Hong Kong Diploma of Secondary Education Examination

Information and Communication Technology

School-based Assessment

Elective D: Software Development

Point-of-Sale System

Name: Liu Ho Man

Class: 6D

Year: 2014

Content

SBA Title

Point-of-Sale System

A Point-of-Sale system provides an information system for manager, salesperson, and member to help the operation of shop which improves the communication disable between those people.

You are the IT project manager responsible for the project. You are going to provide solutions for the Point-of-Sale system.

Objective and Analysis

Objective

a) Problem

- In the old shops like supermarket, the operations of shops are disorder, for example: the goods may not place in order due to the customers, the inter-communication between managers and salesperson are not good. Due to the above problems, the operation of a shop will become low efficiency.

b) Situation

- This system is build for supermarket or a grocery store. The managers (administrator) usually use in storehouse to check the items. The salespersons usually use in cashier or the workstation in shop; the workstations are build at the corner of shop to let the salespersons help customers checking the amount of goods. The registered members can also login via the workstations to get the updated information (goods lists) from the system.

Objective and Analysis

Objective

c) Intended User

- Shop Manager
- Salesperson
- Member
- Registration for new member

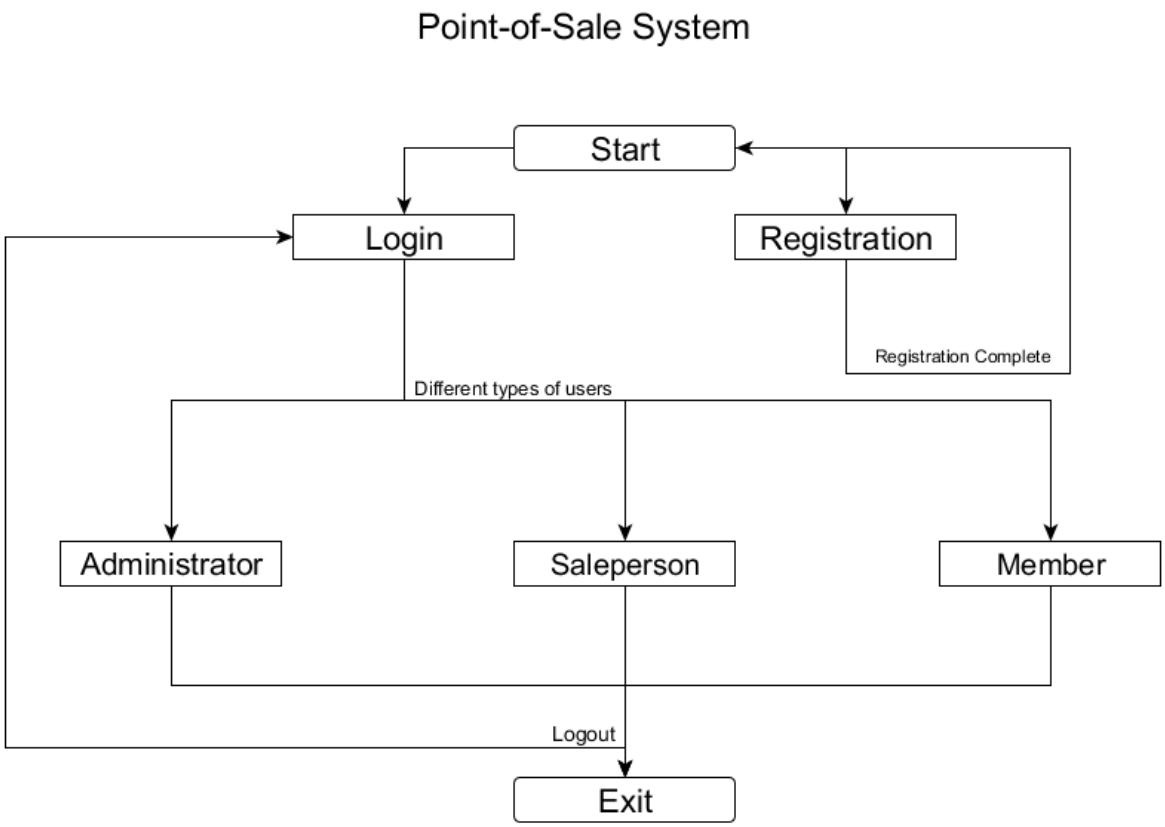
d) Sub-problem

- In the old shops, the attendance records of staffs may not be corrected, so the pos system will provide the attendance system to let the staff record their attendance time and the manager can check all the staff records clearly.

Objective and Analysis

Analysis

a) System chart to show the main idea for the system



Objective and Analysis

Analysis

b) Consider different kinds of the programming languages

- C
- C++
- Java
- Visual Basic
- Pascal

Objective and Analysis

Analysis

b) Consider different kinds of the programming languages

(i) C

Advantages :

- ☞ All system can be compiled
- ☞ Small in size
- ☞ Widely be used
- ☞ Free to use

Disadvantages :

- ☞ No object orientation
- ☞ Errors occur in cross-platform
- ☞ No garbage collection

Objective and Analysis

Analysis

b) Consider different kinds of the programming languages

(ii) C++

Advantages :

- Small in size
- Widely be used
- Free to use
- Object orientation

Disadvantages :

- Difficult to use
- Errors occur in cross-platform
- No garbage collection

Objective and Analysis

Analysis

b) Consider different kinds of the programming languages

(iii) Java

Advantages :

- ☞ Object orientation
- ☞ Cross-platform
- ☞ Multi-threading
- ☞ Garbage collection

Disadvantages :

- ☞ Not effectively
- ☞ Large in size
- ☞ No pointers

Objective and Analysis

Analysis

b) Consider different kinds of the programming languages

(iv) Visual Basic

Advantages :

- ☞ GUI system
- ☞ Easy to use
- ☞ Easy to learn

Disadvantages :

- ☞ Only compile in Windows or MS-DOS
- ☞ Large in size
- ☞ Need fee for software

Objective and Analysis

Analysis

b) Consider different kinds of the programming languages

(v) Pascal

Advantages :

- ☞ Object Orientation
- ☞ Small in size
- ☞ Free to use

Disadvantages :

- ☞ Less support
- ☞ Difficult to use

Objective and Analysis

Analysis

b) Consider different kinds of the programming languages

Due to the above disadvantages of different kinds of programming languages like difficult to use, large in size, and not effectively, so I will use C language to be the programming language in this system.

Although C language also has lots of disadvantages like cross-platform errors, not in object oriented programming, those disadvantages can be solved.

For the cross-platform errors, this point-of-sale system is mainly be used in a same and common platform only, cross-platform is less opportunity to occur, so this disadvantage is not serious.

Design and Implementation

Design

a) Hardware platform and Software

(i) Hardware platform

- Low-requirement
- Keyboard
- Monitor

(ii) Software

- Operating systems that can support .exe filename extension
  - DOS
  - Microsoft Windows
  - Symbian

Design and Implementation

Design

b) User Interface

(i) Compare different types of user interfaces

Interface / Advantage	CLI	TUI	GUI
How to control?	Input command	Arrow keys	Pointing devices
Users use	Hard	Easy	Easy
Appearance	Bad	Good	Good
Feasibility	✓	✓	×

* CLI = Command Line Interface
TUI = Text User Interface
GUI = Graphical User Interface

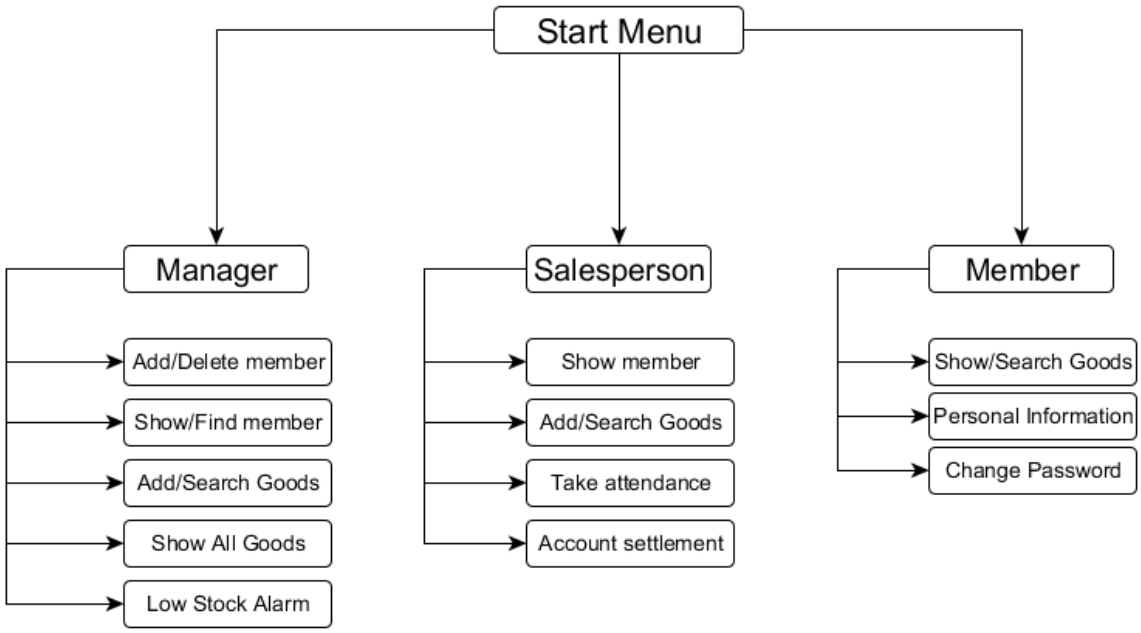
(ii) Choice of interface to use mainly in this system

- ✓ Text User Interface

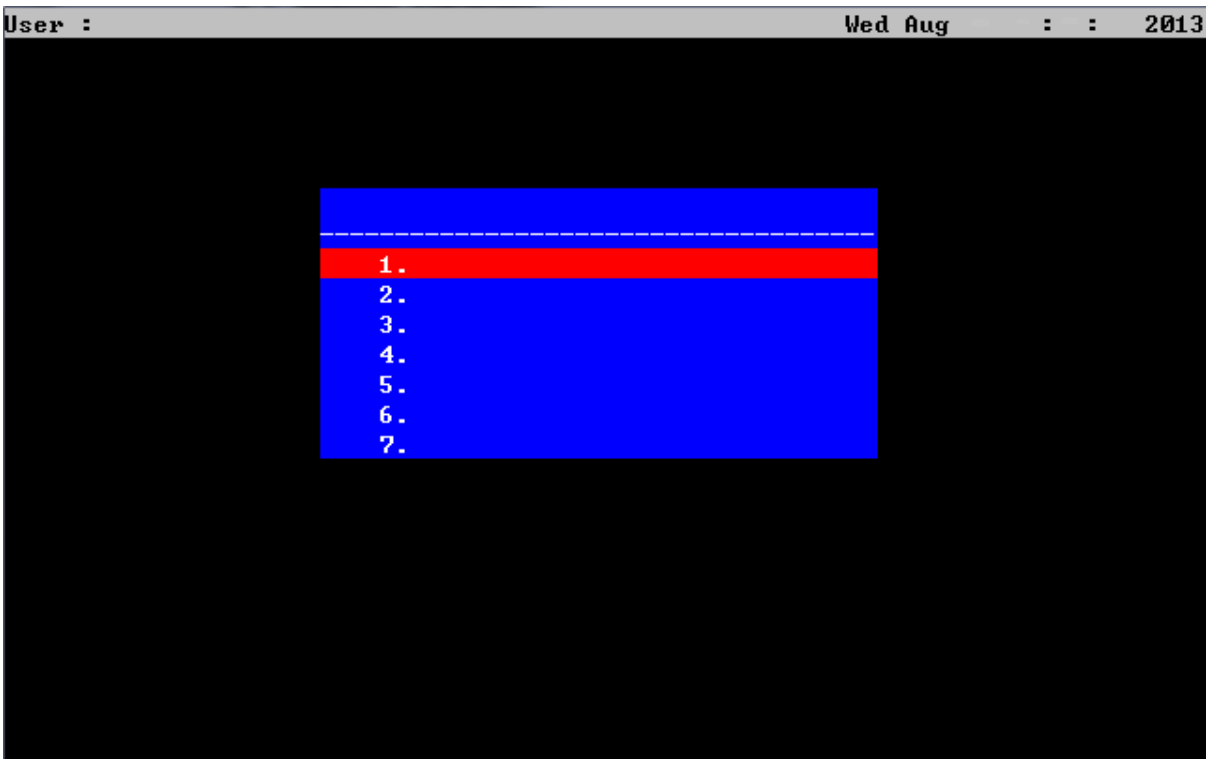
Design and Implementation

Design

c) Menu Design



d) Designed Screen Layout

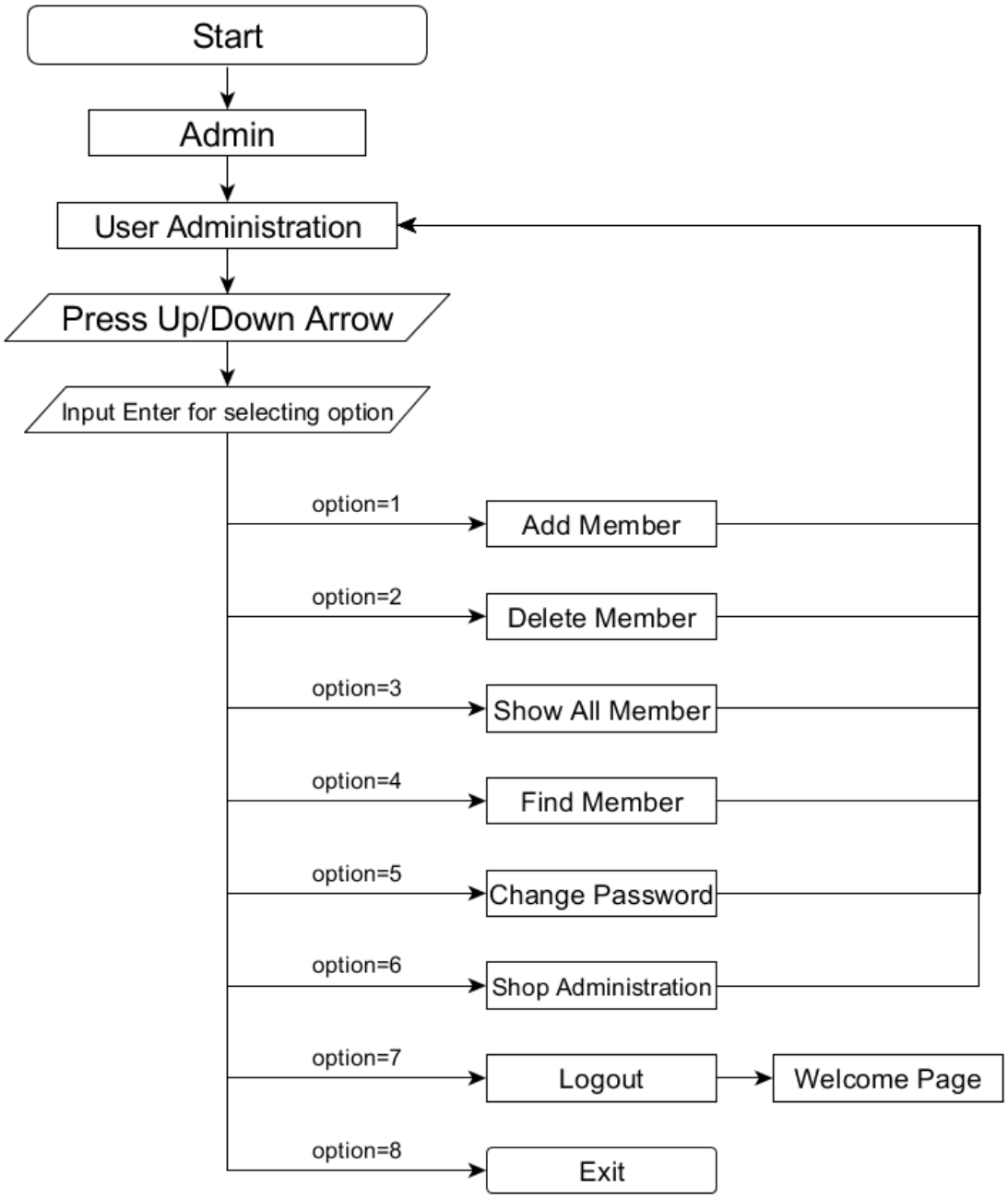


Design and Implementation

Implementation

a) Flow Chart of System

(i) User Administration of Manager

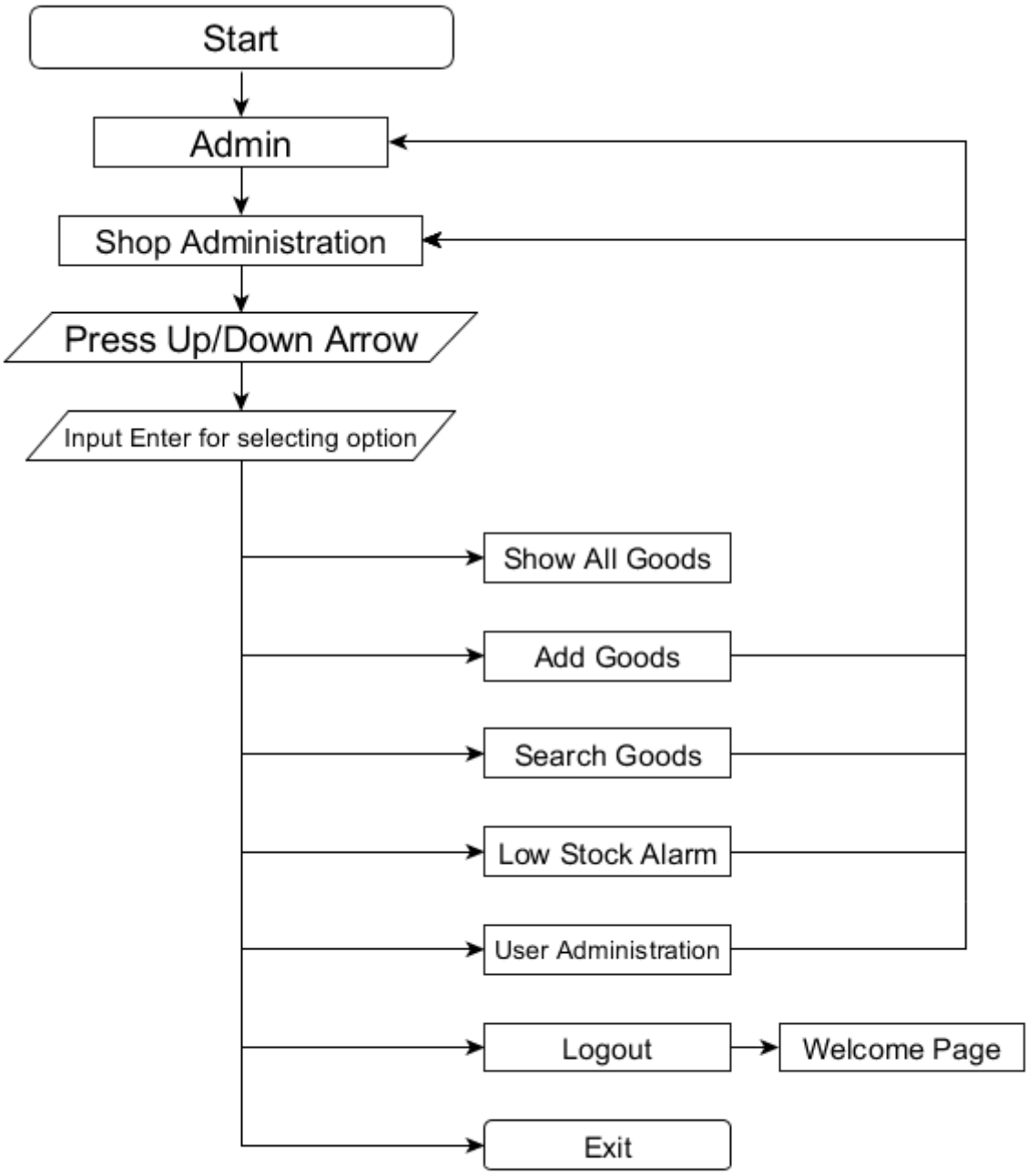


Design and Implementation

Implementation

a) Flow Chart of System

(ii) Shop Administration of Manager

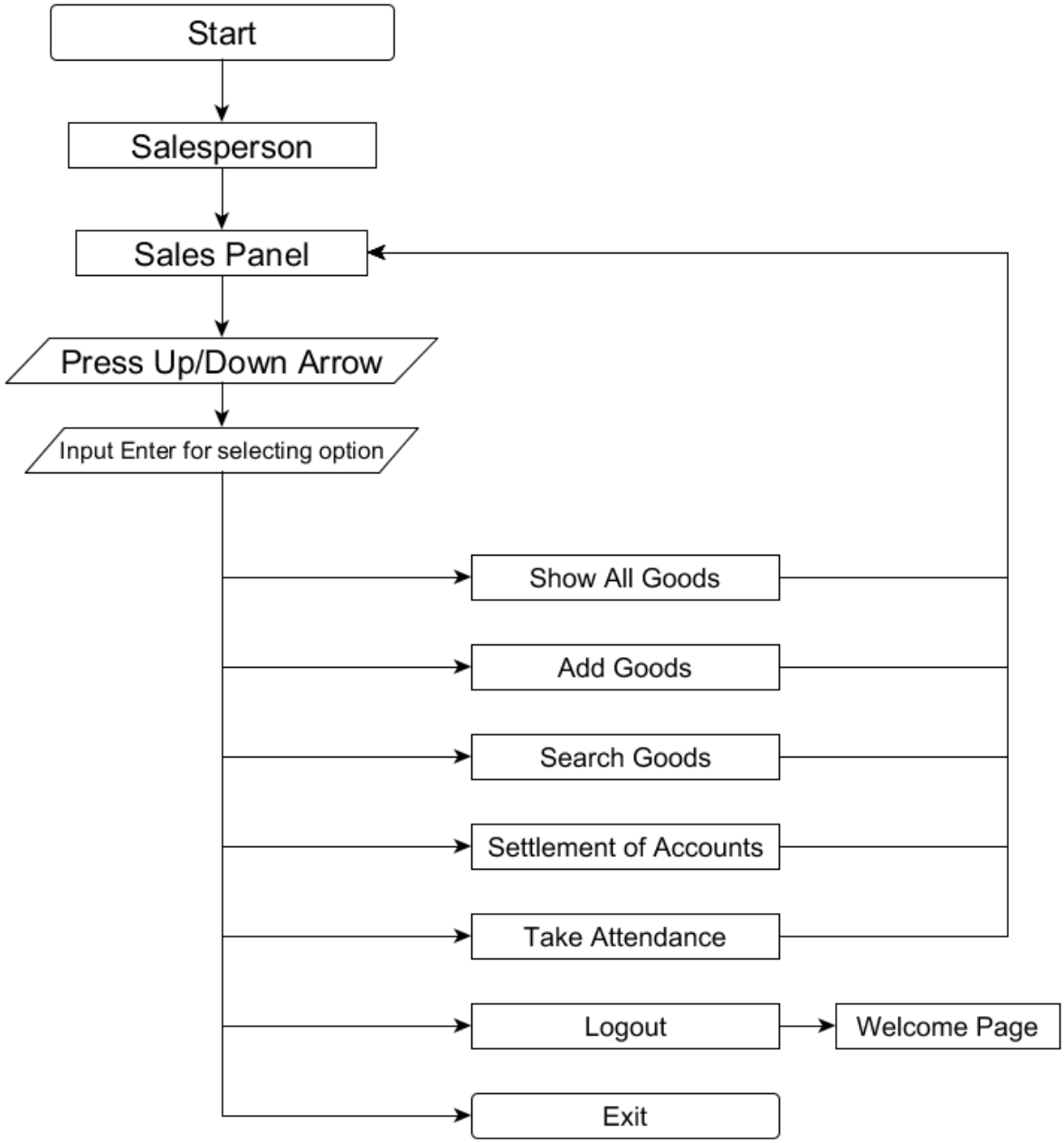


Design and Implementation

Implementation

a) Flow Chart of System

(iii) Salesperson

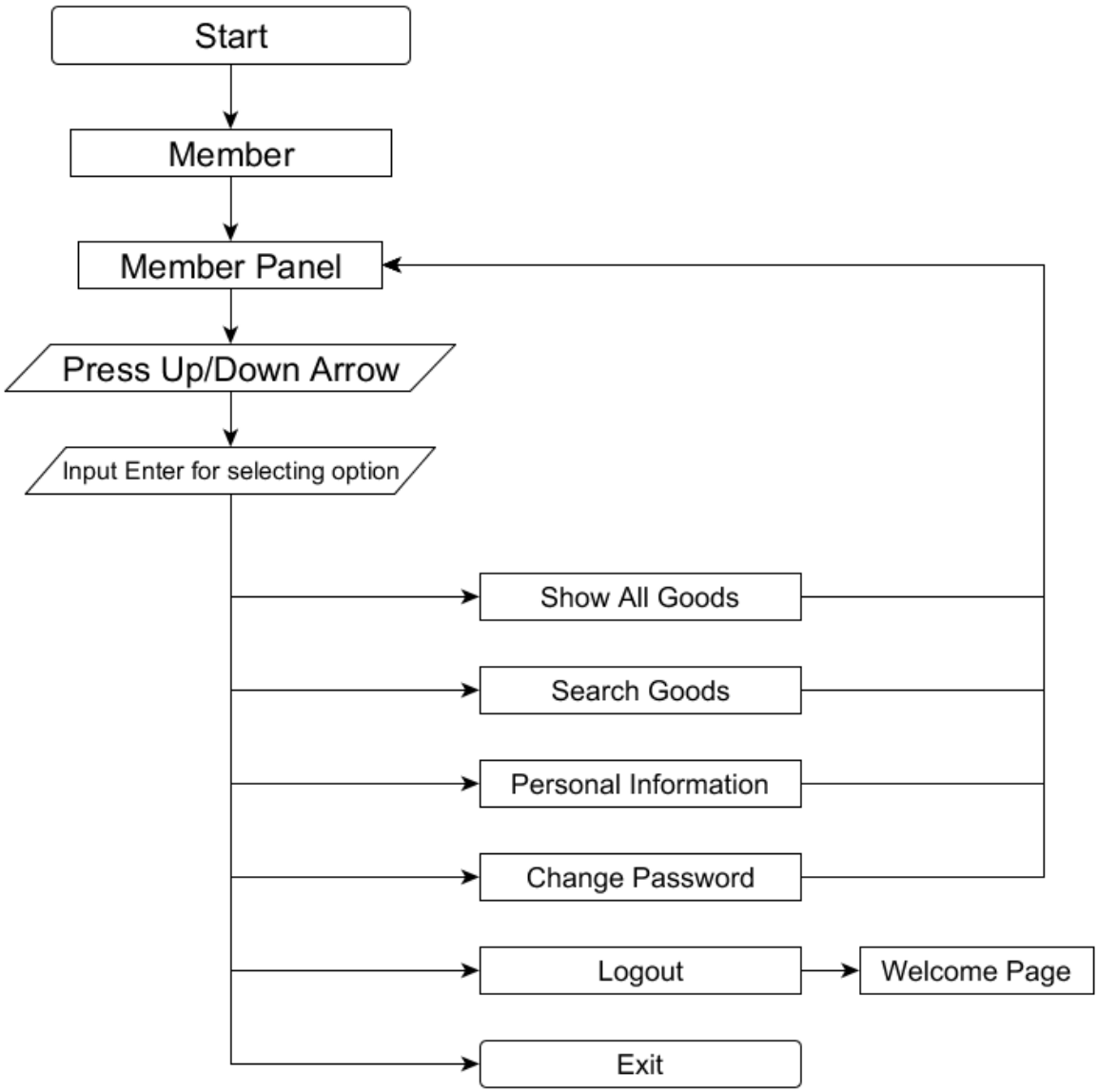


Design and Implementation

Implementation

a) Flow Chart of System

(iv) Member

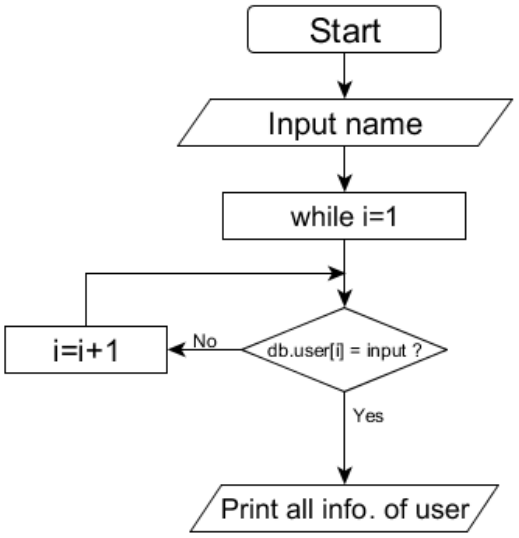


Design and Implementation

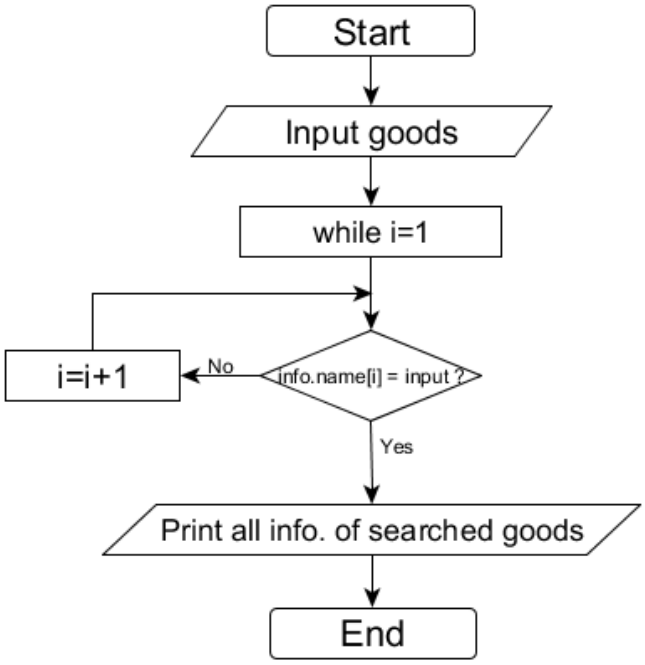
Implementation

b) Flow Chart of Functions

(i) Search User



(ii) Search Goods

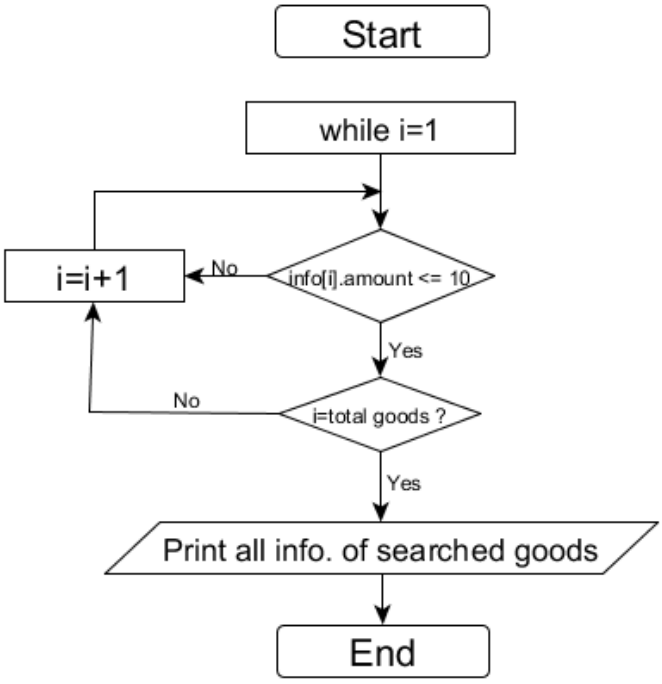


Design and Implementation

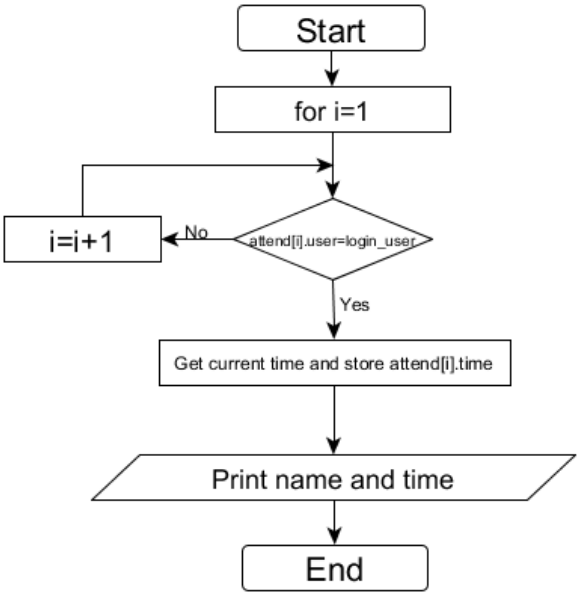
Implementation

b) Flow Chart of Functions

(iii) Low Stock Alarm



(iv) Take attendance

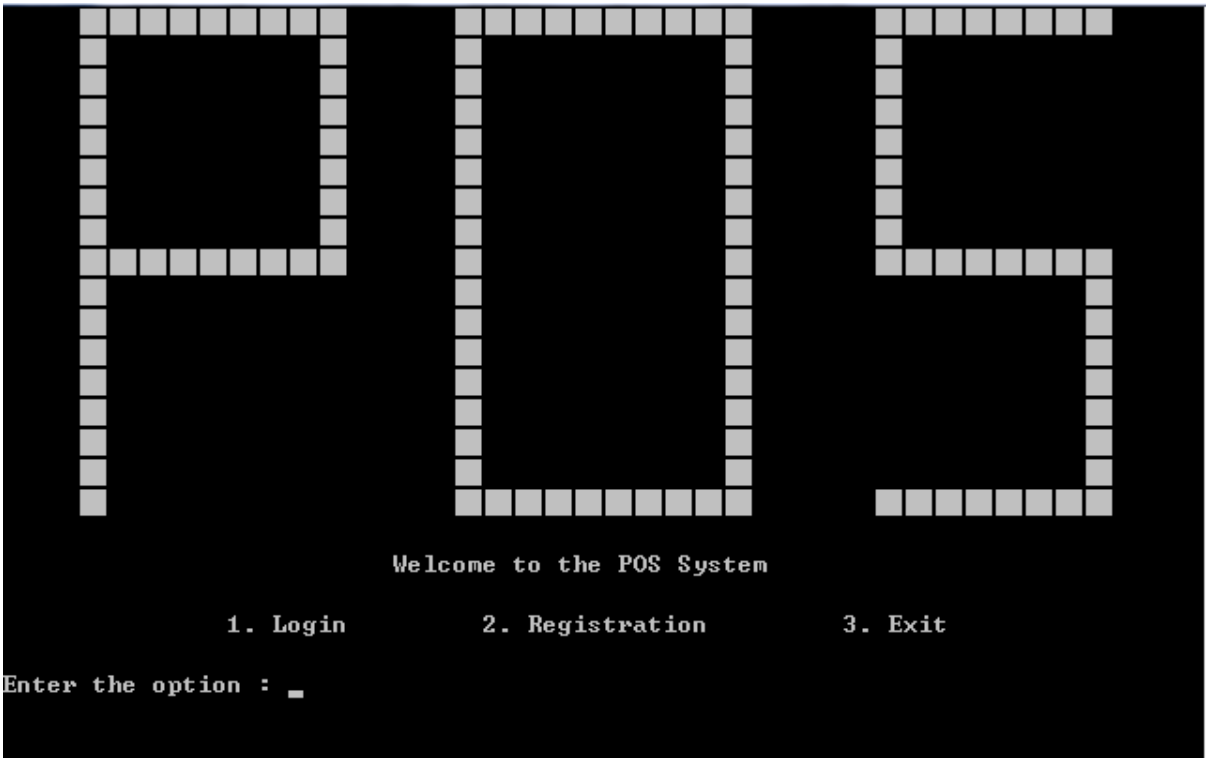


Design and Implementation

Implementation

c) Actual Screen Layout

(i) Welcome Page

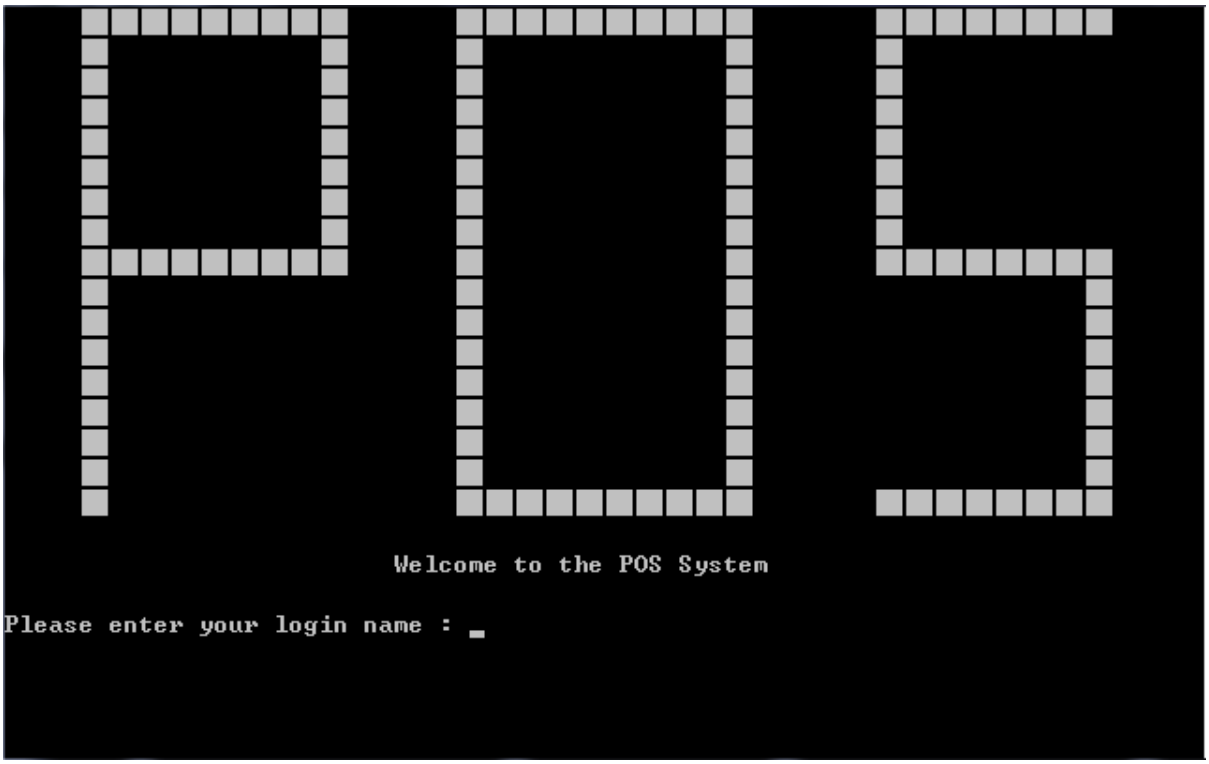


Design and Implementation

Implementation

c) Actual Screen Layout

(ii) Login Page

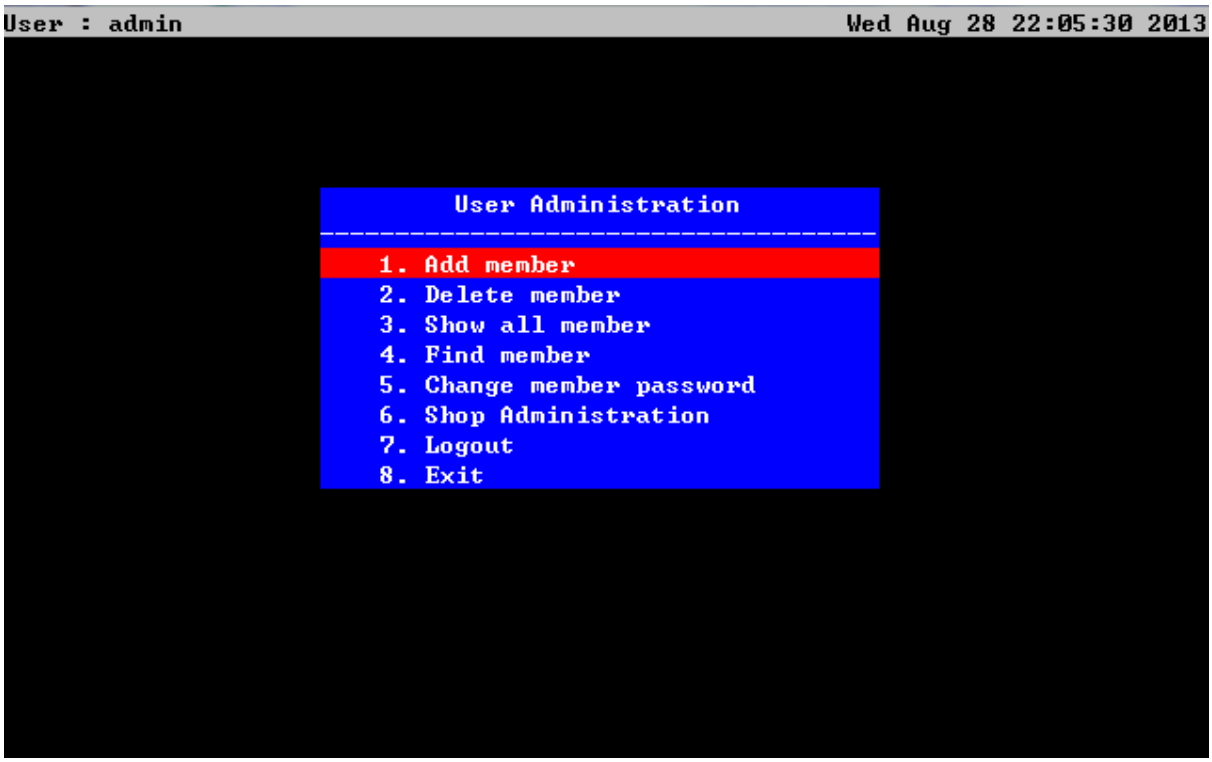


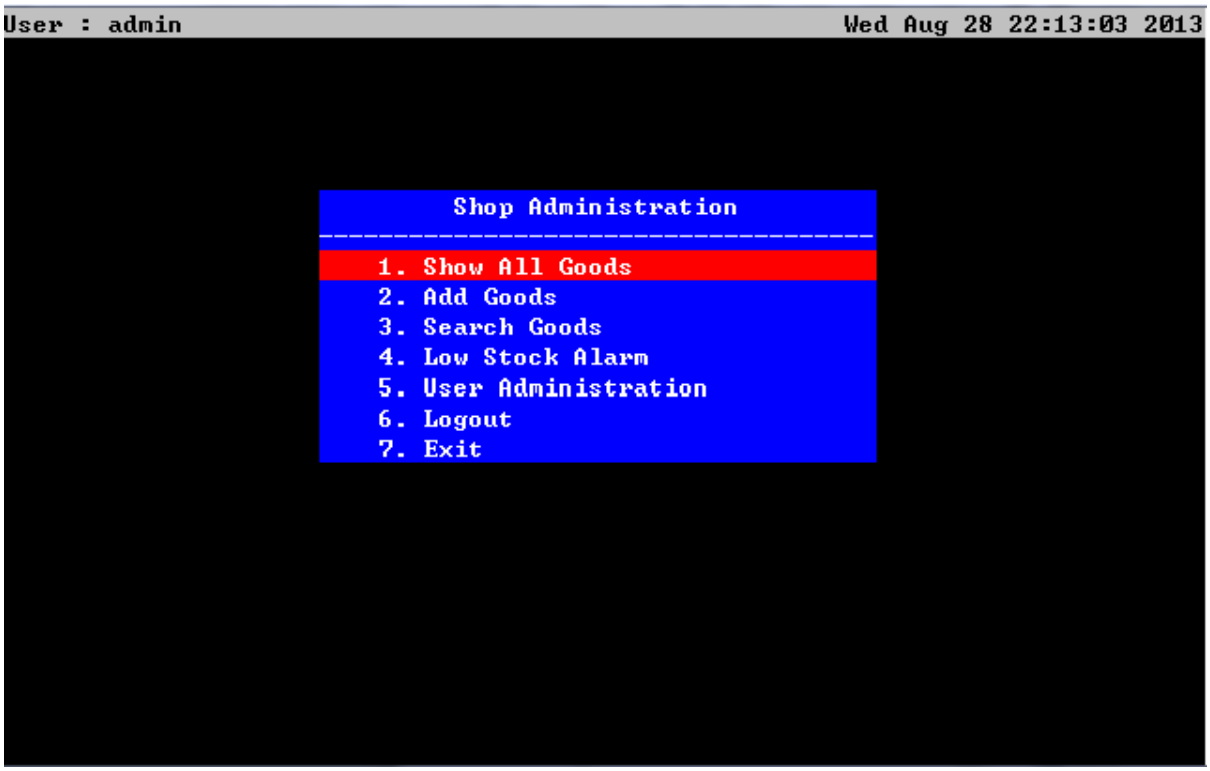
Design and Implementation

Implementation

c) Actual Screen Layout

(iii) Administrator Panel



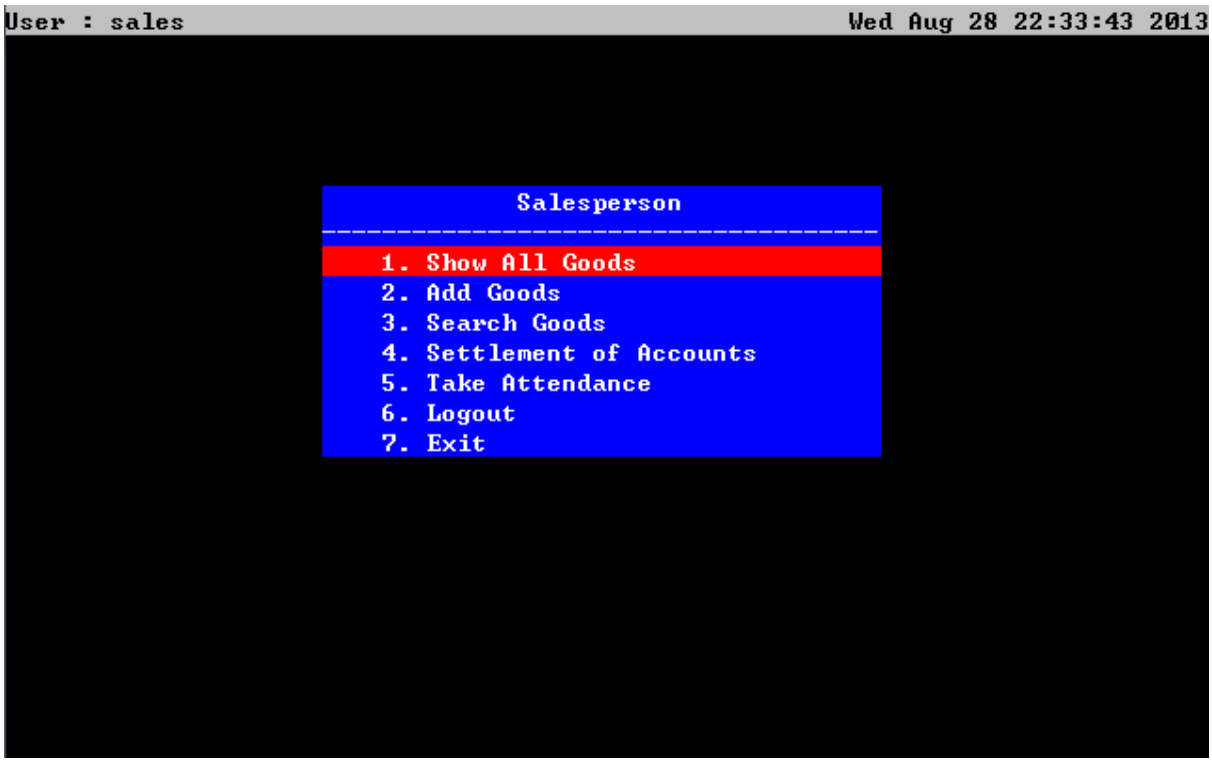


Design and Implementation

Implementation

c) Actual Screen Layout

(iv) Salesperson Panel

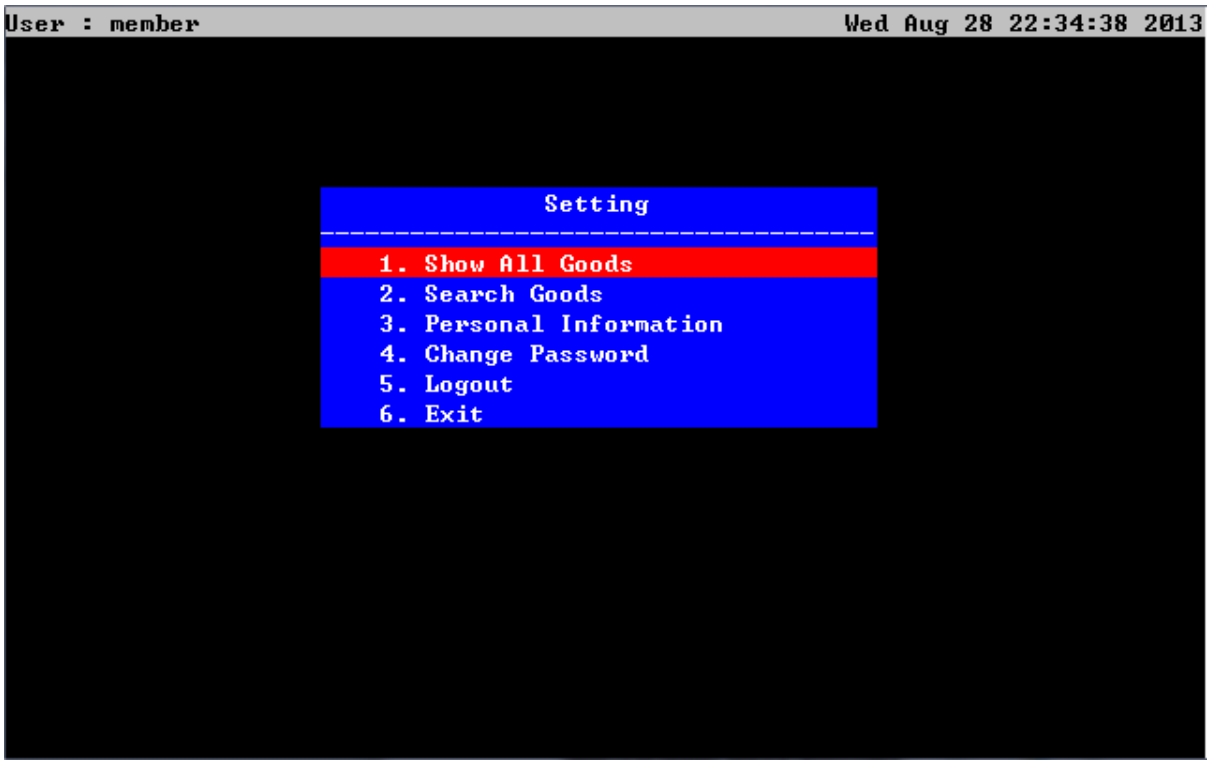


Design and Implementation

Implementation

c) Actual Screen Layout

(v) Member Panel



Design and Implementation

Implementation

c) Actual Screen Layout

(vi) Registration Page

Practical ICT Skills

Practical ICT Skills

a) Programming and Debugging Tool

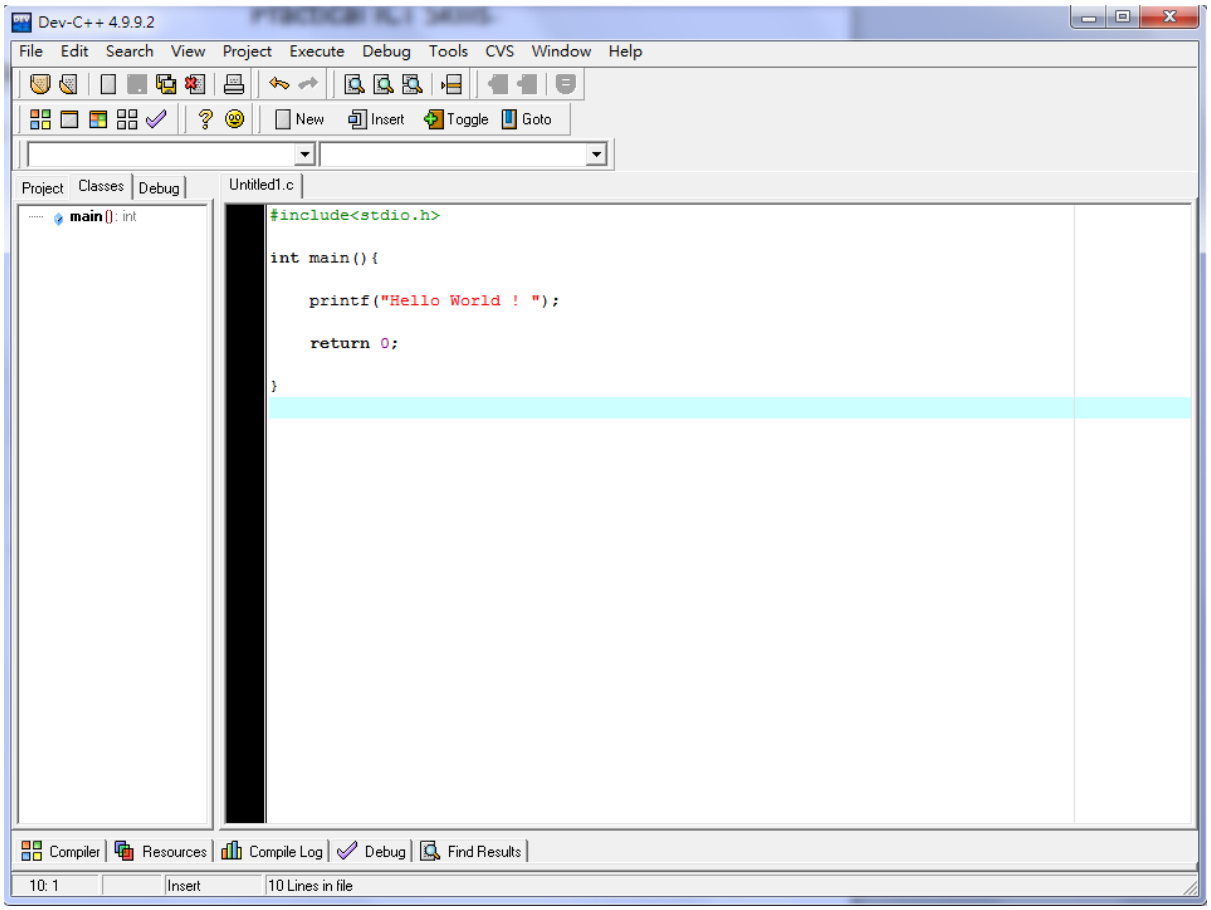
Software Name : Bloodshed Dev-C++

Software Type : Free and open source programming tool for several programming languages like C, C++, Pascal

Supported platform : Windows 95/98/NT/2000/XP

URL : http://www.bloodshed.net/devcpp.html

Screenshot :



Practical ICT Skills

b) Technical Drawing

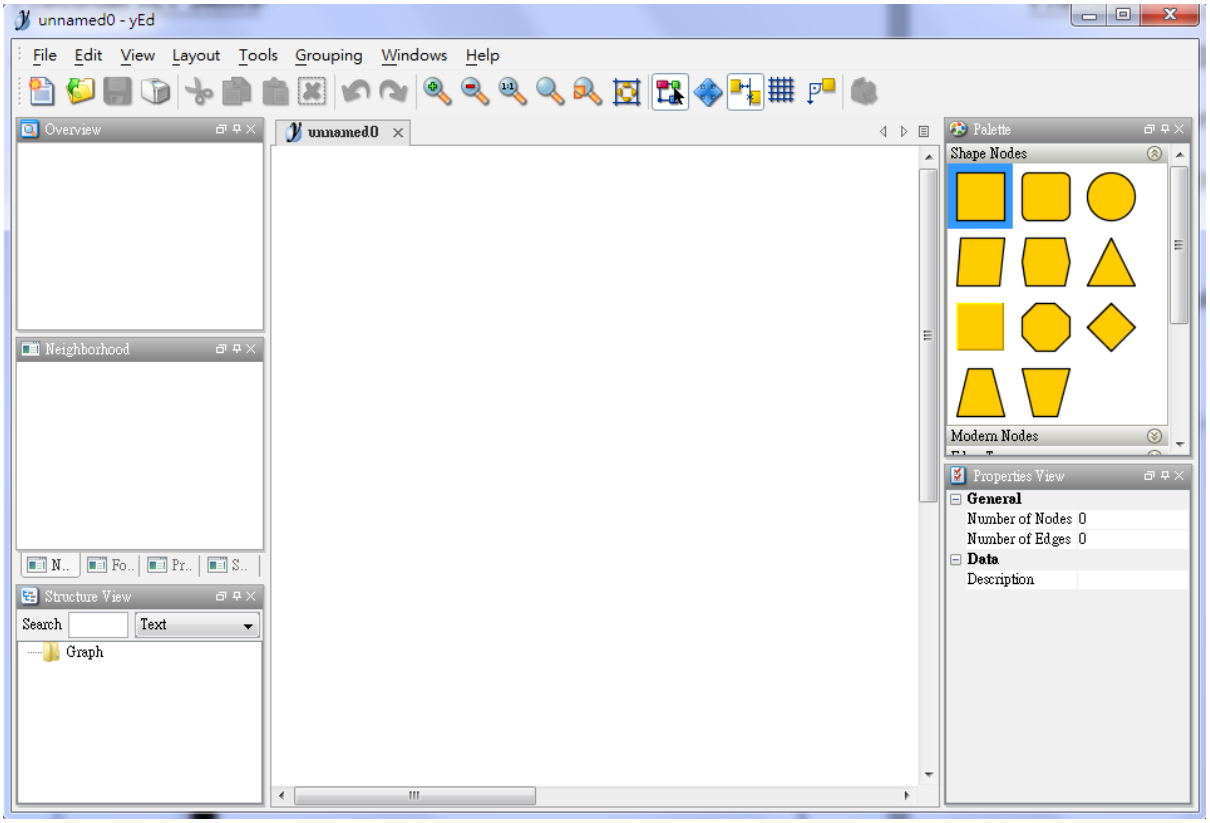
Software Name : yEd Graph Editor

Software Type : Free desktop application for generating high-quality diagrams

Supported platform : Windows, Unix/Linux, and Mac OS X

URL : http://www.yworks.com/en/index.html

Screenshot :

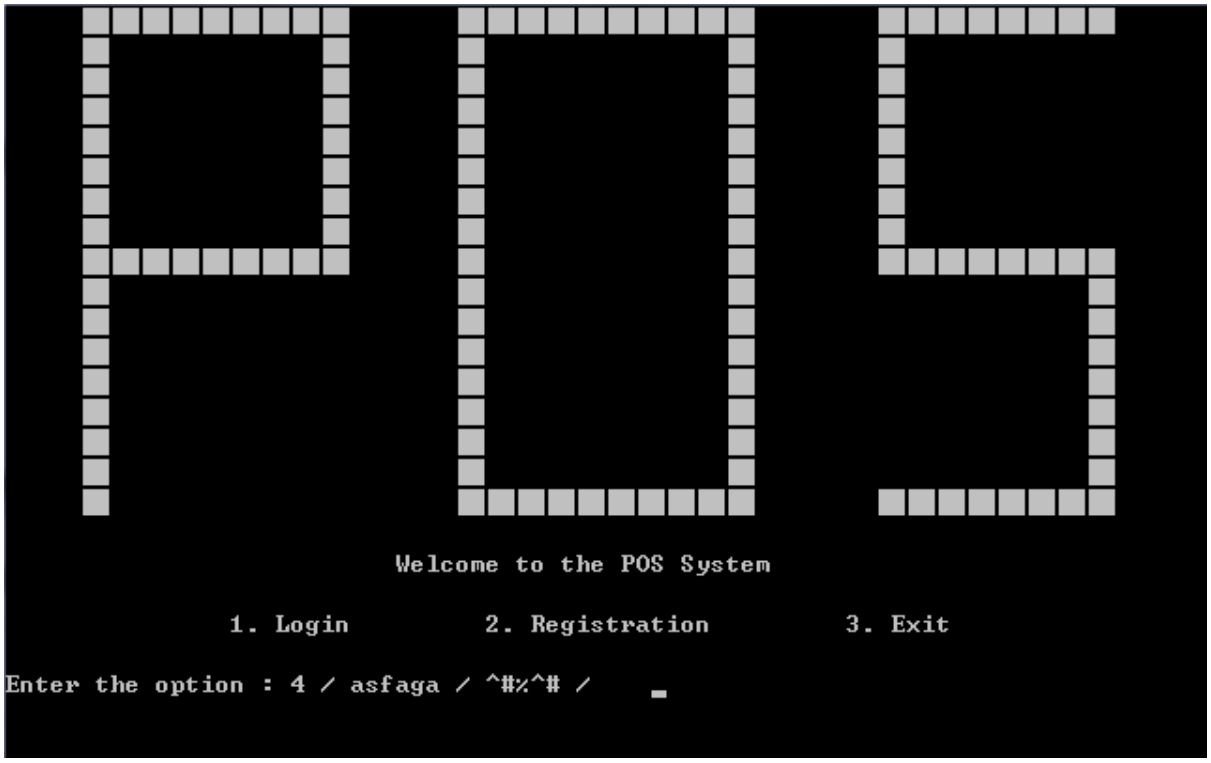


Testing and Evaluation

Testing

a) Test Case 1 : Welcome option

Input Value	Not equal to 1 , 2 , 3



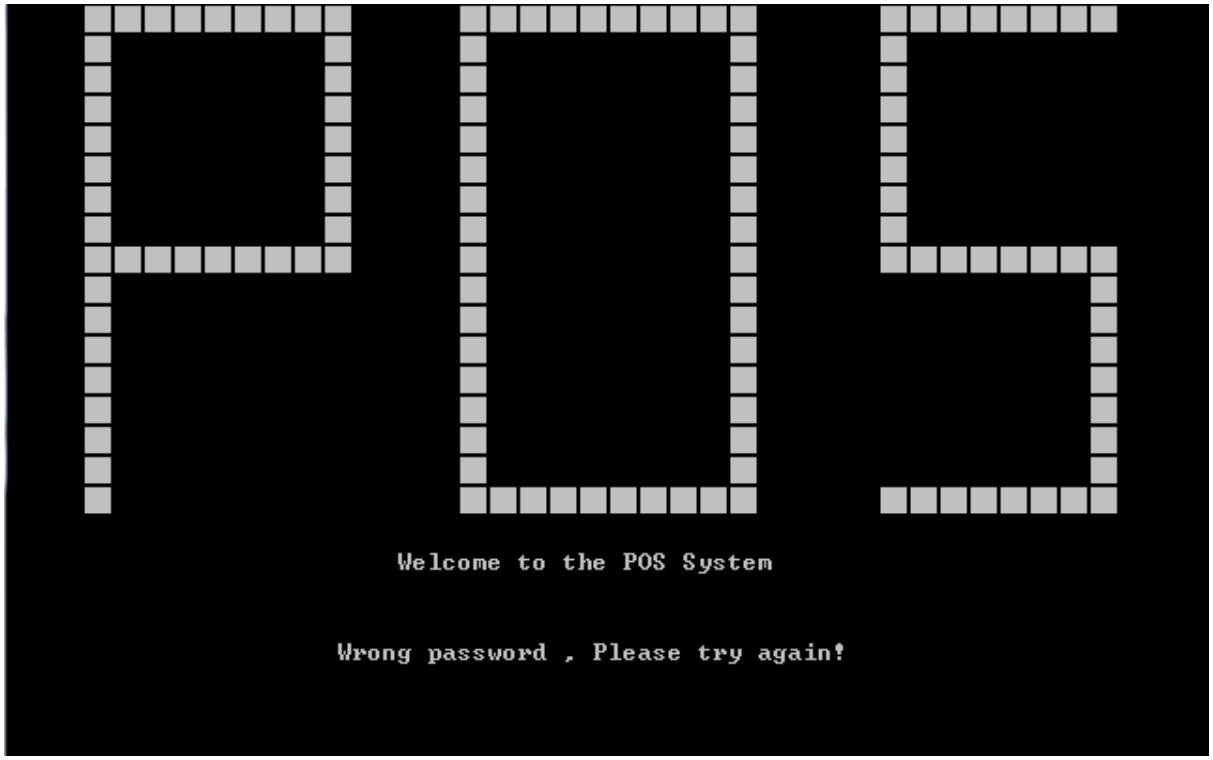
Return Value	Input error
Result	Return to the welcome page

Testing and Evaluation

Testing

b) Test Case 2 : Login Input

Input Value	Wrong Password



Return Value	Input password and Data are not equal
Result	Return to the login system

Testing and Evaluation

Testing

c) Test Case 3 : Login Input

Input Value	Not exist username and password

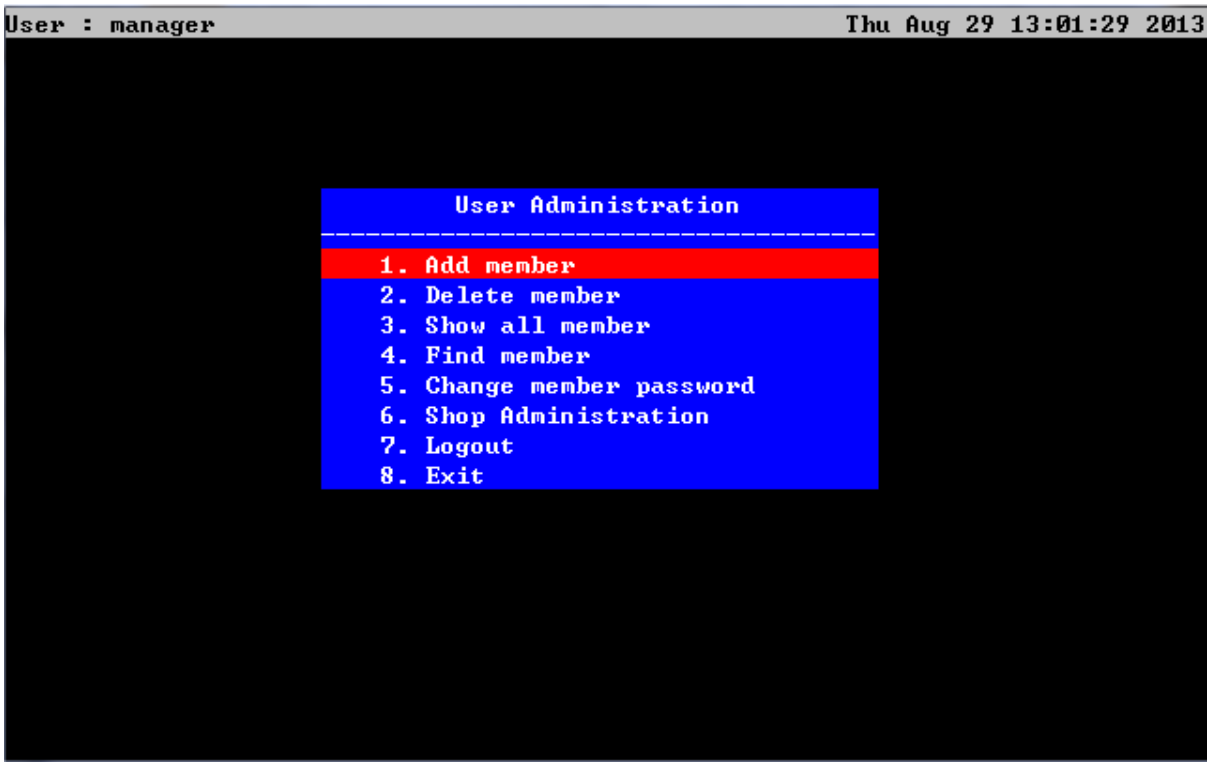
Return Value	Input username and Data are not equal
Result	Return to the login system

Testing and Evaluation

Testing

d) Test Case 4 : Menu Panel

Input value	Any Buttons except Up/Down arrows



Return Value	Not equal to Up/Down arrows
Result	Nothing happens

Testing and Evaluation

Testing

e) Test Case 5 : Paid of money (Salesperson)

Input Value	Less than total money

```
                    Jay's Market Place
      Shop 1-39, JJBox, Harvest Road, Kowloon, Hong Kong
                   Tel:+852 - 2666 9868
____________________________________________________________

              Name                     Amount          Price
       --------------------         ------------   ------------
1.     Apple                        10             10 x $10
                                                   $100
2.     Orange                       10             10 x $20
                                                   $200
3.     Pineapple                    10             10 x $30
                                                   $300
4.     Watermelon                   10             10 x $40
                                                   $400
5.     Lemon                        10             10 x $50
                                                   $500

____________________________________________________________

  Total       :      $1500
  Paid        :      $_
 Not Enough Money ! Please Press Any Button to continue!
```

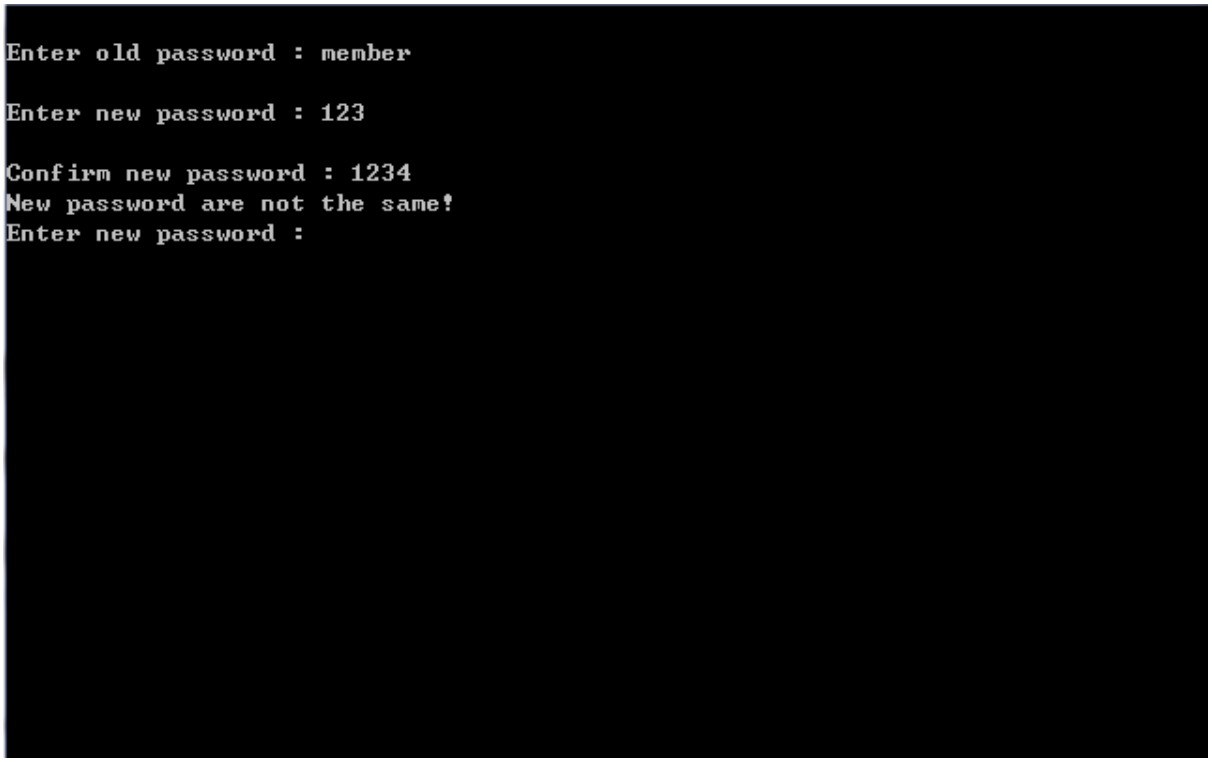
Return Value	Return is negative number
Result	Input paid again

Testing and Evaluation

Testing

f) Test Case 6 : Confirm New Password (Member)

Input Value	Two inputs are not the same



Return Value	Two inputs are not equal
Result	Input new password again

Testing and Evaluation

Testing

g) Testing Results

- All valid data are inputted for testing that the system can work normally
- When the invalid data are inputted, the above results are come out that can prove the system can handle improper entries
- For the boundary values, this system has set the exact boundary. If inputs are within the boundary, the values will be correct

Testing and Evaluation

Evaluation

a) Successful Case

(i) Not user-friendly

- When some wrong cases are inputted, test case 1 will only return back to the welcome page, but it does not show the error sentence to let the users know what errors are occurred.

b) Fail Case

(i) No input testing of registration

- When the new members registry, the information has to input, but there is no testing to test the inputs. The new members may input some wrong inputs, e.g. the phone number may not be 8 digits, the email address does not include @.

Conclusion and Discussion

Conclusion

- In this SBA program, I have improved my programming skills and I learnt some extra commands, e.g. ‘setbuf(stdin,NULL)’ is used for clearing the buffer of the previous program, ‘textcolor()’ is used for changing the colour of text.
- For the time management, I have designed for the timetable to do the project. Before the middle of August, it is the time for me to write the program. After the middle of August, it is the time for me to write the report of the SBA project.

Conclusion and Discussion

Discussion

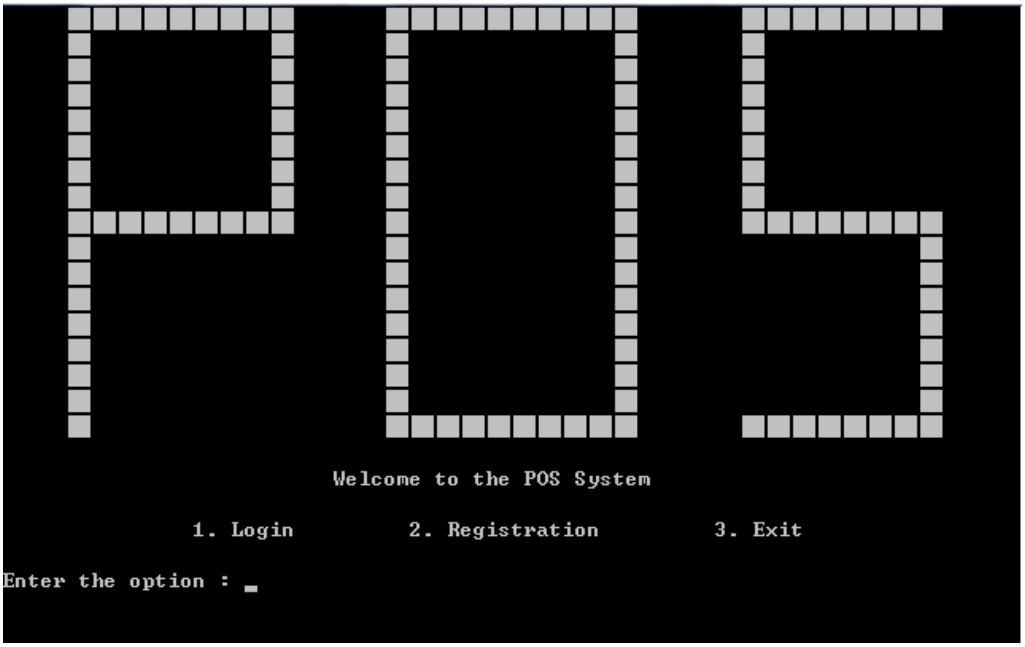
- For the project, the registration testing has not done due to the limiting of time. If time is enough for me to write more, I think I can do the registration testing.
- For the clock of program that is in the top of the page, if it can continue to do in the future, I will improve the clock that can be displayed at any pages of the program, not only at the page of panel.

Documentation

a) User Manual

(i) All users

1. Open the Start.bat to start the POS system

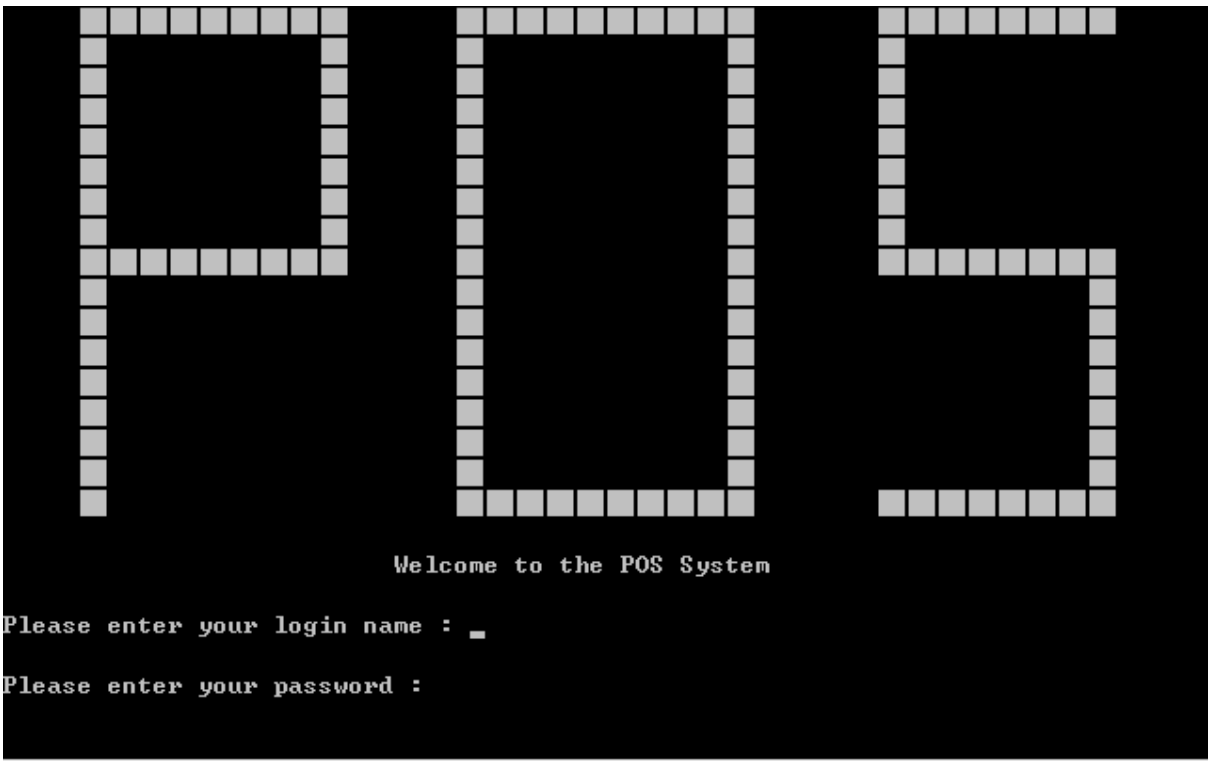


2. Enter the option that you want to do (Option 1 for login, Option 2 for registration Option 3 for exit the system)

Documentation

a) User Manual

(i) All users



3. Enter the login name. After finish inputting the login name, enter has to be pressed and the password is inputted afterward.
   (Default setting of administrator : admin admin)
4. If the error sentence is displayed, press any button to return to the login page.

Documentation

a) User Manual

(i) All users

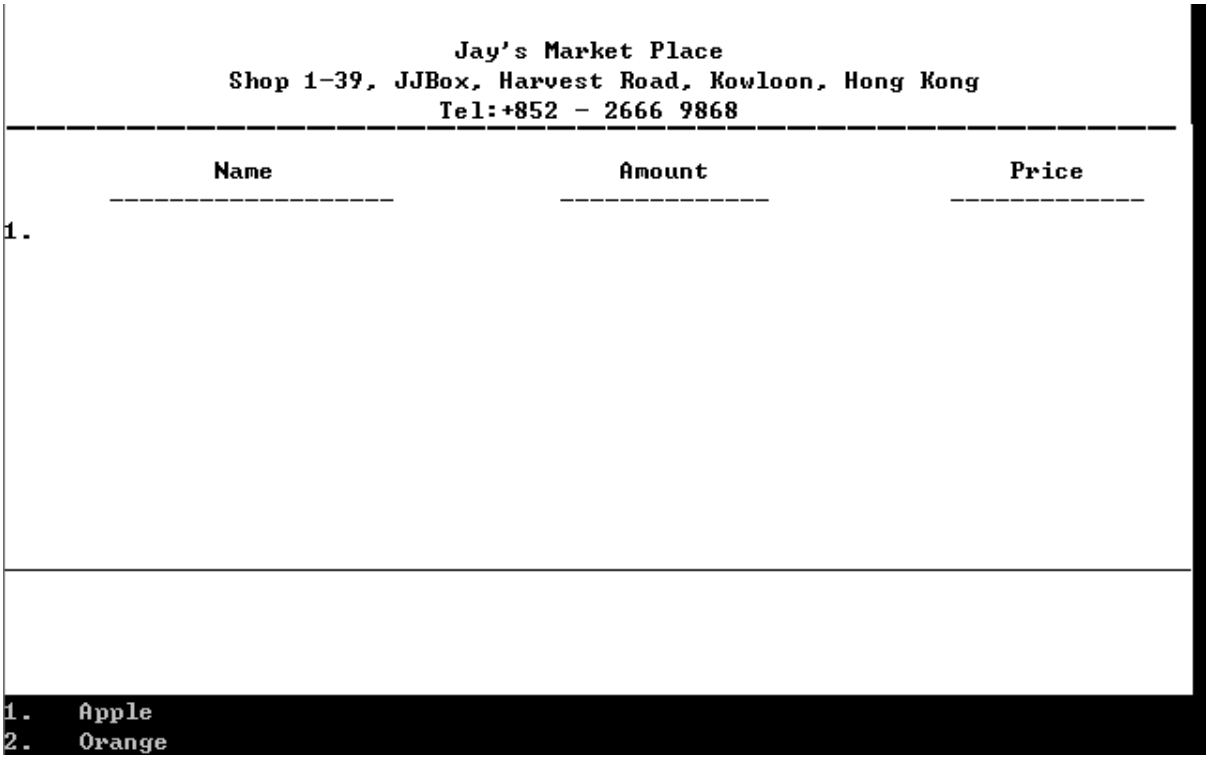
5. Use the up or down arrows to control the option and the red row represents the option that user select.
6. Press enter key to confirm your option.

(The upper row displays the logged in user and the date & time)

Documentation

a) User Manual

(ii) Salesperson part



1. Input the code of product shown below and then press enter key. If the code of product does not exist, you have to input again.
2. After step 1, input the amount of product. If the amount of product is larger than the stock, you have to input again.
3. After finish inputting the product and amount, input code '9999' to let the calculation stop.
4. After calculation, you have to input the paid and the return money

will be shown.

Documentation

a) User Manual

(iii) Registration part

1. Name : Input your name
2. Gender : Either M or F
3. Age : input number between 0-99
4. Address : Input your personal address
5. Phone number : Input 8 digit integers (XXXX XXXX)
6. E-mail address : Input personal email (xxxxxxxx@xxxxx.xxxx)
7. Password & Confirm Password : Two of them must be same

Documentation

b) Reference

http://stackoverflow.com/questions/3402643/most-efficient-way-to-get-current-time-date-day-in-c

Reply 4 : ctime(); to get the current time

http://sourceforge.net/projects/conio/files/devpak/CONIO%202.0/

To get the better version of conio.h library which has textcolor() function

http://www.programmingsimplified.com/c/conio.h/gotoxy

To learn the function of gotoxy()

http://www.programmingsimplified.com/c/conio.h/kbhit

To learn the function of kbhit()

http://stackoverflow.com/questions/10463201/getch-and-arrow-codes

Best answer : To know the concept of detecting up and down arrows and know the coding of arrows