1. Introduction to project

Point of sale (POS) or point of purchase is the time and place where a retail transaction is completed. At the point of sale, the merchant calculates the amount owed by the customer, indicates that amount, may prepare an invoice for the customer, and indicates the options for the customer to make payment. In restaurant business, POS systems often include table reservation, ordering food, alerts, billing, credit card processing and customer management.

Even before the COVID-19 crisis, POS systems had gained traction across the industry. During the coronavirus pandemic, restaurants face greater peril than ever. Such systems are expected to increase business intelligence, reduce wasted effort and opportunity to scale to a large business. Moreover, the systems should support take-away options. Our customers have multiple restaurants and have a need to develop a responsive web-based POS system that implements the current business flow.

In this project, we will deploy an application web-based solution for POS system which implements the functions for current restaurant business in table reservation, ordering food, alerts, billing, credit card processing and customer management.

In this project, we will deploy an application web-based solution for POS systems which implements the functions for current restaurant business in relation to food order and table reservation, alerts, billing and payment, credit card processing, menu management and general management.

2. General features of project

***Feature 1: Food order and table reservation***

1. Customers access the restaurant website by directly searching for the restaurant's website name on Google. At this stage, customers can also use devices scanning for the provided QR code. QR code to access the restaurant's main website.
2. Customers can place orders and choose whether to have the food to be served at the restaurant or take it away. If the customers choose to have food served at the restaurant, they will have access to another option, table booking (number of seats, location, time). At the table booking option, customers can book for the table, cancel the reservation and update booking information. Please also note that the table booking information can only be updated within 2 hours since the reservation time. Thus, any updates after 2 hours are not accepted and the customer can only cancel the order.
3. On the menu, the customer can click on one item and see the item's information (name, price and main ingredient).
4. Customers can choose the number of the items that they want to order and options related to the items (with/without onions, spicy, non-spicy...).
5. After confirming items, food will be added to the cart, the customer can choose to order their next item (repeat from Step 2). After finishing the ordering process, the customer will confirm the order and chosen items are added to the card.  In the cart, the customer can view items they have selected. Customers can also delete or change their choice related to the quantity, options and size of each item. The price of each item and the total amount are also displayed at this stage. After checking for the total price, the customer can also choose the payment method (by cash, online…).
6. The system receives payment results and assigns the order to responsible staff.

***Feature 2: Menu management***

Restaurant owners and managers can edit, add, remove items from the menu, update the prices and other information related to items.

***Feature 3: Billing and Payment***

The restaurant can issue invoices for customers. The information in the invoice includes name of items, price of each item, quantity, tax, total price to be paid, time of invoice creation, cashier name.... Customers can choose to pay by using cash or card. Cashier checks and confirms the payment.

***Feature 4: General management***

The general management includes order management, customer management and employee management.

Order management includes:

* Manage the number of received orders, cancel orders and receive feedback…
* Manage total orders from customers, ranking items that restaurant serves based on count of orders from customers and collect feedback to generate data, generate sales reports and perform recommendations.
* Sales reports: Generate detailed sales reports (based on product, hour, employee, total cost of items sold, total retail amount, net profit, profit percentage, gross margin). Provide quick snapshots and charts on your store’s sales performance. Restaurant owners and managers can view, display and receive the summary of sale reports every day, week, month, quarter, year.

Customer management includes: The system stores customer invoice information, total recurring revenue…

Employee management include:

* Login account for employee
* View of attendance
* Manage employee's working hours (date, shift, hours and check in/ check out time…).
* Information system for storing employee information (name, employee number, year of birth, address…), payment and titles (employee, manager…).

3. Non-functional requirements

***Usability***

* Web application content will be written by the Vietnamese.
* Some actions are represented by icons instead of text.
* The system usability is easy to use and users generally don’t need to look at the document to use.

***Reliability:*** The data should be backed up periodically.

***Availability:*** The system must be available from 7am to 9pm.

***Maintainability***

* The system is divided into separate modules for easy maintenance.
* Can extendable to use in multiple restaurants.

***Portability***

* Using web technology and QR code.
* Usable from a mobile device, a tablet device or a normal computer/laptop.

***Performance***

* System has been successfully tested with basic standards.
* Response time less than 2 seconds.
* The current transactions are about 300 orders per day.
* System can be accessed by 100 users at 1 time.

4. Project’s use case

5. Work assignment

| **Member** | **Function** |
| --- | --- |
| NGUYỄN NGỌC HIỂN | Food order and table reservation |
| CHIÊNG PHI HOÀNG | Food order and table reservation |
| LÊ HỒNG NHẬT | Menu management |
| TRẦN QUANG KHẢ | Menu management |
| LƯƠNG ĐỨC DŨNG | Payment and Billing |
| VŨ ĐÌNH PHÚ | Restaurant management |
| NGUYỄN TRẦN QUẾ TRÂM | Restaurant management |

Detailed features

| Use-case name | Restaurant management |
| --- | --- |
| Actor | Employee, Customer, System Admin |
| Description | The general management includes order management, customer management and employee management which support the management of employees and the general system of the restaurant related to ordering services. |
| Preconditions | Internet is connected, The database must be connected and loaded |
| Normal Flow | Employee management:  Employees login account for employee  Employees check in and check out for view of attendance  Employees update the information, if any.  System load and update the information.  Customer management includes:  The system records customer information.  The system records the invoice information.  System load and update the information.  Order management:  System records the number of received orders, cancels orders and receives feedback  System manages total orders from customers  System collect feedbacks  System load and update the information  System generates data, generates sales reports to analyze and performs recommendations and quick snapshots and charts on your store’s sales performance.  System send summary of sale reports every day, week, month, quarter, year. |

Scope:

Food ordering: The scope of this feature is to show the details of each dish on the menu when customers view the dishes. They can see an illustration of the dish and information about that dish like the price and description . When they choose to order that dish, they can choose the quantity, size and options about the dish (for example dish with/without onions, spicy level,etc) and can make a note for the Clerk.

Menu: The scope of this feature is to present a general description about what dishes the restaurant can be served at the current time. To support for this purpose, the menu provide the below function for user and system:

Management: The scope of this feature is to manage the restaurant, limited to activities related to POS systems that support system users to record, update and delete the information. Based on the recorded information, the system can perform recommendations (related to sales and inventory) as well as analyze activities to report to the manager and restaurant’s owner. Furthermore, employees and customers can login into the system, view and update information if necessary. In addition, the system management also supports employees to view attendance (checkin and checkout at work); customers to sign up an account, view coupons and check for orders status.

Billing and payment: This feature allows customers to choose the payment method that they find most convenient, from the available options offered by the restaurant such as cash, credit card, online banking, etc and the system will store the record of the transaction. The scope of this feature is that the system only supports the limited payment method options provided by the restaurant and only stores the record of the transaction that has been completed.