add, Update, Delete, Search customers by name and Transaction History.

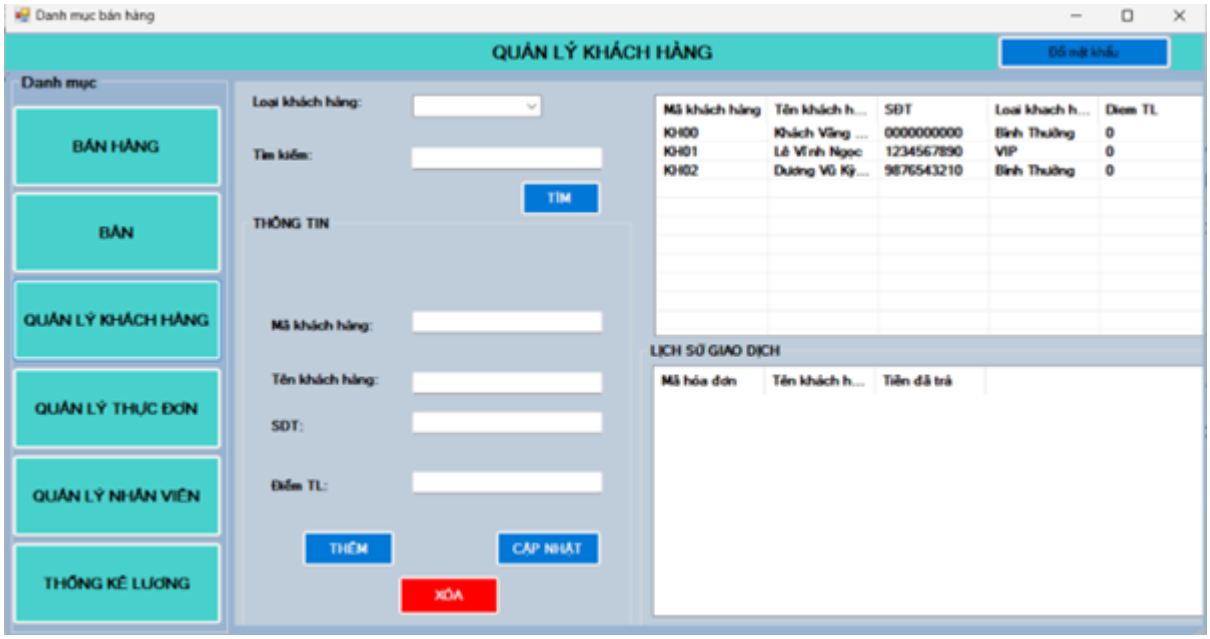


FIGURE 4.10: FORM CUSTOMER MANAGEMENT FUNCTION

Operations:

+ Combobox will display Customer Type, there will be 3 types of customers: Visitor, Normal, VIP.

+ Below will be the Search customer by name button and if there is that customer, the data will appear in the ListView on the right. Check customer information in this section and at the same time we can see that customer's transaction history at the store via the ListView below.

4.1.5 Employee management function

- Only admin can see this function in the sales interface.

- Groupbox employee information includes: Employee code, Employee name, RadioButton Gender, Phone number, position, DateTimePicker date of birth, ListView list of employees.

- Here, user can Add, Update, Delete, Search employees by employee code.

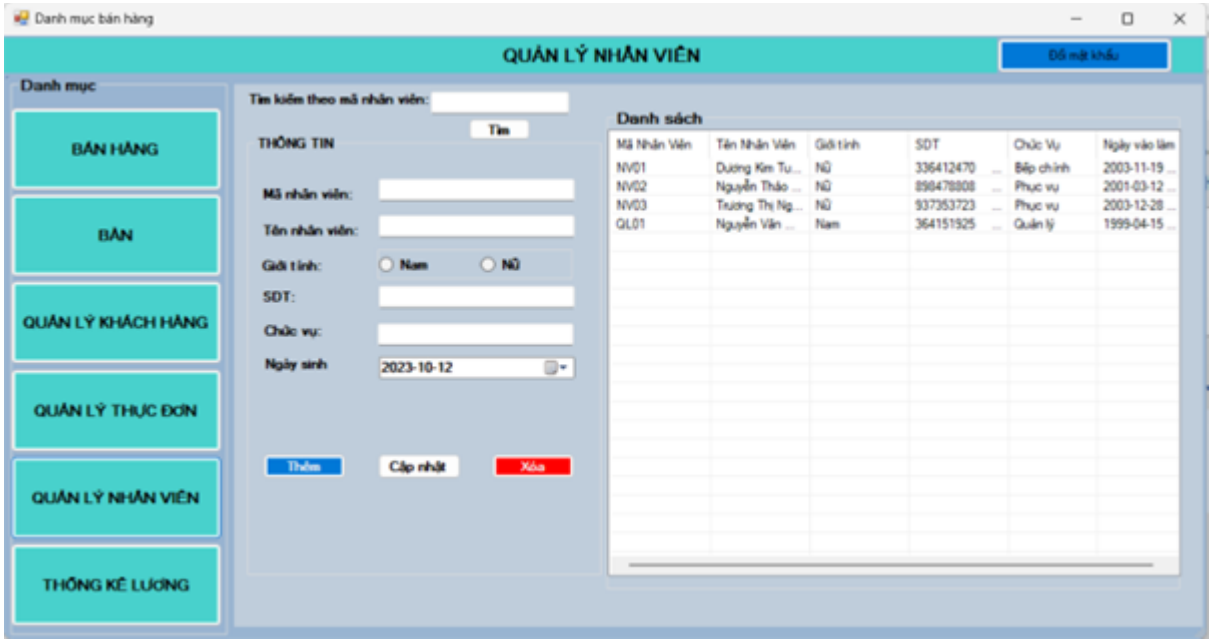


FIGURE 4.11: FORM EMPLOYEE MANAGEMENT FUNCTION

Operations:

+ Employee management function helps us search for employees and export that employee's information through ListView of employee lists to be able to manage employees more easily.

4.1.6 Salary statistics management function

- Only admin can see this function in the sales interface.

- In the salary statistics section, 2 parts will appear: Shifts and employee salaries:

a. Work shift

- Shift information groupbox: employee code, date, listview of shift list.

- Here we can add, edit and delete shifts.

Operations:

+ This function helps users store employee shifts for the purpose of managing employee shifts and is a premise for calculating employee salaries.

b. Employee salary

- Employee salary information groupbox: Employee code, Total salary, salary period, listview of employee salary list.

- Here we can add, edit and delete employee salaries.

Operations:

+ This function helps users to store employee salaries for the purpose of managing employee salaries and to be able to compile salary statistics for that employee in a certain period.

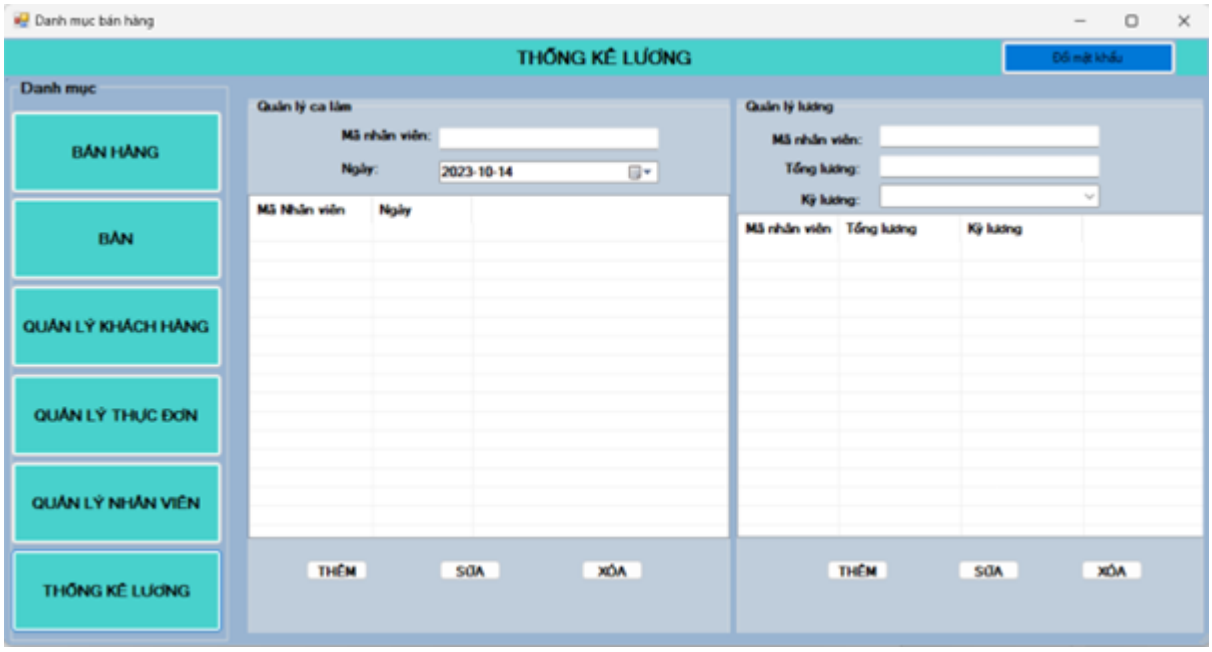


FIGURE 4.12: FORM SALARY STATISTICS MANAGEMENT FUNCTION

Note: Only when entering a shift, the salary can be entered.

4.1.7 Menu management function

- Only admin can see this function in the sales interface.

- Food name, Price, combobox item type, ListView list of dishes and drinks in store menu.

- Here, admins can Add, Update, Delete dishes those operations will be displayed via the ListView menu list.

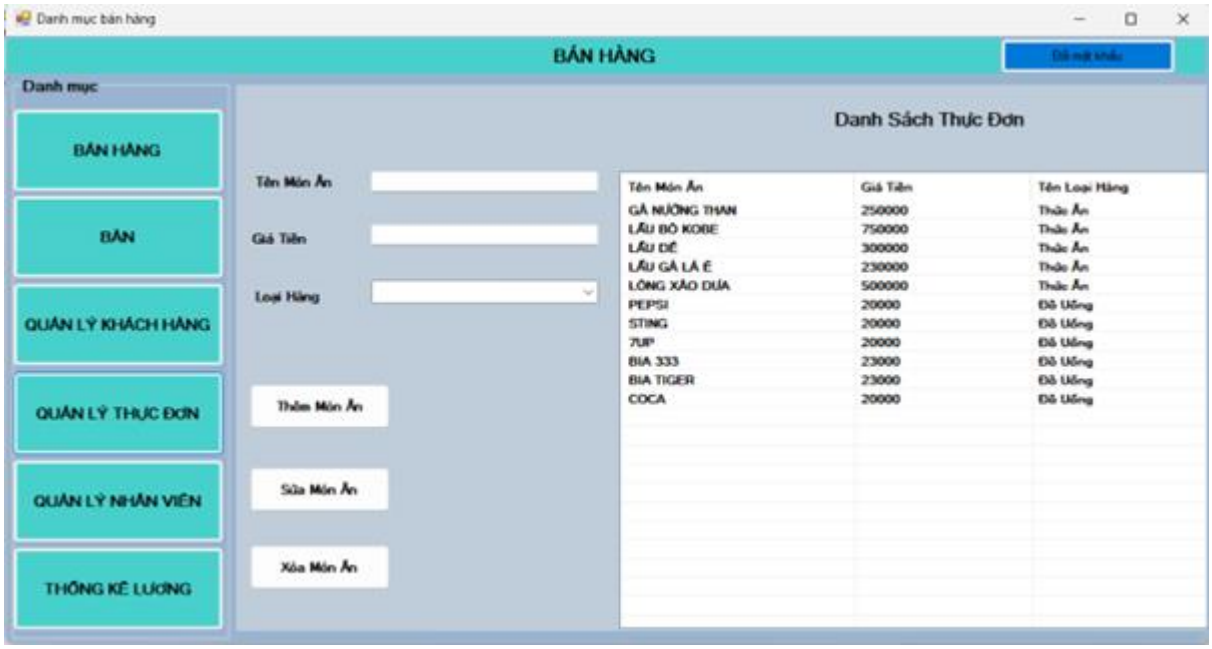


FIGURE 4.13: FORM MENU MANAGEMENT

CHAPTER 5: CONCLUSION

1. Result achieved

5.1.1 About the knowledge gained

- Master the basic knowledge for program design.
- The SQL design is relatively complete, fully responsive for writing
- programme.
- Develop software with all necessary functions and detailed illustrations for the theories presented.
- Consolidate the knowledge you have learned.
- Know how to apply theoretical knowledge into practice.

5.1.2 About software

- Fully complete functions: add, delete, edit.
- Complete statistics and reports.
- The program interface is friendly, simple, and easy to use.

5.1.3 Limitations of the topic

- Due to limited research time, the research is not complete
- Practical knowledge and programming knowledge are limited, so professionalism is lacking
- The performance of the program is not high, some feature errors have not been fixed not yet optimized.

- The program is not really fully featured as expected.

5.1.4 Development direction

- Program design and editing to make the program more professional.
- Find security signals for the program.
- Added some additional functions: employee timekeeping by working hours, payment by bank card.

REFERENCE LIST

https://www.slideshare.net/trongthuy3/luan-van-xay-dung-phan-mem-quan-li-quan-ca-phe-hot-9d