**FINAL PROJECT DESCRIPTION FOR PRN231 COURSE**

**SPRING2024**

**Group name: 08 – Supermarket Management**

**Members of Group:**

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# I. Introduction

* 1. **Purpose**

The purpose of this document defines the requirements for a supermarket management software system. This document will be used by stakeholders, including customers, developers, and testers, to ensure that the system meets their needs.

* 1. **Scope**
* The supermarket management software system will provide the following functionalities:
* Product management: The system will allow users to manage product information, including product code, name, description, price, etc.
* Order management: The system will allow users to manage customer orders, including customer information, product information, payment information, etc.
* Employee management: The system will allow users to manage employee information, including employee personal information, account information, and permission information, etc.
* Warehouse management: The system will allow users to manage warehouse information, including product information in the warehouse, inventory information, etc.
* Statistical reporting: The system will allow users to generate statistical reports on the supermarket's operations, including revenue, expenses, etc.
  1. **Stakeholders**

The key stakeholders of the system include:

* Customer: The supermarket is the primary customer of the system. They will use the system to manage their operations.
* Developer: The developer will be responsible for building the system. They will need to understand the customer's requirements to build a system that meets their needs.
* Tester: The tester will be responsible for testing the system to ensure that the system meets the requirements.
  1. **User interface**
* The user interface should be user-friendly and easy to use.
* The user interface should be responsive to different screen sizes.
  1. **Platform**

The web application will be built on the .NET platform.

* 1. **Technology**

The web application will use the following technologies:

* ASP.NET Core
* SQL Server
* Microsoft Web Code Generation
* Microsoft Extensions
* Microsoft Code Analysis
* Authentication
* Authorization

# II. Project Objectives

In this project, Group 08 will:

* Develop a user-friendly and responsive web application that meets the needs of both potential and current customers of supermarket.

To achieve these objectives, Group 08 will:

* Design and develop a user interface that is easy to use and navigate on both desktop and mobile devices.
* Build a secure and reliable database to store product, customer, and order information.
* Integrate secure and convenient online payment features.
* Develop a content management system (CMS) that allows supermarket to easily update product and service information.

Group 08 is committed to delivering a high-quality web application that will meet the needs of supermarket and its customers. We believe that our experience and expertise in web development will enable us to create a successful project.

# III. Database Design

## 3.1 **Tables in your database**

Table Name: Products

|  |  |  |  |
| --- | --- | --- | --- |
| **Column Name** | **Data Type** |  |  |
| ProductID | int | Primary Key | Mã sản phẩm |
| ProductName | String(200 chars) |  | Tên sản phẩm |
| SupplierID | Int | Foreign Key | Mã nhà cung cấp |
| CategoryID | Int | Foreign Key | Mã loại hàng |
| Description | String(450 chars) | Allow Nulls | Mô tả sản phẩm |
| Discontinued | boolean |  | Trạng thái sản phẩm |
| TotalQuantity | int |  | Tổng số lượng sản phẩm |
| Price | Double |  | Giá sản phẩm |

Table Name: Categories

|  |  |  |  |
| --- | --- | --- | --- |
| **Column Name** | **Data Type** |  |  |
| CategoryID | Int | Primary Key | Mã loại hàng |
| CategoryName | String(200 chars) |  | Loại hàng |
| Description | String(450 chars) | Allow Nulls | Mô tả loại hàng |
| Discontinued | Boolean |  | Trạng thái loại hàng |

Table Name: Suppliers

|  |  |  |  |
| --- | --- | --- | --- |
| **Column Name** | **Data Type** |  |  |
| SupplierID | Int | Primary Key | Mã nhà cung cấp |
| CompanyName | String(450 chars) |  | Tên công ty cung cấp |
| Address | String(450 chars) |  | Địa chỉa nhà cung cấp |
| Phone | String(11 chars) |  | SĐT nhà cung cấp |
| Fax | String(11 chars) |  | Số Fax nhà cung cấp |
| HomePage | String(450 chars) |  | Trang chủ nhà cung cấp |
| Discontinued | Boolean |  | Trạng thái |

Table Name: Batch

|  |  |  |  |
| --- | --- | --- | --- |
| **Column Name** | **Data Type** |  |  |
| BatchID | Int | Primary Key | Mã lô hàng |
| ProductID | Int | Foreign Key | Mã sản phẩm |
| InventoryID | Int | Foreign Key | Mã kho hàng |
| ExpirationDate | Date |  | Ngày hết hạn |
| Manufacturing | Date |  | Ngày sản xuất |
| Quantity | Int |  | Số lượng |
| Discontinued | Boolean |  | Trạng thái |

Table Name: Inventory

|  |  |  |  |
| --- | --- | --- | --- |
| **Column Name** | **Data Type** |  |  |
| InventoryID | Int | Primary Key | Mã kho hàng |
| ProductID | Int | Foreign Key | Mã Sản phẩm |
| Quantity | Int |  | Số lượng |
| PurchasePrice | Double |  | Giá nhập |
| EntryDate | Date |  | Ngày nhập |
| EmployeeID | Int | Foreign Key | ID nhân viên |

Table Name: Customers

|  |  |  |  |
| --- | --- | --- | --- |
| **Column Name** | **Data Type** |  |  |
| CustomerID | Int | Primary Key | ID khách hàng |
| LastName | String(50 chars) |  | Tên khách hang |
| FirstName | String(50 chars) |  | Họ khách hàng |
| Address | String(450 chars) |  | Địa chỉ khách hàng |
| Phone | String(11 chars) |  | SĐT khách hàng |

Table Name: SalesTransactions

|  |  |  |  |
| --- | --- | --- | --- |
| **Column Name** | **Data Type** |  |  |
| TransactionID | Int | Primary Key | Mã giao dịch |
| CustomerID | Int | Foreign Key | ID khách hàng |
| EmployeeID | Int | Foreign Key | ID nhân viên |
| TransactionDate | Date |  | Ngày giao dịch |
| CashRecieved | Double |  | Tiện nhận |
| Change | Double |  | Tiền thừa |
| TotalPrice | Double |  | Tổng đơn giá |

Table Name: TransactionDetails

|  |  |  |  |
| --- | --- | --- | --- |
| **Column Name** | **Data Type** |  |  |
| TransactionID | Int | Foreign Key, Primary Key | Mã giao dịch |
| BatchID | Int | Foreign Key, Primary Key | Mã lô hàng |
| Subtotal | Double |  | Giá |
| Quantity | Int |  | Số lượng |
| Discount | Double | Allow Nulls | Giảm giá |

Table Name: Employees

|  |  |  |  |
| --- | --- | --- | --- |
| **Column Name** | **Data Type** |  |  |
| EmployeeID | Int | Primary Key | Mã nhân viên |
| LastName | String(50 chars) |  | Tên nhân viên |
| FirstName | String(50 chars) |  | Họ nhân viên |
| DoB | Date |  | Ngày sinh nhân viên |
| HireDate | Date |  | Ngày nhận việc |
| Address | String(450 chars) |  | Địa chỉ nhân viên |
| Phone | String(11 chars) |  | SĐT nhân viên |
| Discontinued | Boolean |  | Trạng thái |

## **3.2 Relationship between the tables…**

* The "Product" table is linked to the "Suppliers" table through the foreign key "SupplierID."
* The "Product" table is linked to the "Category" table through the foreign key "CategoryID."
* The "Inventory" table is linked to the "Product" table through the foreign key "ProductID" and is also linked to the "Employees" table through the foreign key "EmployeeID."
* The "Batch" table is linked to the "Product" table through the foreign key "ProductID" and is also linked to the "Inventory" table through the foreign key "InventoryID."
* The "SaleTransactions" table is linked to the "Customers" table through the foreign key "CustomerID" and is also linked to the "Employees" table through the foreign key "EmployeeID."
* The "TransactionDetails" table is linked to the "SalesTransactions" table through the foreign key "TransactionID" and is also linked to the "Batch" table through the foreign key "BatchID."

# IV. Main Functions of Application

The supermarket management web application will provide the following main functions for both management, employees, and customers:

For management:

* Product management:
  + Add, delete, and edit product information (product name, description, image, price, promotion, etc.).
  + Categorize and sort products by different criteria (product type, brand, supplier, etc.).
  + Check inventory and update product quantities.
* Employee management:
  + Add, delete, and edit employee information (employee name, role, permissions, etc.).
  + Track and evaluate employee performance.
  + Calculate salaries and bonuses for employees.
* Revenue and expense management:
* View and export reports on the supermarket's revenue and expenses.
* Analyze and summarize data on sales, profits, expenses, customers, and products.
* Control the supermarket's financial situation.
* Reporting system:
* Create custom reports on the supermarket's various activities.
* Export reports in different formats (PDF, Excel, etc.).

For employees:

* Inventory management:
  + Receive new inventory from suppliers.
  + Ship inventory to customers.
  + Check inventory and update product quantities.
* Customer checkout:
* Enter customer order information.
* Process different payment methods (cash, credit/debit cards, etc.).
* Print sales receipts.
* Customer service:
* Answer customer questions about products and services.
* Help customers find the products they need.
* Resolve customer issues related to orders or payments.

# V. Role of members

Table – tasks of member

|  |  |  |
| --- | --- | --- |
| **Full Name** | **StudentId** | **Role** |
| Trần Đại Nghĩa | HE163119 | Leader, BA, DEV, Tester |
| Chu Thành Duy | HE161399 | BA, DEV, Tester |
| Nguyễn Việt Anh | HE163837 | BA, DEV, Tester |

# VI. Plan for Project (3 weeks)

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Task** | **Member** | **Time** |
| 01 | Create group | All members | Week 1  (04/01/2024) |
| 02 | Create idea project | All members | Week 1  (04/01/2024) |
| 03 | Create maintain functions | All members | Week 1  (06/01/2024) |
| 04 | Create idea database | All members | Week 2  (08/01/2024) |
| 05 | Create Database design | All members | Week 2  (08/01/2024) |
| 06 | Create project description | All members | Week 2  (11/01/2024) |
| 07 | Create test case | All members | Week 2  (13/01/2024) |
| 08 | Create GitHub project | All members | Week 3  (15/01/2024) |
| 09 | Design Database | All members | Week 3  (18/07/2024) |

# TEST CASE RESULTS

|  |  |  |
| --- | --- | --- |
| **API** | **Response** | **Response Detail** |
| Get: /api/Products | Success | View list products Json |
| Get: /api/products/{id} | Success | View product Json |
|  | Fail | Error |
| Post:/api/Products/{id} | Success | Add new product |
|  | Fail | Error |
| Put: /api/Products/{id} | Success | Update product |
|  | Fail | Error |
| Delete: /api/Products/{id} | Success | Delete product |
|  | Fail | Error |
| Get: /api/Categories | Succes | View list categories Json |
| Get: /api/Categories/{id} | Success | View category Json |
|  | Fail | Error |
| Post: /api/Categories/{id} | Success | Create new category |
|  | Fail | Error |
| Put: /api/Categories/{id} | Success | Update category |
|  | Fail | Error |
| Delete: /api/Categories/{id} | Success | Delete category |
|  | Fail | Error |
| Get: /api/Suppliers | Succes | View list suppliers Json |
| Get: /api/Suppliers/{id} | Success | View supplier Json |
|  | Fail | Error |
| Post: /api/Suppliers/{id} | Success | Create new supplier |
|  | Fail | Error |
| Put: /api/Suppliers/{id} | Success | Update supplier |
|  | Fail | Error |
| Delete: /api/Suppliers/{id} | Success | Delete supplier |
|  | Fail | Error |
| Get: /api/Batchs/{id} | Success | View batch Json |
|  | Fail | Error |
| Post: /api/Batchs/{id} | Success | Create new batch |
|  | Fail | Error |
| Put: /api/Batchs/{id} | Success | Update batch |
|  | Fail | Error |
| Get: /api/Customers | Succes | View list customers Json |
| Get: /api/Customers/{id} | Success | View customer Json |
|  | Fail | Error |
| Post: /api/Customers/{id} | Success | Create new customer |
|  | Fail | Error |
| Put: /api/Customers/{id} | Success | Update customer |
|  | Fail | Error |
| Get: /api/Employees | Succes | View list employees Json |
| Get: /api/Employees/{id} | Success | View employee Json |
|  | Fail | Error |
| Post: /api/Employees/{id} | Success | Create new employee |
|  | Fail | Error |
| Put: /api/Employees/{id} | Success | Update employee |
|  | Fail | Error |

# REFERENCE MATERIALS

[**https://stackoverflow.com/**](https://stackoverflow.com/)

[**https://github.com/**](https://github.com/)