Xi'an Jiaotong-Liverpool University
西交利物浦大学

CPT106 Assessment 4 Report

Submission Date: 2021/6/9

Catalogue

Abstract

This report is divided into 5 main parts. First, the aims and tasks of this project will be briefly outlined in `Project Statement`, including the specific requirements of the client, the general idea of the program development, the teamwork strategy and the task distribution. Secondly, the `Analysis and Design` part will demonstrate the complete project design and methodology on the basis of the above objectives and requirements. In particular, the implementation of the algorithm will be explained in `Analysis and Design`. Besides, the list of source and data files for this project will be shown in the `Introduction of files and code implementation` part with some comments to have a Intuitive understand the design of this program. Then, the whole development process of testing and debug will be explained in the `Test and Debug` part, including the code and screenshot of each test. Eventually, the **manual** and specific use cases of this program will be shown in the `Manual and Display` part, in the form of process descriptions with pictures. Specifically, the completion of each task will be verified by writing several test functions.

Project Statement

This section will describe the project requirements and the planning of the group collaboration.

[Requirement]

`Project A: Restaurant Management System` is the finalized assignment after the group discussion. The specific requirements are as follows.

Overall description:

Design a management system for the restaurant.

Customer specifications:

First of all, this system is able to store information about raw materials, dishes and customers. Secondly, it can calculate the total cost of the customer based on the dishes he or she ordered. In addition, the system can calculate the net profit based on the price of the dish and the price of the raw material.

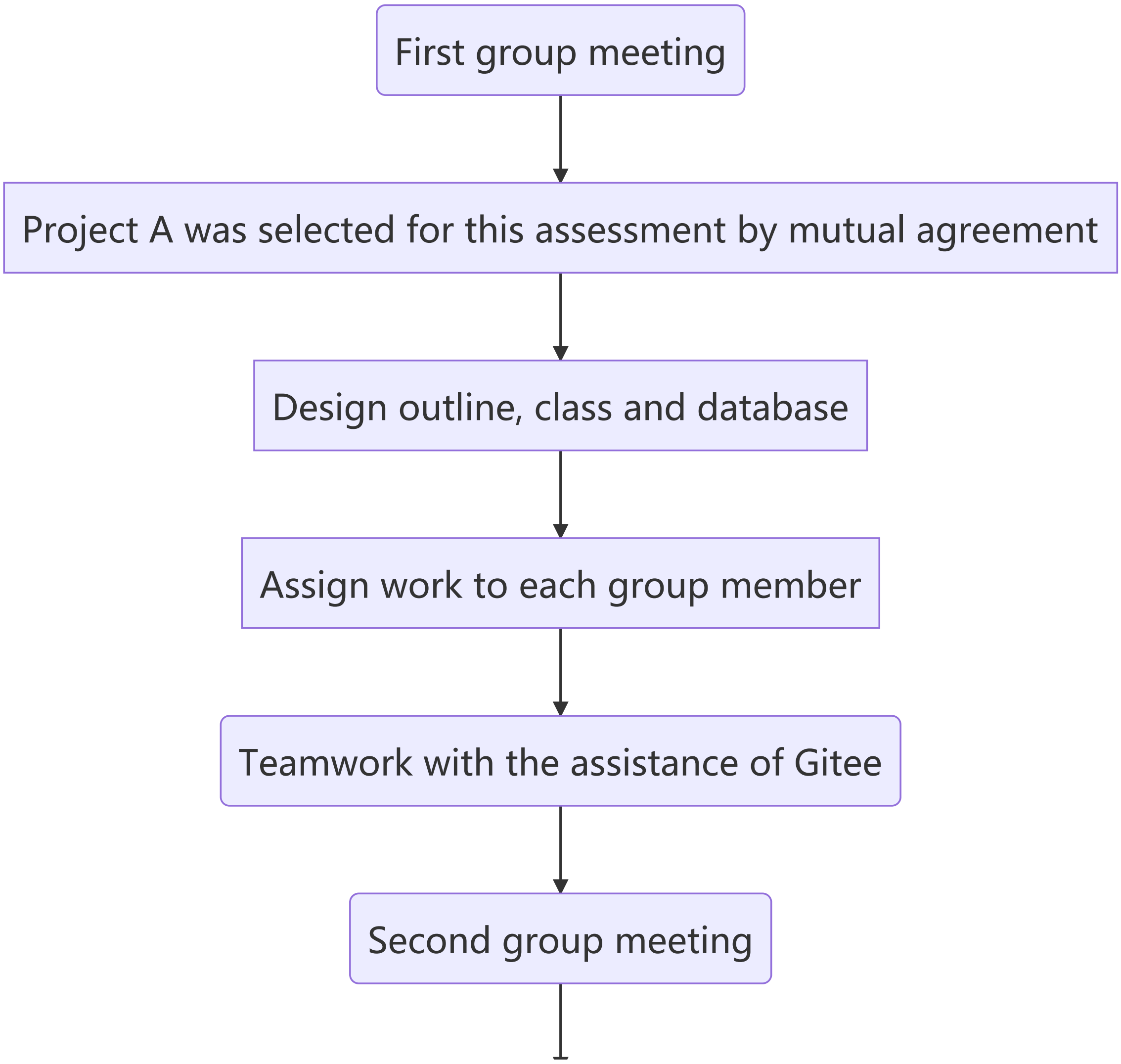
Specifically, the program should implement the following functions.

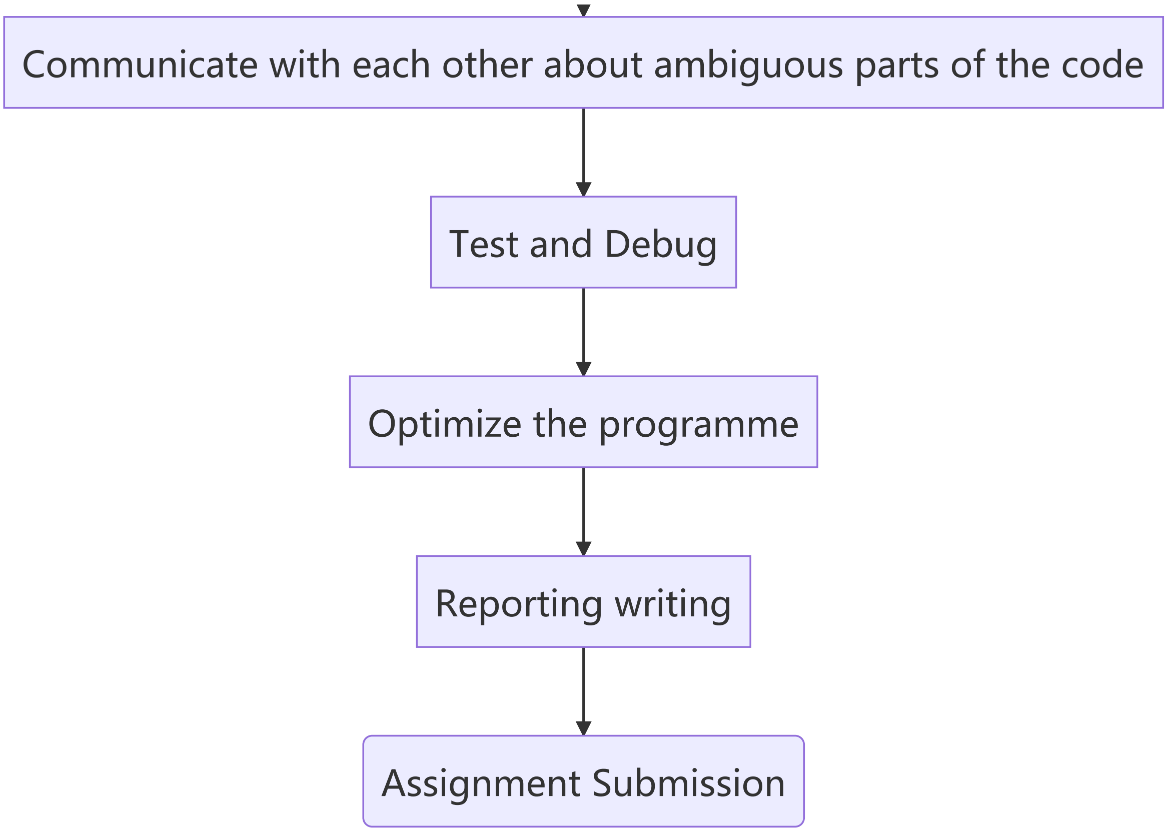
- Browse, add, modify and delete the raw material information, menu information and customer information
- The manager has the highest authority, which means that all task options can be performed.
- Chef user can search and browse the raw material information and edit the menus.

- When adding new items to the menu, the program ensures that the item IDs and names are not duplicated; nor are they duplicated when customers order them.
- Customer users are able to browse the menu, order dishes and check-out.
- Different permissions are provided depending on the user's attributes.

[Group Work Outline]

Regarding this project, the work arrangement was generally decided after the first meeting that four members of the team were respectively in charge of algorithm designing, main function structuring, interactive interface designing and program debugging. During the first period of programming development, the basic framework of the project had been constructed. User class serving as father class was first developed, and many specified methods in customer, chef and manager had been complemented by other group members. After constructing the general framework of the restaurant ordering system, we enter the second period of programming development where majority of team members started to debug and improve the user interface. Lastly, after completing system designing and coding, the whole team started to concentrate on the development of project report and user manual. Overall, the flow chart for group collaboration is shown below.


First group meeting
Project A was selected for this assessment by mutual agreement
Design outline, class and database
Assign work to each group member
Teamwork with the assistance of Gitee
Second group meeting



Picture[01]:Project Flow

Analysis and Design

This section will be divided into four parts to explain the design of this program and the specific algorithm implementation. First, in order to achieve a consistent and uniform style of function writing when programming in a team, we designed the database for the project before programming began, the details of which can be found in `[Database Design]`. Then, all classes of this program will be presented in the form of corresponding UML diagram in the `[Class Diagram]` part. In addition, the functions corresponding to each class will be explained in detail in the `Function Explantion` part with some flowcharts. Finally, the algorithm of the main program will be described in the `main() Explantion` part.

[Database Design]

The database for this project consists of the following text files. The names of the fields and the corresponding brief descriptions of the data stored in each text file are shown in the table below, where each field is separated by a space.

For example, the data stored in `registration_information.txt` can appear in the following form.

```
lqy 123 customer
zzy 123 chef
wzr 123 manager
```

The following tables give a detailed introduction to the database.

`registration_information.txt`

Username	Password	Job
Username defined by user during registration (Unique and not null)	User password that used to log in	user type (`manager`, `chef` or `customer`)

Table[01]: registration_information

`menu.txt`

ID	Name	Price
The ID number of the corresponding dish is used as a unique identifier	The name of this dish	The price of this dish

Table[02]: menu

`order_record.txt`

Username	Cost
Username corresponding to this consumption record	The amount corresponding to this consumption record

Table[03]:order_record

`RawM.txt`

Name	Amount
Name of raw material	Quantity of raw materials

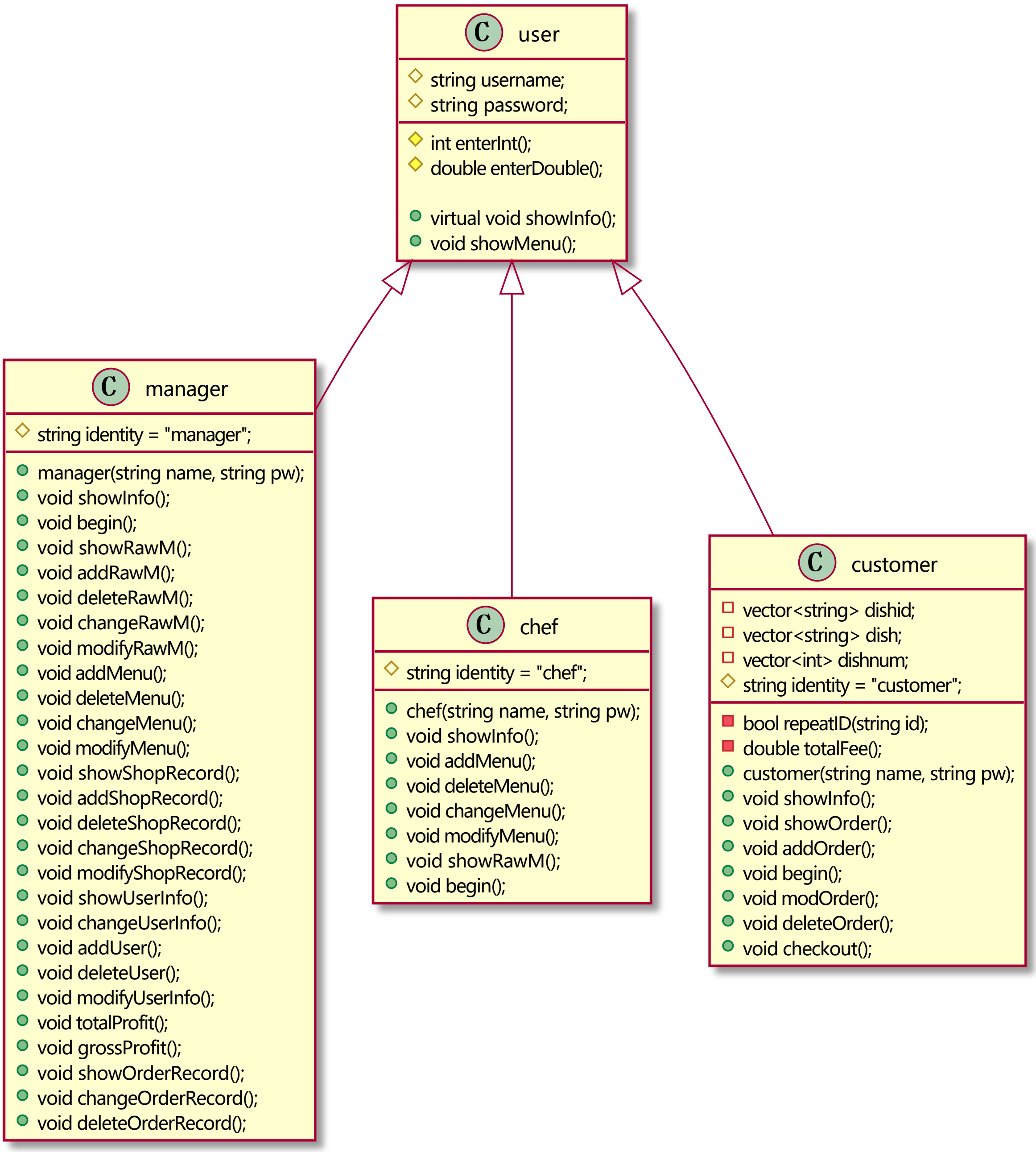
Table[04]:RawM

`shopRecord.txt`

Name	Cost
The name of the raw material corresponding to this purchase record	The corresponding cost of this purchase record

Table[05]:shopRecord

[Class Diagram]



Picture[02]:Class Diagram

[Function Explanation]

`Manager` Design

Functions

`void showInfo()` :Show the information of manager.

`void begin()` : The begin of manager class, has many choice for user to choose which function do they want to use

`void showRawM()` : show the raw material list

`void addRawM()` : add new raw material

`void deleteRawM()` : delete the raw material from the list

`void changeRawM()` : change the raw material information

`void modifyRawM()` : A menu of which functions for users to choose which function of modify the raw list they want to use

`void addMenu()`: add new dish
`void deleteMenu()`: delete the dish from the menu
`void changeMenu()`: change the information of dish
`void modifyMenu()`: a menu of which function does the user want to use to modify the dish list

`void showShopRecord()`: show the shop record list
`void addShopRecord()` : add new shop record to the list
`void deleteShopRecord()`: delete the shop record from the list
`void changeShopRecord()`: change the shop record information in the list
`void modifyShopRecord()`: a menu of which function does the user want to use to modify the shop record information list

`void showUserInfo()`: show the user information
`void changeUserInfo()`: change the user information in the list
`void addUser()`: add new user information to the list
`void deleteUser()`: delete the user information from the list
`void modifyUserInfo()`: a menu of which function does the user want to use to modify the user information list

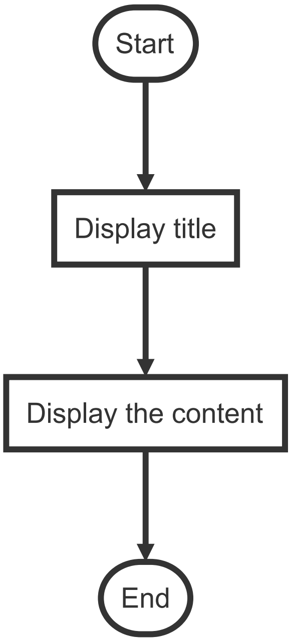
`void totalProfit()`: calculate the current total profit
`void grossProfit()`: calculate the gross profit

`void showOrderRecord()`: show the order record list
`void changeOrderRecord()` change the order record list
`void deleteOrderRecord()`: delete the order record list

Here are some important function used in this class. Other functions are similar with these functions but also has some different between them. If explain all the function, they report will become too long to read. So here is just some examples of those functions.

- `void showRawM()`
  Function description:
  Show the raw material list. Function
  Variables:
  There is no variable in this function.
  Similar functions:
  `void showShopRecord()``void showUserInfo()``void showOrderRecord()`

Flow Chart:



Picture[03]:FlowChart

- `void addRawM()`

  Function description:

  Add new raw material to the material list.

  Variables:

  `string addName`: The name of the raw material that will add to the list

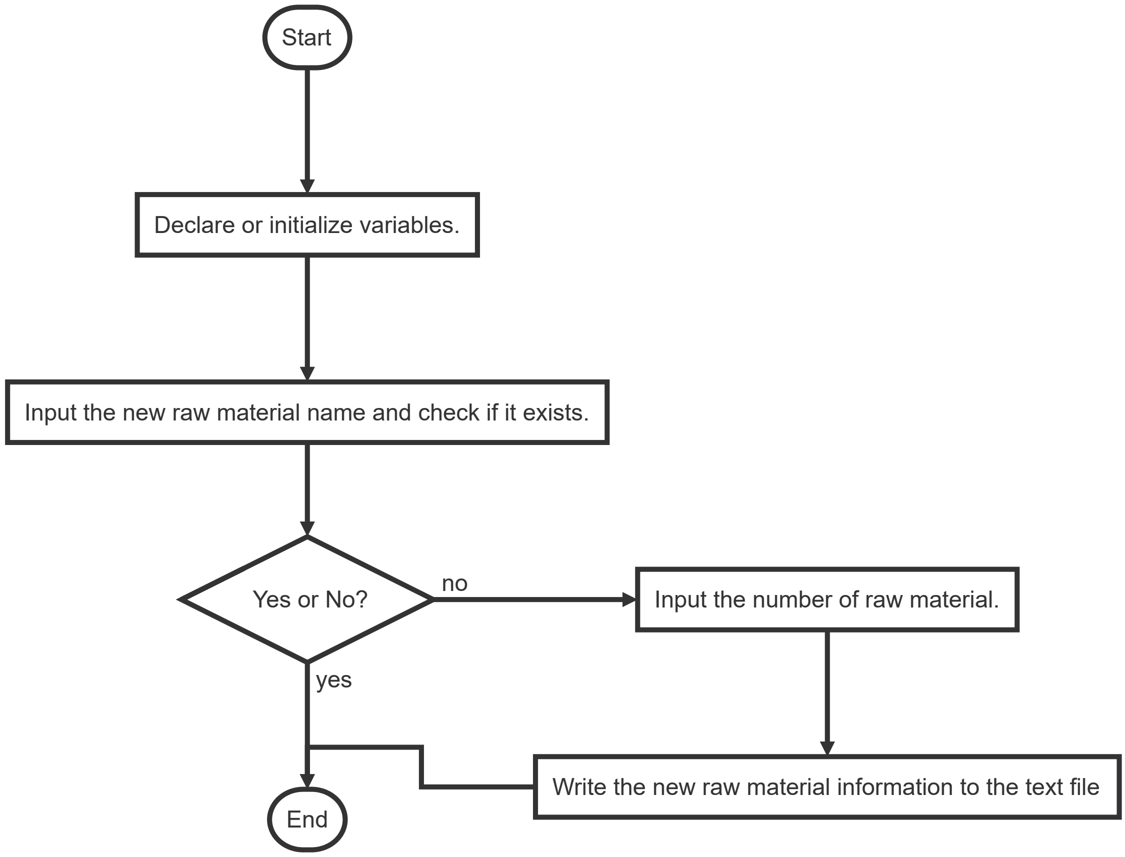
  `int addnumber`: The number of the raw material will add to the list

  `string name`: The name of the raw material in the list

  `string number`: The number of the raw material in the list

  Similar functions:
  `void addMenu()`
  `void addShopRecord()`
  `void addUser()`

  Flow chart:


Start
Declare or initialize variables.
Input the new raw material name and check if it exists.
Yes or No?
no
Input the number of raw material.
yes
Write the new raw material information to the text file
End

Picture[04]:FlowChart

- `void deleteRawM()`

  Function description:

  Delete the raw material information from the raw material list.

  Variables:

  `string delname`: The name of the raw material that will delete from the list

  `string name`The name of the raw material in the list

  `int number`: The name of the raw material in the list

  `string number`: The number of the raw material in the list

  `vector<string> rawName`: A vector used to the record each raw material name

  `vector<int> rawNum`: A vector used to record the number of each raw material

  Similar functions:

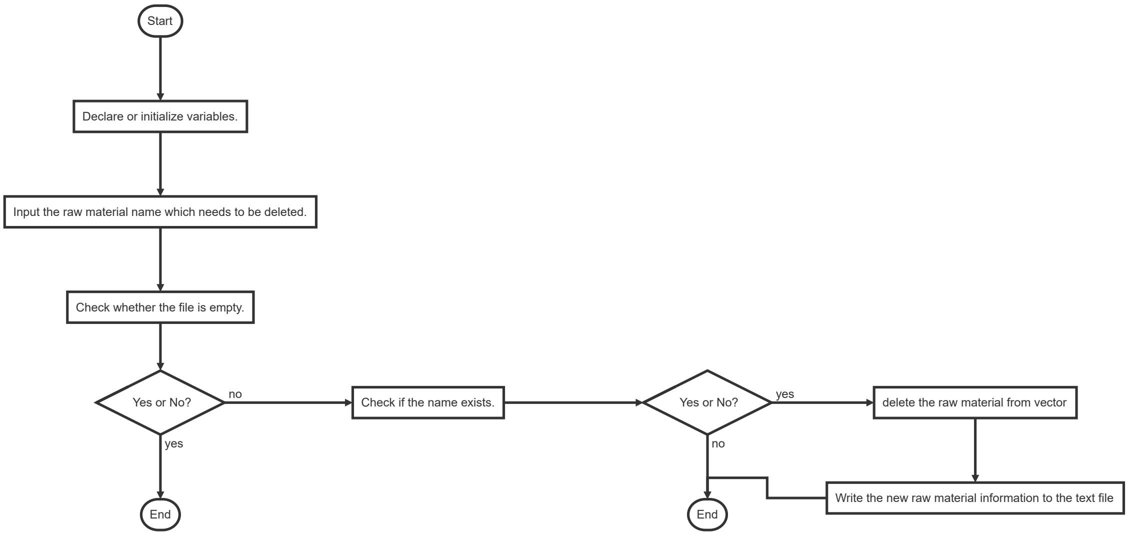
  `void deleteMenu()`

  `void deleteShopRecord()`

  `void deleteUser()`

  `void deleteOrderRecord()`

  Flow Chart:


Start
Declare or initialize variables.
Input the raw material name which needs to be deleted.
Check whether the file is empty.
Yes or No?
no
yes
End
Check if the name exists.
Yes or No?
yes
no
delete the raw material from vector
Write the new raw material information to the text file
End

Picture[05]:FlowChart

- `void changeRawM()`

  Function description:

  Change the raw material information.

  Variables:

  `string changeRaw`: The name of raw material need to be changed

  `string name`: Record the raw material name in the file

  `int changeNum`: The number of raw material will change to

  `int number`: Record single number of raw material in the file

  `int position`: Record the position of the raw material in the vector need to be change

  `int exitName`: Used to determine if there is a name in the file to delete

  `vector<string> rawName`: A vector used to the record each raw material name

  `vector<int> rawNum`: A vector used to record the number of each raw material

Similar functions:

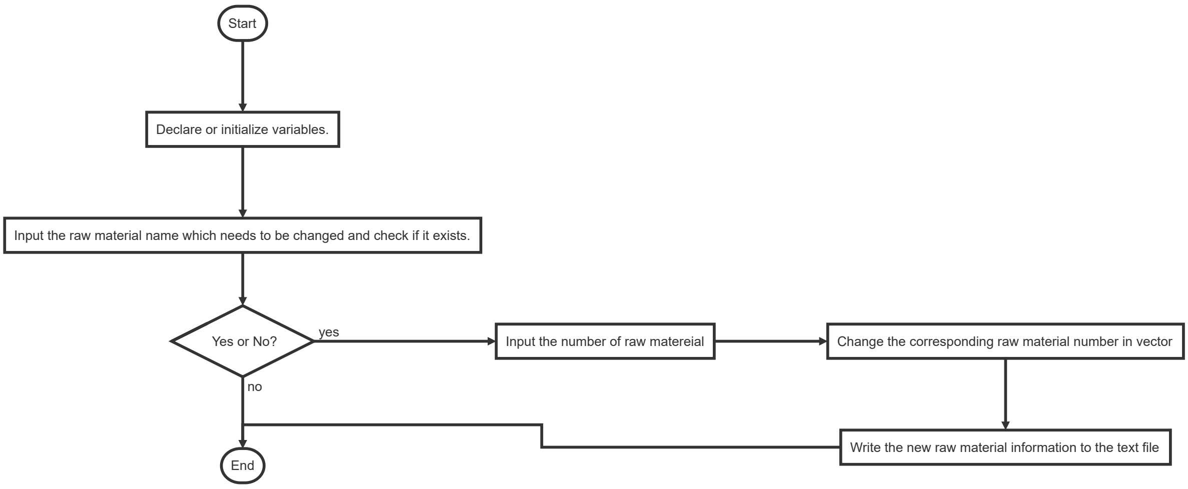
`void changeMenu()`

`void changeShopRecord()`

`void changeUserInfo()`

`void changeOrderRecord()`

Flow Chart:


Start
Declare or initialize variables.
Input the raw material name which needs to be changed and check if it exists.
Yes or No?
yes
no
Input the number of raw matereial
Change the corresponding raw material number in vector
Write the new raw material information to the text file
End

Picture[06]:FlowChart

- `void modifyRawM()`
  Function description:
  A menu of which functions for users to choose which function of modify the raw list they want to use

  Variables:

  `int choose`: The choice of the user to choose the modify function

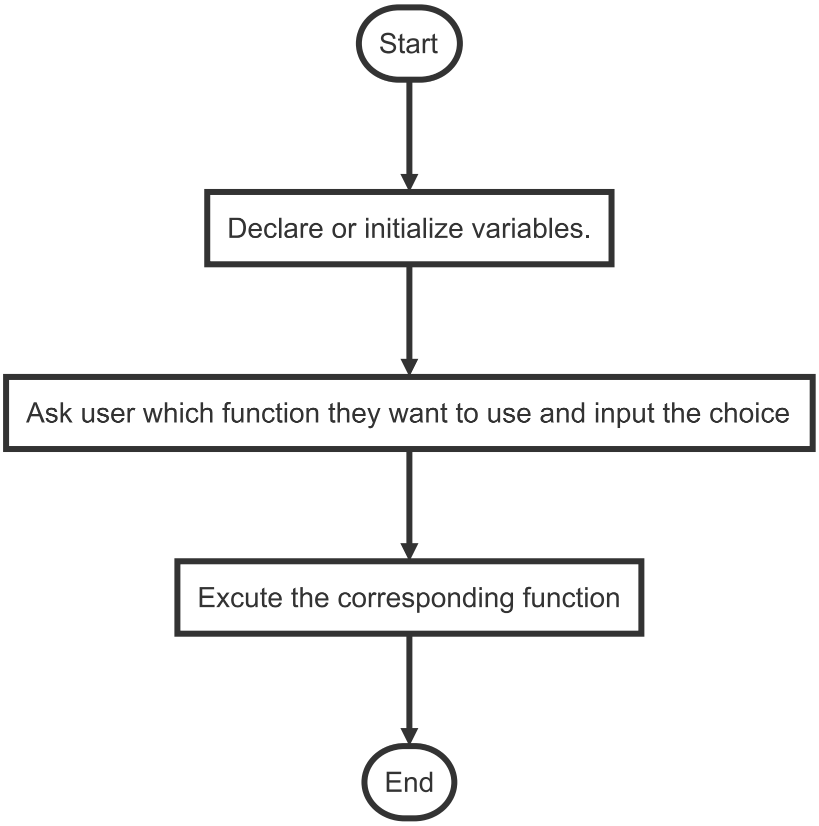
  Similar functions:

  `void modifyMenu()`

  `void modifyShopRecord()`

  `void modifyUserInfo()`

  Flow chart


Start
Declare or initialize variables.
Ask user which function they want to use and input the choice
Excute the corresponding function
End

Picture[07]:FlowChart

- `void totalProfit()`

Function description:
Calculate the current total profit. Which is the total turnover of this restaurant.

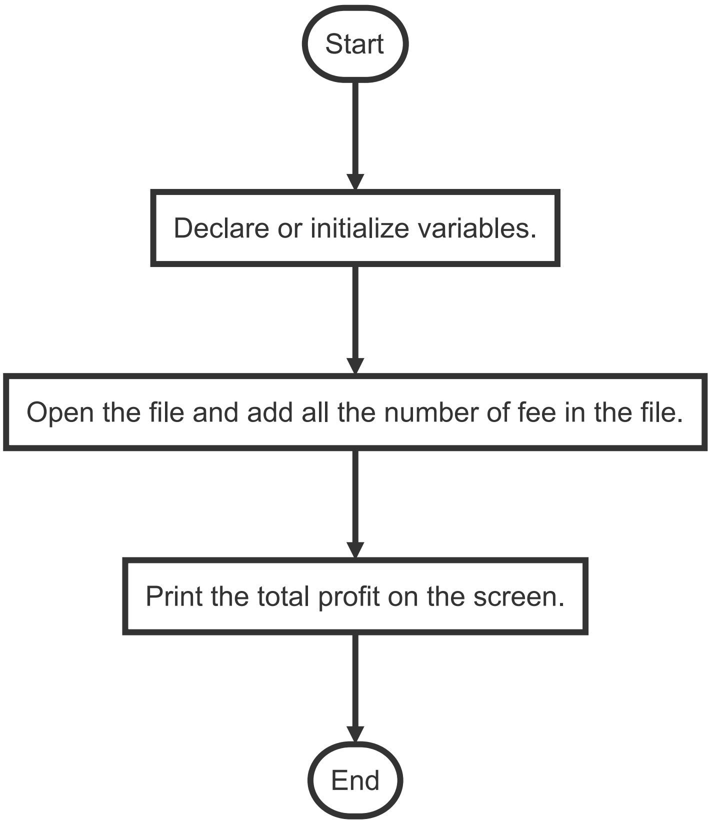
Variables:

`double totalprofit`: Record the total profit

`double totalfee`: Record the cost of each user

`string username`: Record the username in the file

Flow Chart


Start
Declare or initialize variables.
Open the file and add all the number of fee in the file.
Print the total profit on the screen.
End

Picture[08]:FlowChart

- `void grossProfit()`

  Function description:

  Calculate the gross profit of this restaurant.

  Variables:

  `double totalprofit` : Record the total profit

  `double totalfee`: Record the cost of each user

  `double costfee`: Record the cost of buying raw material each time

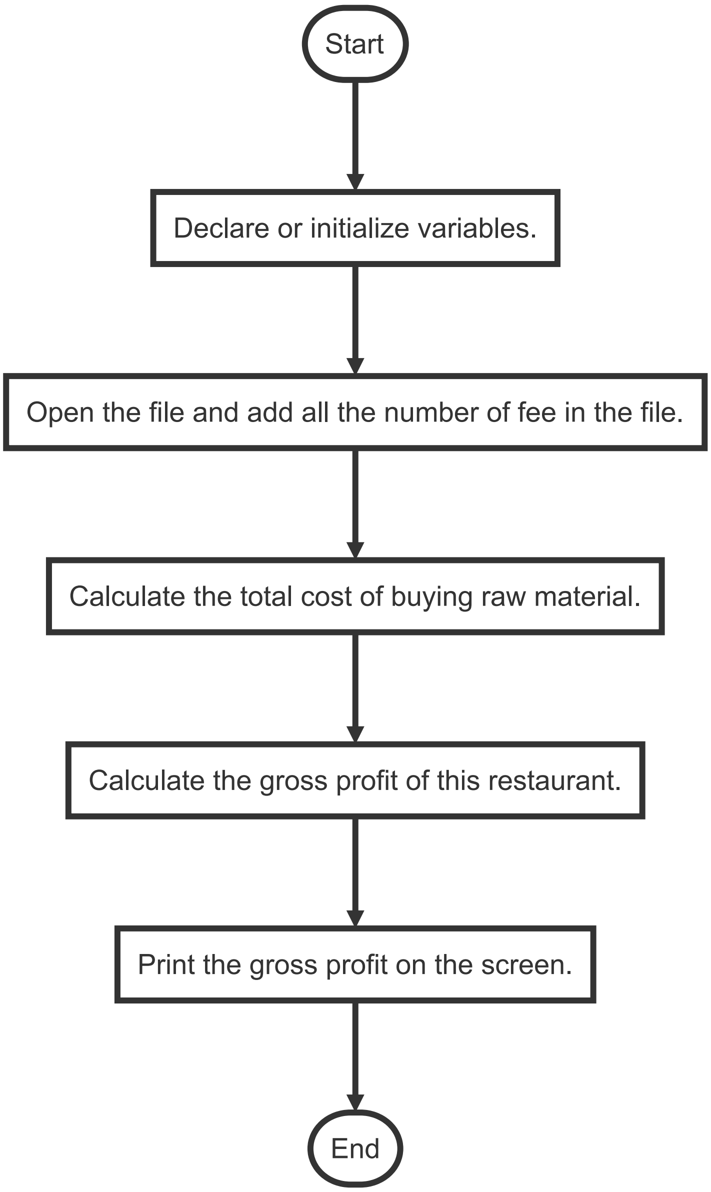
  `double totalcost`: Record the total cost of buying material

  `double grosspro`: Record the gross profit

  `string username`: Record the user name in the 'order_record' file

  `string rawName`: Record the name of raw material in the 'shopRecord' file

  Flow chart


Start
Declare or initialize variables.
Open the file and add all the number of fee in the file.
Calculate the total cost of buying raw material.
Calculate the gross profit of this restaurant.
Print the gross profit on the screen.
End

Picture[09]:FlowChart

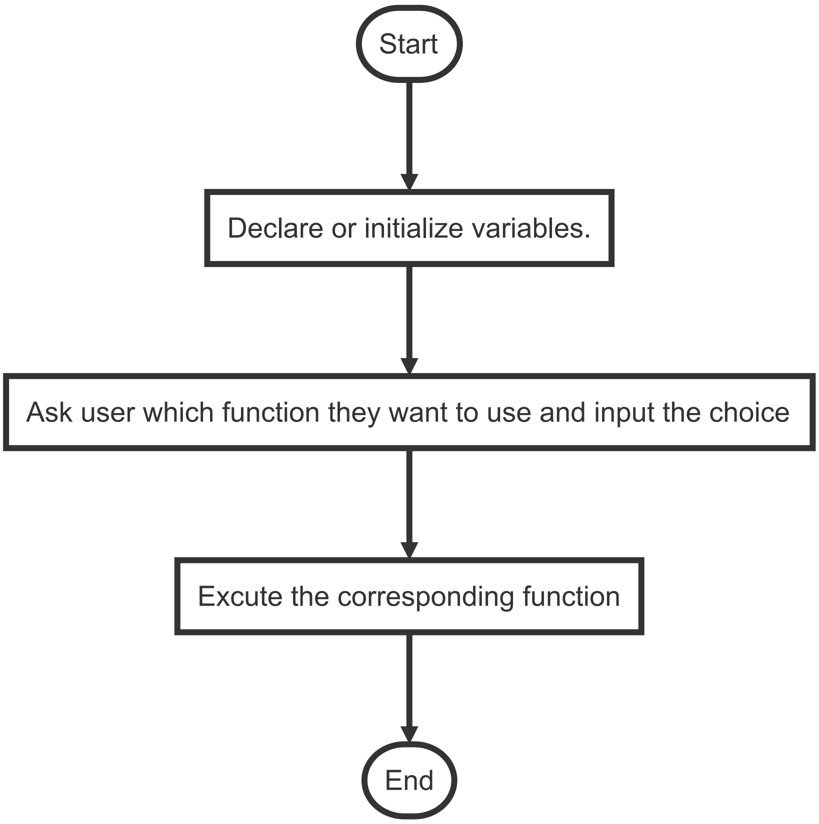
- `void begin()`

  Function description:
  A menu of which functions for users to choose which function of modify the raw list they want to use

  Variables:

  `int choose`: The choice of the user to choose the modify function

  Flow chart


Start
Declare or initialize variables.
Ask user which function they want to use and input the choice
Excute the corresponding function
End

Picture[10]:FlowChart

`Customer` Design

Class description: this class inherits from the user, it represents a customer

Variables

`vector<string> dishid` : store the id of each dish
`vector<string> dish` : store the name of each dish
`vector<int> dishnum` : store the number of each dish

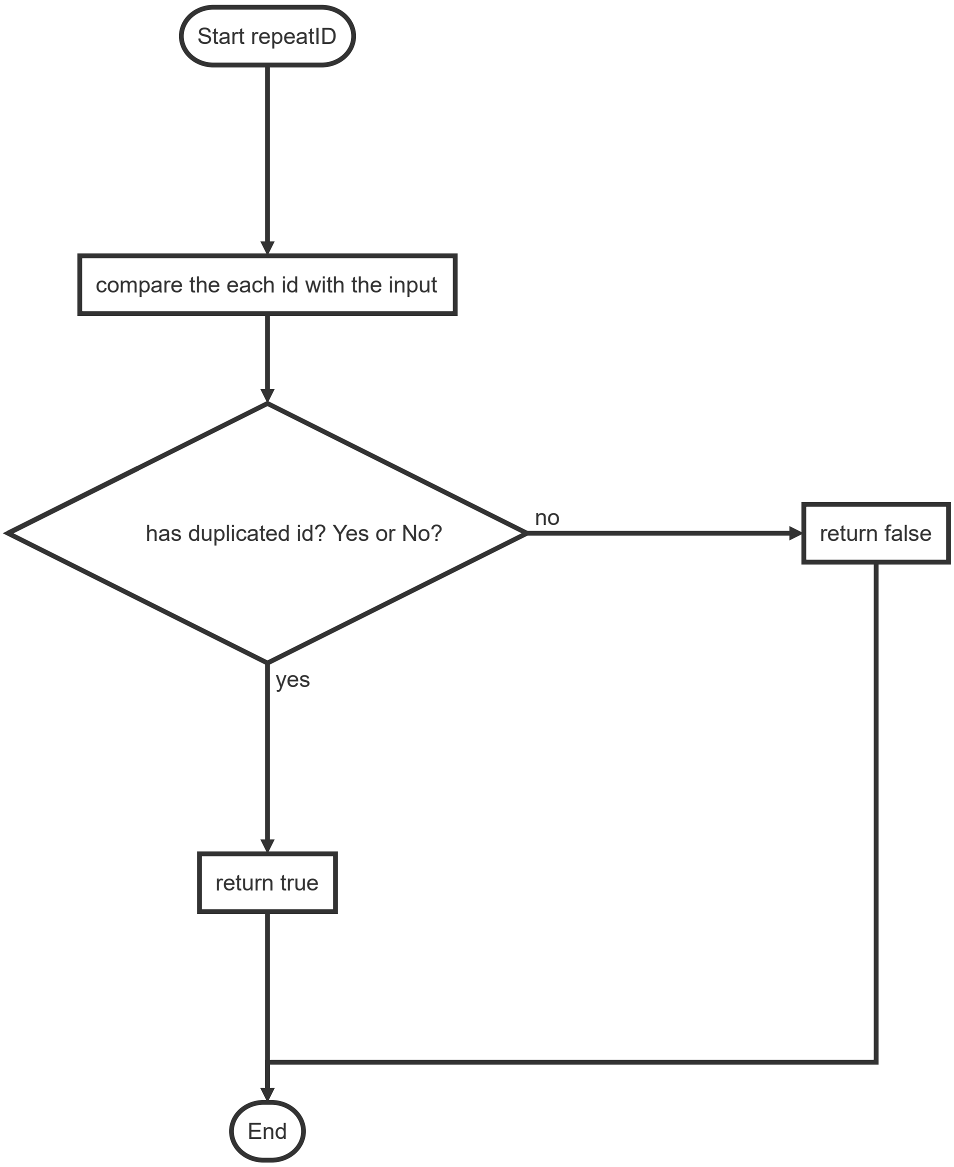
Functions

- `bool repeatID(string id)`

  Function Description:
  This function checks if the input id is repeated with the elements in dishid. If it is repeated, this function returns true.

  Variables:
  There is no variable in this function.

  Flow chart:


Start repeatID
compare the each id with the input
has duplicated id? Yes or No?
no
return false
yes
return true
End

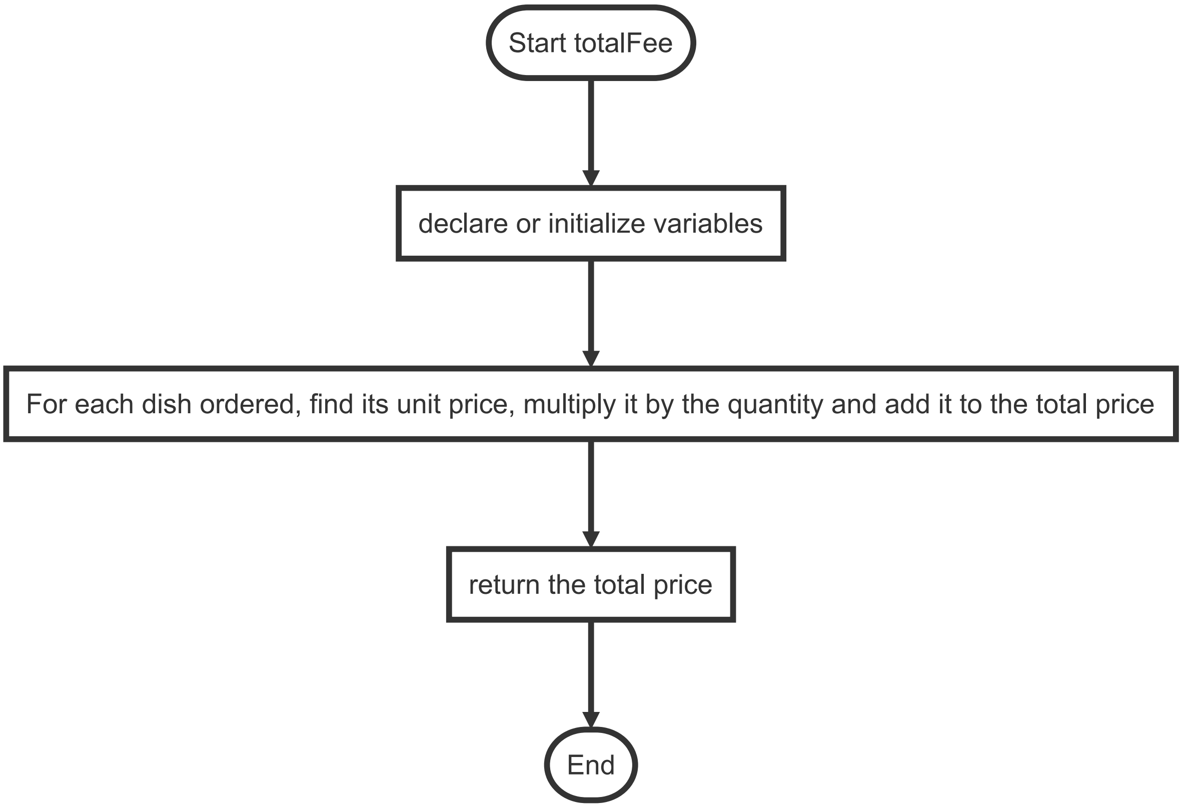
Picture[11]:FlowChart

- `double totalFee()`

  Function Description:
  This function calculates the current total fee according to the dish ordered by the customer.

  Variables:
  `string menuid, menuName`: The id and name of the dish in the menu
  `double unitPrice`: The unit price of the dishes in the menu
  `double totalPrice = 0`: The total fee
  `fstream fin(“menu.txt”, ios::in)`: The input stream of menu

Flow chart:


Start totalFee
declare or initialize variables
For each dish ordered, find its unit price, multiply it by the quantity and add it to the total price
return the total price
End

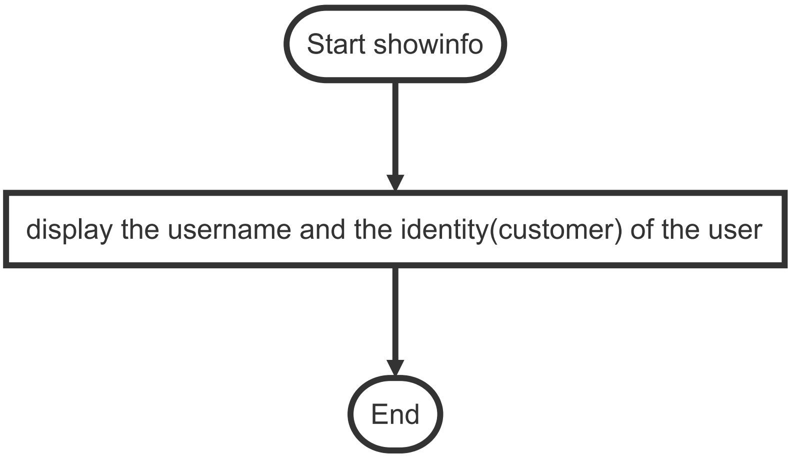
Picture[12]:FlowChart

- `void showInfo()`

  Function Description:
  This function shows the information of the user.

  Variables:
  There is no variable in this function.

  Flow Chart:



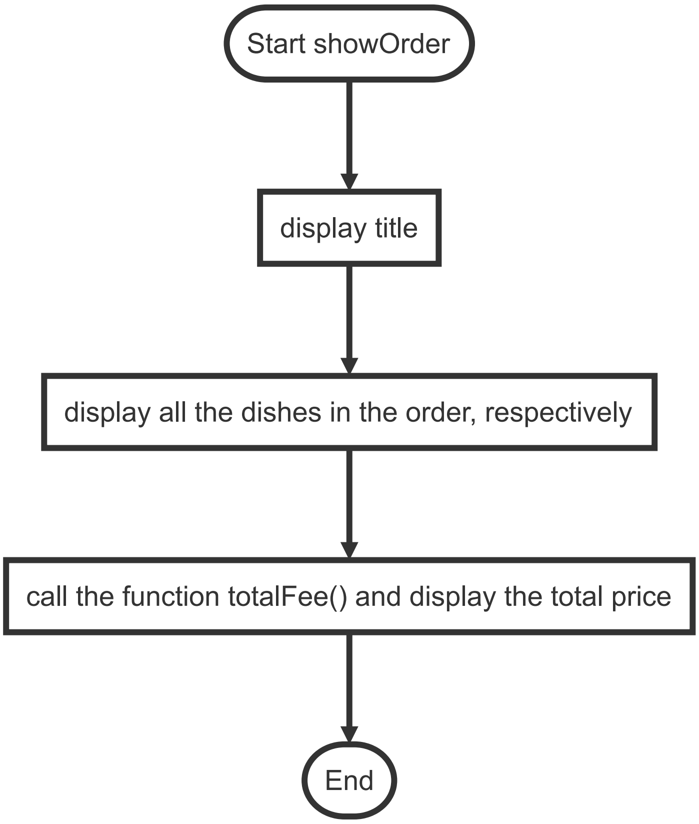
Picture[13]:FlowChart

- `void showOrder()`

  Function Description:
  This function displays the customer's current order, including id, name, number of servings.

Variables:
There is no variable in this function.

Flow Chart:


Start showOrder
display title
display all the dishes in the order, respectively
call the function totalFee() and display the total price
End

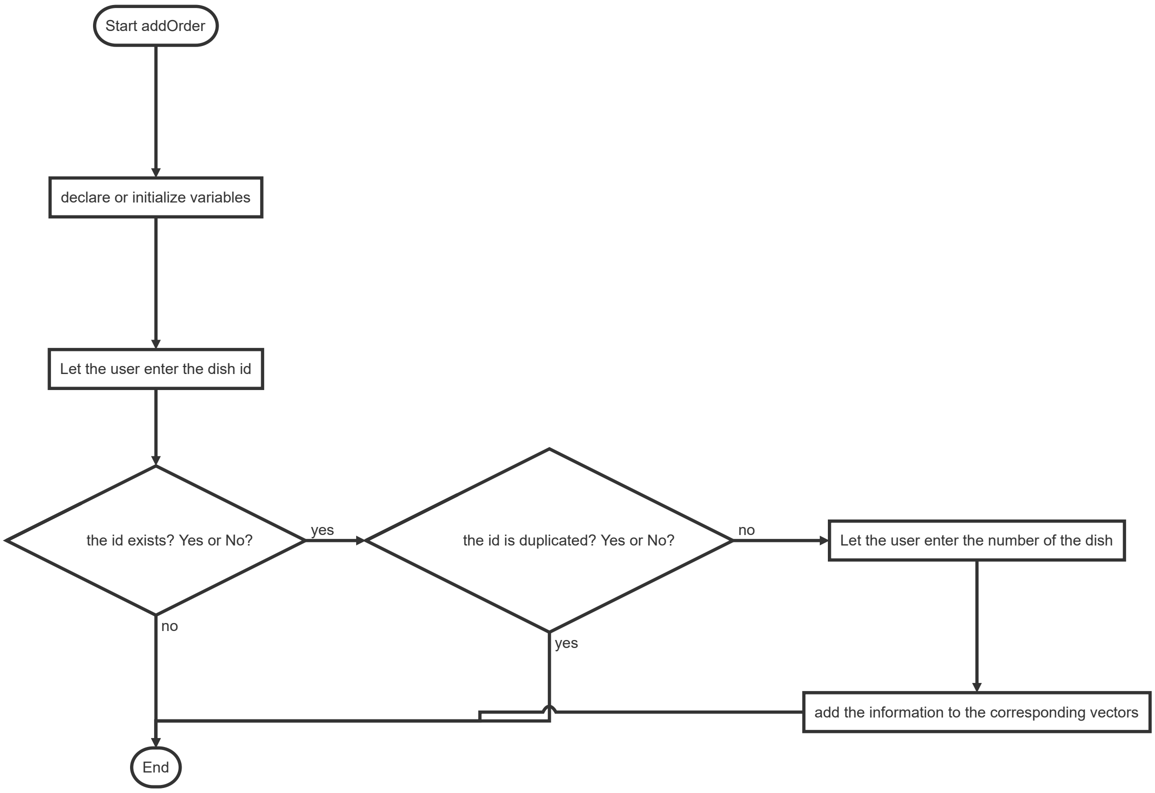
Picture[14]:FlowChart

- `void addOrder()`

  Function Description:
  This function let the user enter the id of the dish, the number of servings, and then add the corresponding attributes of the dish to the three vectors. Duplicate ids are not allowed to be added in this function.

  Variables:
  `string id`: User input id
  `int num`: Number of servings entered by the user
  `fstream fin(“menu.txt”, ios::in)`: Input stream of the menu
  `string menuid, menuName, menuPrice`: Store the id, name, and price in the menu

  Flow Chart:


Start addOrder
declare or initialize variables
Let the user enter the dish id
the id exists? Yes or No?
yes
no
the id is duplicated? Yes or No?
no
yes
Let the user enter the number of the dish
add the information to the corresponding vectors
End

Picture[15]:FlowChart

- `void modOrder()`

  Function Description:
  This function let the user enter the id of the dish to be modified. Then the user enters a new id and the number of servings. Finally, this function changes the corresponding values in the three vectors.

Variables:

`string id, newid`: The id of the dish the user wants to modify and the new id

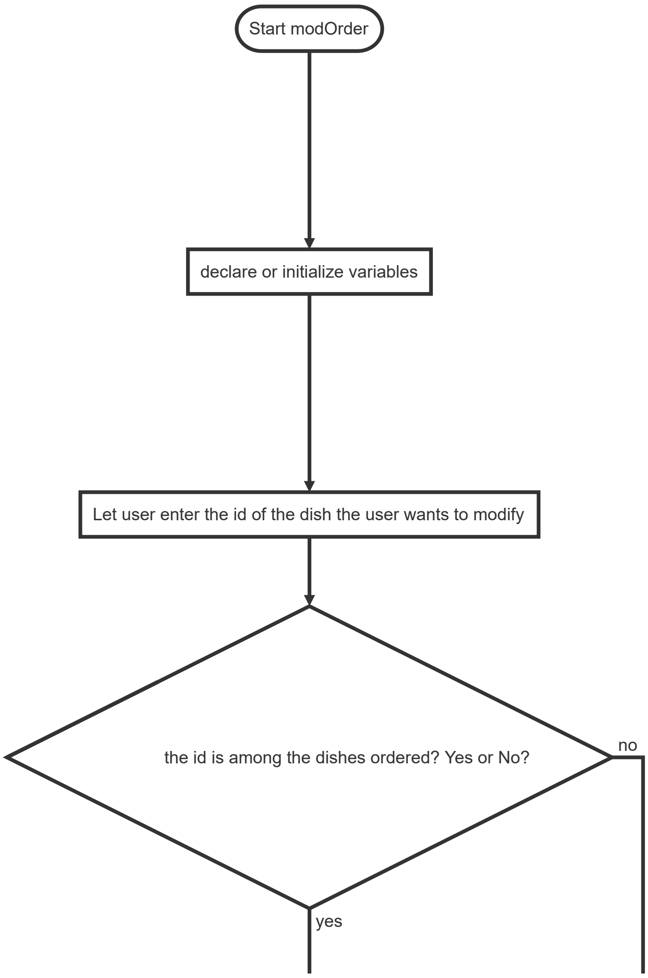
`int newnum`: New Quantity

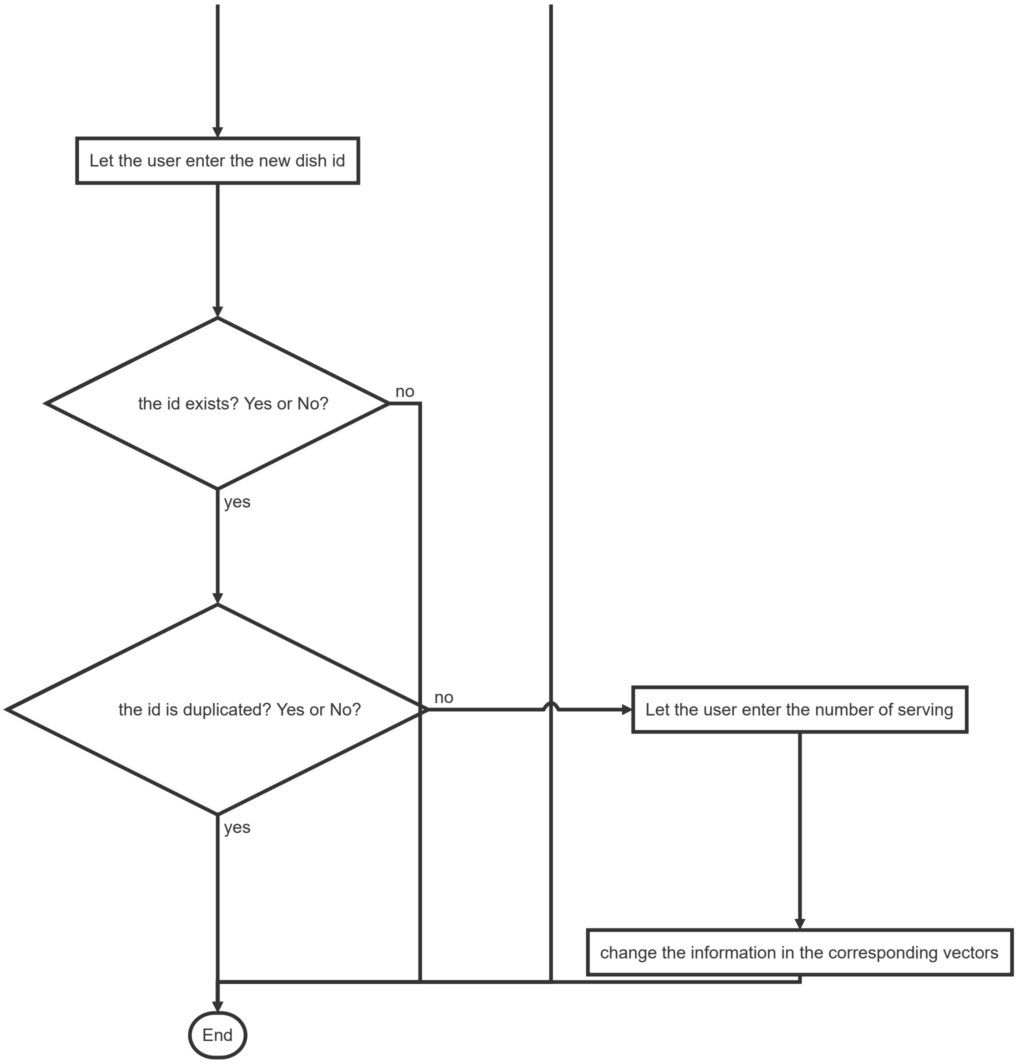
`int n = -1`: This is the n th dish the user has ordered

`fstream fin(“menu.txt”, ios::in)`: The input stream of menu

`string menuid, menuName, menuPrice`: Store the id, name, and price in the menu

Flow Chart:


Start modOrder
declare or initialize variables
Let user enter the id of the dish the user wants to modify
the id is among the dishes ordered? Yes or No?
no
yes


Let the user enter the new dish id
the id exists? Yes or No?
no
yes
the id is duplicated? Yes or No?
no
Let the user enter the number of serving
yes
change the information in the corresponding vectors
End

Picture[16]:FlowChart

- `void deleteOrder()`

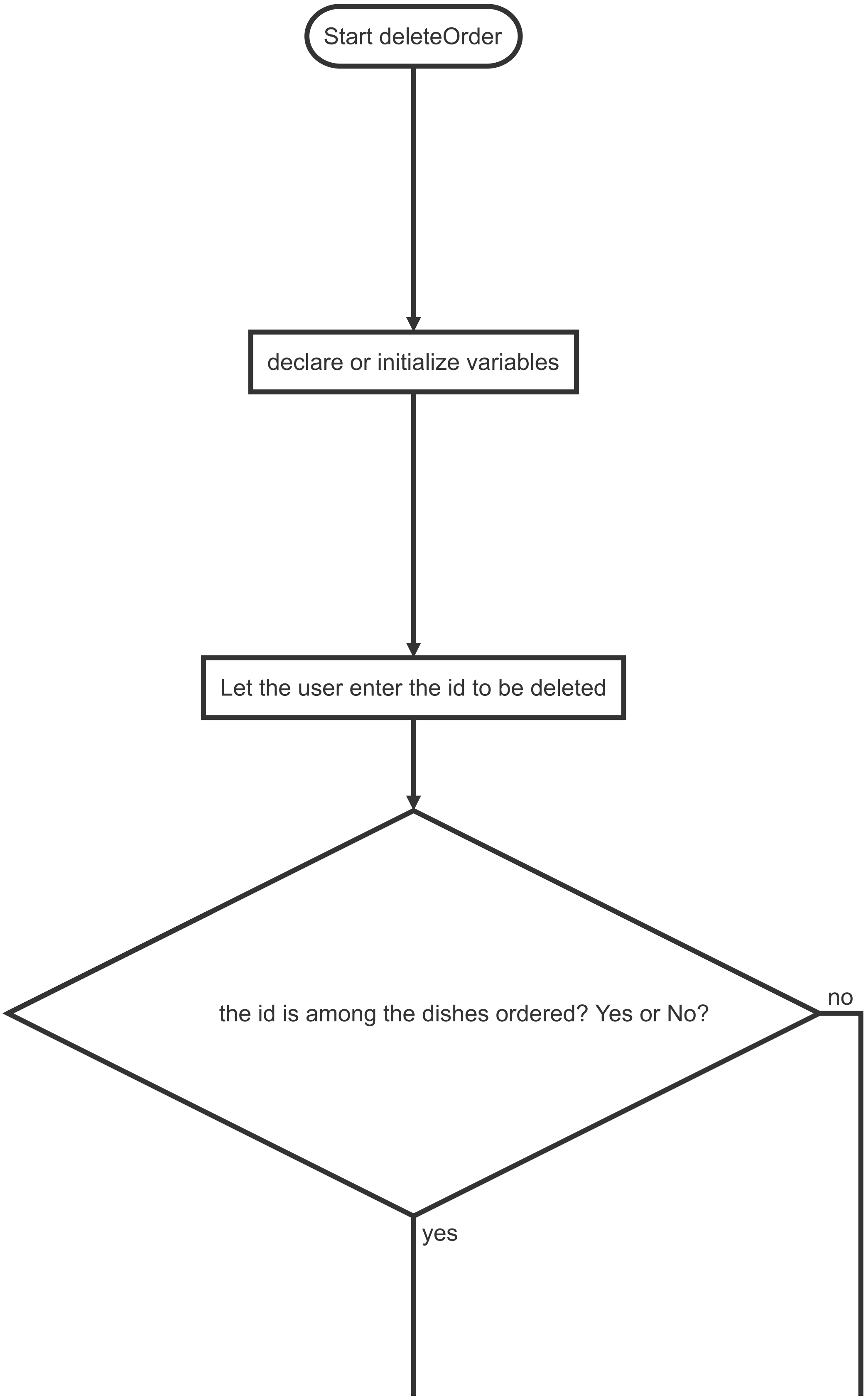
  Function Description:
  This function let the user enter an id to be deleted and deletes it from the vectors.

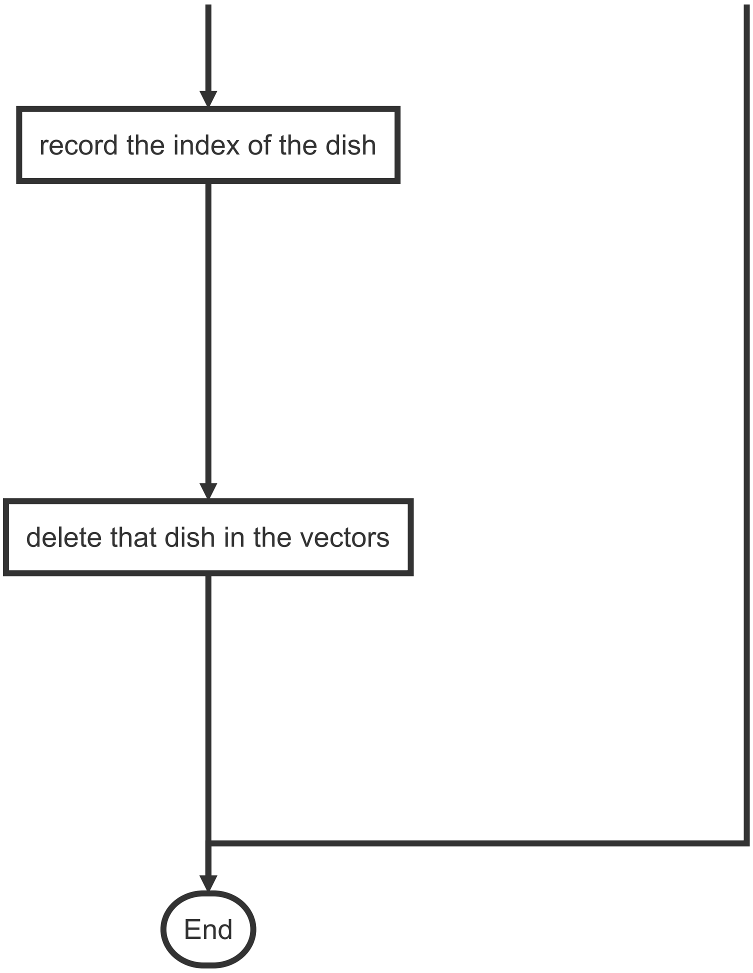
Variables:

`string id`: The id of the dish the user wants to delete

`int n = -1`: This is the n th dish the user has ordered

Flow Chart:


Start deleteOrder
declare or initialize variables
Let the user enter the id to be deleted
the id is among the dishes ordered? Yes or No?
no
yes



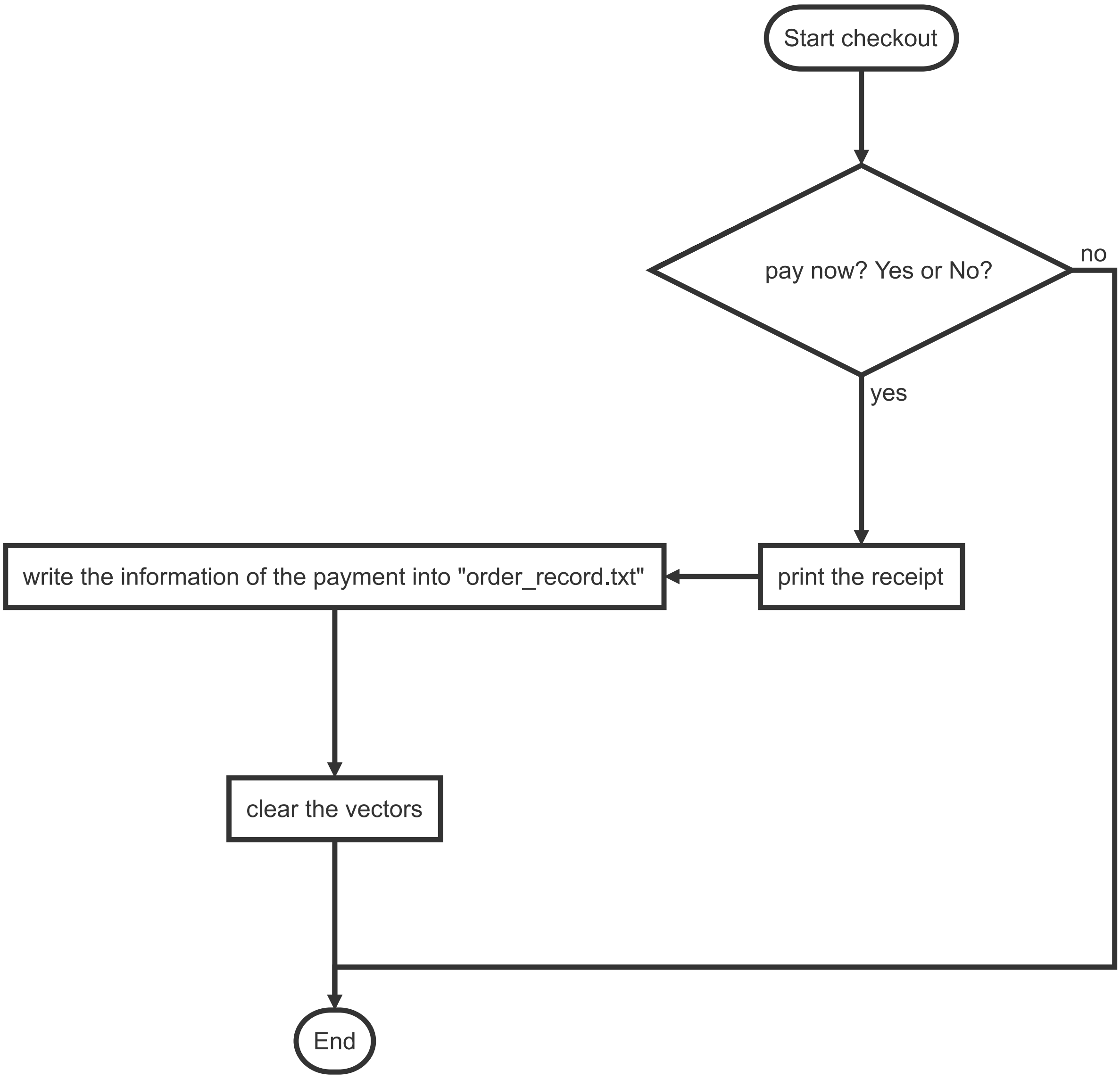
Picture[17]:FlowChart

- `void checkout()`

  Function Description:
  This restaurant does not upload orders to chefs until after checkout. This function tells the customer the total amount to be paid at the checkout and the customer chooses whether to pay. After payment, this function writes the three vectors to the “order_record” text file, and then empty the three vectors.

  Variables:
  `int userChoice`: the choice of the user
  `fstream fout("order_record.txt", ios::app)`: output stream of order_record

  Flow Chart:



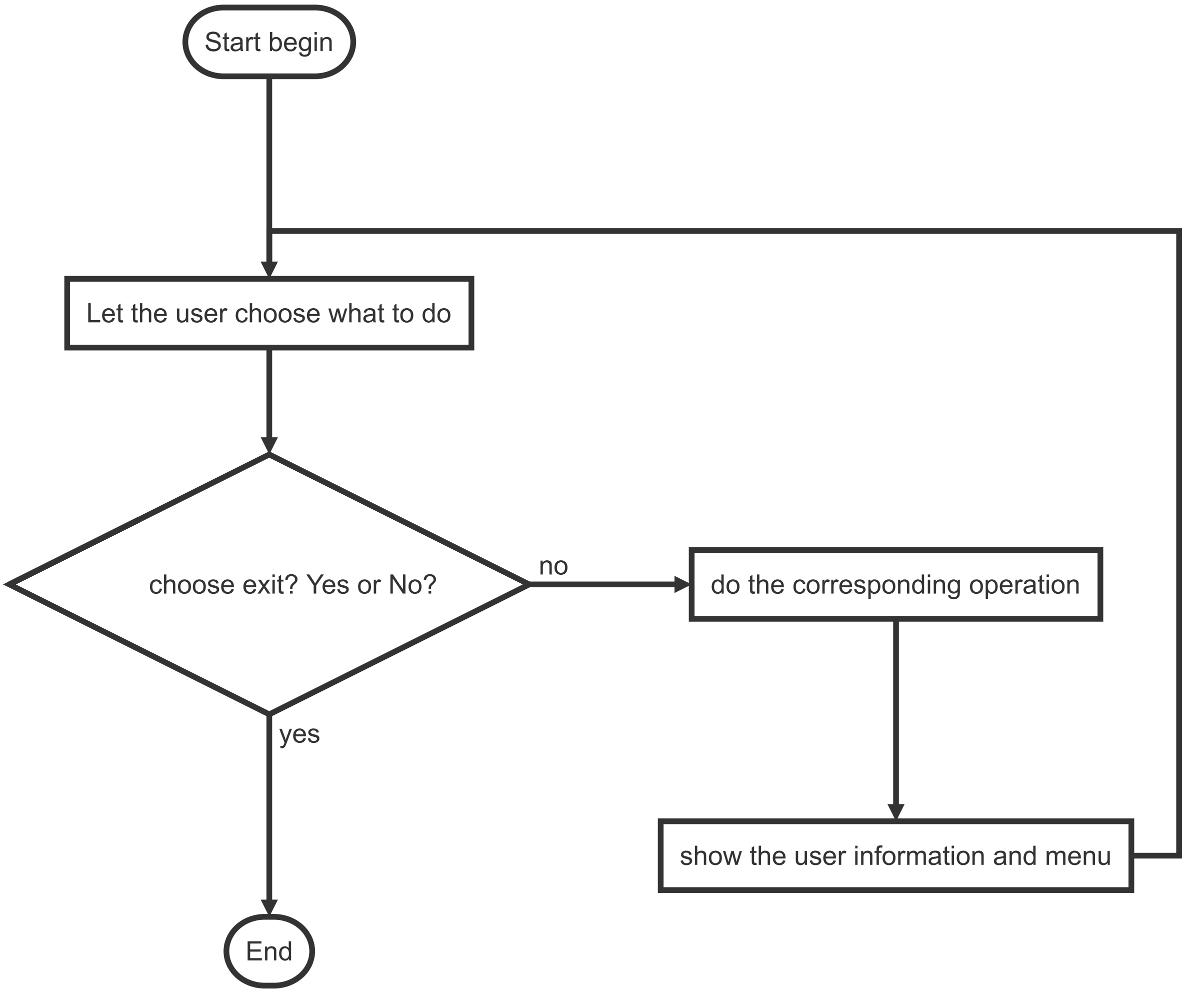
Picture[18]:FlowChart

- `void begin()`

  Function Description:
  This function let the user choose what to do from the options. This function continuously asks the user to choose until he exits.

  Variables:
  `int choose`: the choice of the user
  `bool exit = 0`: if the user chooses to exit

  Flow Chart:


Start begin
Let the user choose what to do
choose exit? Yes or No?
no
do the corresponding operation
show the user information and menu
yes
End

Picture[19]:FlowChart

`Chef` Design

Functions

`void showInfo()`:Show the information of chef.

`void showRawM()`: show the raw material list

`void addMenu()`: add new dish
`void deleteMenu()`: delete the dish from the menu
`void changeMenu()`: change the information of dish
`void modifyMenu()`: a menu of which function does the user want to use to modify the dish list

Description

Since the authority of the chef duplicates that of the manager. So, most of the functions of chef are similar with manager. This part will not explain the operation of those functions again.

[`main()` Explantion]

The explantion of the main program will be described in detail on the basis of the code combined with comments.

```cpp
//main.cpp

#include<iostream>
#include<fstream>
#include<string>
#include<exception>
#include<io.h>
#include "manager.h"
#include "chef.h"
#include "customer.h"
using namespace std;

enum ident { man, che, cus };   //Enumeration: Convenient to switch later


//Let the user enter an integer
int enterInt() {
    string i;   //User-entered
    int integer = 0;    //The integer to return
    bool success = 0;   //Whether or not to enter the integer that was just successful
    do {
        getline(cin, i);    //Collect user input
        if (i == "") {  //If the user hits the carriage return directly
            cout << "Please enter a correct integer" << endl;
            goto L1;
        }
        for (int j = 0; j < i.size(); j++) {
            if (isdigit(i.at(j)) == 0) {    //If one of the characters is not a interger number
                cout << "Please enter a correct integer" << endl;
                goto L1;
            }
        }
        success = 1;    //Enter integer successfully
    L1: continue;
    } while (success != 1);

    integer = atoi(i.c_str());  //string to int
    return integer;
}

//Let the user enter a decimal number
double enterDouble() {
    string d;   //User-entered
    double db = 0;
    bool success = 0;
    bool haveDp = 0;    //Decimal points have been detected
    do {
        haveDp = 0;
        getline(cin, d);    //Collect user input
        if (d == "") {  //If the user hits the carriage return directly
            cout << "Please enter a correct number" << endl;
            goto L2;
        }
        for (int i = 0; i < d.size(); i++) {
            //At the beginning, or at the end, or if there has been a decimal point, then the decimal point cannot be entered
            if (i == 0 || i == (d.size() - 1) || haveDp == 1) {
                if (isdigit(d.at(i)) == 0) {
                    cout << "Please enter a correct number" << endl;
                    goto L2;
                }
            }
            //Not at the beginning, not at the end, not over the decimal point, then you can enter the decimal point
            else {
                if (isdigit(d.at(i)) == 0) {
                    if (d.at(i) == '.') {
                        haveDp == 1;
                    }
                    else {
                        cout << "Please enter a correct number" << endl;
                        goto L2;
                    }
                }
            }
        }
        success = 1;
    L2: continue;
    } while (success != 1);

    db = atof(d.c_str());   //string to double
    return db;
}

//Check if there are spaces in a character array, return true to indicate that there are spaces
bool checkSpace(string str) {
    for (int i = 0; i < str.length(); i++) {
        if (str.at(i) == ' ') {
            return true;
        }
    }
    return false;
}


int main() {
    //Create all the txt files that the program will use
    string riFile = "registration_information.txt";
    string menuFile = "menu.txt";
    string orFile = "order_record.txt";
    string rmFile = "RawM.txt";
    string srFile = "shopRecord.txt";

    if (_access(riFile.c_str(), 0) != 0) {  //file not found
        fstream f;  //Streams to be used to create files
        f.open(riFile, ios::app);
        f.close();
    }

    if (_access(menuFile.c_str(), 0) != 0) {    //file not found
        fstream f;  //Streams to be used to create files
        f.open(menuFile, ios::app);
        f.close();
    }

    if (_access(orFile.c_str(), 0) != 0) {  //file not found
        fstream f;  //Streams to be used to create files
        f.open(orFile, ios::app);
        f.close();
    }

    if (_access(rmFile.c_str(), 0) != 0) {  //file not found
        fstream f;  //Streams to be used to create files
        f.open(rmFile, ios::app);
        f.close();
    }

    if (_access(srFile.c_str(), 0) != 0) {  //file not found
        fstream f;  //Streams to be used to create files
        f.open(srFile, ios::app);
        f.close();
    }

    int tempchoice; //User's Choice
    bool loginSuccess = 0;  //Determination of whether the login is successful
    bool usernameSuccess = 0; //Judgment of the success of entering the user name
    bool pwSuccess = 0; //Determination of successful password entry
    bool identitySuccess = 0;   //Judgment of whether the input identity is successful
    string username;    //username
    string password;    //password
    string identity;    //identity
    string tempname;    //Used to store the username in the file
    string temppw;  //Used to store passwords in files
    string tempidentity;    //Used to store user identities
    fstream fout;   //Output Stream
    fstream fin;    //input Stream

    // The following is the login screen
    do {
        //Adjustment of the login screen can be used as a template in the future
        cout << "\n \n \n" << endl;
        cout << "\t Please choose an option:\n" << endl;
        cout << "\t 1. Log in \n" << "\t 2. Register \n" << "\t 3. Exit" << endl;
        cout << "\n \n \n" << endl;
        tempchoice = enterInt();
        system("cls"); //Clean screen to maintain easy readability

        switch (tempchoice)
        {
        case 1: //
            fin.open("registration_information.txt", ios::in);

            cout << "\n \n \n" << endl;
            cout << "\t enter user name: ";
            getline(cin, username);
            cout << "\t enter password: ";
            getline(cin, password);
            cout << "\n \n \n" << endl;

            while (!fin.eof()) {
                fin >> tempname >> temppw >> tempidentity;  //Pop up a line of user names and passwords to compare with what the user has entered (such an extraction will be done in spaces, with the first content reaching the end of the space and the second being the content after the space)
                if (tempname == username && temppw == password) { //Matches the user's input
                    cout << "log in successfully!" << endl;
                    identity = tempidentity;    //Get the identity of this user
                    loginSuccess = 1;       //Login successful
                    fin.close();
                    break;
                }
                if (fin.eof()) {    //If the user name and password are not matched by the end of the file, the login fails.
                    cout << "log in failed!" << endl;
                }
            }
            fin.close();
            system("pause");    //clean the screen
            system("cls");
            break;
        case 2: //Here write to the registry, the registration name and password can not contain spaces
            fout.open("registration_information.txt", ios::app);    //Write stream to registration information file

            //The following collection of usernames
            do {
                cout << "\n \n \n" << endl;
                cout << "\t user name (the length should be more than 3 and less than 8 characters, no space in the name): ";
                //Users cannot enter more than 8 characters and spaces
                getline(cin, username);

                //Performing a check
                fin.open("registration_information.txt", ios::in);
                while (!fin.eof()) {
                    fin >> tempname >> temppw >> tempidentity;  //A line pops up with the username and password compared to what the user entered
                    if (tempname == username) { //Matches the user's input
                        cout << "\n \n \n" << endl;
                        cout << "repeated name!" << endl;
                        fin.close();
                        system("pause");    //clean the screen
                        system("cls");
                        goto label; //Jump to the next if's continue statement
                    }
                }
                fin.close();

                if (username.length() > 8 || username.length() < 3) {
                    cout << "\n \n \n" << endl;
                    cout << "the user name must be within 3 to 8 characters! Please enter again." << endl;
                    system("pause");    //clean
                    system("cls");
                label:continue; //Jump back to the conditional test of this while loop
                }
                if (checkSpace(username)) {
                    cout << "\n \n \n" << endl;
                    cout << "the user name cannot contain space! Please enter again" << endl;
                    system("pause");    //clean
                    system("cls");
                    continue;   //Jump back to the conditional test of this while loop
                }
                usernameSuccess = 1;    //Username input successfully

            } while (usernameSuccess != 1);


            //Collect passwords below
            do {
                cout << "\t password (the length should be more than 3 and less than 8 characters, no space in the password):";
                //Users cannot enter more than 8 characters and spaces
                getline(cin, password);//Collect a full line of user input
                if (password.length() > 8 || password.length() < 3) {
                    cout << "\t the password must be within 3 to 8 characters! Please enter again." << endl;
                    system("pause");    //clean
                    system("cls");
                    continue;   //Jump back to the conditional test of this while loop
                }
                if (checkSpace(password)) {
                    cout << "\t the password cannot contain space! Please enter again." << endl;
                    system("pause");    //clean
                    system("cls");
                    continue;   //Jump back to the conditional test of this while loop
                }
                pwSuccess = 1;  //Password input successfully
                system("pause");
                system("cls");
            } while (pwSuccess != 1);


            //The following collection of identity
            do {
                cout << "\n \n \n" << endl;
                cout << "\t your identity (customer, chef, manager): ";
                //Users cannot enter more than 8 characters and spaces
                getline(cin, identity);
                if (!(identity == "customer" || identity == "chef" || identity == "manager")) {
                    cout << "wrong identity!" << endl;
                    system("pause");
                    system("cls");
                    continue;
                }
                identitySuccess = 1;    //Identity input successful
            } while (identitySuccess != 1);

            fout << username << "\t" << password << "\t" << identity << endl;
            fout.close();
            cout << "\n \n \n" << endl;
            cout << "register successfully!" << endl;
            system("pause");
            system("cls");  //Clean screen after successful registration
            break;

        case 3: //exit
            cout << "\n \n \n" << endl;
            cout << "\t Are you sure to EXIT? \n" << endl;
            cout << "\t 1 yes" << endl;
            cout << "\t 2 no" << endl;
            cout << "\n \n \n" << endl;
            tempchoice = enterInt();
            if (tempchoice == 1)
                return 0;//exit
            else
                system("cls");
            break;
        default:
            break;  //Unsuccessful, re-select the login registration option
        }
    } while (loginSuccess != 1);


    //Branching according to identity
    user* us; //There are two initializations that are not used here, and the corresponding instances are used depending on the switch
    ident iden;
    manager mana(username, password);
    chef cf(username, password);
    customer cust(username, password);
    if (identity == "manager") {
        iden = man;
    }
    else if (identity == "chef") {
        iden = che;
    }
    else {
        iden = cus;
    }
    //Start Branching
    switch (iden) {
    case 0:
        us = new manager(username, password);
        us->showInfo();
        mana.begin();
        break;

    case 1:
        us = new chef(username, password);
        us->showInfo();
        cf.begin();
        break;

    case 2:
        us = new customer(username, password);
        us->showInfo();
        us->showMenu();
        cust.begin();
        break;
    default:
        break;
    }

    return 0;
}
```

Introduction of files and code implementation

All the files of this assessment included in the project `Assessment4` of solution `CPT106Solution`.

Document list:

> Program source file

- `user.h`
- `manager.h`
- `chef.h`
- `customer.h`
- `main.cpp`

> Data file

- `registration_information.txt`
- `menu.txt`
- `order_record.txt`
- `RawM.txt`
- `shopRecord.txt`

Test and Debug

This part will excerpt bugs that existed in several historical versions of the program as a demonstration and provide possible solutions In addition, this section provides a discussion of other issues that may exist with this program.

> Version 1.0 integrates several of the more important bugs in the development process, and version 2.0 is the final version.

[Restaurant_v1.0]

> **This section is about bug analysis and improvement.**

1. Unexpected input from users led to system crash

Some data input variables are declared to be int type, while it is very possible that the user might mistype the inputs, which will lead to the system crash.

Solution: Certain input variables are declared to be string to reach a wider range of tolerance towards user input. String value comparing method is used afterwards to distinguish user's instruction.

2. User's identity could be freely modified in manager's interface

When user log in as a manager, he could modify the already existed user's identity freely even out of the preset three identity range. For example, the manager could change a customer user named Jack into a user whose identity is "happy".

Solution: Add the limitation to the input of the identity. The input of the identity can only be 'customer', 'chef', manager. If the user does not input those three identity, he needs to input again until it is correct.

3. Cannot properly delete the dish in the menu if it is the last existed one

When the user log in as manager and start to modify the menu, he cannot properly delete the dish in the menu if the dish is the only remained one.

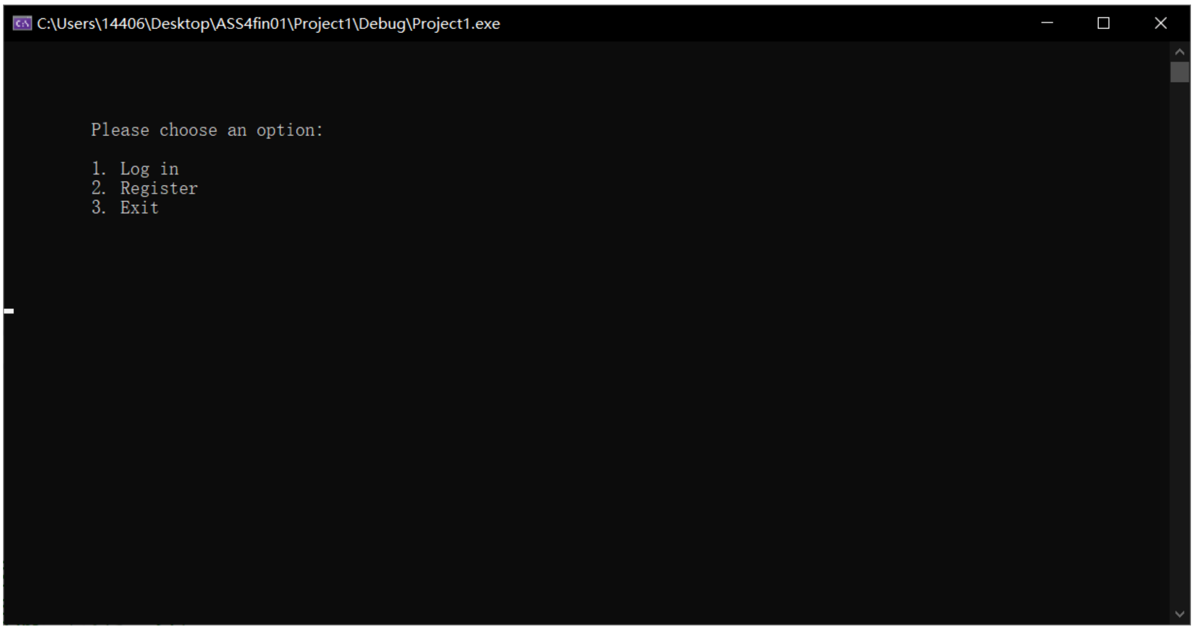
Solution: Add a conditional statement to judge whether the content in the file just has one menu. If there is just one dish, it will use another algorithm to delete the dish.

[Restaurant_v2.0]

> **This section will show the test of the final version.**

Registration and Log in

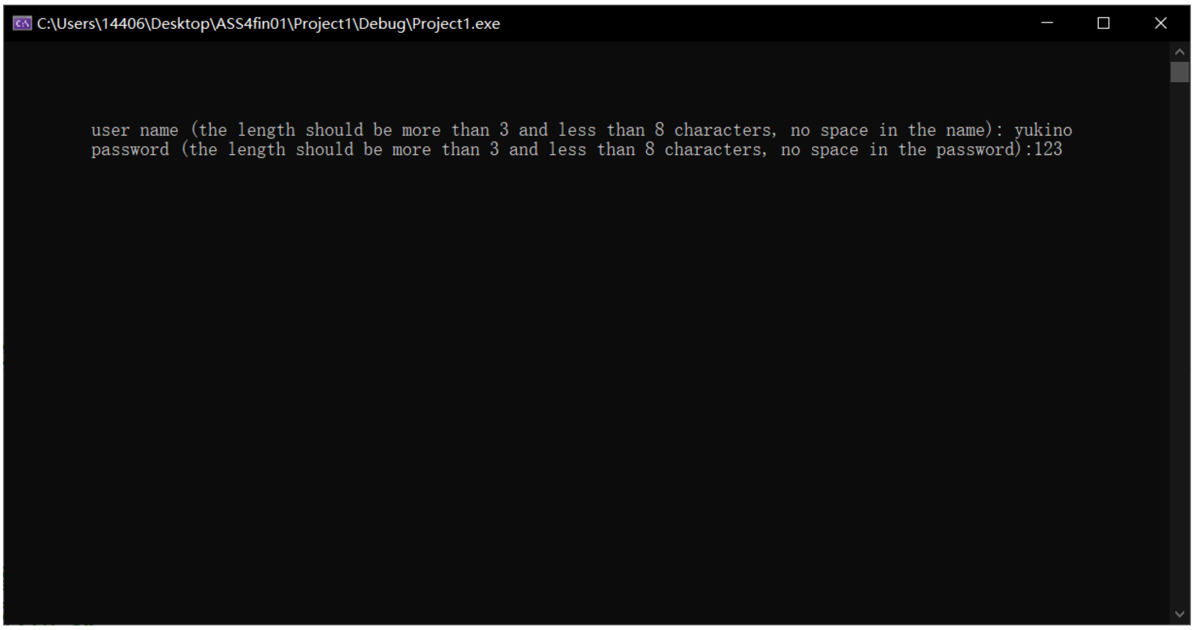
First, the following pictures show how to register user information.



C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Please choose an option:

1. Log in
2. Register
3. Exit
```

Picture[20]: Screenshot

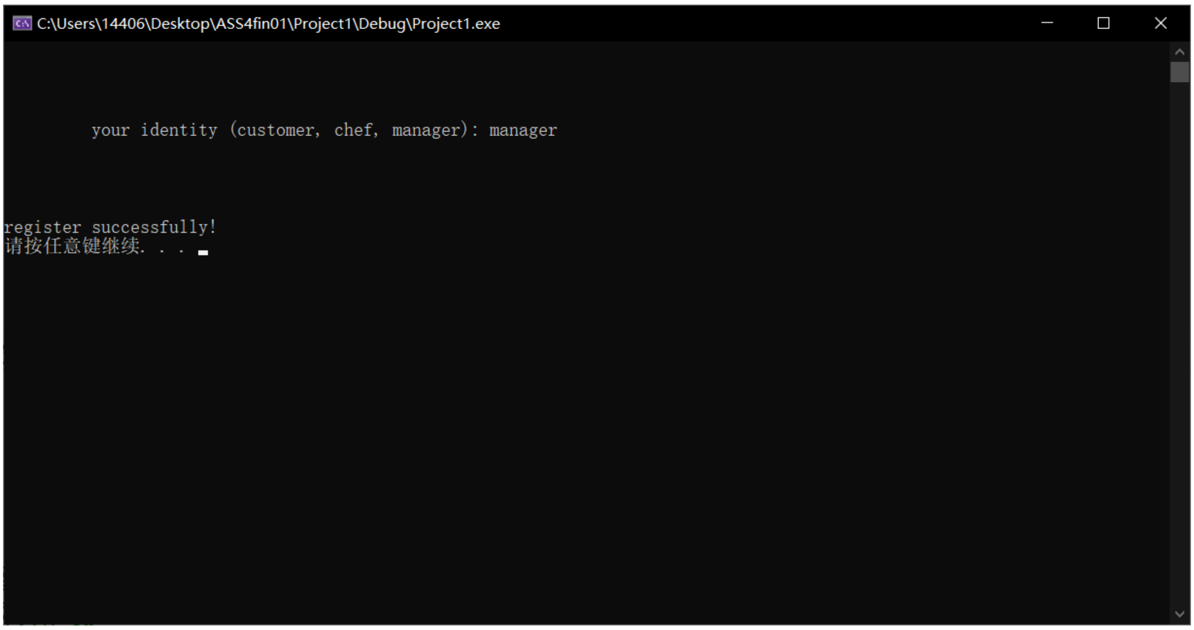


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
        user name (the length should be more than 3 and less than 8 characters, no space in the name): yukino
        password (the length should be more than 3 and less than 8 characters, no space in the password):123
```

Picture[21]: Screenshot

First, choose `manager` as the identity.

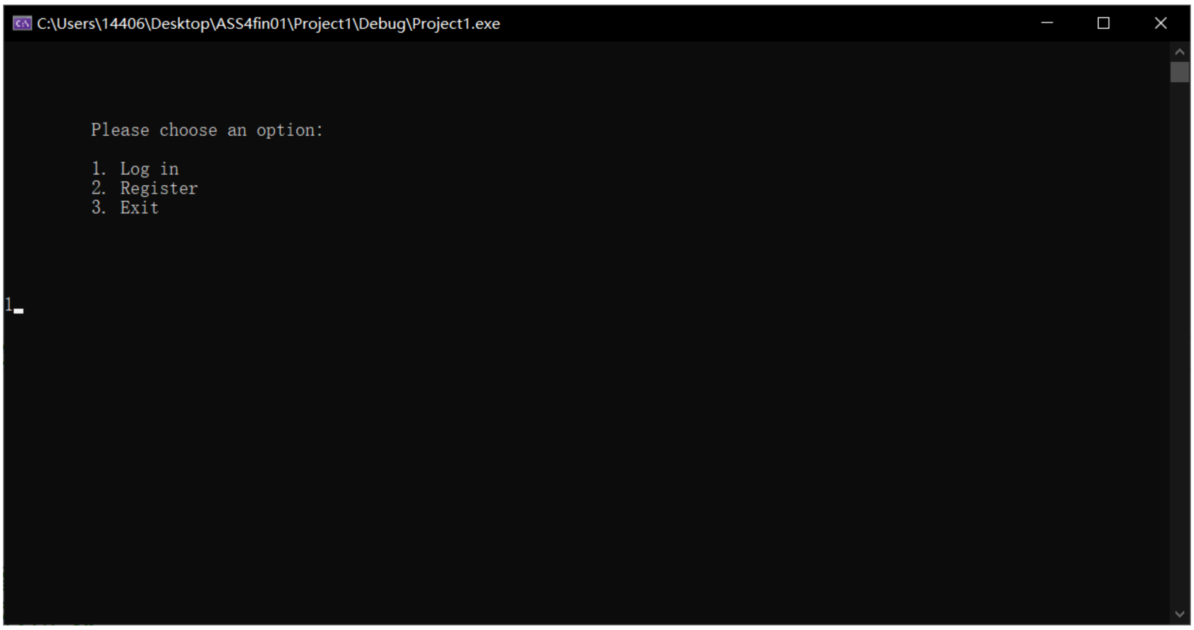


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
        your identity (customer, chef, manager): manager


register successfully!
请按任意键继续. . .
```

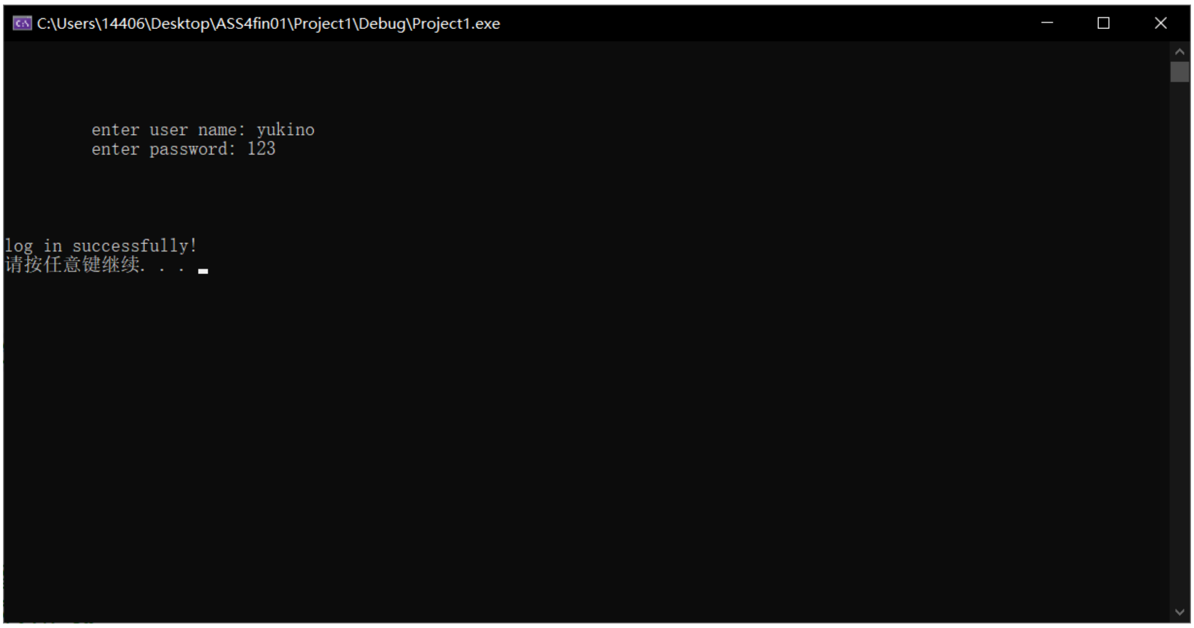
Picture[22]: Screenshot

Then log in with the registered account with ID `yukino`.



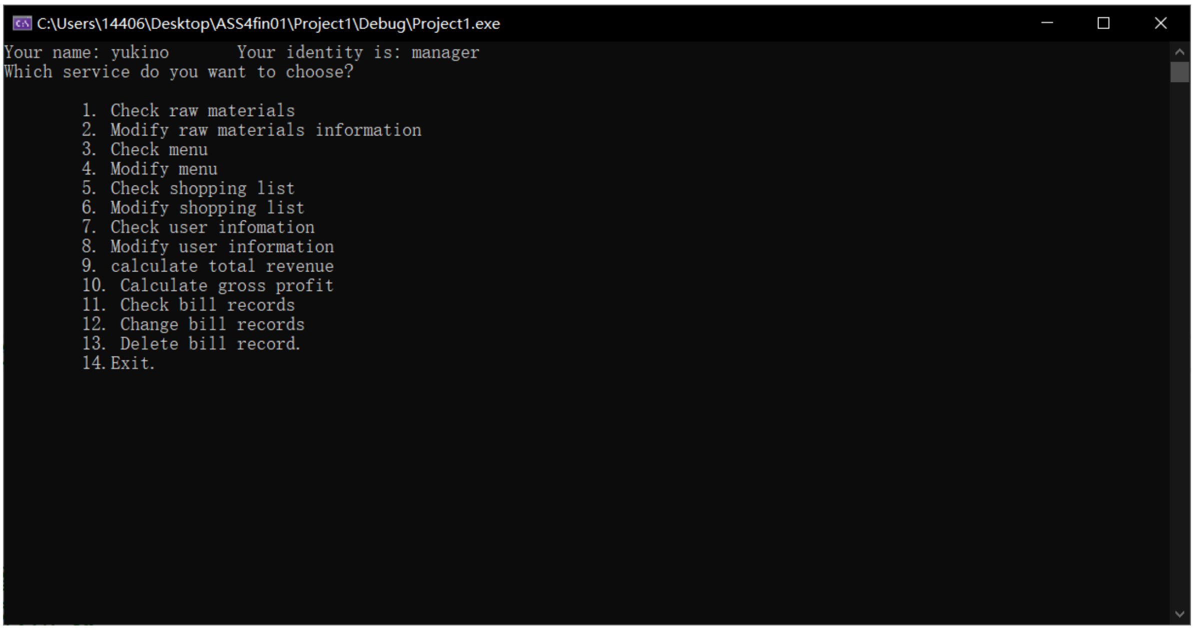
```
C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

         Please choose an option:

         1. Log in
         2. Register
         3. Exit



1
```

Picture[23]: Screenshot



```
C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

         enter user name: yukino
         enter password: 123



log in successfully!
请按任意键继续. . .
```

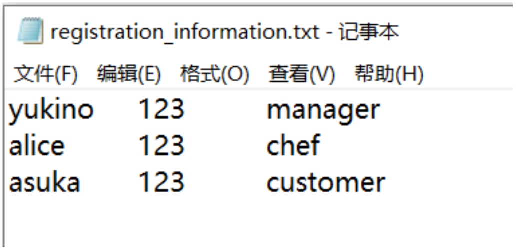
Picture[24]: Screenshot



```
C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14. Exit.
```

Picture[25]: Screenshot

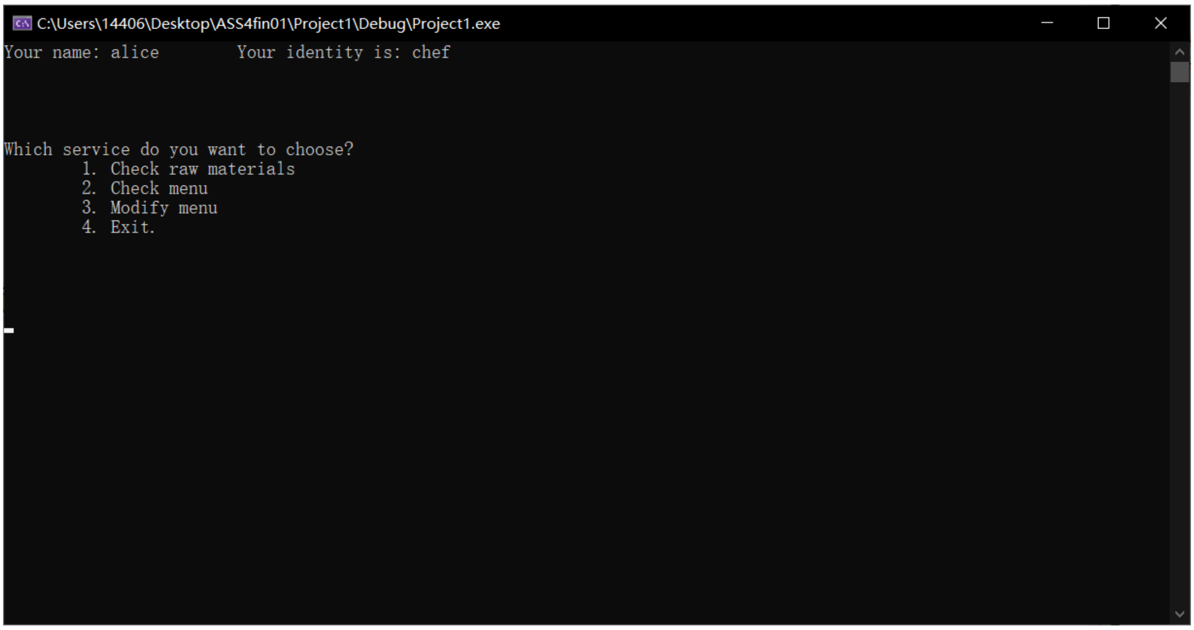
Then repeat the above operation to register two other users, `alice` as `chef` and `asuka` as `customer`, respectively. The following picture shows the data table after registration.


registration_information.txt - 记事本
文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)

```
yukino    123    manager
alice     123    chef
asuka     123    customer
```

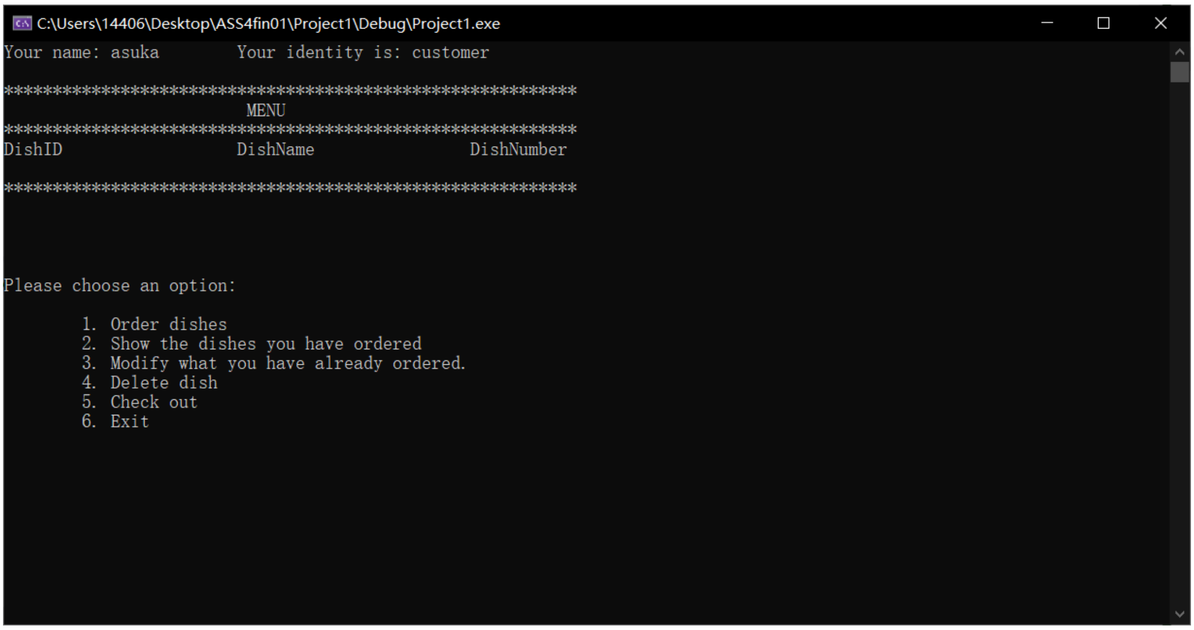
Picture[26]: Screenshot

The two pictures below represent the interface of the `chef` and the `customer`.


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: alice        Your identity is: chef




Which service do you want to choose?
        1. Check raw materials
        2. Check menu
        3. Modify menu
        4. Exit.
```

Picture[27]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: asuka        Your identity is: customer

***********************************************************
                         MENU
***********************************************************
DishID                  DishName                DishNumber

***********************************************************




Please choose an option:

        1. Order dishes
        2. Show the dishes you have ordered
        3. Modify what you have already ordered.
        4. Delete dish
        5. Check out
        6. Exit
```

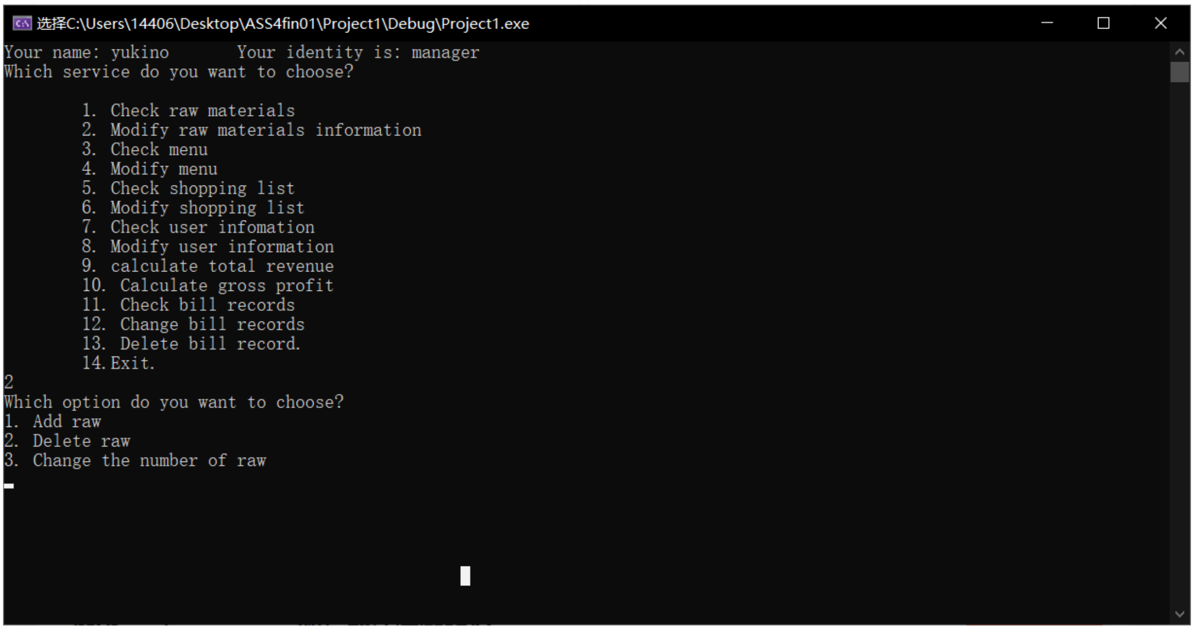
Picture[28]: Screenshot

The following section describes how to use the functions of the operation interface for deferent type of users

`Manager`

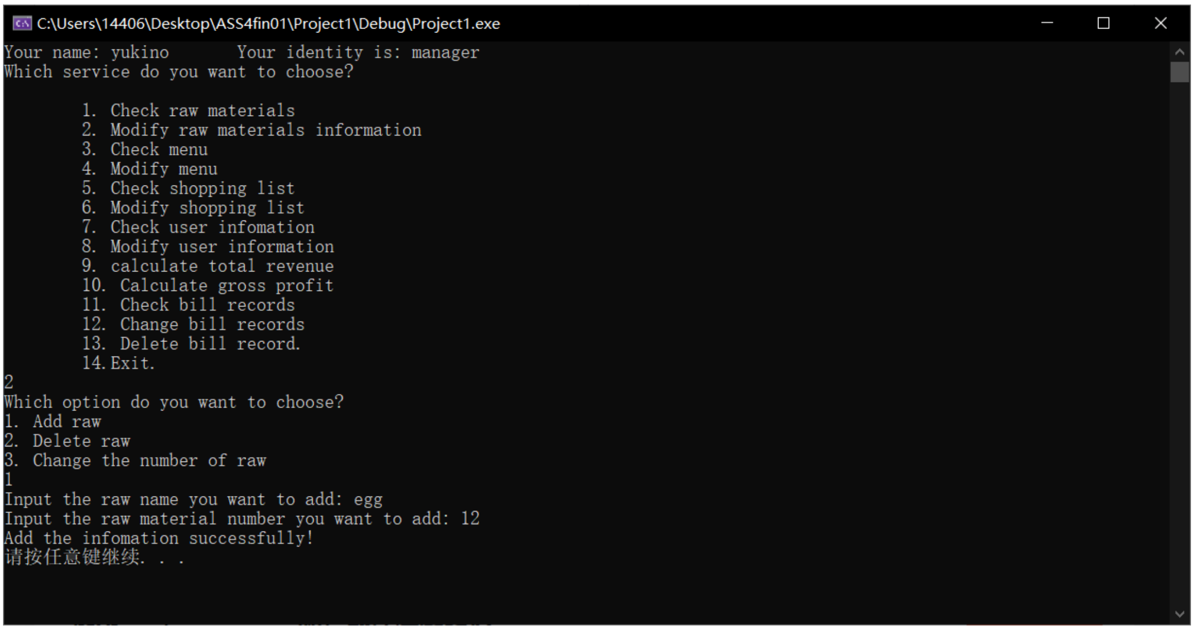
1. Modify raw materials information and check raw materials

Add a new raw which is `egg 12`



```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
2
Which option do you want to choose?
1. Add raw
2. Delete raw
3. Change the number of raw
```

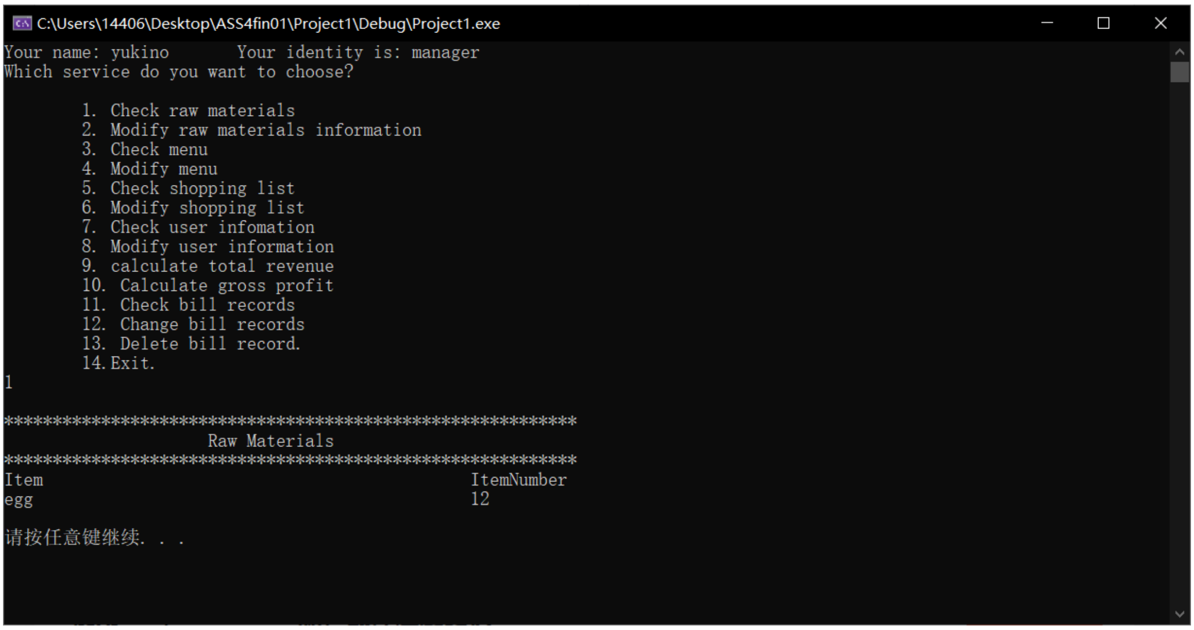
Picture[29]: Screenshot



```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
2
Which option do you want to choose?
1. Add raw
2. Delete raw
3. Change the number of raw
1
Input the raw name you want to add: egg
Input the raw material number you want to add: 12
Add the infomation successfully!
请按任意键继续. . .
```

Picture[30]: Screenshot

Check the material list.

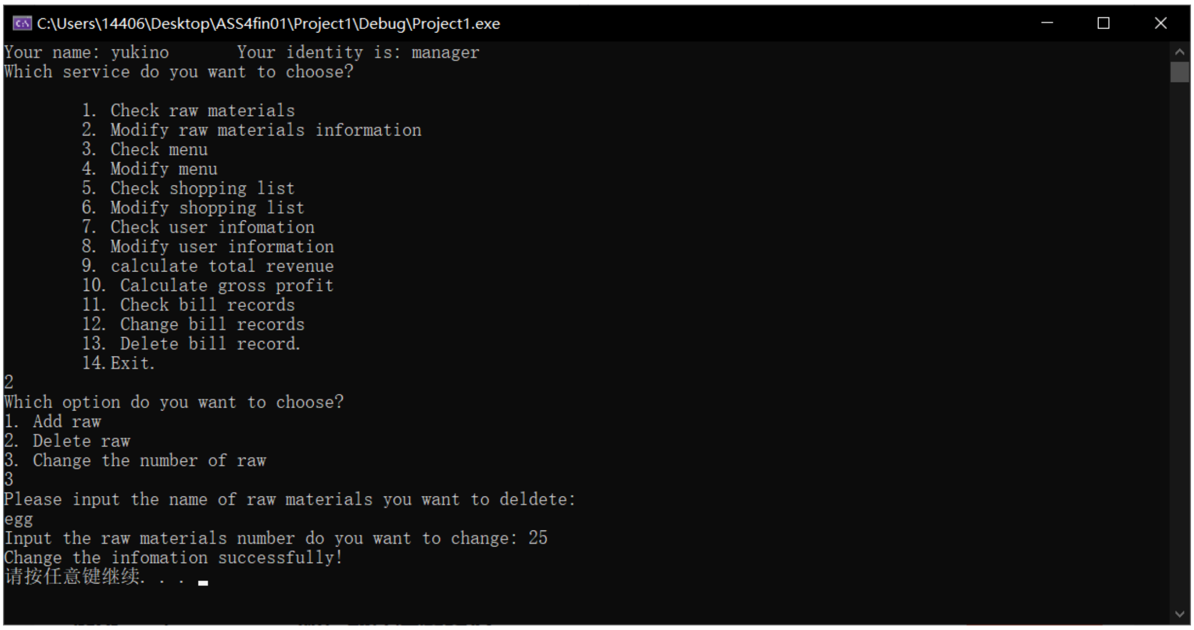


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: yukino        Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
1

************************************************************
                     Raw Materials
************************************************************
Item                                                ItemNumber
egg                                                 12

请按任意键继续. . .
```

Change the number of `egg` to `25`.

Picture[31]: Screenshot

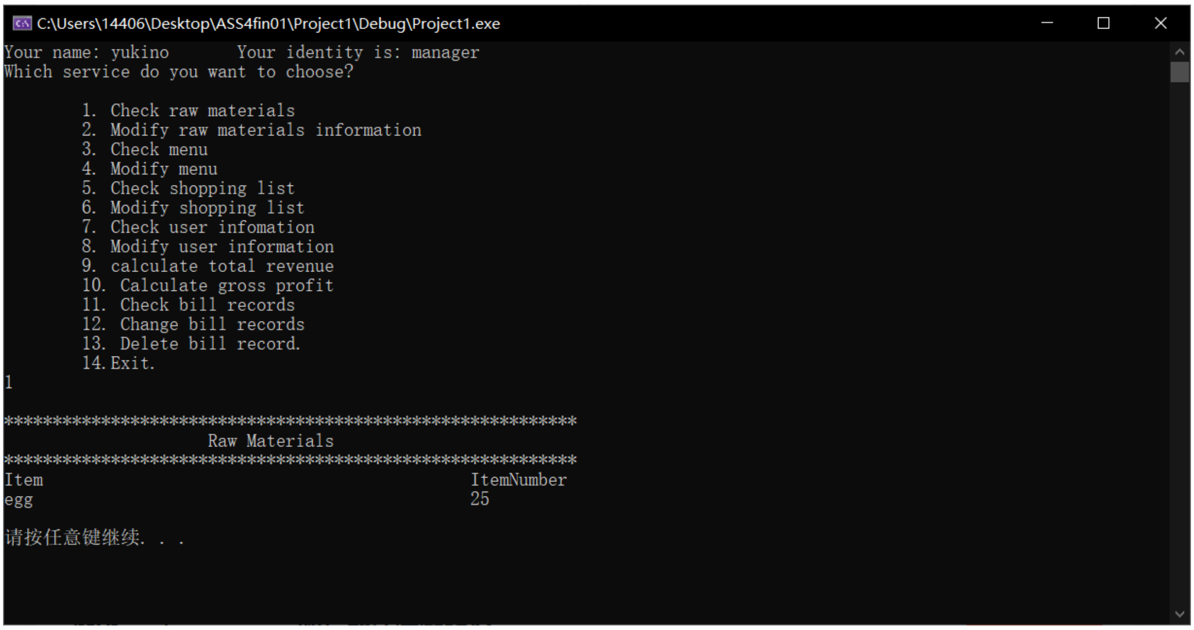


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: yukino        Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
2
Which option do you want to choose?
1. Add raw
2. Delete raw
3. Change the number of raw
3
Please input the name of raw materials you want to deldete:
egg
Input the raw materials number do you want to change: 25
Change the infomation successfully!
请按任意键继续. . .
```

Picture[32]: Screenshot

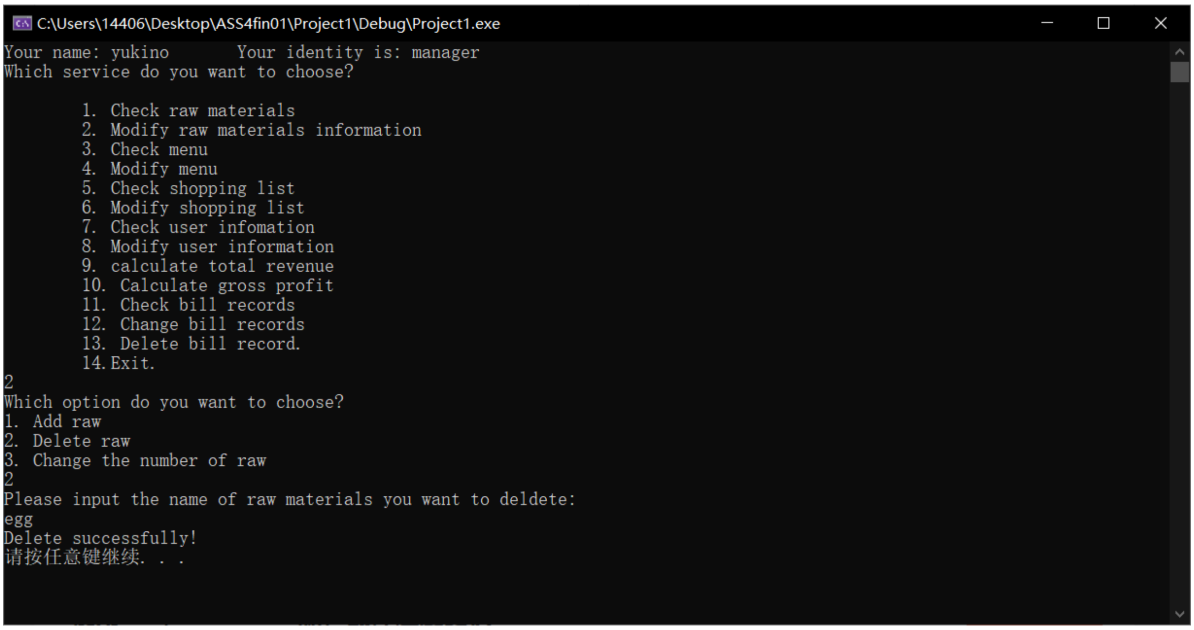
Check again.



```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
1

***********************************************************
                     Raw Materials
***********************************************************
Item                                              ItemNumber
egg                                               25

请按任意键继续. . .
```

Picture[33]: Screenshot

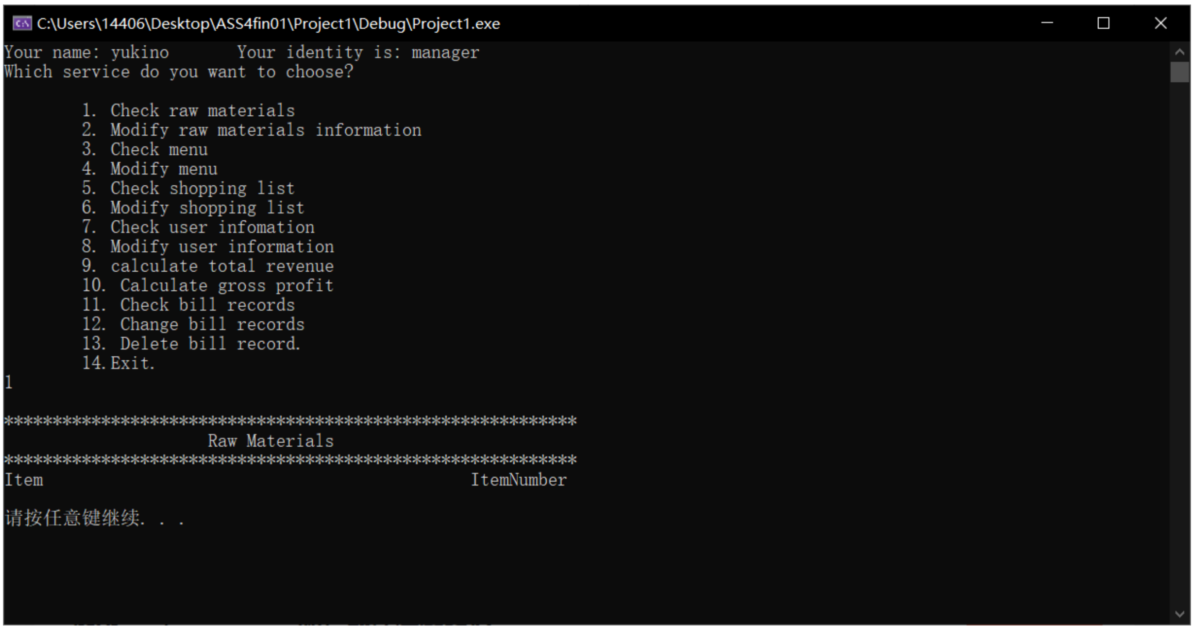
Delete a raw where the name is `egg`.



```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
2
Which option do you want to choose?
1. Add raw
2. Delete raw
3. Change the number of raw
2
Please input the name of raw materials you want to deldete:
egg
Delete successfully!
请按任意键继续. . .
```

Picture[34]: Screenshot

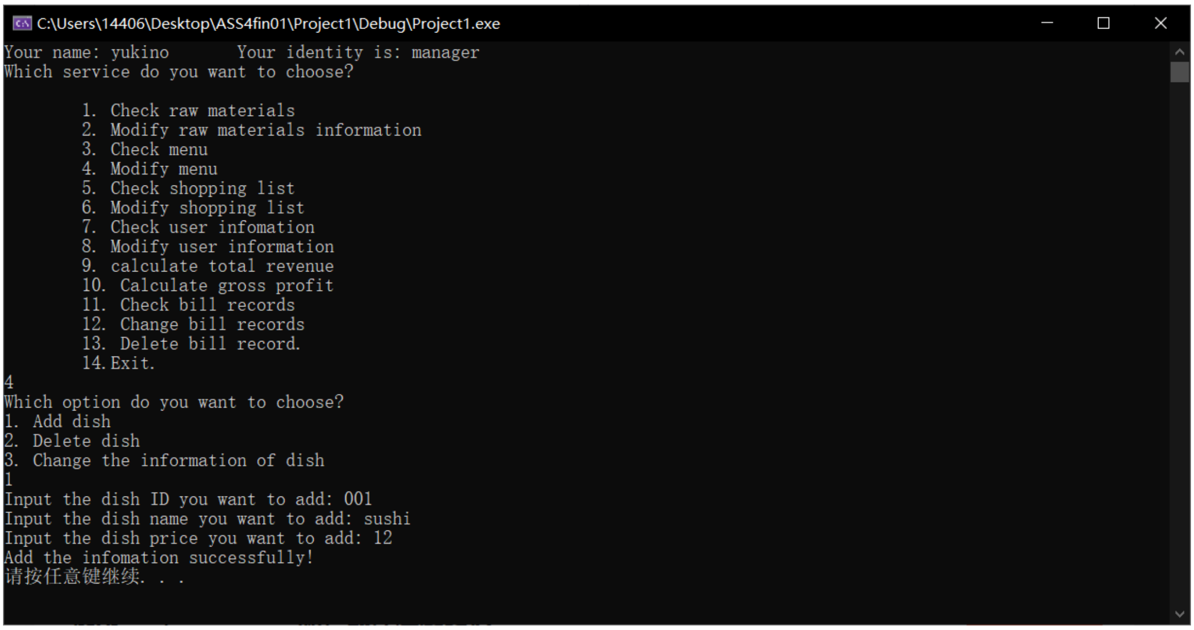
Check again.


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: yukino        Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
1

************************************************************
                     Raw Materials
************************************************************
Item                                                ItemNumber

请按任意键继续. . .
```

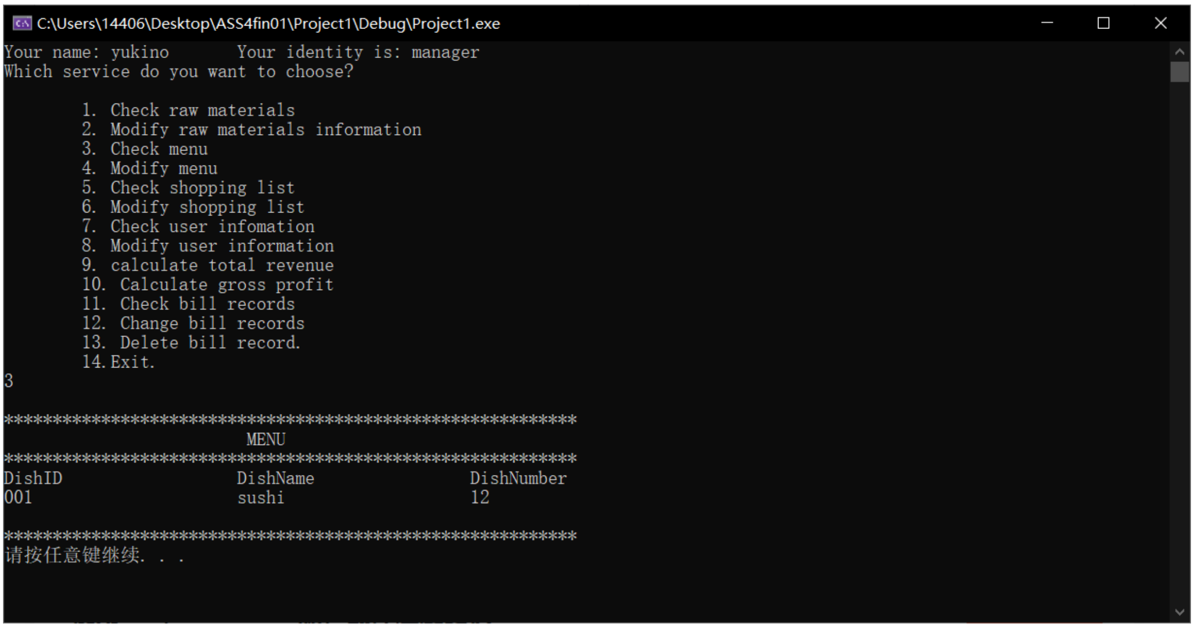
Picture[35]: Screenshot

2. Modify and check menu


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

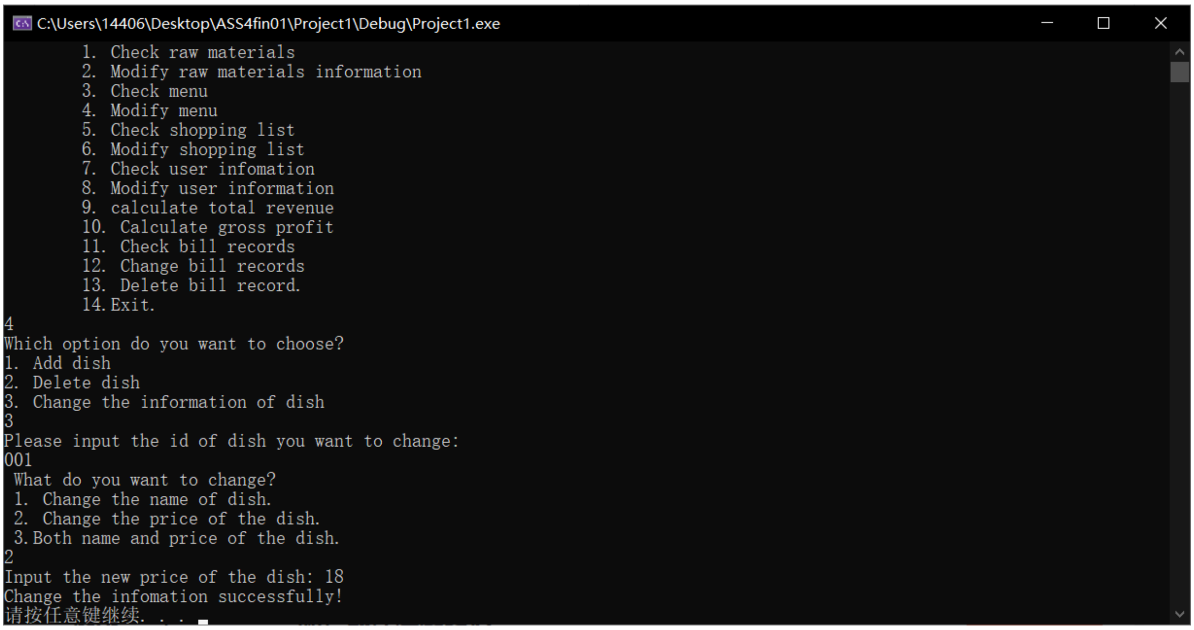
```
Your name: yukino        Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
4
Which option do you want to choose?
1. Add dish
2. Delete dish
3. Change the information of dish
1
Input the dish ID you want to add: 001
Input the dish name you want to add: sushi
Input the dish price you want to add: 12
Add the infomation successfully!
请按任意键继续. . .
```

Picture[36]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

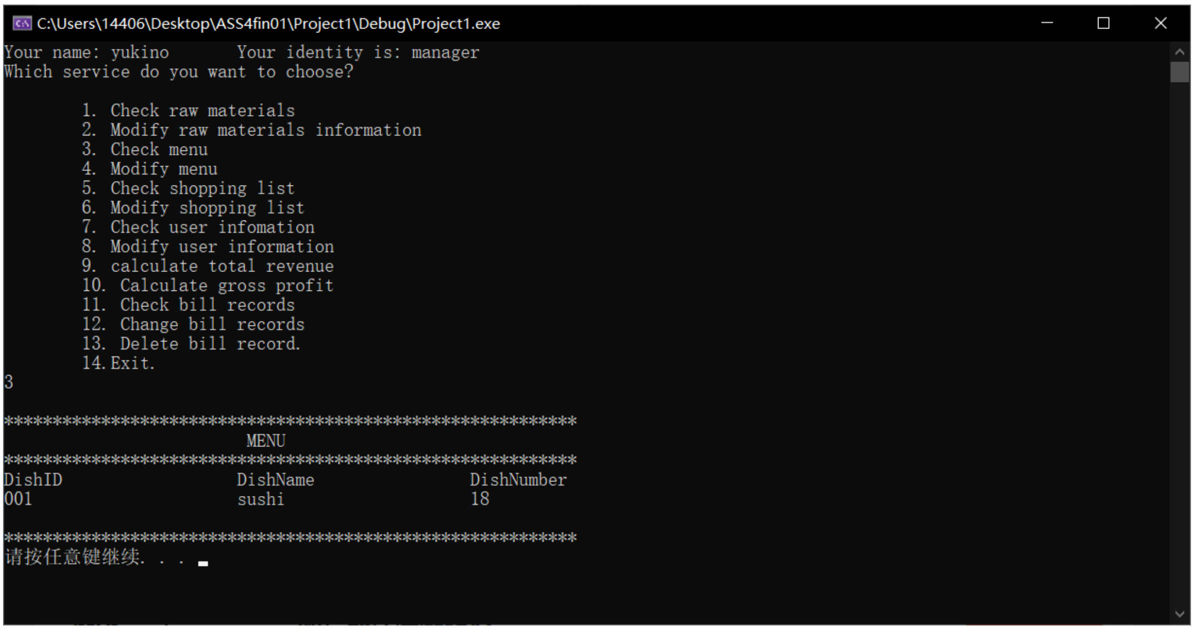
```
Your name: yukino        Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
3

************************************************************
                         MENU
************************************************************
DishID                  DishName                DishNumber
001                     sushi                   12

************************************************************
请按任意键继续. . .
```

Picture[37]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

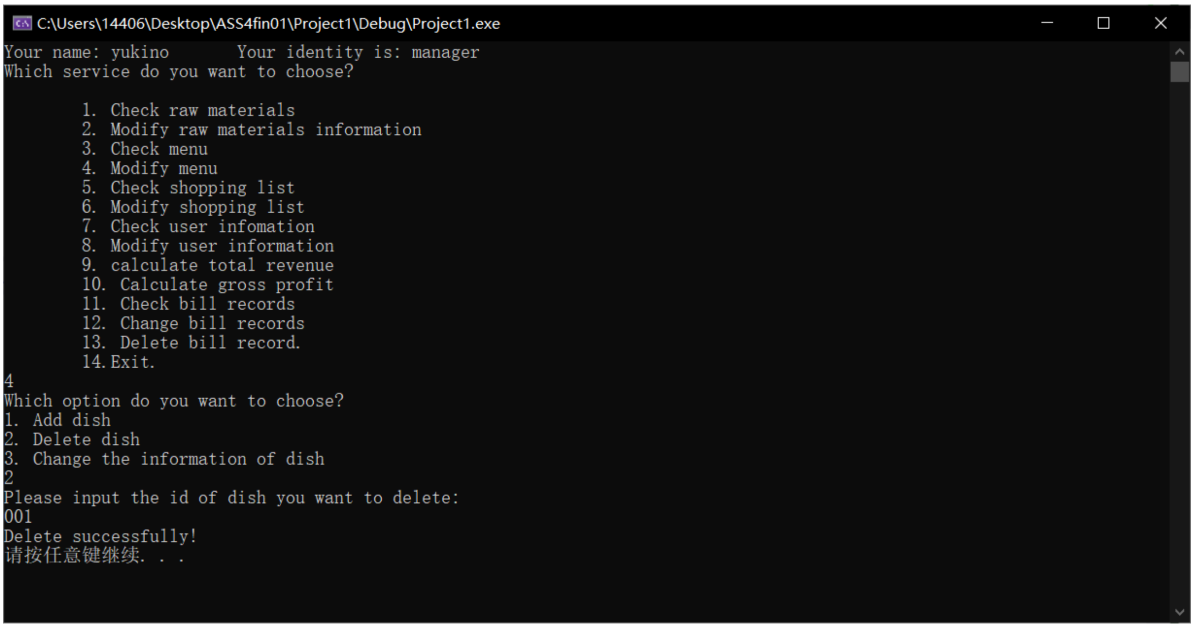
```
        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
4
Which option do you want to choose?
1. Add dish
2. Delete dish
3. Change the information of dish
3
Please input the id of dish you want to change:
001
 What do you want to change?
 1. Change the name of dish.
 2. Change the price of the dish.
 3.Both name and price of the dish.
2
Input the new price of the dish: 18
Change the infomation successfully!
请按任意键继续. . .
```

Picture[38]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

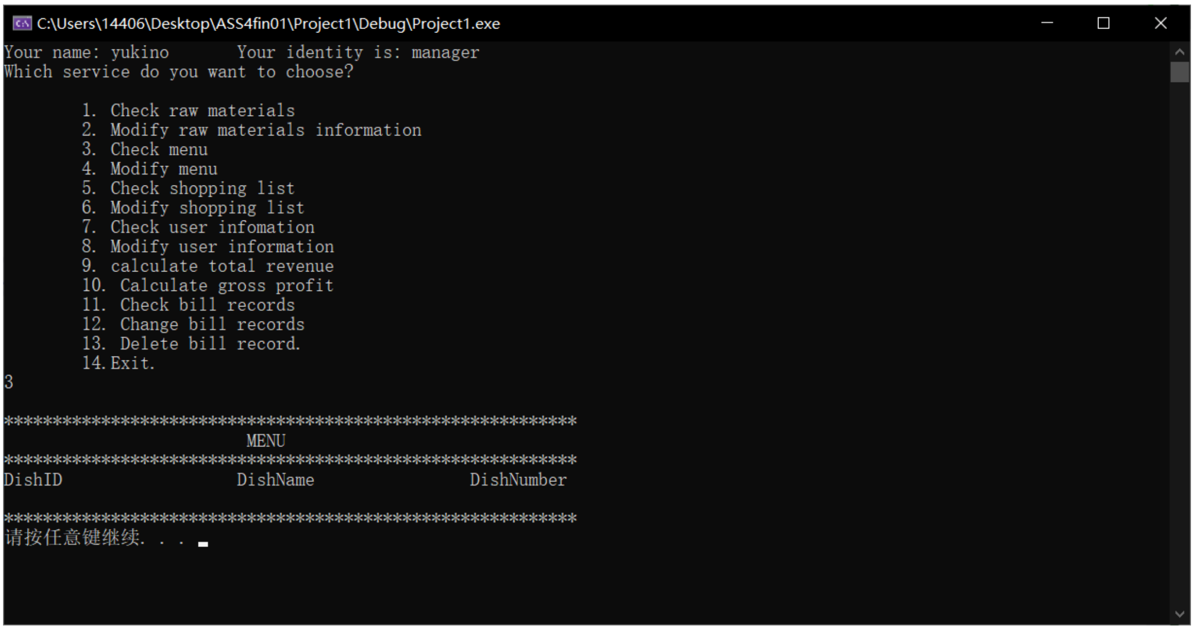
```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
3

**********************************************************
                         MENU
**********************************************************
DishID                  DishName                DishNumber
001                     sushi                   18

**********************************************************
请按任意键继续. . .
```

Picture[39]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
4
Which option do you want to choose?
1. Add dish
2. Delete dish
3. Change the information of dish
2
Please input the id of dish you want to delete:
001
Delete successfully!
请按任意键继续. . .
```

Picture[40]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

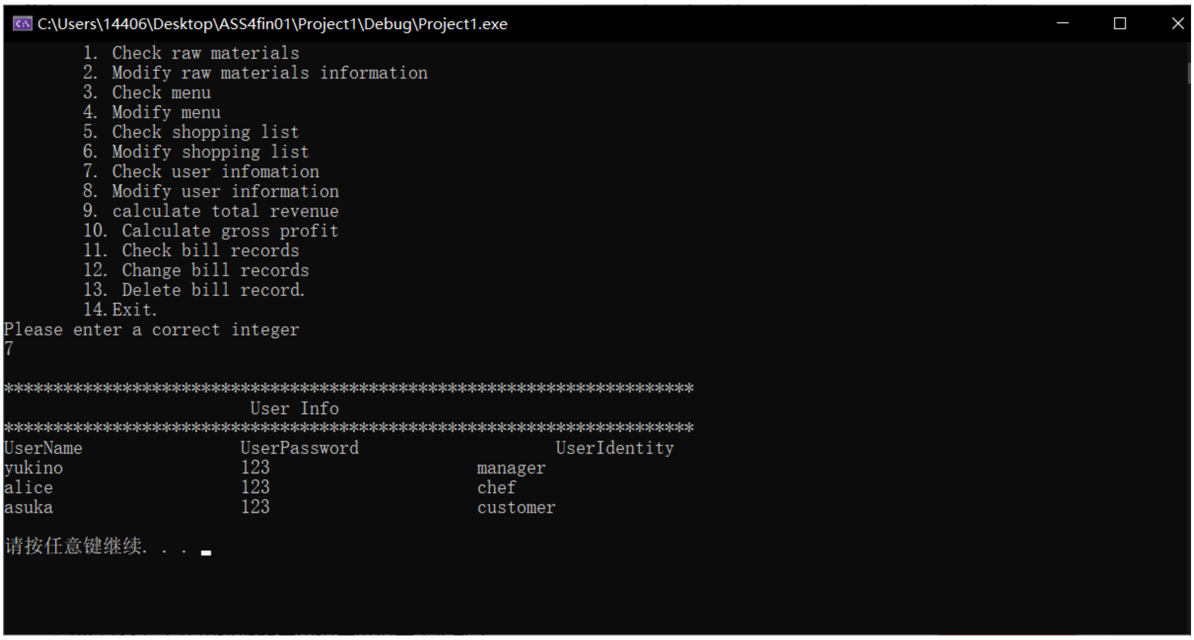
```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
3

***********************************************************
                         MENU
***********************************************************
DishID                  DishName                DishNumber

***********************************************************
请按任意键继续. . .
```

Picture[41]: Screenshot

3. Check and modify shopping list

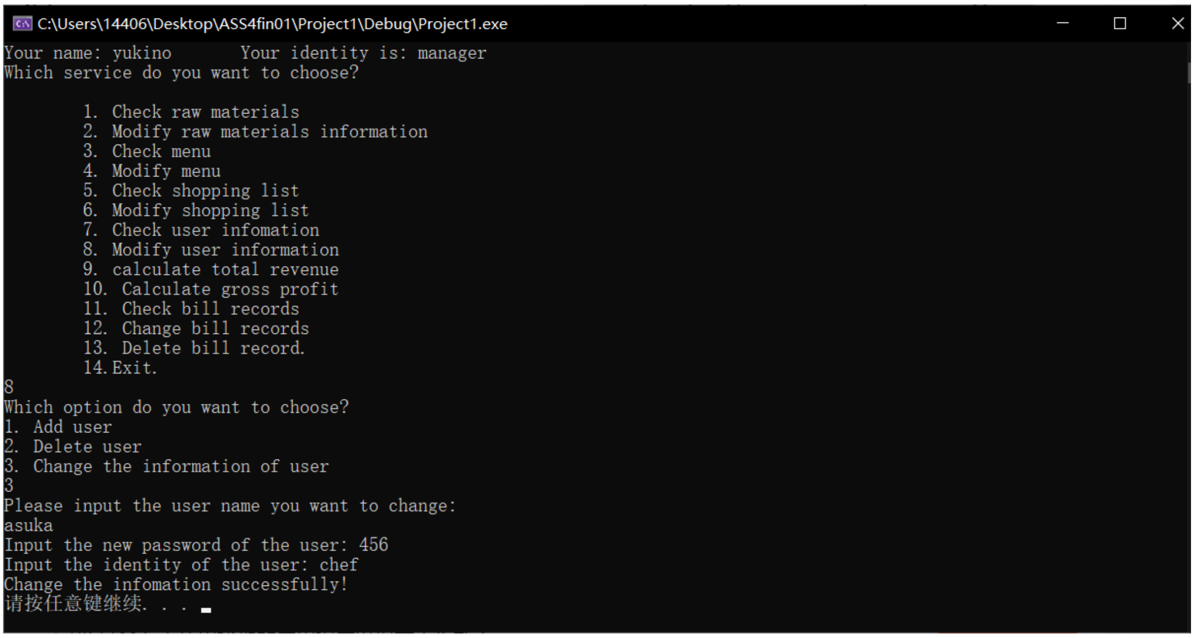
The operation of this option is similar to the operation on the menu.

4. Modify and check user information


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

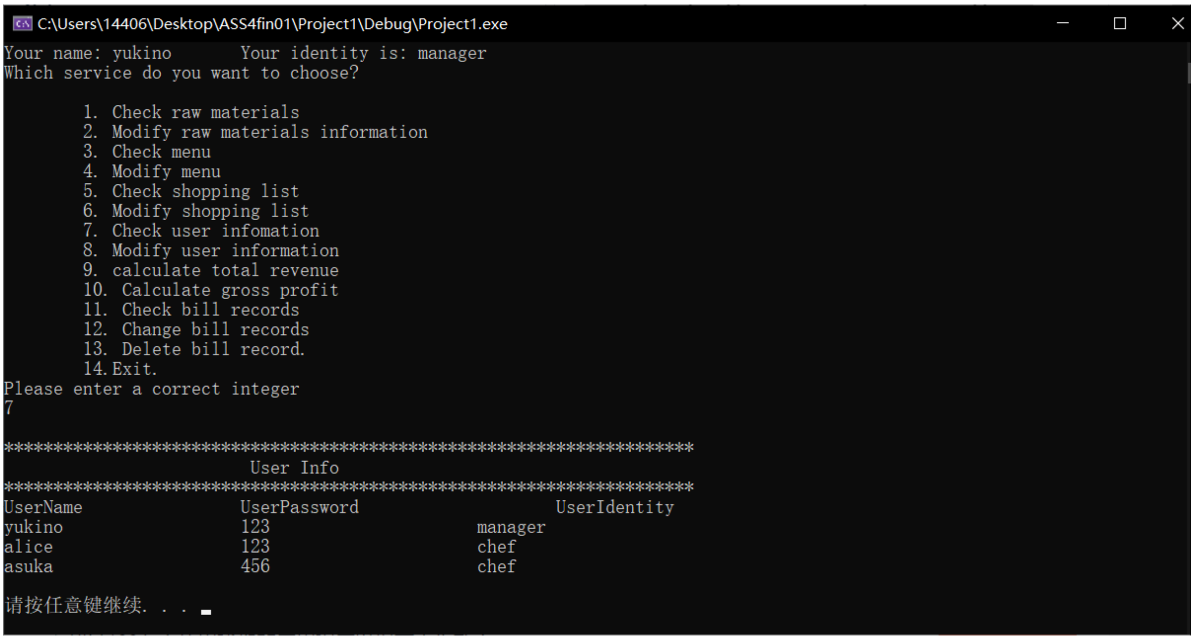
```
        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
Please enter a correct integer
7

***********************************************************************
                         User Info
***********************************************************************
UserName                UserPassword                    UserIdentity
yukino                  123                     manager
alice                   123                     chef
asuka                   123                     customer

请按任意键继续. . .
```

Picture[42]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
8
Which option do you want to choose?
1. Add user
2. Delete user
3. Change the information of user
3
Please input the user name you want to change:
asuka
Input the new password of the user: 456
Input the identity of the user: chef
Change the infomation successfully!
请按任意键继续. . .
```

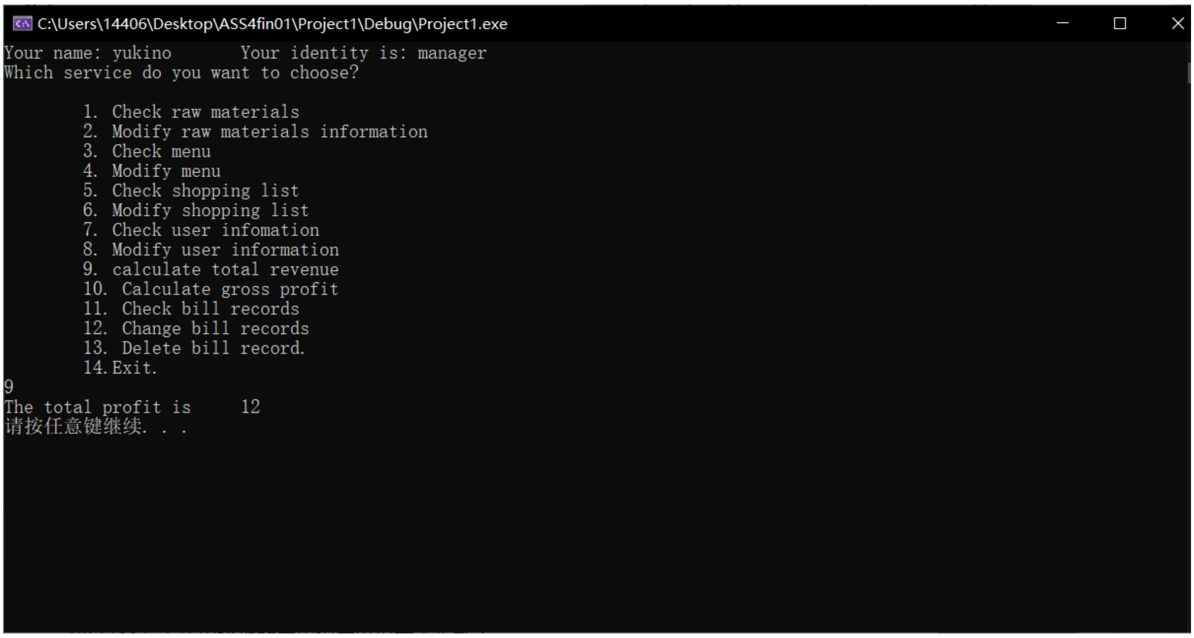
Picture[43]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
Please enter a correct integer
7

**********************************************************************
                         User Info
**********************************************************************
UserName                UserPassword                    UserIdentity
yukino                  123                     manager
alice                   123                     chef
asuka                   456                     chef

请按任意键继续. . .
```

Picture[44]: Screenshot

5. Calculate total revenue

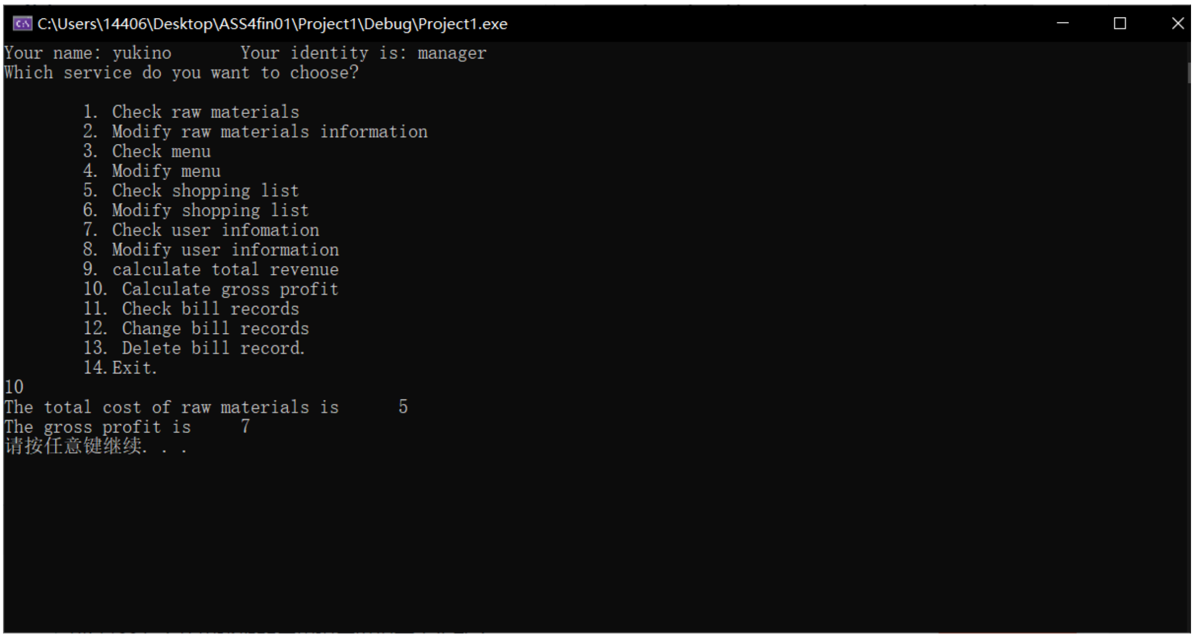


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
9
The total profit is     12
请按任意键继续. . .
```

Picture[45]: Screenshot

6. Calculate gross profit

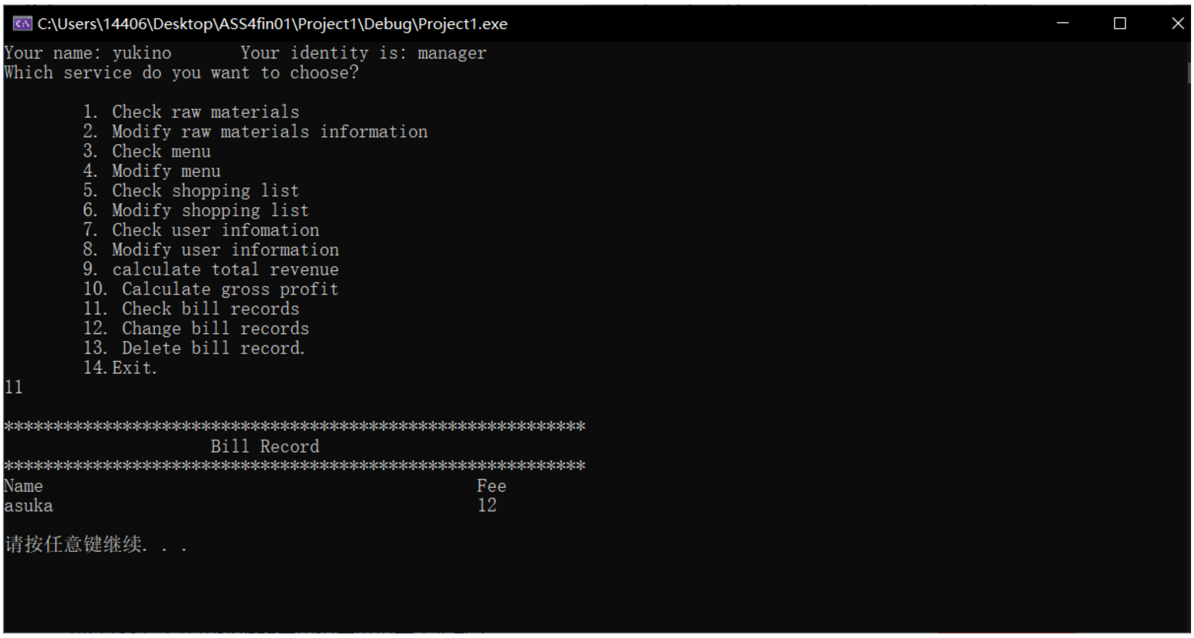


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
10
The total cost of raw materials is      5
The gross profit is     7
请按任意键继续. . .
```

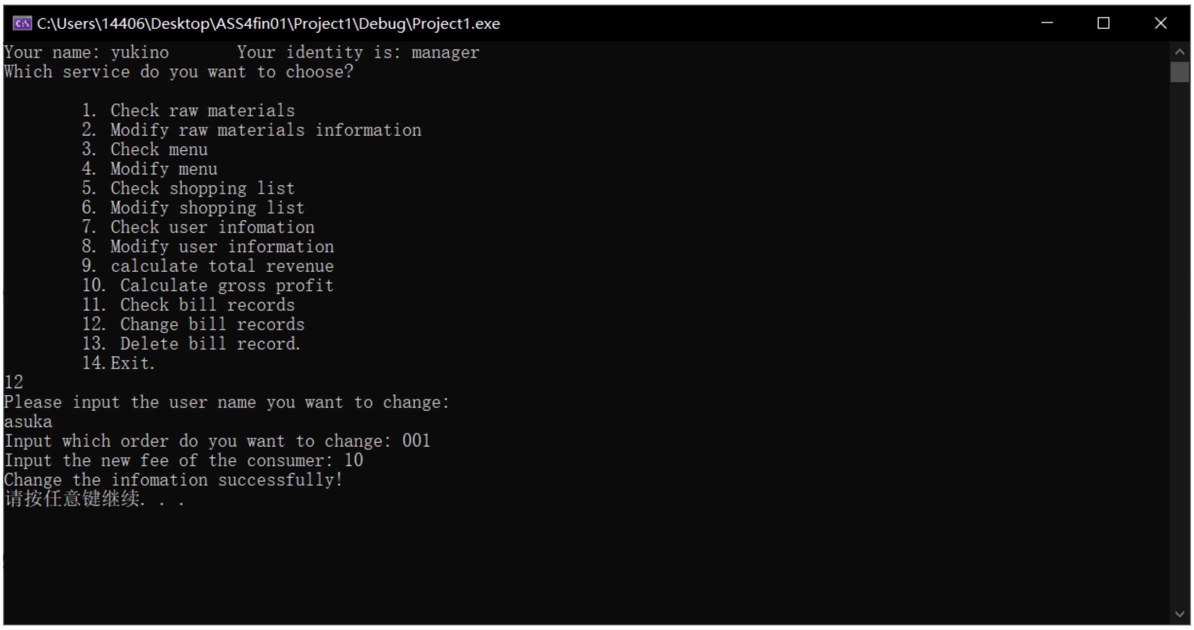
Picture[46]: Screenshot

7. Change, delete and check bill records



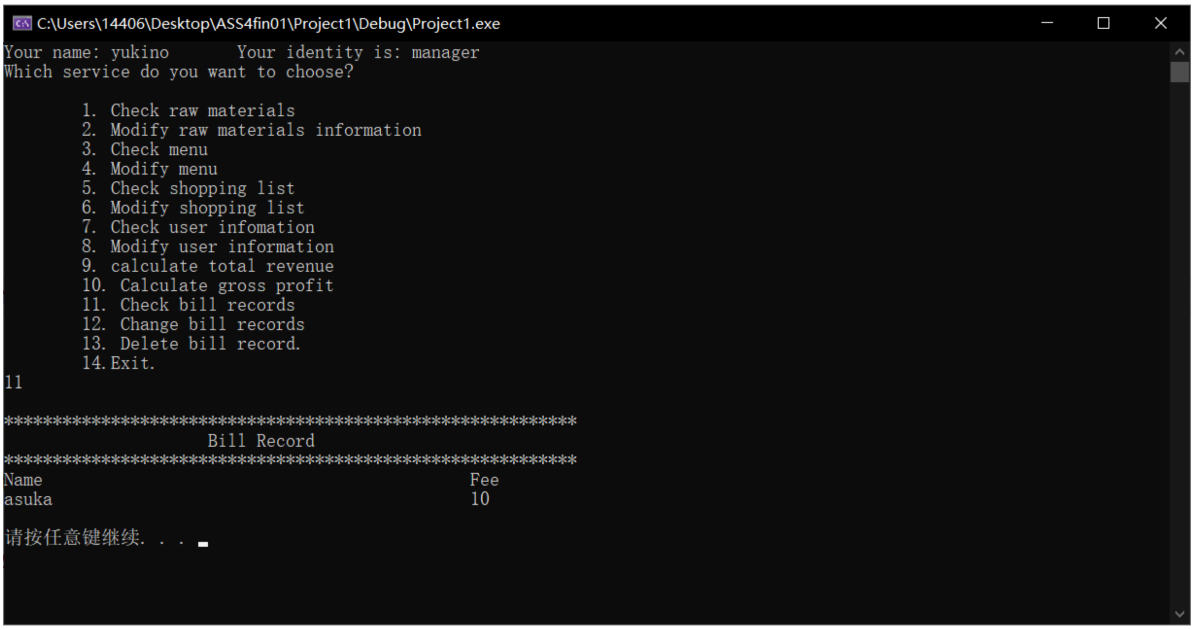
```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
11

************************************************************
                     Bill Record
************************************************************
Name                                                Fee
asuka                                               12

请按任意键继续. . .
```

Picture[47]: Screenshot



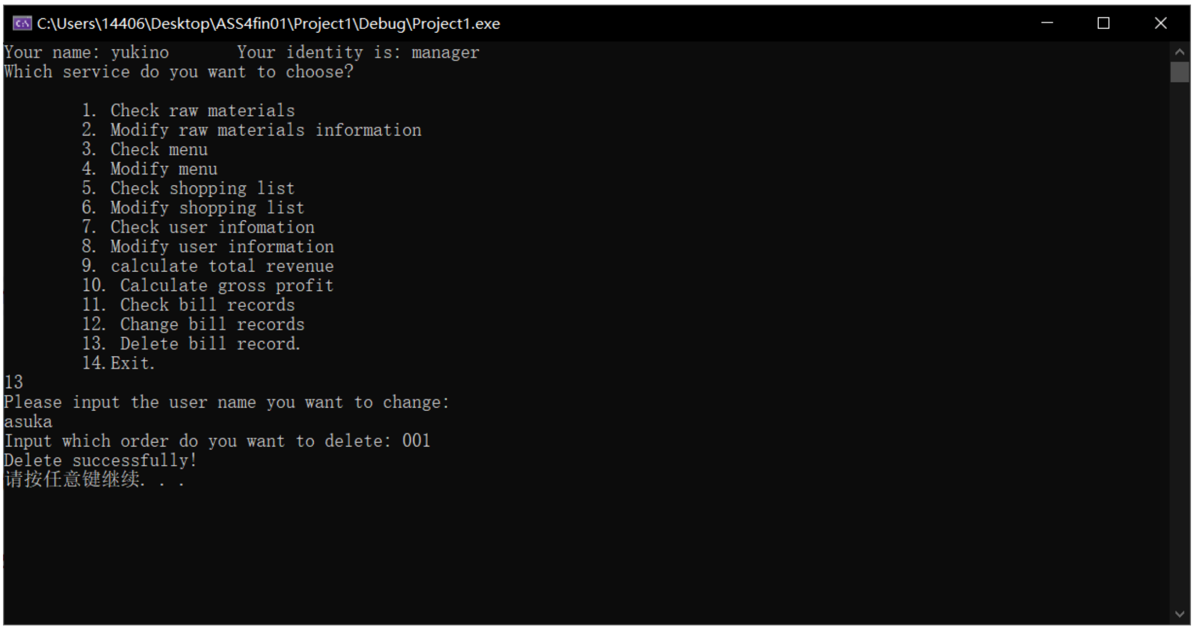
```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
12
Please input the user name you want to change:
asuka
Input which order do you want to change: 001
Input the new fee of the consumer: 10
Change the infomation successfully!
请按任意键继续. . .
```

Picture[48]: Screenshot



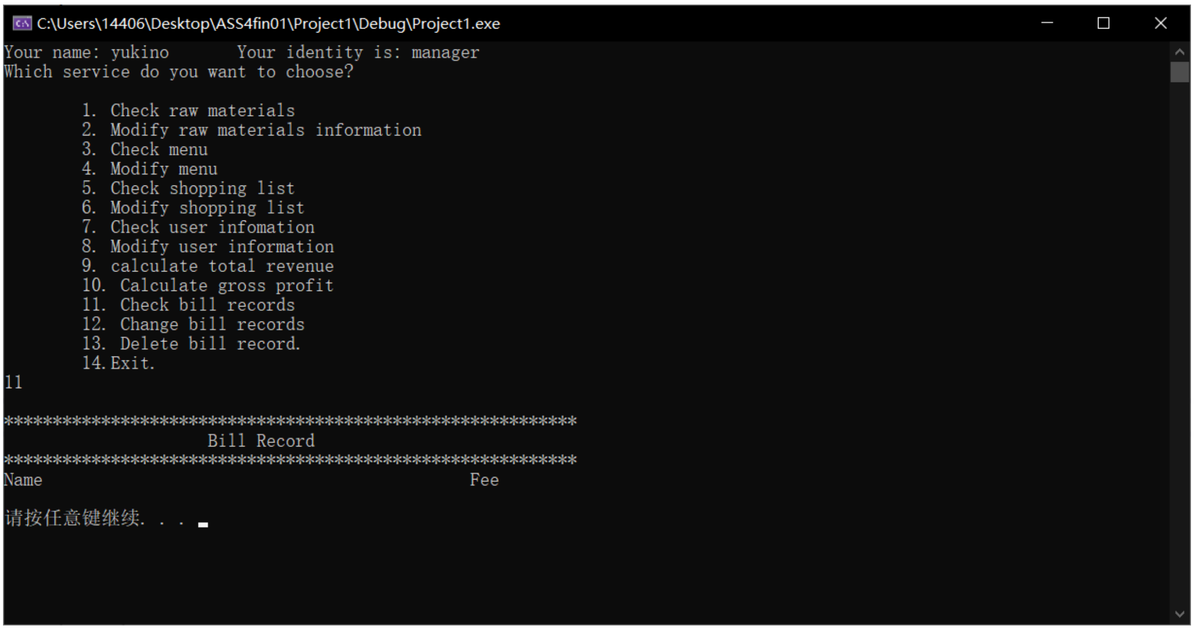
```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
11

************************************************************
                     Bill Record
************************************************************
Name                                                Fee
asuka                                               10

请按任意键继续. . .
```

Picture[49]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
13
Please input the user name you want to change:
asuka
Input which order do you want to delete: 001
Delete successfully!
请按任意键继续. . .
```

Picture[50]: Screenshot

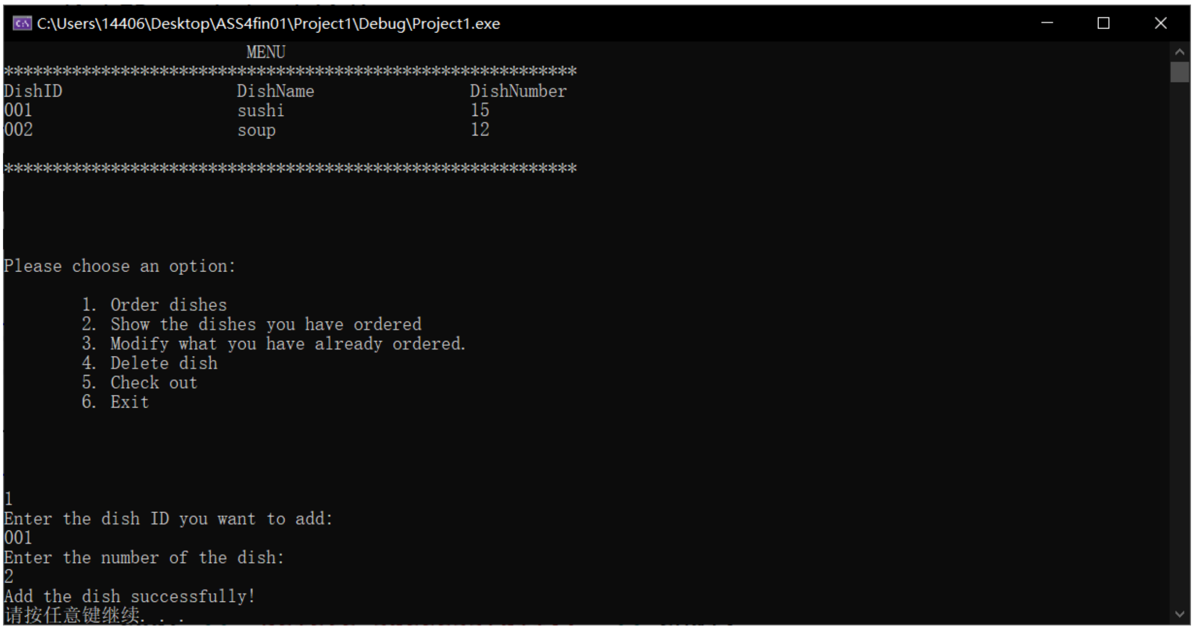

C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
Your name: yukino       Your identity is: manager
Which service do you want to choose?

        1. Check raw materials
        2. Modify raw materials information
        3. Check menu
        4. Modify menu
        5. Check shopping list
        6. Modify shopping list
        7. Check user infomation
        8. Modify user information
        9. calculate total revenue
        10. Calculate gross profit
        11. Check bill records
        12. Change bill records
        13. Delete bill record.
        14.Exit.
11

***********************************************************
                     Bill Record
***********************************************************
Name                                            Fee

请按任意键继续. . .
```

Picture[51]: Screenshot

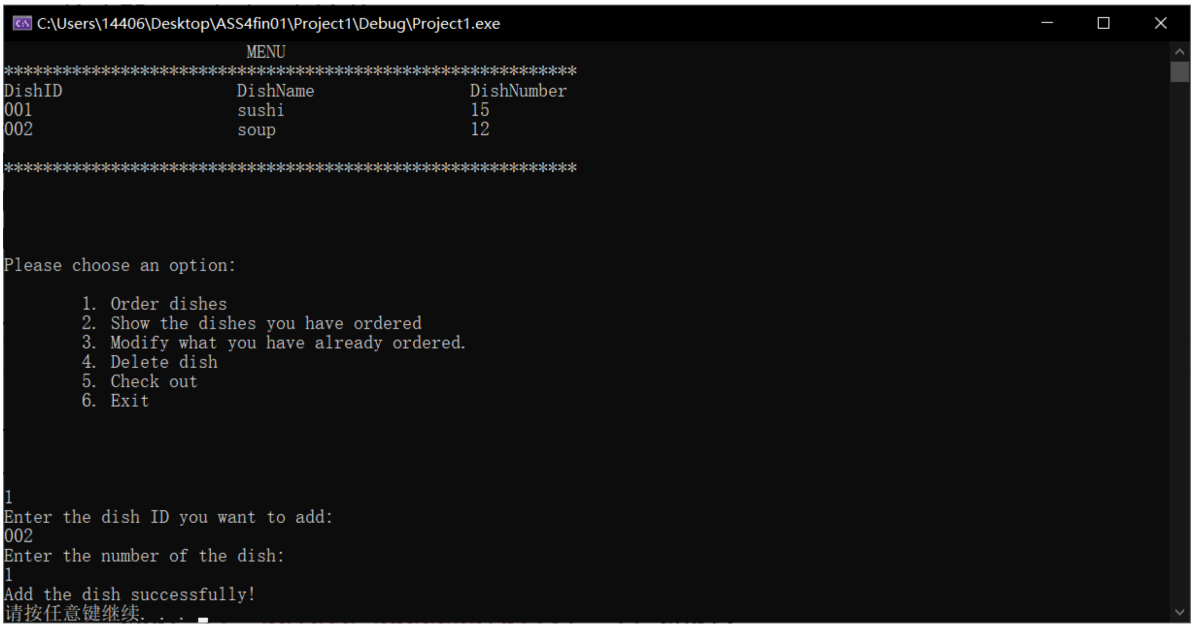
`Customer`

1. Order dishes and check out


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

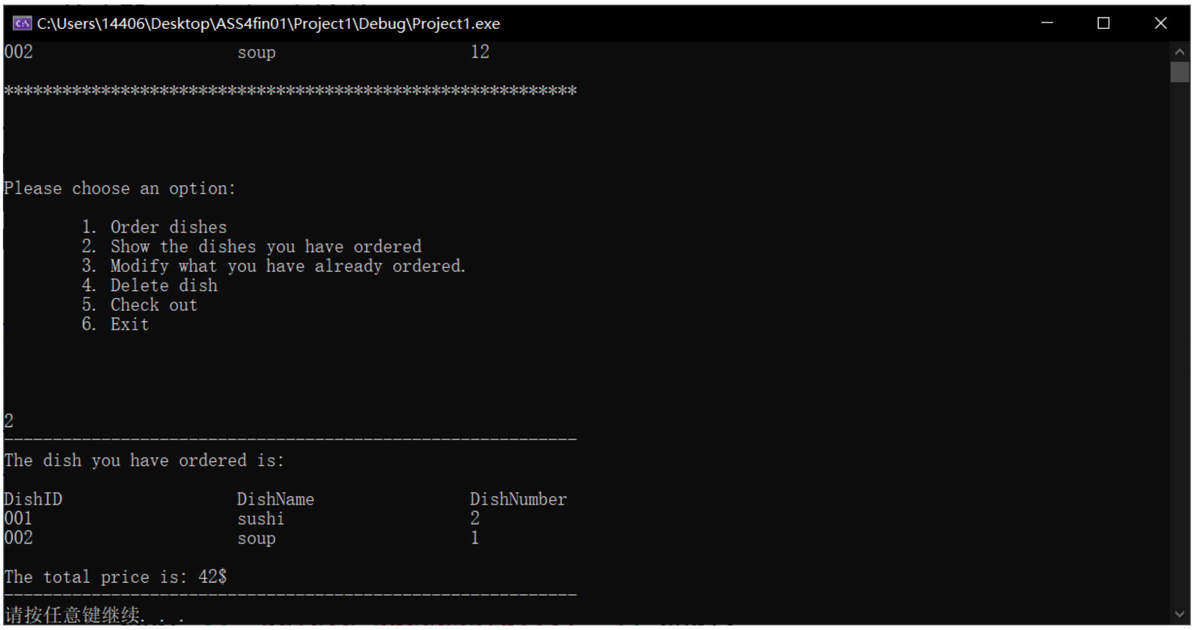
```
                         MENU
***********************************************************
DishID                  DishName                DishNumber
001                     sushi                   15
002                     soup                    12

***********************************************************




Please choose an option:

        1. Order dishes
        2. Show the dishes you have ordered
        3. Modify what you have already ordered.
        4. Delete dish
        5. Check out
        6. Exit




1
Enter the dish ID you want to add:
001
Enter the number of the dish:
2
Add the dish successfully!
请按任意键继续. . .
```

Picture[52]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

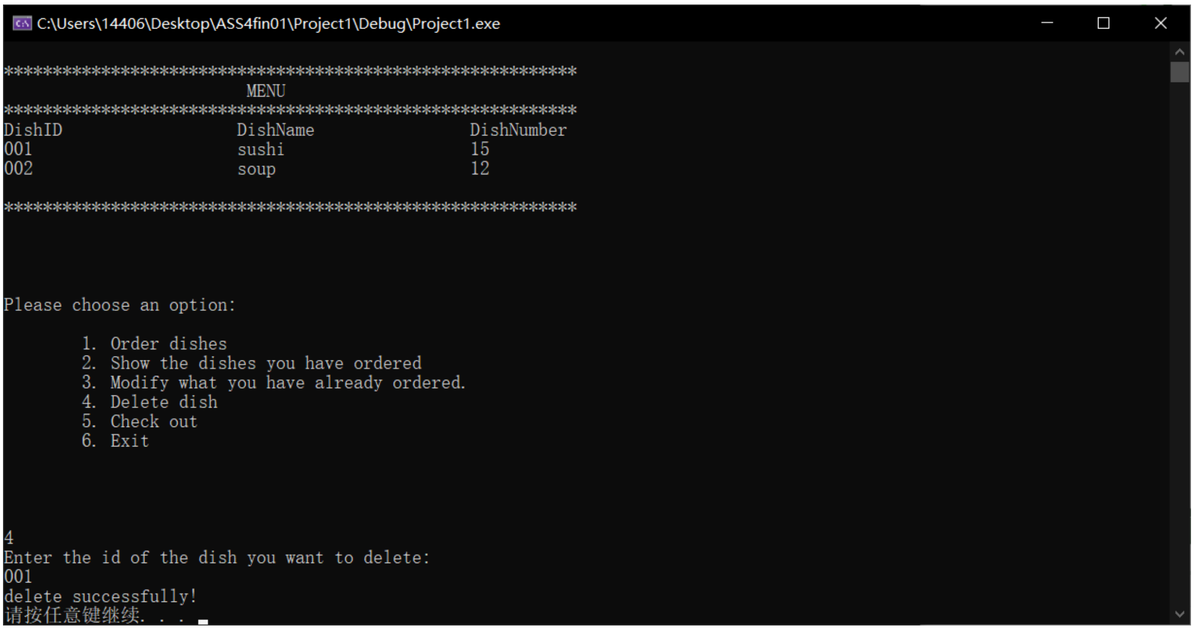
```
                         MENU
***********************************************************
DishID                  DishName                DishNumber
001                     sushi                   15
002                     soup                    12

***********************************************************




Please choose an option:

        1. Order dishes
        2. Show the dishes you have ordered
        3. Modify what you have already ordered.
        4. Delete dish
        5. Check out
        6. Exit




1
Enter the dish ID you want to add:
002
Enter the number of the dish:
1
Add the dish successfully!
请按任意键继续. . .
```

Picture[53]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

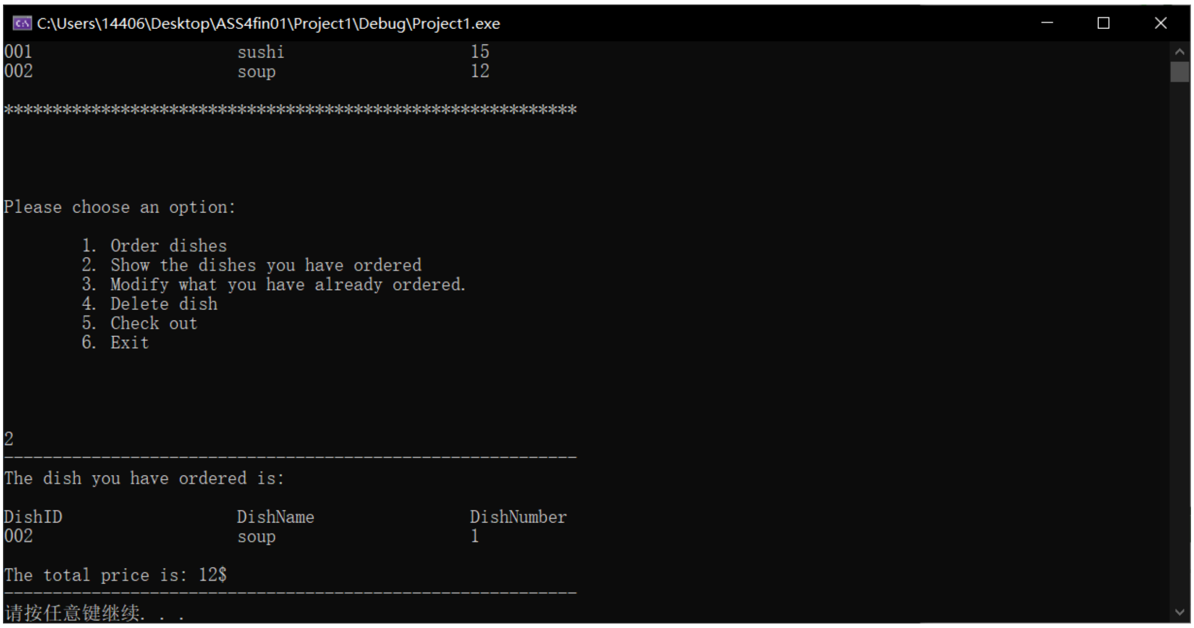
```
002                     soup                    12

***********************************************************




Please choose an option:

        1. Order dishes
        2. Show the dishes you have ordered
        3. Modify what you have already ordered.
        4. Delete dish
        5. Check out
        6. Exit




2
-----------------------------------------------------------
The dish you have ordered is:

DishID                  DishName                DishNumber
001                     sushi                   2
002                     soup                    1

The total price is: 42$
-----------------------------------------------------------
请按任意键继续. . .
```

Picture[54]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

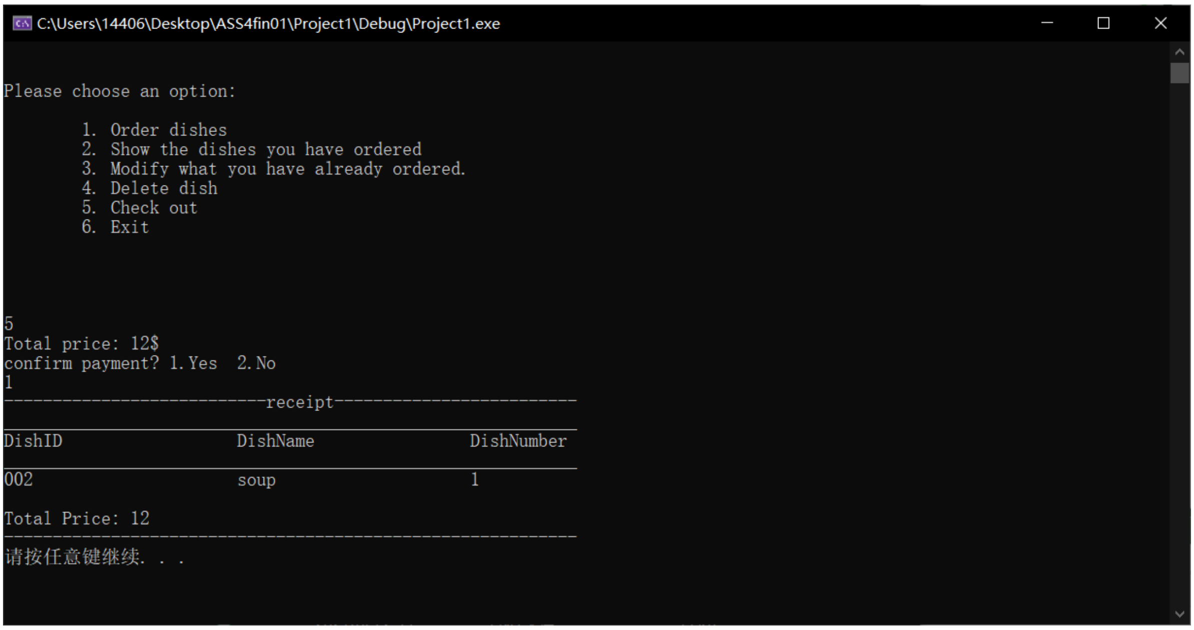
```
***********************************************************
                         MENU
***********************************************************
DishID                  DishName                DishNumber
001                     sushi                   15
002                     soup                    12

***********************************************************




Please choose an option:

        1. Order dishes
        2. Show the dishes you have ordered
        3. Modify what you have already ordered.
        4. Delete dish
        5. Check out
        6. Exit





4
Enter the id of the dish you want to delete:
001
delete successfully!
请按任意键继续. . .
```

Picture[55]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
001                     sushi                   15
002                     soup                    12

***********************************************************




Please choose an option:

        1. Order dishes
        2. Show the dishes you have ordered
        3. Modify what you have already ordered.
        4. Delete dish
        5. Check out
        6. Exit





2
-----------------------------------------------------------
The dish you have ordered is:

DishID                  DishName                DishNumber
002                     soup                    1

The total price is: 12$
-----------------------------------------------------------
请按任意键继续. . .
```

Picture[56]: Screenshot


C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```

Please choose an option:

        1. Order dishes
        2. Show the dishes you have ordered
        3. Modify what you have already ordered.
        4. Delete dish
        5. Check out
        6. Exit





5
Total price: 12$
confirm payment? 1.Yes  2.No
1
--------------------------receipt--------------------------
___________________________________________________________
DishID                  DishName                DishNumber
___________________________________________________________
002                     soup                    1

Total Price: 12
-----------------------------------------------------------
请按任意键继续. . .
```

Picture[57]: Screenshot

`Chef`

The options for `chef` are included in `manager`.

[Discussion]

> **This section will discuss possible vulnerabilities of this program.**

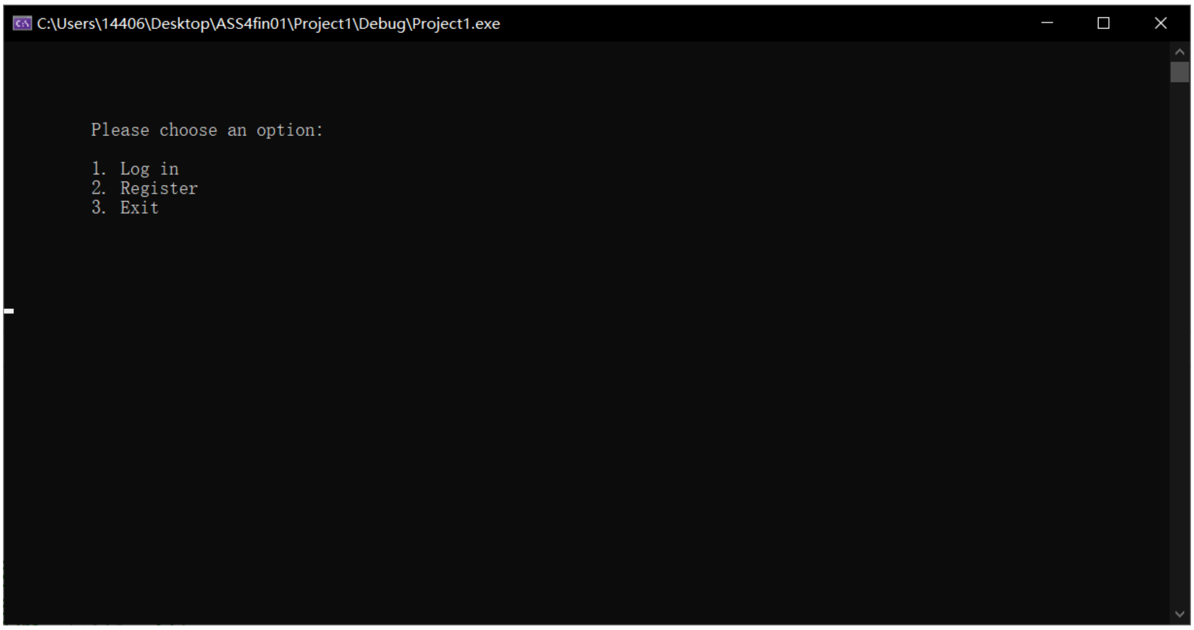
Possible bugs still exist in the program: If the user makes changes to the source text file of the database directly it can lead to new bugs.
Solution: Further encapsulation of the program.

Manual and Display

This section will provide the manual of this restaurant management system.

[Registration and Login in]

The registration or login operation is performed directly according to the corresponding option on the Start menu screen, and the specific demonstration can be found in [`[Restaurant_v2.0]`].



C:\Users\14406\Desktop\ASS4fin01\Project1\Debug\Project1.exe

```
        Please choose an option:

        1. Log in
        2. Register
        3. Exit
```

Picture[58]: Screenshot

[Manager Interface]

The following table shows all the options of the `Manager` operator interface, and specific examples can be found in A.

1. Check raw materials
2. Modify raw materials information
3. Check menu
4. Modify menu
5. Check shopping list
6. Modify shopping list
7. Check user infomation
8. Modify user information
9. Calculate total revenue
10 .Calculate gross profit
11. Check bill records
12. Change bill records
13. Delete bill record.
14. Exit

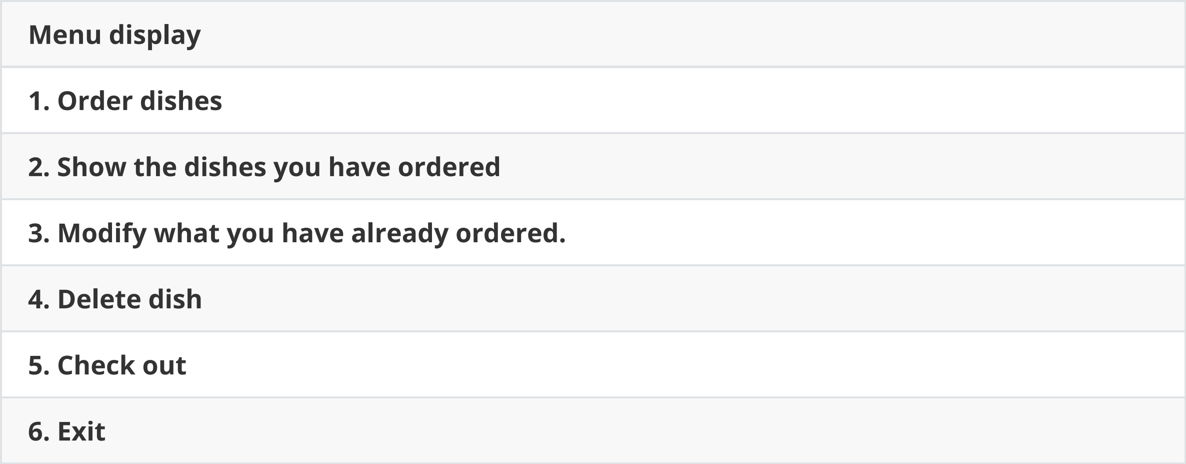
[Chef Interface]

The following table shows all the options of the `Chef` operator interface, and specific examples can be found in `[Restaurant_v2.0]`.

1. Check raw materials
2. Check menu
3. Modify menu
4. Exit

[Customer Interface]

The following table shows all the options of the `Customer` operator interface, and specific examples can be found in `[Restaurant_v2.0]`.



Menu display
1. Order dishes
2. Show the dishes you have ordered
3. Modify what you have already ordered.
4. Delete dish
5. Check out
6. Exit