

EEE 102

C++ Programming

and

Software Engineering II

Assessment #4

SDP Report

Student Name	Student ID
Xinyu Liu (Team Leader)	1614270
Kai-Yu Lu	1614649
Sahand Sabour	1614650
Jiaqi Tu	1612328

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Students are requested to rate sincerely their contributions (1=low,5=High) as well as the percentage of their work load (%) during the project development process.
Note that summation of all the students' work load for each specific item, e.g., coding, should be 100%.

Kai-Yu Lu 1614649		Spec	Design	Coding	Testing	Doc.	How did the student appreciate the work within the group?
Name & ID	Rate	4	4	4	4	5	I attend every meeting and complete every task distributed from the team leader.
	Work Load	50%	35%	20%	15%	45%	

Students are requested to rate sincerely their contributions (1=low,5=High) as well as the percentage of their work load (%) during the project development process.
Note that summation of all the students' work load for each specific item, e.g., coding, should be 100%.

Sahand Sabour 1614650		Spec	Design	Coding	Testing	Doc.	How did the student appreciate the work within the group?
Name & ID	Rate	4	4	4	4	5	I attend every meeting and complete every task distributed from the team leader.
	Work Load	20%	35%	35%	15%	30%	

Students are requested to rate sincerely their contributions (1=low,5=High) as well as the percentage of their work load (%) during the project development process.
Note that summation of all the students' work load for each specific item, e.g., coding, should be 100%.

Jiaqi Tu 1612328		Spec	Design	Coding	Testing	Doc.	How did the student appreciate the work within the group?
Name & ID	Rate	4	4	4	4	5	I attend every meeting and complete every task distributed from the team leader.
	Work Load	10%	15%	15%	55%	10%	

Students are requested to rate sincerely their contributions (1=low,5=High) as well as the percentage of their work load (%) during the project development process.
Note that summation of all the students' work load for each specific item, e.g., coding, should be 100%.

Xinyu Liu 1614270		Spec	Design	Coding	Testing	Doc.	How did the student appreciate the work within the group?
Name & ID	Rate	4	4	5	4	5	I attend every meeting and distribute the tasks reasonably to every teammate.
	Work Load	20%	15%	40%	15%	15%	

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1. Problem statement

This assignment requires the students to design and program a Warehouse Management System by using C++. The circumstance is that a team is working for a logistic company, who needs a sustainable working system for the arrangement of their warehouses.

The description for customer specifications is as follows:

This company has a total of 6 warehouses, 2 large and 4 small, where the customer goods can be stored. Regarding the space of a large warehouse, it could hold 50*10 standard cargo containers. In terms of the space of a small warehouse, it could hold 40*10 small cargo containers. As for the user of the program, there are two types of users defined for this program: keeper and customer.

The keeper has the authority to edit the information regarding the warehouses, the goods and also customers. On the contrary, the customer is not allowed to modify any of the mentioned information. However, the customer could use this management system to search for goods that had already been stored, browse through the warehouses, add and/or remove goods.

The detailed descriptions of system specifications are provided below:

- 1) The keeper and the customer are the types of the user.
- 2) The keeper has the authority to edit the information of the warehouse, customer and the stored goods.
- 3) The keeper is allowed to browse, add, modify and delete through the mentioned warehouses.

- 4) The user (keeper or customer) can search and display the desired information.
- 5) A batch of goods would be stored in the same warehouse if possible.
- 6) The system would calculate the total storage fees based on the storing duration and the number of occupied cargo containers.
- 7) Although it is not mentioned by the task sheet, this management system would also be able to record user's saved progress and restore the progress once the program is relaunched.

2. Analysis

The analysis of this program is divided into two main parts: the keeper and the customer. The detailed analysis for each is provided respectively below:

Inputs:

As both keeper or customer, the user has to first enter a username. It should be mentioned that the keyword "Rui" was used as the keeper's username and any other username is considered to be a customer.

As the keeper:

Firstly, the keeper is presented with the menu containing two choices: edit information or log out. Consequently, if the user chooses to edit information, they are asked to input a number from 1- 6 to choose the specific warehouse that they wish to edit: 1 and 2 being the big warehouses while 3-6 are for the small warehouses.

After choosing to edit the information, the keeper has to input a number from 1-4. Consequently, each of these options require the keeper to enter new inputs to specify the thing they desire to change.

Input "1": To change the name of the owner ==> The keeper would enter a string for the name of the owner as an input.

Input “2”: To change the price of the selected price of the cargo ==> The keeper would enter an integer for the price as an input.

Input “3”: To change the size of the cargo ==> The keeper would enter 1 or 2 regarding the size of the cargo (1 being standard and 2 being small) as an input.

Input “4”: To delete the selected cargo ==> The keeper would enter a number depending on the warehouse, which corresponds to the cargo that they wish to delete. The integer number that the keeper enters is the input in this case.

As a customer:

If the user logs in the system as a customer, the user is then asked to input a number from 1-4 to choose one of the following operations:

Input “1”: The customer could search for the stored goods. First, the customer could choose the warehouse that they want to see the information of the stored goods of by inputting 1-6. Consequently, the user would enter a number, whose range depends on the size of the warehouse, which corresponds to the cargo that they want to see the information of.

Input “2”: As this option is for storing the goods, the customer has to initially enter the number of the goods that they want to add. Next, the customer would enter either 1 or 2 to determine the size of their goods.

Input “3”: By choosing this option, the customer could take out the goods stored in the cargos. firstly, the customer need to select the specific cargos (their warehouse and their index) and then choose the way to take out the

goods (input “1” means take out a single piece of goods while input “2” means take out a batch of goods).

Input “4”: Since, by entering this input, the user has decided to log out, there is no input in this section.

Note: In many instances, the user is asked to make a choice, whether they want to continue or quit the program. This is also another input that is required in this program.

Outputs:

The corresponding outputs corresponding to each operation from the user is described respectively below:

a) If the user logs in as the keeper, the system will let the user choose whether they want to edit the information or log out. If the keeper chooses to edit the information, it will let the user select the warehouse that they wish to edit. consequently, the system will provide the customer with the choice of selecting one of the following operations.

1. Edit name
2. Change the price
3. Change the size
4. Delete the cargo

If the keeper chooses to log out, the system would jump back to the main interface. Then the user could again choose to log in as a keeper or a customer.

After each of the mentioned operations, there are messages, which are displayed to the user, that are considered as one type of the output for this program. Moreover, after each operation, changes would be made to each

object of the program and the newly modified object is considered an output of this section likewise.

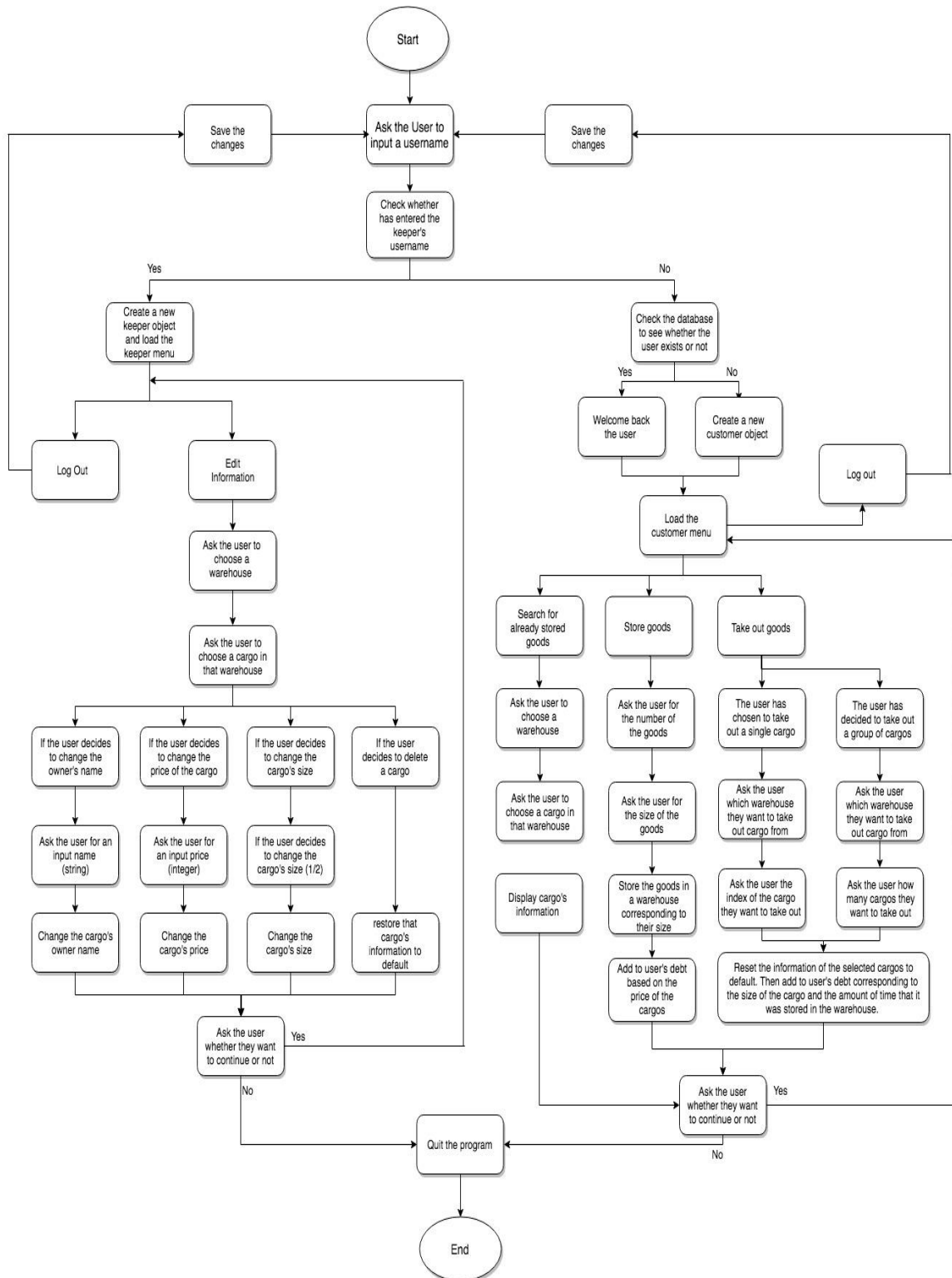
b) If the user logs in as a customer, the system would present 4 choices to the user:

1. Search for the stored goods: in this section, information regarding the cargos would be displayed corresponding to the user's choice.
2. Store the goods: In this section, a set of newly modified objects along with occasional messages are the output.
3. Take out the goods: In this section, a set of newly modified objects along with occasional messages are the output.
4. Log out: The only input regarding this section is a message.

During the options of numbers, such as let the user input the number in a fixed range, if the input is not in or not the same type of the range, the following message would be displayed: "Invalid input! Please try again!". In addition, at the end of the every operation, a message asking the user whether they want to continue or not would be displayed.

3. Design

3.1 Flow Chart



3.2 Design step

In order to complete this functional database management system, the elements of authorities and relationships should be considered orderly and

scrupulously. According to the requirement of the company, the company needs to have 6 warehouses, and each of them has their own cargos to store the goods. Additionally, the system should be controlled by the user.

However, the user consists of the keeper and the customer. Therefore, this project consists of the following classes: warehouse, cargo, user, keeper and customer. In the end, they would be combined functioned in main. The functions of each class and their working principles are explained respectively below:

Warehouse: Firstly, it will initialize the size, the number of the empty cargos and the price for each cargo (the price of the cargo in standard warehouse is higher than those in a small warehouse).

cargo: In class cargo, it could set and get the information of cargos, which are size, price, owner and the status (empty or full). Moreover, it could record the duration that the cargo was stored, then the extra fees would be added (0.2 per minute in the big warehouse and 0.1 per minute in the small warehouse). Lastly, there is a function to display the information of the specific cargo (size, price, owner, status and the duration of storing).

user: This class has the function of storing and loading the information of the user and the cargos. In addition, it can store the information of different customers. If the name of the customer is matched in the database, the system will log in the system as the identity of the corresponding user and the information of the user could be loaded and displayed. However, if the user input the name of the keeper (in reality, the name of the keeper is like a code to have management authority of the system), the keeper could edit the information of the system. Subsequently, the working principles of the keeper would be detailed in class keeper and the working principles of the customer would be detailed in class customer.

keeper: this class do not have any methods. This is a sub-class of the user.

customer: there are methods in this class that correlate with the customer's debt, the cargos they own and also to show the customer's info. This is also a sub-class of the user.

main: In main, it has following methods:

void display(user *User) --> display the information of the user and the number of the goods that have been stored in the warehouses (different customer show different information).

int warehouseSelector() --> choose the warehouse

int cargoSelector(int warehouseSize) --> afford the function to let user to input the desired number to store the goods (situation would be determined previously, which means the size is standard or small is previously provided).

int changeSelector() --> provide the choices for the keeper to choose which information need to be edited.

The situation is divided into two parts, which are the keeper and the customer. Then it will go to the corresponding interface and show the relevant clues. Here, the information of 6 warehouses would be all stored in vectors. After every operations (changes), the whole information in the database system would be updated so that the accuracy of the data could be guaranteed.

The algorithm used for this program is as follows:

Firstly, the user is asked to enter a username. Then, the program would have two paths to take:

- 1) If the user inputs the keeper's user name and become the keeper
- 2) If the user does not input the keeper's username

In the first case, the user would be given a choice whether they want to edit information or log out. In case of wanting to edit information, the user would then be given four choices regarding the changes that can be made. Consequently, the user would choose one of the mentioned options and the corresponding changes would be made accordingly. After the operation is completed, the user is asked whether they want to continue or not. If they wish to continue, the program returns to the beginning menu for the keeper. If they wish to quit the program, a corresponding message would be displayed and the program shuts down.

If the user chooses to log out, a message informing the user of this operation displays on the screen and the program returns to the beginning step.

In the second case, the database is first checked to see whether the entered username already exists or not. In the case that it does exist, the recorded progress of that user would be stored. If the username is not found, a new user is created in the database. Consequently, the user is given four options to choose from, the last one being to log out.

If the user chooses to log out, similar to the case with the keeper, a corresponding message would be displayed and the program returns to the beginning step.

In the case that the user chooses one of the three remaining options, which are provided for the customer, the user would then be asked to enter a series of inputs in order to access what they wish to access or modify. After the operation of the chosen option is completed the user would be asked whether they want to continue. If they wish to continue, the program returns to the beginning menu

for the customer. If they wish to quit the program, a corresponding message would be displayed and the program shuts down.

4. Implementation

The name of the header files used for this program are as follows:

“cargo.h”, “customer.h”, “keeper.h”, “user.h” and “warehouse.h”.

In addition, the name of the .cpp files used for this program are as follows:

“cargo.cpp”, “customer. cpp”, “keeper.cpp”, “user.cpp”, “warehouse.cpp” and also “main.cpp”.

Moreover, the following text files were also used for this program:

“BW1DataFile.txt”, “BW2DataFile.txt”, “SW1DataFile.txt”, “SW2DataFile.txt”, “SW3DataFile.txt”, “SW4DataFile.txt” and “UserDataFile.txt”.

5. Testing:

The C++ program was tested by carrying out a set of experiments; and the C++ program output was verified successfully for each function. For instance,

First of all, input the name, and create the warehouses and the cargos. The user logs in as a customer.

```
C:\WINDOWS\system32\cmd.exe
Please enter your name:
abc
Warehouse and cargos has been created successfully
Users data has been loaded successfully
Warehouses data has been loaded 1/6
Warehouses data has been loaded 2/6
Warehouses data has been loaded 3/6
Warehouses data has been loaded 4/6
Warehouses data has been loaded 5/6
Warehouses data has been loaded 6/6
Warehouses data has been loaded successfully
abc has been logged in as a customer successfully!
=====
请按任意键继续. . .
```

Figure 1. Input the name.

```
C:\WINDOWS\system32\cmd.exe
*****
*      Welcome to use Warehouse Lease System      *
*****
=====
Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
_
```

Figure 2. The options of the customer

```
C:\WINDOWS\system32\cmd.exe
*****
=====
Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
1
=====
=====
+ Number of goods in the Big Warehouse #1: 0
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====
=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1      2. Big Warehouse #2
3. Small Warehouse #1    4. Small Warehouse #2
5. Small Warehouse #3    6. Small Warehouse #4
```

Figure 3. Search all the information for each warehouse

For the function: search for the stored goods. All the available options were working properly and the steps are shown as figure 4 to figure 9:

```
C:\WINDOWS\system32\cmd.exe
- The debt for this user to be paid is ==>0
=====
=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1      2. Big Warehouse #2
3. Small Warehouse #1    4. Small Warehouse #2
5. Small Warehouse #3    6. Small Warehouse #4
1
Your cargos in this warehouse:
Total number of owned Cargos in this warehouse: 0
=====
Select a cargo (enter a number from 1-500)
1
+Cargo size ==> Standard
+Cargo Price ==> 20
+Cargo Owner ==> uJ
+Cargo status ==> Full
Do you want to continue? 1.Yes 2.No
-
```

Figure 4. Show the information of the '1' cargo in the Big warehouse#1 at the beginning.


```
C:\WINDOWS\system32\cmd.exe
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1        4. Small Warehouse #2
5. Small Warehouse #3        6. Small Warehouse #4
2
Your cargos in this warehouse:

Total number of owned Cargos in this warehouse: 0

=====
Select a cargo (enter a number from 1-500)
2
+Cargo size ==> Standard
+Cargo Price ==> 20
+Cargo Owner ==> NO NAME
+Cargo status ==> Empty

Do you want to continue? 1.Yes 2.No
```

Figure 5. Show the information of the '2' cargo in the Big warehouse#2 at the beginning.

```
C:\WINDOWS\system32\cmd.exe
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1        4. Small Warehouse #2
5. Small Warehouse #3        6. Small Warehouse #4
3
Your cargos in this warehouse:

Total number of owned Cargos in this warehouse: 0

=====
Select a cargo (enter a number from 1-400)
3
+Cargo size ==> Small
+Cargo Price ==> 10
+Cargo Owner ==> NO NAME
+Cargo status ==> Empty

Do you want to continue? 1.Yes 2.No
```

Figure 6. Show the information of the '3' cargo in the Small warehouse#1 at the beginning.

```
C:\WINDOWS\system32\cmd.exe
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1        4. Small Warehouse #2
5. Small Warehouse #3        6. Small Warehouse #4
4
Your cargos in this warehouse:

Total number of owned Cargos in this warehouse: 0

=====
Select a cargo (enter a number from 1-400)
4
+Cargo size ==> Small
+Cargo Price ==> 20
+Cargo Owner ==> uj
+Cargo status ==> Full

Do you want to continue? 1.Yes 2.No
```

Figure 7. Show the information of the '4' cargo in the Small warehouse#2 at the beginning.

```
C:\WINDOWS\system32\cmd.exe
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1        4. Small Warehouse #2
5. Small Warehouse #3        6. Small Warehouse #4
5
Your cargos in this warehouse:

Total number of owned Cargos in this warehouse: 0

=====
Select a cargo (enter a number from 1-400)
5
+Cargo size ==> Small
+Cargo Price ==> 10
+Cargo Owner ==> NO NAME
+Cargo status ==> Empty

Do you want to continue? 1.Yes 2.No
```

Figure 8. Show the information of the '5' cargo in the Small warehouse#3 at the beginning.

```
C:\WINDOWS\system32\cmd.exe
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1        4. Small Warehouse #2
5. Small Warehouse #3        6. Small Warehouse #4
6
Your cargos in this warehouse:

Total number of owned Cargos in this warehouse: 0
=====
Select a cargo (enter a number from 1-400)
6
+Cargo size ==> Small
+Cargo Price ==> 10
+Cargo Owner ==> NO NAME
+Cargo status ==> Empty

Do you want to continue? 1.Yes 2.No
```

Figure 9. Show the information of the '6' cargo in the Small warehouse#4 at the beginning.

From the figures, it is easily know that all the cargos in different warehouses are empty and all of them don't have the owner. Then, we can choose continue or not for the program as figure 10 and figure 11.

```
C:\WINDOWS\system32\cmd.exe
- The debt for this user to be paid is ==>0
=====

Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1        4. Small Warehouse #2
5. Small Warehouse #3        6. Small Warehouse #4
1
Your cargos in this warehouse:

Total number of owned Cargos in this warehouse: 0
=====
Select a cargo (enter a number from 1-500)
1
+Cargo size ==> Standard
+Cargo Price ==> 20
+Cargo Owner ==> uj
+Cargo status ==> Full

Do you want to continue? 1.Yes 2.No
1
You have chosen to continue!
请按任意键继续. . .
```

Figure 10. Continue the program

```
C:\WINDOWS\system32\cmd.exe

- The debt for this user to be paid is ==>0
=====

Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1      2. Big Warehouse #2
3. Small Warehouse #1    4. Small Warehouse #2
5. Small Warehouse #3    6. Small Warehouse #4
6
Your cargos in this warehouse:

Total number of owned Cargos in this warehouse: 0
=====
Select a cargo (enter a number from 1-400)
6
+Cargo size ==> Small
+Cargo Price ==> 10
+Cargo Owner ==> NO NAME
+Cargo status ==> Empty

Do you want to continue? 1.Yes 2.No
2
You have chosen to quit the program!

Thank you for using our program!
请按任意键继续. . .
```

Figure 11. End the program

Next, for the function: store the cargo. All the available options were working properly and the steps are shown as figure 12 to figure 14:

```
C:\WINDOWS\system32\cmd.exe

*****
*      Welcome to use Warehouse Lease System      *
*****

Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
2

=====

+ Number of goods in the Big Warehouse #1: 0
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Please enter in the number of goods that you want to store:
```

Figure 12. Choose the store goods' function

```
C:\WINDOWS\system32\cmd.exe
=====
Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
2
=====
+ Number of goods in the Big Warehouse #1: 0
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====
Please enter in the number of goods that you want to store: 100
What is the size of the goods?
1. Standard
2. Small
1
Do you want to continue? 1.Yes 2.No
```

Figure 13. Enter the total number of the standard goods which will be stored.

```
C:\WINDOWS\system32\cmd.exe
=====
Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
2
=====
+ Number of goods in the Big Warehouse #1: 80
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>1600
=====
Please enter in the number of goods that you want to store: 300
What is the size of the goods?
1. Standard
2. Small
2
Do you want to continue? 1.Yes 2.No
```

Figure 14. Enter the total number of the small goods which will be stored.

From the figures, it is easily know that the cargo can be store in different warehouse successfully. Then, we can choose continue or not for the program as figure 15 and figure 16.

```
C:\WINDOWS\system32\cmd.exe
2. Store goods
3. Take out goods
4. Log Out
2

=====
+ Number of goods in the Big Warehouse #1: 0
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Please enter in the number of goods that you want to store: 100

What is the size of the goods?
1. Standard
2. Small
1

Do you want to continue? 1.Yes 2.No
1
You have chosen to continue!
请按任意键继续. . .
```

Figure 15. Continue the program

```
C:\WINDOWS\system32\cmd.exe
3. Take out goods
4. Log Out
2

=====
+ Number of goods in the Big Warehouse #1: 80
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>1600
=====

Please enter in the number of goods that you want to store: 300

What is the size of the goods?
1. Standard
2. Small
2

Do you want to continue? 1.Yes 2.No
2
You have chosen to quit the program!
Thank you for using our program!
请按任意键继续. . .
```

Figure 16. End the program

In addition, for the function: store the cargo. All the available options were working properly and the steps are shown as figure 17 to figure 14:

```
C:\WINDOWS\system32\cmd.exe

*      Welcome to use Warehouse Lease System      *
*****
=====
Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
3
=====
+ Number of goods in the Big Warehouse #1: 80
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====
Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
```

Figure 17. Choose the function: take out the cargo

If the user want to take out a single cargo of goods, test all the warehouses one by one and show the result as below:

```
C:\WINDOWS\system32\cmd.exe
=====
+ Number of goods in the Big Warehouse #1: 80
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====
Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
1
=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1      2. Big Warehouse #2
3. Small Warehouse #1    4. Small Warehouse #2
5. Small Warehouse #3    6. Small Warehouse #4
1
=====
Select a cargo (enter a number from 1-500)
1
Cargo number 0 of your cargos was taken out!
Do you want to continue? 1.Yes 2.No
```

Figure 18. Take out the '1' cargo in the Big warehouse#1 successfully

```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 80
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0
- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
1

=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
2

=====
Select a cargo (enter a number from 1-500)
2
Cargo number 1 of your cargos was taken out!
Do you want to continue? 1.Yes 2.No
```

Figure 19. Take out the '2' cargo in the Big warehouse#2 successfully

```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 80
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0
- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
1

=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
3

=====
Select a cargo (enter a number from 1-400)
3
Cargo number 2 of your cargos was taken out!
Do you want to continue? 1.Yes 2.No
```

Figure 20. Take out the '3' cargo in the Small warehouse#1 successfully


```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 80
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0
- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
1

=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
4

=====
Select a cargo (enter a number from 1-400)
4
Cargo number 3 of your cargos was taken out!
Do you want to continue? 1.Yes 2.No
```

Figure 21. Take out the '4' cargo in the Small warehouse#2 successfully

```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 80
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0
- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
1

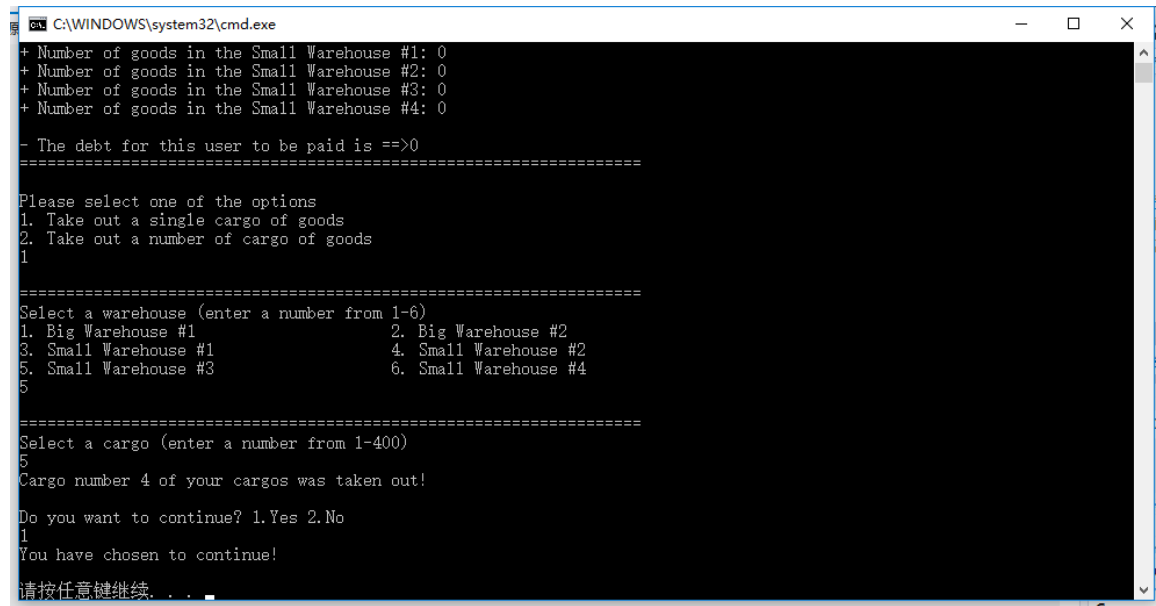
=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
5

=====
Select a cargo (enter a number from 1-400)
5
Cargo number 4 of your cargos was taken out!
Do you want to continue? 1.Yes 2.No
```

Figure 22. Take out the '5' cargo in the Small warehouse#3 successfully

Figure 23. Take out the '6' cargo in the Small warehouse#4 successfully

From the figures, it is easily know that the cargo can be taken out from different warehouses successfully. Then, we can choose continue or not for the program as figure 24 and figure 25.



```
CA\WINDOWS\system32\cmd.exe
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
1

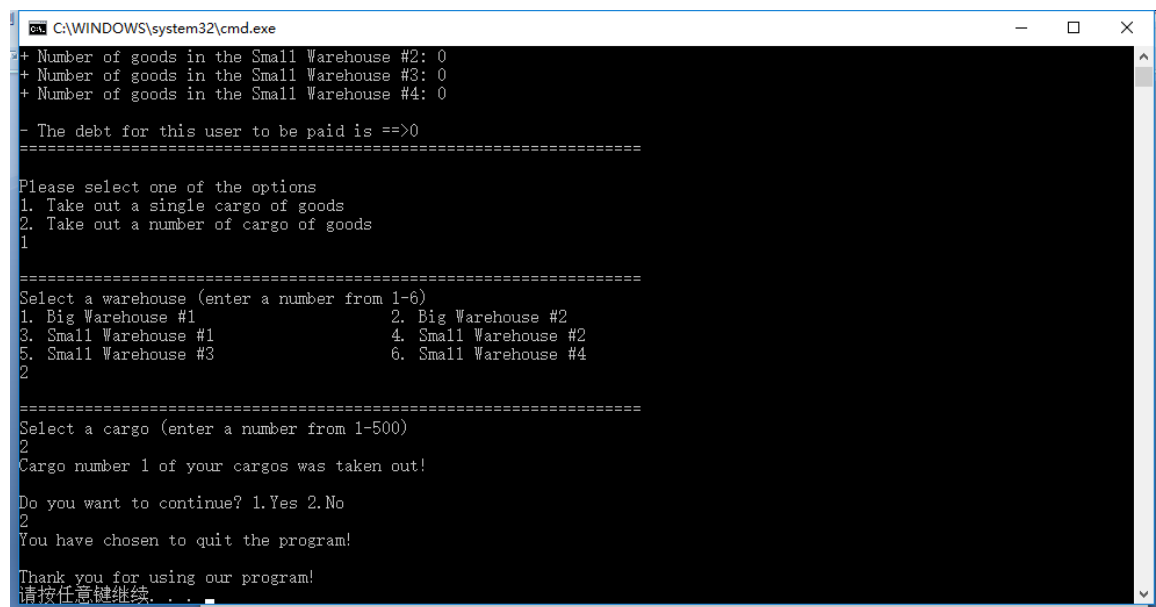
=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
5

=====
Select a cargo (enter a number from 1-400)
5
Cargo number 4 of your cargos was taken out!

Do you want to continue? 1.Yes 2.No
1
You have chosen to continue!

请按任意键继续. . .
```

Figure 24. Continue the program



```
CA\WINDOWS\system32\cmd.exe
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
2

=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
2

=====
Select a cargo (enter a number from 1-500)
2
Cargo number 1 of your cargos was taken out!

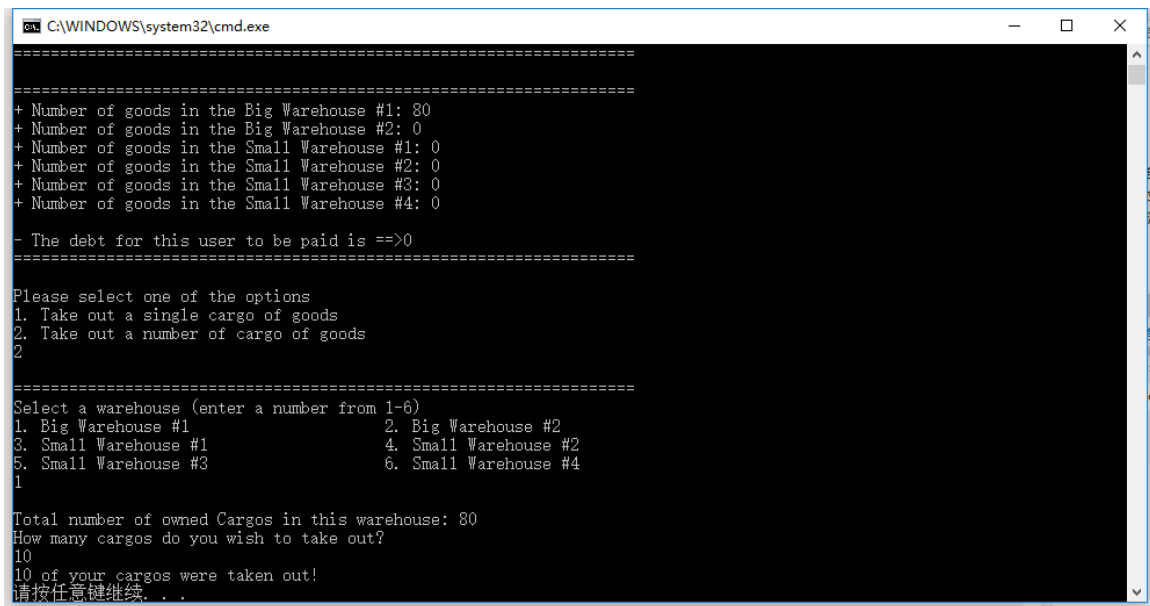
Do you want to continue? 1.Yes 2.No
2
You have chosen to quit the program!

Thank you for using our program!

请按任意键继续. . .
```

Figure 25. End the program

If the user want to take out a number of cargo of goods by once, test all the warehouses one by one and show the result as below:



```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 80
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

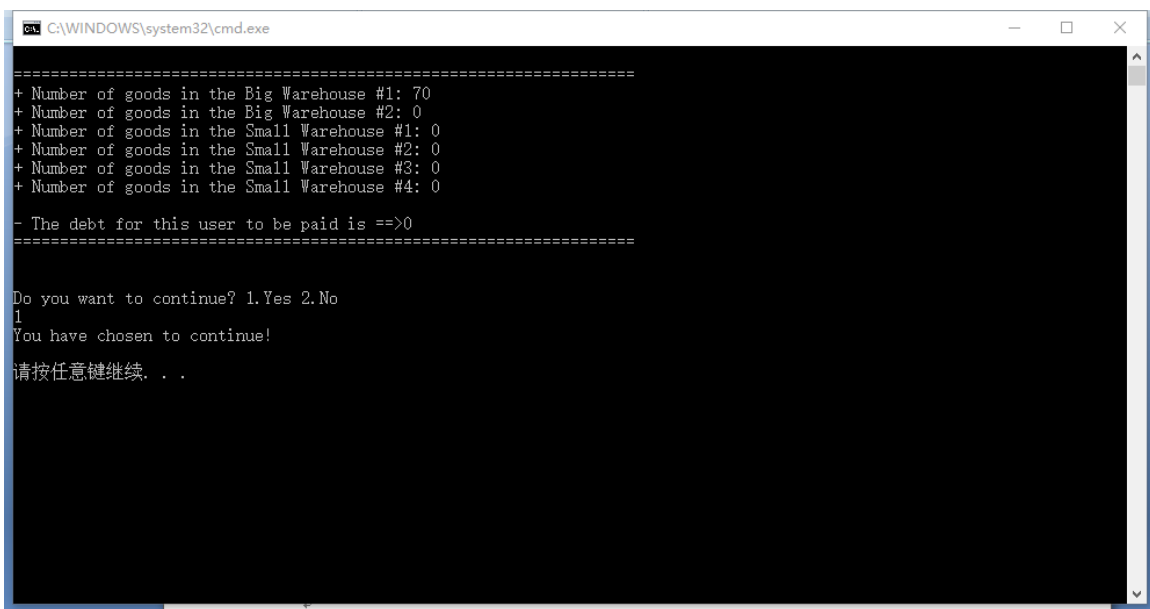
- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
2

=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
1

Total number of owned Cargos in this warehouse: 80
How many cargos do you wish to take out?
10
10 of your cargos were taken out!
请按任意键继续. . .
```

Figure 26. Take out the '1' cargo in the Big warehouse#1 successfully



```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 70
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Do you want to continue? 1.Yes 2.No
1
You have chosen to continue!
请按任意键继续. . .
```

```
C:\WINDOWS\system32\cmd.exe
+ Number of goods in the Big Warehouse #1: 81
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 1
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
2

=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
2

Total number of owned Cargos in this warehouse: 0
How many cargos do you wish to take out?
10
The number you have chosen is more than the number of the cargos you own!
As a result we have taken out all of your owned cargos

Do you want to continue? 1.Yes 2.No
```

Figure 27. Take out the '2' cargo in the Big warehouse#2 successfully

```
C:\WINDOWS\system32\cmd.exe
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
Invalid input! Please try again!
Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
2

=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
3

Total number of owned Cargos in this warehouse: 1
How many cargos do you wish to take out?
100
The number you have chosen is more than the number of the cargos you own!
As a result we have taken out all of your owned cargos

Do you want to continue? 1.Yes 2.No
```

Figure 28. Take out the '3' cargo in the Small warehouse#1 successfully

```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 81
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
2

=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
4

Total number of owned Cargos in this warehouse: 0
How many cargos do you wish to take out?
2
2 of your cargos were taken out!
请按任意键继续. . .
```

Figure 29. Take out the '4' cargo in the Small warehouse#2 successfully

```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 81
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 79
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
2

=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
5

Total number of owned Cargos in this warehouse: 0
How many cargos do you wish to take out?
100
The number you have chosen is more than the number of the cargos you own!
As a result we have taken out all of your owned cargos

Do you want to continue? 1.Yes 2.No
1
```

Figure 30. Take out the '5' cargo in the Small warehouse#3 successfully

```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 81
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 79
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Please select one of the options
1. Take out a single cargo of goods
2. Take out a number of cargo of goods
2

=====
Select a warehouse (enter a number from 1-6)
1. Big Warehouse #1          2. Big Warehouse #2
3. Small Warehouse #1       4. Small Warehouse #2
5. Small Warehouse #3       6. Small Warehouse #4
6

Total number of owned Cargos in this warehouse: 0
How many cargos do you wish to take out?
1
1 of your cargos were taken out!
请按任意键继续. . .
```

Figure 31. Take out the '6' cargo in the Small warehouse#4 successfully

From the figures, it is easily know that a large number of cargos can be taken out from different warehouses for once successfully. Then, we can choose continue or not for the program as below.

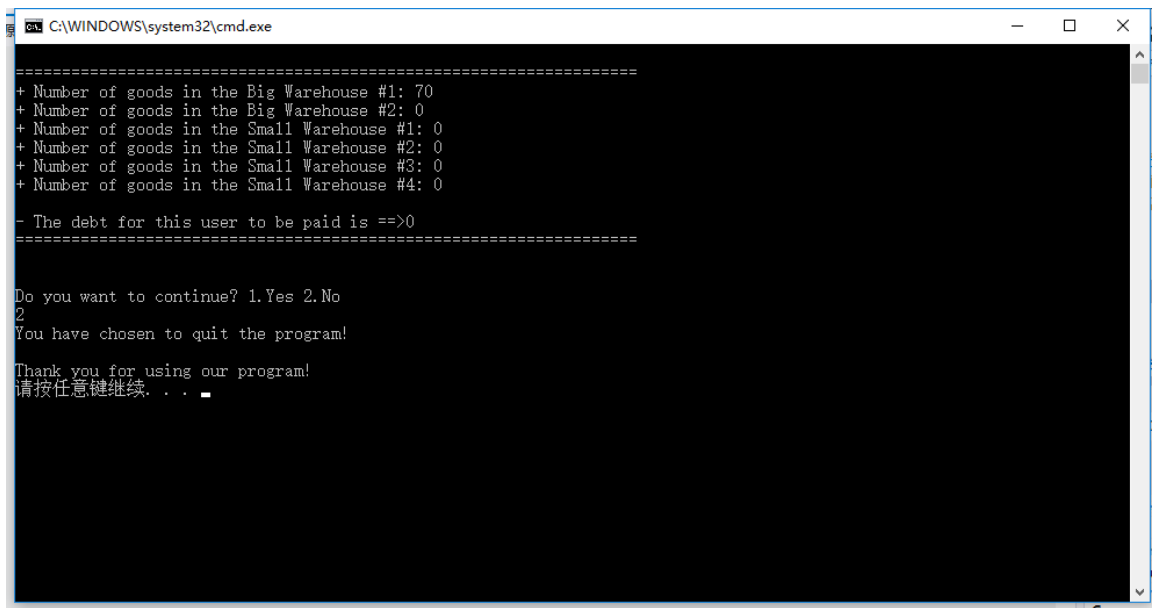
```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 70
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

- The debt for this user to be paid is ==>0
=====

Do you want to continue? 1.Yes 2.No
1
You have chosen to continue!
请按任意键继续. . .
```

Figure 32. Continue the program



```
C:\WINDOWS\system32\cmd.exe

=====
+ Number of goods in the Big Warehouse #1: 70
+ Number of goods in the Big Warehouse #2: 0
+ Number of goods in the Small Warehouse #1: 0
+ Number of goods in the Small Warehouse #2: 0
+ Number of goods in the Small Warehouse #3: 0
+ Number of goods in the Small Warehouse #4: 0

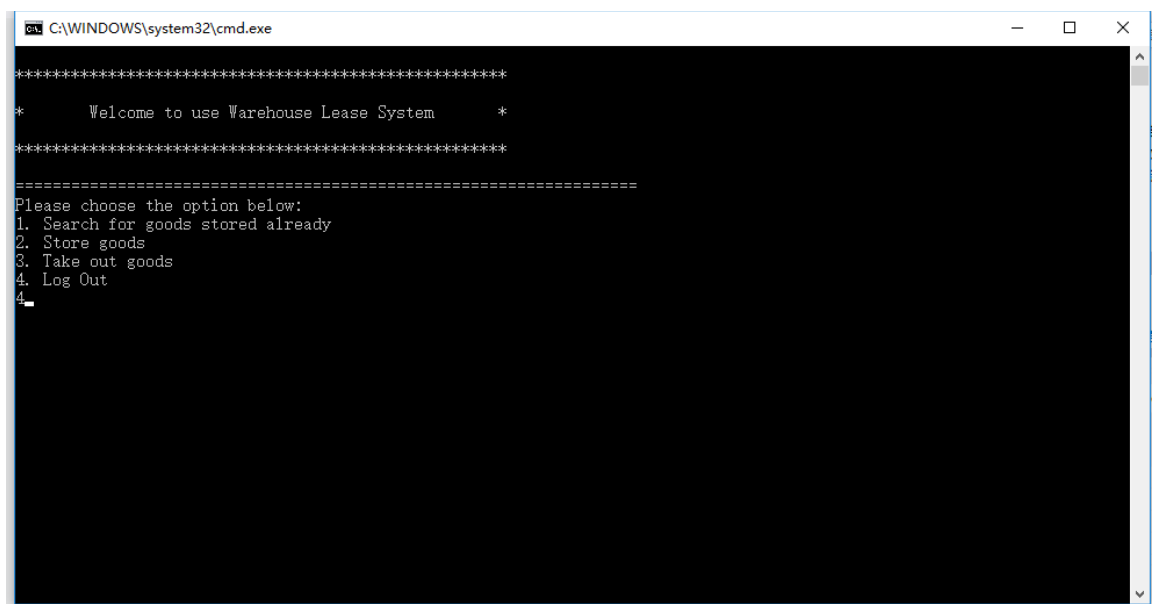
- The debt for this user to be paid is ==>0
=====

Do you want to continue? 1.Yes 2.No
2
You have chosen to quit the program!

Thank you for using our program!
请按任意键继续. . .
```

Figure 33. End the program

Then, for the function: log out. All the available options were working properly and the steps are shown as below:



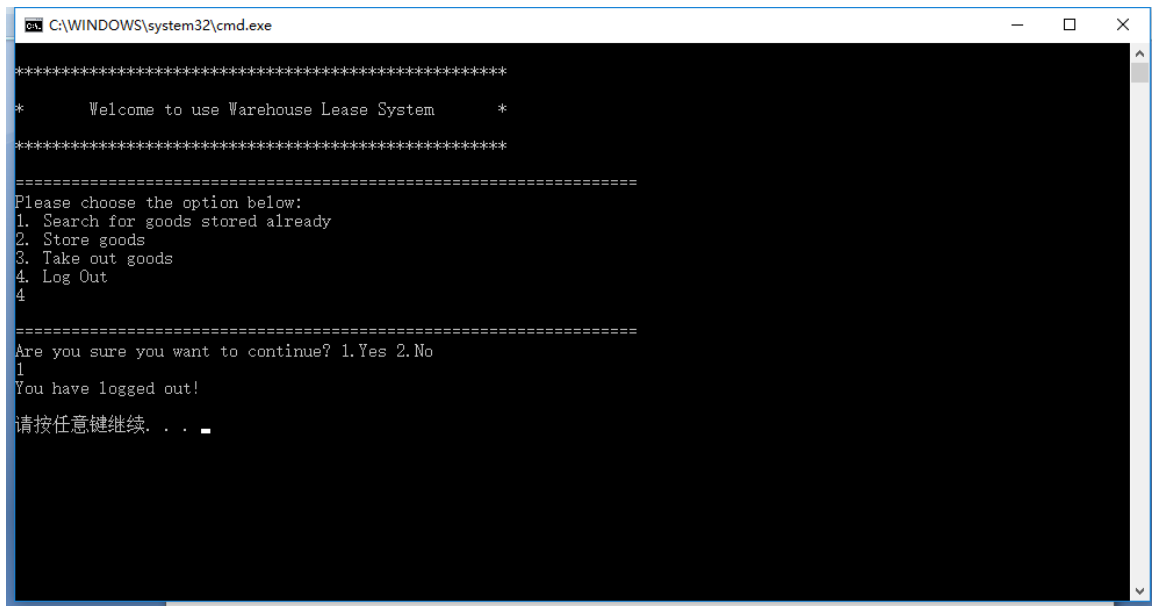
```
C:\WINDOWS\system32\cmd.exe

*****
*      Welcome to use Warehouse Lease System      *
*****

Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
4
```

Figure 34. Choose the function: Log out

After you choose this function, the program will ask you to make sure you want to log out whether or not.



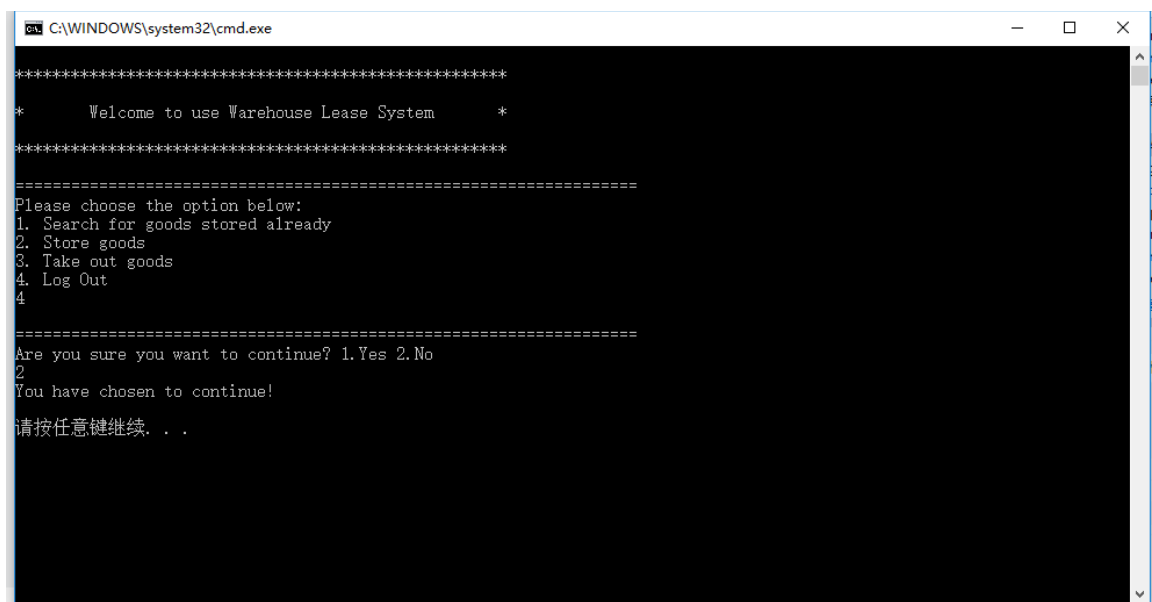
```

C:\WINDOWS\system32\cmd.exe

*****
*      Welcome to use Warehouse Lease System      *
*****
=====
Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
4
=====
Are you sure you want to continue? 1.Yes 2.No
1
You have logged out!
请按任意键继续. . .

```

Figure 35. Continue the program and return to the main interface



```

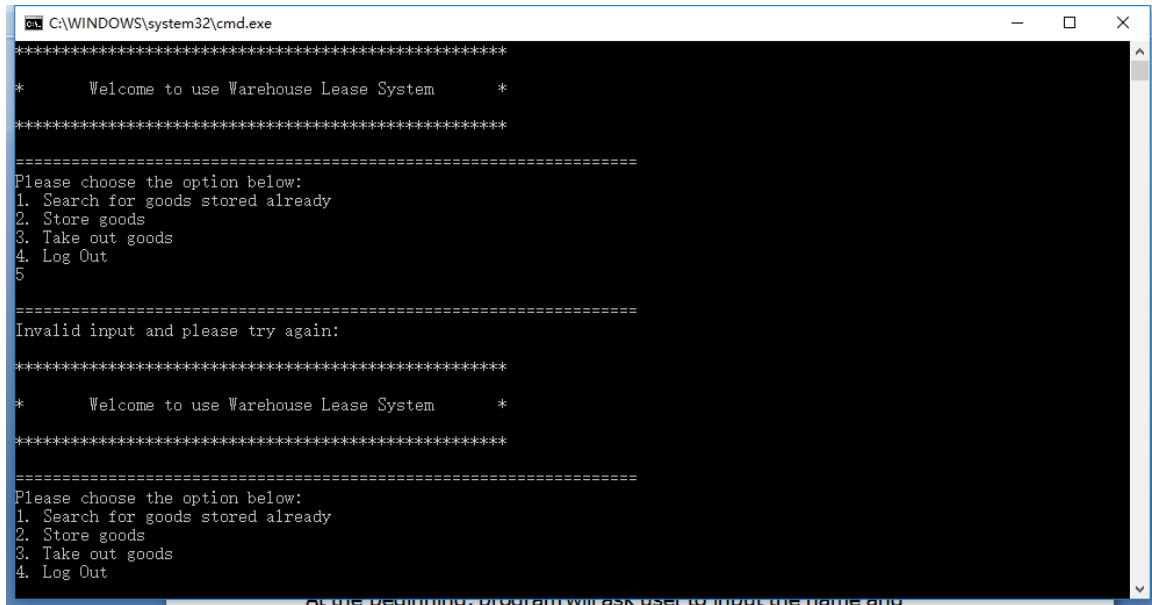
C:\WINDOWS\system32\cmd.exe

*****
*      Welcome to use Warehouse Lease System      *
*****
=====
Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
4
=====
Are you sure you want to continue? 1.Yes 2.No
2
You have chosen to continue!
请按任意键继续. . .

```


Figure 36. End the program

If the user input the number out of the range, the happening:



```
Ca\WINDOWS\system32\cmd.exe
*****
*      Welcome to use Warehouse Lease System      *
*****

=====
Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
5
=====
Invalid input and please try again:
*****
*      Welcome to use Warehouse Lease System      *
*****

=====
Please choose the option below:
1. Search for goods stored already
2. Store goods
3. Take out goods
4. Log Out
5
```

At the beginning, program will ask user to input the name and

Figure 37. Input the number out of the range

6. Bug report

As the txt file was chosen to store the information, and the width of its buffer is enough, so the information would be added a line break mark in the middle, which meant the program could not read the file line by line when the inputs were at a huge amount.

7. User manual

At the beginning, program will ask user to input the name and compare all the information which is saved in the data.

If user log in as the keeper: Input "1" or "2" to choose the option which user want to do.

Input the name. (If you input yyh, you could be keeper, if you input other names, you could be the customer)

Circumstance 1: Input: yyh -> You log in as the keeper.

->Input "1": Edit the information.

Input the number from '1' to '6' to choose the different warehouse to work in. Then, user can choose the number from '1' to '4' to do the next operation for each cargo.

>>Input '1': Edit the owner's name.

>>Input '2': Edit the cargo's price.

>>Input '3': Edit the cargo's size->Input '1' to change the size as

standard or input '2' to change the size as small.

>>Input '4': Delete the information of the selected cargo.

->Input '2': Log out. End the program and make the system back to the main interface. Then, another user can log in again.

Circumstance 2: Input other names -> You log in as the customer.

1. Input '1': Search for the stored goods. All the information about how many goods in the different warehouse, will be shown on the screen.

1.1 Input the number from '1' to '6'. The information about the number of the owned cargo in different warehouse will be shown on the screen.

1.2 Input a number between '1' to '500' to select a cargo to look the total information of it.

1.3 Input '1' or '2' to choose continue or not.

1.3.1 Input '1': Back to the beginning of the customer.

1.3.2 Input '2': End this program. All the information of this user has been changed and saved in the program.

2. Input '2': Store the cargo. All the information about how many goods in the different warehouse, will be shown on the screen.

2.1 Input the number of goods that user want to store.

2.2 Input '1' or '2' to choose the size of the goods.

2.2.1 Input '1': The goods are standard

2.2.2 Input '2': The goods are small

- 2.3 Input '1' or '2' to choose continue or not.
 - 2.3.1 Input '1': Back to the beginning of the customer.
 - 2.3.2 Input '2': End this program. All the information of this user has been changed and saved in the program.
- 3. Input '3': Take out the cargo. Then, input '1' or '2' to have different choices. All the information about how many goods in the different warehouse, will be shown on the screen.
 - 3.1 Input '1' or '2' to select the options.
 - 3.1.1 Input '1': Take out a single cargo of goods.
 - 3.1.1.1 Input the number from '1' to '6' to select the warehouse.
 - 3.1.1.2 Input the number from '1' to '500' to select a cargo which the user want to take out.
 - 3.1.1.3 Input '1' or '2' to choose continue or not.
 - 3.1.1.3.1 Input '1': Back to the beginning of the customer.
 - 3.1.1.3.2 Input '2': End this program. All the information of this user has been changed and saved in the program.
 - 3.1.2 Input '2': Take out a number of cargo of goods.
 - 3.1.2.1 Input the number from '1' to '6' to select the warehouse.
 - 3.1.2.2 The total number of owned cargo in this warehouse will be shown on the screen. Input the number less than the total number.
 - 3.1.2.3 Input '1' or '2' to choose continue or not.
 - 3.1.2.3.1 Input '1': Back to the beginning of the customer.
 - 3.1.2.3.2 Input '2': End this program. All the information of this user has been changed and saved in the program.

- 4. Input '4': Log out. End the program and make the system back to the main interface. Then, another user can log in again.
- 4.1 Input '1' or '2' to choose continue or not.
- 4.1.1 Input '1': Back to the main interface.
- 4.1.2 Input '2': End this program. All the information of this user has been changed and saved in the program.