

---

**Group Project**  
**Subject: Basic Cross-Platform**  
**Application Programming With .NET**  
  
***Restaurant Management Software***

**Version 1.0 approved**

**Prepared by Group 4-SE1504**

***Trần Mạnh Hùng***  
***Nguyễn Thế Hiển***  
***Lê Minh Khoa***  
***Tôn Trọng Nghĩa***

**October 6, 2021**

# Table of Contents

## Table of Contents

1. Case Study	1
1.1. Business opportunity and Problem	1
1.2. Business objective	1
1.3. Product overview	1
1.4. Use Case	2
<b>2. Database Design</b>	<b>4</b>
2.1. Entity relationship diagram	4
2.2. DataBase Diagram	5
<b>3. System Architecture</b>	<b>6</b>
<b>4. Implementation</b>	<b>10</b>

## Revision History

Name	Date	Reason For Changes	Version
Group 4	01/10/2021	initial draft	1.0 draft 1
Group 4	06/11/2021	baseline following changes after inspection	1.0 approved

# **1. Case Study**

## **1.1. Business opportunity and Problem**

For a restaurant to run efficiently, a business owner or store manager must keep track of and handle a massive workload. Traditional manual restaurant management is not only prone to errors and mistakes, but also consumes a lot of money. Restaurant management software was born and has become an extremely effective "technology assistant" to support the management and control of business activities of managers.

## **1.2. Business objective**

To solve the problems that the restaurants are facing, it is necessary to put everything on the software and manage it all on the computer. This restaurant management system makes restaurant management easier than ever.

## **1.3. Product overview**

Restaurant management software is created to speed up the steps in the restaurant management process, it will replace paper paperwork or manual management, it also supports all table payment procedures, Manage revenue, inventory and restaurant staff more effectively. The system is expected to grow over several releases, eventually to a management system for the restaurant.

This system supports the following types of users:

Employees: They work in the restaurant, work with customers and perform table transfers, track and pay bills for dining tables.

Admin: They work with issues in the restaurant such as paying the table bill, tracking and managing sales, inventory, and restaurant staff.

## 1.4. Use Case

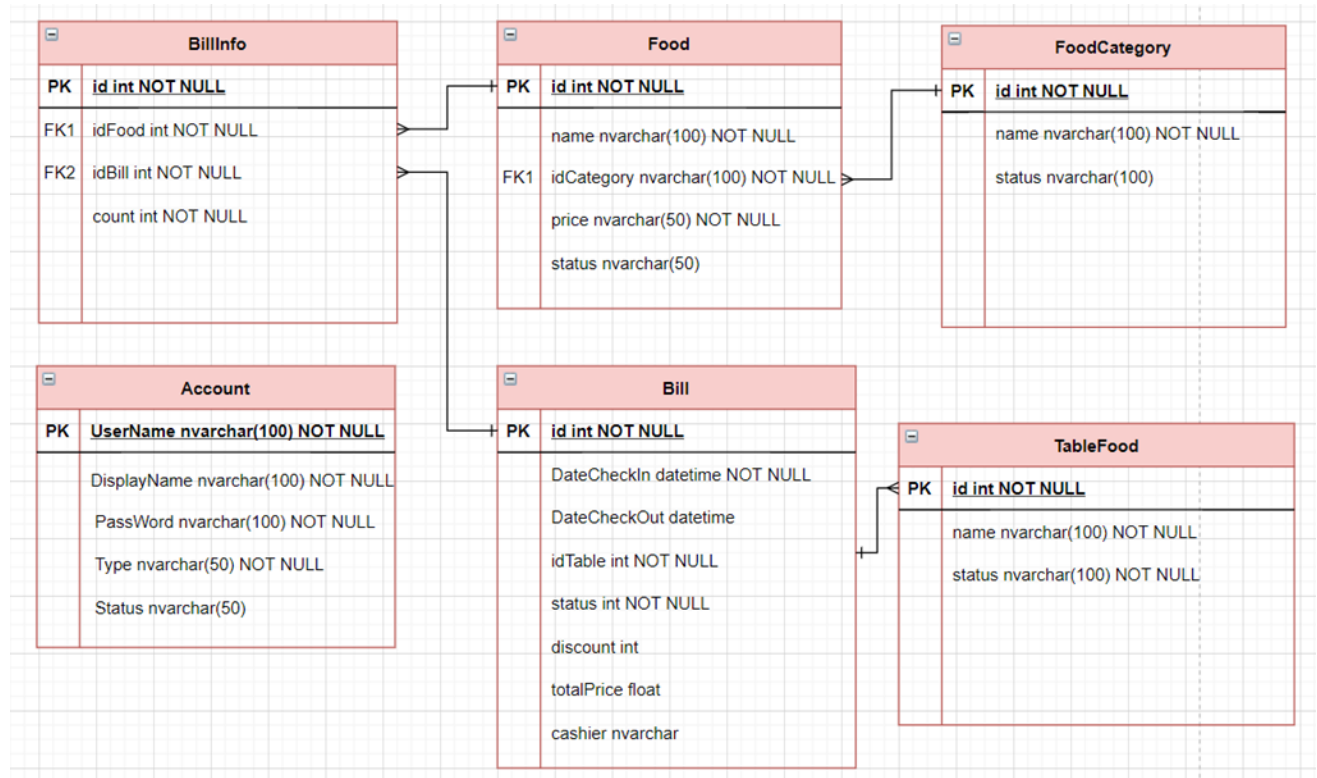


Figure 1. Use Case diagram for release 1.0 of the Restaurant Management System.

<i><b>Primary Actor</b></i>	<i><b>Use Cases</b></i>
Manager	<ol style="list-style-type: none"><li>1. Check and checkout the bill</li><li>2. Move table</li><li>3. View revenue table</li><li>4. Update Profile</li><li>5. Insert/ Delete Food</li><li>6. Update Food</li><li>7. View list of Food</li><li>8. Insert/ Delete Category</li><li>9. Update Category</li><li>10. View list of Category</li><li>11. Insert/ Delete Table</li><li>12. Update Table</li><li>13. View list of Table</li><li>14. Insert/Delete Account</li></ol>
Staff	<ol style="list-style-type: none"><li>15. Check and checkout the bill</li><li>16. Move table</li><li>17. Update Profile</li></ol>

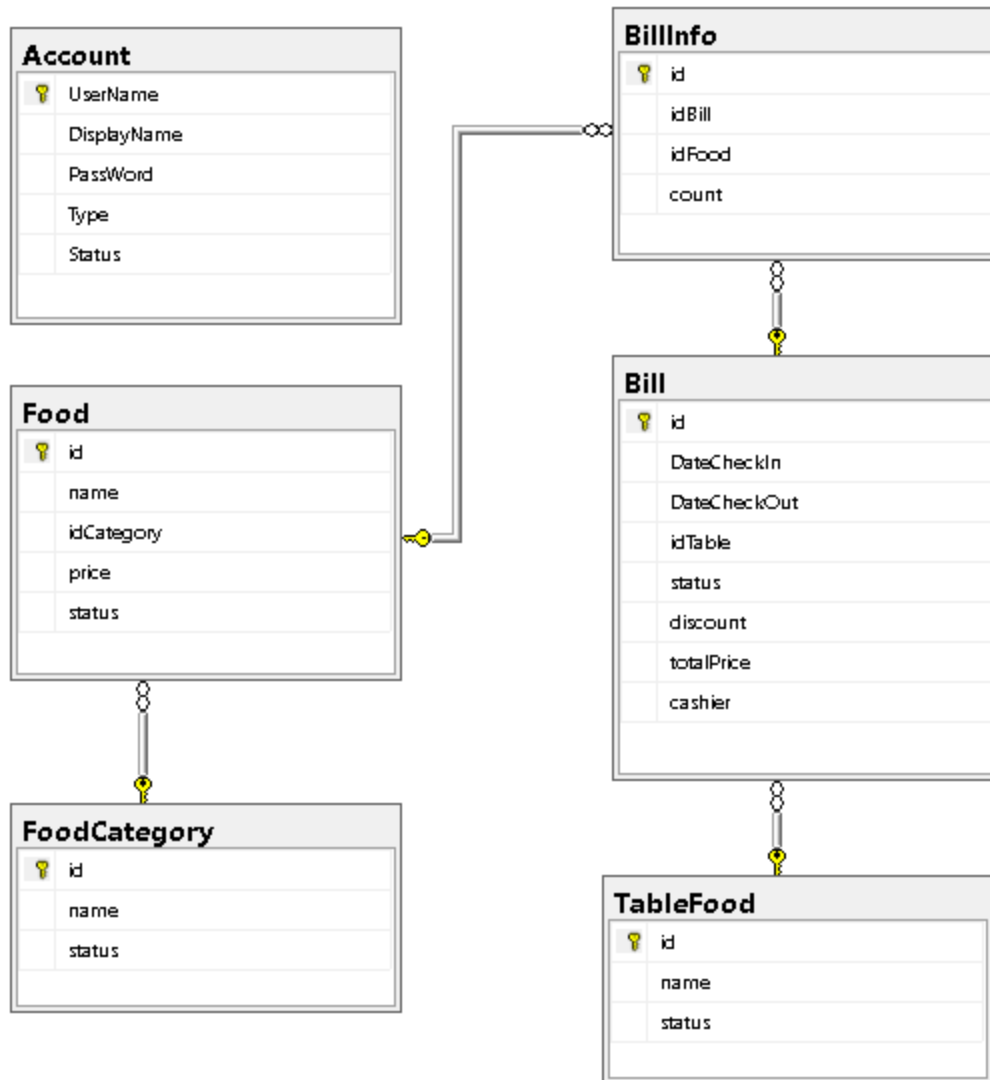
## 2. Database Design

### 2.1. Entity relationship diagram



**Figure 2. Entity Relationship Diagram for release 1.0 of the Restaurant Management System.**

## 2.2. DataBase Diagram



## 3. System Architecture

### 3.1 Environment

This software is build on .NET Core 5.0, required .NET Core 5.0 runtimes and Windows Form Libraries along with Windows Operating System to run it, database can run in localhost or on internet depend on customer's requirement.

### 3.2 Architecture

Use 3 layers design pattern along with Repository design pattern, repository class will implement repository interface, all repository methods will call from corresponding DAO classes. DAO classes methods is grouped by role. The system have 2 main roles, that is : staff, admin.

#### **System function for user:**

##### **Login:**

User input: username, password.

Description: User clicks Login button with username and password entered, if username and password exist in database, return User object, show main form.

#### **System function for staff:**

##### **Main form:**

User Input: N/A.

Description: When the main form is loaded, the tab shows the tables with the status "Available"/"Available" on the left and payment operations on the right.

##### **Add foods to the bill:**

User input: dish information and quantity

Description: When the main form is loaded, on the right payment tab, you can add dishes with information about dish name, quantity, unit price and amount. At the same time, the employee can enter the discount percentage on each order.



**Handling the table shifting operation:**

User input: Table information, table status

Description: At the bottom right of the main tab, the user selects the Switch table button to transfer the invoice as well as the status between the tables.

**Checkout the bill:**

User input: Invoice information

Description: Update revenue, final calculated price after entering more discount code.

**Update account profile:**

User Input: Display Name, Current Password, New Password and Confirm Password.

Description: Confirmation Password must match New Password and New Password must be different from Current Password.

**System function for manager: (Manipulation that can perform as Staff actions)**

**View revenue statistics:**

User input: Start date, End date.

Description: View the restaurant's sales statistics for the period from the start date to the end date.

**View food:**

User Input: N/A

Description: View all foods with their details.

**Insert food:**

User input: Food information

Description: New Food will be included in the database if the input meets the validation requirements (food name is a unique field).

**Update food:**

User input: Food information

Description: New food information will be updated based on their ID.

**Delete food:**

User Input: Information of food

Description: Select a food from the data grid view to delete. The delete operation will be performed after confirming the action in the message box.

**View Category:**

User Input: N/A

Description: View all Categories with their details.

**Insert Category:**

User Input: Category Information

Description: The new Category will be included in the database if the input meets the validation requirements (Category name is a unique field).

**Update Category:**

User Input: Category Information

Description: New Category information will be updated based on their ID.

**Delete Category:**

User Input: Information of Category

Description: Select a Category from the data grid view to delete. The delete operation will be performed after confirming the action in the message box.

**View Table:**

User Input: N/A

Description: View all Tables with their details.

**Insert Table:**

User Input: Table Information

Description: A new table will be included in the database if the input meets the validation requirements (Table name is a unique field).

**Update Table:**

User Input: Table Information

Description: New Table information will be updated based on their ID.

**Delete Table:**

User Input: Table Information

Description: Select a Table from the data grid view to delete. The delete operation will be performed after confirming the action in the message box.

**View Account:**

User Input: N/A

Description: View all Accounts with their details.

**Insert Account:**

User input: Account information

Description: The new account will be included in the database if the input meets the validation requirements (Account name is the only field).

**Update Account:**

User input: Account information

Description: New Account information will be updated based on their ID.

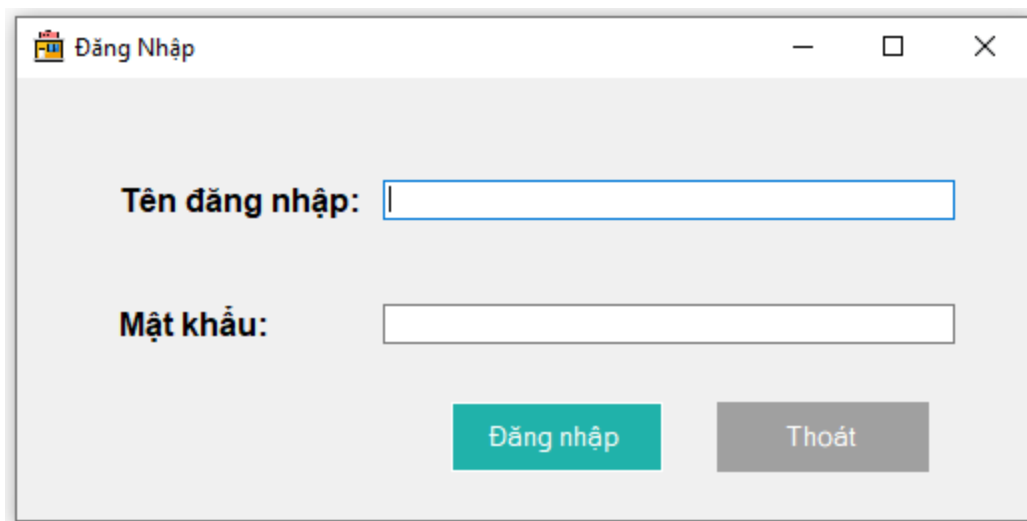
**Delete Account:**

User input: Account information

Description: Select an Account from the data grid view to delete. The delete operation will be performed after confirming the action in the message box.

## 4. Implementation

### 4.1. Login



The image shows a screenshot of a Windows application window titled "Đăng Nhập" (Login). The window has a standard Windows title bar with minimize, maximize, and close buttons. The main content area is light gray and contains two text input fields. The first field is labeled "Tên đăng nhập:" (Username) and the second is labeled "Mật khẩu:" (Password). Below the password field are two buttons: a teal button labeled "Đăng nhập" (Login) and a gray button labeled "Thoát" (Exit).

**Login Form**

## 4.2. Check price and checkout the bill

**Phần mềm quản lý quán ăn**

Admin   Thông tin tài khoản (Hasagi)

Bàn 1  
Có Người

Bàn 2  
Bàn Trống

Bàn 3  
Bàn Trống

Bàn 4  
Bàn Trống

Bàn 5  
Bàn Trống

Bàn 6  
Bàn Trống

Bàn 7  
Bàn Trống

Bàn 8  
Bàn Trống

Bàn 9  
Bàn Trống

Bàn 10  
Bàn Trống

Bàn 11  
Bàn Trống

Tên Món	Số lượng	Đơn giá	Thành tiền
Mực một nắng	1	35000	35000

Chuyển bàn
Giảm giá

Tổng tiền  
 35.000,00 đ

Thanh toán

## Main Form

### 4.3. Handling the table shifting operation:

Phần mềm quản lý quán ăn

Admin    Thông tin tài khoản (Hasagi)

Bàn 1  
Có Người

Bàn 2  
Bàn Trống

Bàn 3  
Bàn Trống

Bàn 4  
Bàn Trống

Bàn 5  
Bàn Trống

Bàn 7  
Bàn Trống

Bàn 8  
Bàn Trống

Bàn 9  
Bàn Trống

Bàn 10  
Bàn Trống

Bàn 11  
Bàn Trống

Hải Sản

Mức một nắng

1

Thêm món

Tên Món	Số lượng	Đơn giá	Thành tiền
Mức một nắng	1	35000	35000

Chuyển bàn

Giảm giá

Tổng tiền

Thanh toán

Bàn 2

0

35.000,00 đ

Thông báo

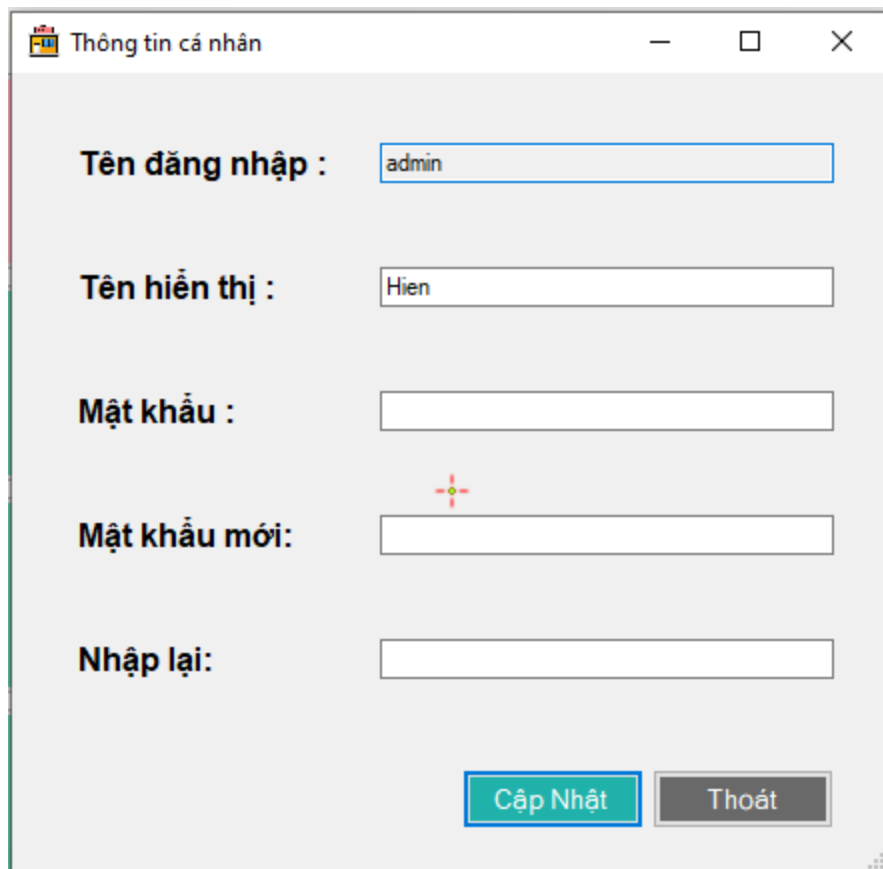
Chuyển Bàn 1 sang Bàn 2 ?

OK

Cancel

## Consumers Box

## 4.4. Update Profile



The screenshot shows a web application window titled "Thông tin cá nhân" (Personal Information). The window contains five input fields for updating user profile information. The first field, "Tên đăng nhập :" (Login name), contains the text "admin". The second field, "Tên hiển thị :" (Display name), contains the text "Hien". The third field, "Mật khẩu :" (Password), is empty. The fourth field, "Mật khẩu mới:" (New password), is empty and has a red cross icon above it, indicating a required field. The fifth field, "Nhập lại:" (Repeat), is empty. At the bottom right, there are two buttons: "Cập Nhật" (Update) in a green box and "Thoát" (Exit) in a grey box.

Tên đăng nhập :	<input type="text" value="admin"/>
Tên hiển thị :	<input type="text" value="Hien"/>
Mật khẩu :	<input type="password"/>
Mật khẩu mới:	<input type="password"/>
Nhập lại:	<input type="password"/>

## 4.5. Admin Form (Only Admin Role can access)

### 4.5.1 View revenue table

Admin

Doanh thu Thức ăn Danh mục Bàn ăn Tài khoản

Monday , November 1, 2021 **Thống kê** Tuesday , November 30, 2021

	Bàn	Ngày vào	Ngày ra	Giảm giá	Tổng tiền	Thu Ngân
▶	Bàn 1	11/6/2021 5:56 PM	11/6/2021 5:58 PM	0	35000	Hasaqi
	Bàn 3	11/5/2021 9:19 PM	11/5/2021 9:25 PM	0	35000	Hung
*						

Trang đầu Trang trước 1 Trang sau Trang cuối

View revenue table Box

#### 4.5.2 Food Management



**Admin**

Doanh thu | **Thực ăn** | Danh mục | Bàn ăn | Tài khoản

	Name	CategoryID	Price
▶	Mực một nắng	1	35000
	Càng ghe rang m...	1	48000
	Tôm hấp	1	32000
	Canh khổ qua	3	30000
	Lẩu thập cẩm	3	120000
	Canh chua	3	80000
	Hèo rừng nướng	2	150000
	Cơm chiên dương...	2	20000
	Dê hấp	2	180000
	Rau muống xào tỏi	4	13000
	Bắp xù luộc	4	15000
	Cải xào cà chua	4	15000
	7up	5	8000

**ID:**

**Tên món:**

**Danh mục:**

**Giá:**

### Food Management Box

#### 4.5.3 Category Management

Admin


Doanh thu Thức ăn **Danh mục** Bàn ăn Tài khoản

Thêm Xoá Sửa Xem

	Name	Id
▶	Hải Sản	1
	Đặc Sản	2
	Món Nước	3
	Rau Củ	4
	Đồ Uống	5

ID:

Tên danh mục:



Category Management Box

#### 4.5.4 Table Management

Admin

Doanh thu

Thức ăn

Danh mục

Bàn ăn

Tài khoản

Thêm

Xoá

Sửa

Xem

	ID	Name	Status
▶	1	Bàn 1	Bàn Trống
	2	Bàn 2	Có Người
	3	Bàn 3	Bàn Trống
	4	Bàn 4	Bàn Trống
	5	Bàn 5	Bàn Trống
	6	Bàn 6	Bàn Trống
	7	Bàn 7	Bàn Trống
	8	Bàn 8	Bàn Trống
	9	Bàn 9	Bàn Trống
	10	Bàn 10	Bàn Trống
	11	Bàn 11	Bàn Trống

ID:

1

Tên bàn:

Bàn 1

Trạng thái:

Bàn Trống

Table Management Box

#### 4.5.5 Account Management

Admin

Doanh thu

Thực ăn

Danh mục

Bản ăn

Tài khoản

Thêm

Xoá

Sửa

Xem

	userName	displayName	type
▶	K9	Hasagi	admin
	staff1	Hien	staff
	staff2	Hung	staff
	staff3	Hung	Admin
*			

Tên tài khoản:

K9

Tên hiển thị:

Hasagi

Loại tài khoản:

Admin

Trạng thái:

Active

Đặt lại mật khẩu

Account Management Box