

School of Computing

Faculty of Engineering

UNIVERSITI TEKNOLOGI MALAYSIA

DATA STRUCTURE & ALGORITMA

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Mini Project Report

Food Ordering System

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1.0 Introduction

Consistent with the Ministry of Health Malaysia (MOH), there have been over 38 thousand active cases of the Coronavirus currently in Malaysia and has resulted in 605 deaths as of 18 January 2021. The number of new cases has been snowballing at an exponential rate since October of 2020 and as of early November 2020, the number of new cases has consistently been over 1000 every single day. Needless to say, the greatest number of cases has reached 4029 on 16 January 2021 which is deeply worrying.

Due to this fact, online ordering has become one of the most important and useful services that have been increasingly used, especially in the field of ordering food as each restaurant has only a limited number of customers to dine in. If you need to get a meal, you have to go through a time-consuming process especially when you go to a place without having a reservation or the restaurant cannot serve all your family members in one table. Facing such difficulties made online food ordering a good choice for customers to get their favorite meals. As a result of that we choose to develop a food ordering system as our assignment objective.

The developed food ordering system will provide the customer with the option of selecting the meal by giving him the chance to order a meal by showing him the ordered list that contains all options. It also will give the staff the ability to update the menu by adding new meals and put them in the right alphabetical order as well as the ability of searching for food items and other functionalities that will be further discussed.

1.1 Objective

- To develop a system that will surely satisfy the customer service.
- Effective modern day food ordering system.
- Businesslike and well organized in a very straightforward manner.
- Consisting basic/necessary service features.
- To design a system that is able to accommodate huge amounts of orders at a time.
- accuracy and reliability.
- To evaluate its performance and acceptability in terms of security, user friendliness.
- minimize the time of ordering.
- To improve the communication between the client and the server and
- Maintain distance.
- Promote a safe environment.
- Minimum contact.
- Manual listing of orders by the waiters/waitresses may result to slow response in customer service. Hence, if the restaurant uses the proposed system, manipulation of orders to the customers is so easy and quick.
- Ensure customer satisfaction.

1.2 Explanation of the data structure and techniques used:

Queue is essentially a list of data items, commands, etc. stored in such a way that it can be retrieved in a certain order, usually the order of insertion. Queue is open at both ends. One end is always used to insert data (enqueue) and the other end is used to delete data (dequeue). Queue follows the methodology of first-in-first-out (FIFO).

In the linked queue, two pointers are stored in the memory the front pointer and the rear pointer. The front pointer contains the address of the starting element of the queue, while the back pointer contains the address of the last element of the queue.

Insertion and deletion shall be performed at the rear and front ends respectively. If both front and back are NULL, it indicates that the queue is empty.

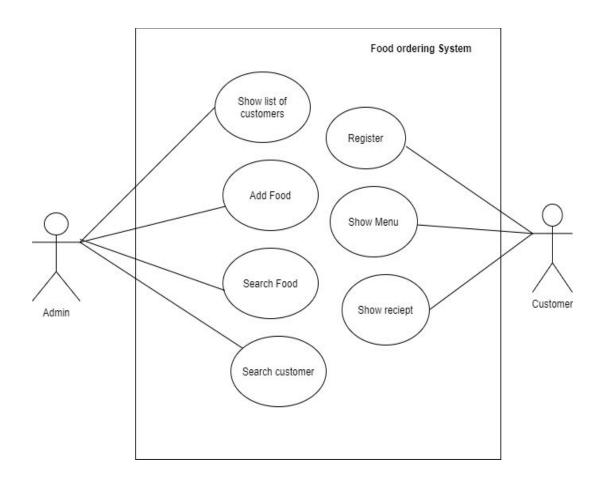
In our project we have used queue for both food list and customer list. Our system offers the customers to have their own Id by logging in and later order food from the menu. So, the customer data are stored by the help of queue.

Admin of the system can update the food items based on the availability. So, once they add a food item, it is stored in the queue by the help of enqueuer() function and later the admin can delete a food item with the help of dequeuer() function process

2.0 System Analysis & Design

2.1 System Requirements

2.1.1 Use case diagram



2.1.2 Use Case Description for food ordering system

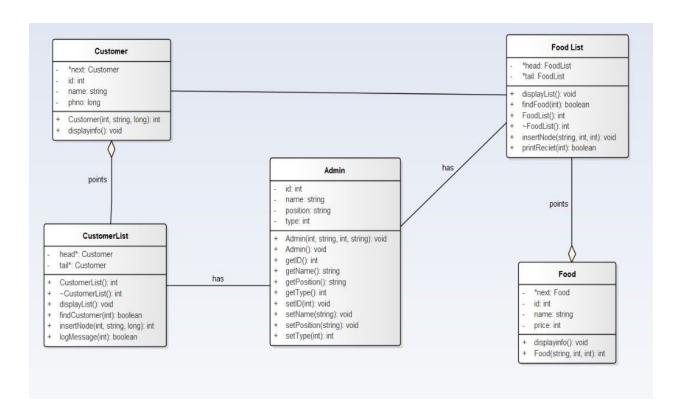
Actor	Task
Admin	The admin in our food ordering system is the person who is in charge of controlling the system. He is responsible for adding food items in the menu. The admin is also able to search a specific customer in the database, showing the list of customers, and search for food item
Customer	The customer is the user who is able to register in the system, view all the food menu, as well as request to show the receipt of his order.

2.1.3 Detail Description for each Use Case

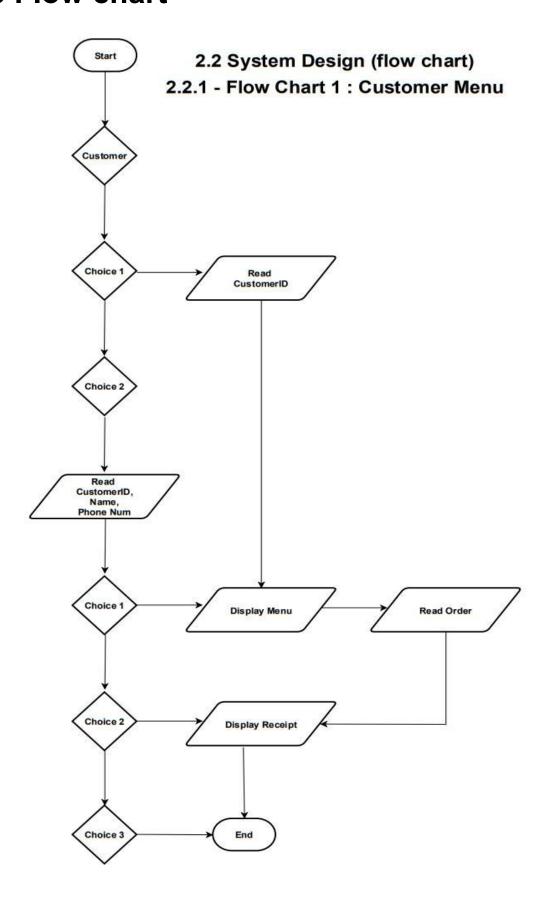
Use case	Description
Show list of customers	It shows the record of all the customers that have been registered in the system Accessed by: admin
Add Food	It is the function that enables the admin to add new food items to the menu of the restaurant by adding an id , name, and price for each added item. Accessed by :admin

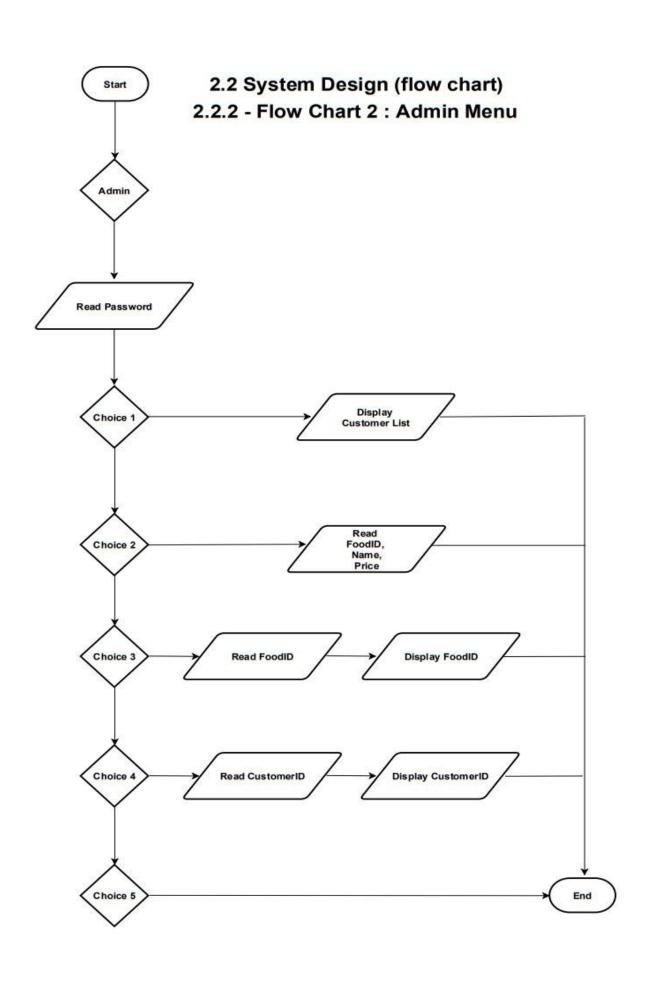
Search Food	This use case allows the admin to search for specific food items from the menu by keying in the id number of the item. Accessed by :admin
Search customer	The admin is allowed to access the registered customers in the system and search for a certain person using his id. Accessed by :admin
Register	The system allows new customers to register themselves in the system . Accessed by:New customers.
Show menu	Users can view all the menu items added in the system and choose their order from it. Accessed by:customer
Show Receipt	After the customer chooses items from the food menu , he is allowed to request to view the receipt. Accessed by:customer

2.2 Class Diagram



2.3 Flow chart





2.4 Techniques used

Explanation of the data structure and techniques used

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Admin of the system can update the food items based on the availability. So, once they add a food item, it is stored in the queue by the help of enqueuer() function and later the admin can delete a food item with the help of dequeuer() function process

3.0 System Prototype

```
Are you a :

1. Customer

2. Admin
```

When the user opens the system there will be two choices to choose from .

Select whether you are a customer or an admin.

```
Welcome to our food ordering system !
1. Existing Customer
2. New Customer
Please make a selection to continue :
```

```
Welcome to our food ordering system !

1. Existing Customer

2. New Customer

Please make a selection to continue :2

Enter id :10

Enter name : omar

Enter Phone Number :050505050_
```

If the user was a customer he must choose whether he is a new or existing customer.

If he was a new customer then he has to input id, name and phone number so the system can take record and add him to the database.But if the user was an existing customer he may proceed with the order.

```
Welcome! Please select your choice

1. Show Menu

2. Show Receipt

3. Exit
```

After that the customer must select the action that he would like to take.

```
Welcome! Please select your choice
1. Show Menu
2. Show Receipt
3. Exit
******************************
ID
        Name
                               Price
        Hot Dog 8
        Spicy Chicken Mcdeluxe 17
        Roti chinai
                      20
4
        Mcnuggets
                       20
8
        pasta 5003
         pasta 5003
Choose your Orders (Press 0 once you are done)3
Choose your Orders (Press 0 once you are done)6
Choose your Orders (Press 0 once you are done)4
Choose your Orders (Press 0 once you are done)0
Thank you for shopping with us!
 Press any key and then press enter to continue
```

If the customer selected 1 which is show menu, a menu will pop up containing all the food list that the restaurant offers. Then he should choose his order by keying in the id of the preferred food.

```
Welcome! Please select your choice
1. Show Menu
2. Show Receipt
3. Exit
2
```

If the customer wants to view the receipt he can choose number 2.

```
Thank you for using us as your preferred platform!!

Your order is:

ID Name Price

3 Hot Dog 8

4 Mcnuggets 20

6 Spicy Chicken Mcdeluxe 17

Press any key to continue . . . .
```

A list of the customer's order will be shown with their prices respectively .

```
Are you a :
1. Customer
2. Admin
2
Enter Password : password
```

If the user was an admin he must key in the password to enter the admin view.

```
Welcome! Please select your choice
1. Show list of Customers
2. Add Food
3. Search food
4. Search Customer
5. Exit
1
```

The admin is given different choices from the customer where he can choose to view the list of the registered customers, add new food to the menu, search for specific food item, search for a customer, or he may exit the system.

```
*************Customers********
ID
               Phone
       Name
1
        Omar
               32323
5
        Alaa
               3544675
        Ali
             233432
663
        angelo 1111933595
8
        angelina
                       55505005
10
               50505050
        omar
Press anything and then press enter to continue
```

If the admin chose to show the list of customers , a record of the registered customers will appear.

```
Welcome! Please select your choice

1. Show list of Customers

2. Add Food

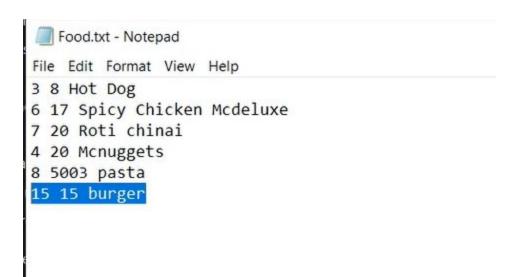
3. Search food

4. Search Customer

5. Exit

2
Enter id :15
Enter name : burger
Enter price :15
```

And if he chose to add a food item to the menu , he must input the id , name and price of the food then it will be added directly.



```
Welcome! Please select your choice

1. Show list of Customers

2. Add Food

3. Search food

4. Search Customer

5. Exit

3

Enter food id : 3

ID Name Price

3 Hot Dog 8

Enter anything and then press enter to continue!
```

Here ,the admin chose to search for food and the item with the keyed in id appeared.

```
Welcome! Please select your choice

1. Show list of Customers

2. Add Food

3. Search food

4. Search Customer

5. Exit

4

Enter customer id : 10

ID Name Phone

10 omar 50505050

Enter anything to continue ! ___
```

```
Welcome! Please select your choice
1. Show list of Customers
2. Add Food
3. Search food
4. Search Customer
5. Exit
5
```

And finally the admin can search for a certain customer or he can choose to exit the system

4.0 Development Activities

Meeting Date	Members Present	Activity	Member Tasks
11/01/2021	All members present.	Discussion regarding requirements of the mini project and divided tasks for parts 1,2 and 3.	OMAR HAMED & ALAA: Have an initial idea on implementation of the different algorithms. Coding the food ordering system. HABIBA: Plan System design (class diagram). VIMALRAJ: Introduction, objectives and report In-charge.

23/01/2021	All members present.	Discussion regarding report & presentation for mini project and divided tasks for parts 4 and 5.	OMAR HAMED & ALAA: Implementing the necessary project requirements & specifications into food ordering system code.
			VIMALRAJ & HABIBA: brainstormed necessary elements for report. VIMALRAJ: Making System Design Algorithm used: Flowchart HABIBA: Use case diagram, function explanation and prototype.

27/01/2021	All members present.	Edit and Compile full	OMAR HAMED &
		Report & Record	ALAA:
		video presentation.	Review the flowchart.
			Testing the code, and
			bug fixing.
			VIMALRAJ &
			HABIBA:
			Correcting and
			Finalizing Complete
			report.
			All members
			participate in the
			video presentation.

Source Code

Admin.cpp

```
#include "Admin.hpp"
#include <iostream>
using namespace std;
Admin::Admin()
    type = 0;
    position = " ";
Admin::Admin(int i, string n, int t, string e)
    type = t;
    position = e;
void Admin::setID(int a)
int Admin::getID()
```

```
void Admin::SetType(int a)
   type = a;
int Admin::getType()
   return type;
void Admin::SetPosition(string a)
   position = a;
string Admin::getPosition()
   return position;
void Admin::setName(string a)
string Admin::getName()
```

Admin.hpp

```
#ifndef Admin_H
#define Admin_H
#include <iostream>

using namespace std;

class Admin
{
private:
   int id, type;
```

```
string position, name;
public:
   Admin();
   Admin(int i, string n, int t, string
e);
   void setID(int a);
   int getID();
   void SetType(int a);
   int getType();
    string getPosition();
   string getName();
#endif
```

Customer.cpp

```
#include "Customer.hpp"
#include <iostream>
using namespace std;
Customer::Customer(int _id, string _name,
long _phno)
```

```
{
    name = _name;
    id = _id;
    phno = _phno;
    next = NULL;
}

void Customer::displayinfo()
{
    cout << id << "\t" << name << "\t" << phno << endl;
}</pre>
```

Customer.hpp

```
#ifndef Customer_H
#define Customer_H
#include <iostream>

using namespace std;

class Customer
{

public:
    int id;
    string name;
    long phno;
    Customer *next = NULL;
    Customer(int, string, long);
    void displayinfo();
};
#endif
```

customerList.cpp

```
#include <iostream>
#include "Customer.hpp"
#include "CustomerList.hpp"
#include <windows.h>
using namespace std;
CustomerList::CustomerList()
CustomerList::~CustomerList()
   Customer *currNode = head;
   Customer *nextNode = NULL;
       nextNode = currNode->next;
       delete currNode;
       currNode = nextNode;
void CustomerList::insertNode(int id,
string name, long phon)
    Customer *temp = new Customer(id, name,
phon);
    temp->next = NULL;
```

```
head = temp;
        tail = temp;
        tail->next = temp;
void CustomerList::displayList()
       curr->displayinfo();
bool CustomerList::findCustomer(int i)
   Customer *temp = head;
   while (temp != NULL)
        if (temp->id == i)
            cout << "ID\tName \tPhone" <<</pre>
endl;
            temp->displayinfo();
        temp = temp->next;
```

```
bool CustomerList::logMessage(int i)
{
    Customer *temp = head;

    while (temp != NULL)
    {
        if (temp->id == i)
        {
             system("CLS");
             cout << "Wecome Back Mr/Mrs "
        << temp->name;
            Sleep(1500);

            return true;
        }
        temp = temp->next;
    }

    return false;
}
```

customerList.hpp

```
#ifndef CustomerList_H
#define CustomerList_H
#include <iostream>
#include "Customer.hpp"

using namespace std;

class CustomerList
{
  private:
        Customer *head;
        Customer *tail;

public:
```

Food.cpp

```
#include "Food.hpp"
#include <iostream>

using namespace std;

Food::Food(string _name, int _id, int _price)
{
    name = _name;
    id = _id;
    price = _price;
    next = NULL;
}

//Display function to show the id, price and name of the food
void Food::displayinfo()
{
    cout << id << "\t" << name << "\t" << price << endl;
}</pre>
```

Food.hpp

```
#ifndef Food_H
#define Food_H
#include <iostream>
using namespace std;

class Food
{
public:
    string name;
    int id;
    int price;
    Food *next;

    Food(string, int, int);

    //Display function to show the id,
price and name of the food
    void displayinfo();
};
#endif
```

FoodList.cpp

```
#include "FoodList.hpp"
#include "Food.hpp"
#include <iostream>
using namespace std;
```

```
FoodList::FoodList()
   tail = NULL;
FoodList::~FoodList()
   Food *currNode = head;
   Food *nextNode = NULL;
   while (currNode != NULL)
       nextNode = currNode->next;
       delete currNode;
       currNode = nextNode;
void FoodList::insertNode(string name, int
id, int price)
   Food *temp = new Food(name, id, price);
   temp->next = NULL;
       head = temp;
       tail = temp;
      tail->next = temp;
      tail = tail->next;
```

```
void FoodList::displayList()
   Food *curr = head;
        curr->displayinfo();
bool FoodList::printReciet(int i)
    Food *temp = head;
   while (temp != NULL)
        if (temp->id == i)
            cout << temp->id << "\t" <<</pre>
temp->name << "\t" << temp->price << endl;</pre>
       temp = temp->next;
bool FoodList::findFood(int i)
   Food *temp = head;
   while (temp != NULL)
        if (temp->id == i)
```

```
temp->displayinfo();
    return true;
}
temp = temp->next;
}
return false;
}
```

FoodList.hpp

```
#ifndef foodlist_H
#define foodlist_H
#include "Food.hpp"

#include <iostream>
using namespace std;

class FoodList
{
    Food *head;
    Food *tail;

public:
    FoodList();
    ~FoodList();

    void insertNode(string,int, int);
    bool findFood(int);
    bool printReciet(int);
    void displayList();
};
#endif
```

Main.cpp

```
#include <iostream>
#include <fstream>
#include <windows.h>
#include "Customer.hpp"
#include "Food.hpp"
#include "Admin.hpp"
#include "FoodList.hpp"
#include "CustomerList.hpp"
using namespace std;
//function to read the food file, it reades
id, price and name of the food and sets it.
int ReadFood(FoodList &a)
   fstream file;
   file.open("Food.txt", ios::in);
   int id, price;
   while (!file.eof())
       file >> id;
       file >> price;
       getline(file, name);
       a.insertNode(name, id, price);
       size++;
void InsertionSort(int a[], int n)
```

```
int i, j, min, temp;
            if (a[j] < a[min])</pre>
        temp = a[i];
        a[i] = a[min];
       a[min] = temp;
int ReadCustomer(CustomerList &a)
   fstream file;
   file.open("Customers.txt", ios::in);
   long phno;
   while (!file.eof())
       file >> id;
       file >> phno;
       getline(file, name);
       a.insertNode(id, name, phno);
       size++;
```

```
/ the password for the admin is "password"
int dispAdminMenu()
   system("CLS");
choice " << endl
endl
         << "2. Add Food" << endl
         << "4. Search Customer" << endl
         << "5. Exit" << endl;
   cin >> a;
   return a;
following operations
int DispCustMenu()
   system("CLS");
choice " << endl
         << "3. Exit" << endl;
   cin >> a;
int main()
   FoodList fList;
   CustomerList cList;
```

```
int c, a, sizea = 0, sizeb, y;
    fstream file;
    sizea = ReadFood(fList);
   sizeb = ReadCustomer(cList);
   cout << " Are you a : " << endl</pre>
         << "1. Customer " << endl
         << "2. Admin" << endl;
   cin >> c;
        system("CLS");
       int p, id;
       char any;
menu will be shown
ordering system !" << endl
endl
continue :";
        cin >> p;
```

```
cout << "Invalid Choice please</pre>
try again!";
            cout << "Enter id :";</pre>
            cin >> id;
            cin.ignore(100, '\n');
            cout << "Enter name : ";</pre>
            getline(cin, name);
            cout << "Enter Phone Number :";</pre>
            cin >> phno;
            file.open("Customers.txt",
ios::out | ios::app);
            file << endl
only requires cusotmer id
            int ec, flag = 0;
            cout << "Enter Customer id : ";</pre>
            cin >> ec;
            for (int k = 0; k < sizeb; k++)
                 if (cList.logMessage(k))
            if (flag == 0)
```

```
Sleep(1000);
   here:
       a = DispCustMenu();
the object it gets the id, name and price
of the food
       case 1:
           cout <<
Price" << endl;</pre>
            fList.displayList();
food's id number
(Press 0 once you are done)";
               rec[y] = s;
            InsertionSort(rec, y);
            cout << "Thank you for shopping</pre>
```

```
then press enter to continue";
            cin >> any;
            system("CLS");
            cout << "\n\n Thank you for</pre>
using us as your preferred platform!!" <<
endl
endl
<< endl;
            for (int i = 0; i < y; i++)
                 fList.printReciet(rec[i]);
            cout << endl</pre>
        system("CLS");
        char any;
        char pas[20];
```

```
if (strcmp(pas, "password") != 0)
           cout << "ACCESS DENIED!!";</pre>
       here2:
           b = dispAdminMenu();
           case 1:
               cout <<
"\n\n*********Customers********* <<
endl
<< endl;
               cList.displayList();
and then press enter to continue";
               cin >> any;
               goto here2;
           case 2:
admin to add new food to the food list
               cin.ignore(100, '\n');
               getline(cin, name);
               cin >> price;
```

```
new items to food.tx file
                file.open("Food.txt",
ios::out | ios::app);
                file << id << " " << price
<< " " << name << endl;
                goto here2;
identified by the food id
               int ec, flag = 0;
                if (fList.findFood(ec))
                   flag = 1;
                if (flag == 0)
                    cout << "Invalid ID";</pre>
and then press enter to continue ! ";
               cin >> any;
               goto here2;
existing customer by using customer id
               int ec, flag = 0;
```

```
cout << "\n\n Enter</pre>
customer id : ";
                 if (cList.findCustomer(ec))
                     cout << endl;</pre>
                    flag = 1;
                 if (flag == 0)
                     cout << "Invalid ID";</pre>
to continue ! ";
                 cin >> any;
    system("pause");
```