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Saga - Container booking and management system

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I hereby declare that this final report is all my own work, except as indicated
in the text:

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Abstract

This document is the dissertation for the final year project module LOK0283. The project supervisor is Dr. Nik Whitehead. The project name is Saga - Container booking and management system, the web site of the project is http://saga.liangcity.com.

This document contains information of the requirement analysis, design, implementation, testing of the container booking and management system. The project finished and web site release successfully.
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I. Introduction

An effective logistic operation and management system can reduce manual workload, cut down on errors, and finally improve service levels for shipping carriers and their customers. This database driven web based container booking and management system provides a wide range of transportation processes. It can make the work processes easy and effectively from booking, documentation, cargo tracking, and equipment management to shipment management.

The development of the Internet increases and speeds up the demand of customers e-commerce services. Building up a centralized e-commerce system was one step towards extending the existing offer by including online services. Combining full range of logistics services via one single interface can enabled you to turn into the leading integrated logistics services.

By use this system, shipping carriers can simplify internal processes by using IT technologies, the operation more efficiently and decrease processing costs.

In order to rapidly and efficiently respond customer requirements, use this web based system to support your shipping business requirements with useful functionalities on a 24 hour per day availability. The system contributes significantly to improved efficiencies in business executions for shipping carriers, logistic company or customers.

II. Requirement Gathering

1. Background reading

For gather the software requirements, first, I read some documents of existing systems and go through the existing systems.

INTTRA is an e-business platform. They launched Universal Carrier Access (UCA) enabling all shippers and forwarders to reach all carriers, it open to shipper, forwarders and carriers. Shippers and forwarders can make booking to different carriers by the platform. Carriers can also send feedback information to shippers and forwarders.
Figure 1 show the major components of a container booking and management system. Shipper or customer book the container by there own system or by INTTRA, INTTRA transfer the shipping instruction to shipping line, shipping line use the information to make booking list and loading plan, then make bills of lading after container loaded on vessel and generate manifest and other documents. Shipper or consignee can track the container information by the system. This system gives the general information for a container manager system for shipping line. Some of functions in my system may base on this system. [2]

Another system, FIS (Freight information system) used by Hapag-Lloyed, FIS is a shipping carrier documentation system. It is similar with INTTRA, but only used by Hapag-Lloyed, it is not a open system, in booking module, it can accept booking request from shipper, then send booking number with booking confirmation after accept the booking request, then documentation module can use this information to make bills of lading. Documentation module can be use to generate report.

Shipper, forwarder, consignee can use web site to trace container information, check vessel schedule information or download Sea Waybill, etc.
My system is used for shipping carrier, shipper send a shipping order to shipping carrier, after booking information inputted into the system, system will generate a booking number, and the booking number can be use for further operation for the cargo.

After booking information inputted into the system, shipping carrier may create report base on the information, for example, booking list. After vessel departs from the port, the system can make bills of lading and manifest. Fright information also saves into the database, it may be export to other accounting or ERP system, but this is not a function in the system now.

In the main time, shipper, forwarder or consignee can trace the cargo information after they get the booking number, such as, the position of the cargo, status, container number, depart date, arrive date, etc.

Further statistic report can be generating by the system, such as containers list by loading port, by destination port by vessel, etc.

2. Interview

After read some background information of logistic process, I interview my friends, Ms Qiuli Luan, who is a documentation manager working for Wallenius Wilhelmsen Logistic China Ltd., she work for this company for more than eight years, she has many experiences with documentation, operation process and customers requirement for the computer booking and management system.

A fast responds, easy use and user friendly interface is most important for a booking and management system. User needs input or transfer huge volume of documents day by day, a fast responds system can reduce processing time and improve operation quality.

The system must easy for user to input and retrieve information, simply and manfully menu is very important, user need to input all shipment information, and retrieve lots of different shipment information according to request, they need to know where they should go, and the system menu do not miss lead the user.

User friendly is also important, some of customers are not computer expert, they only know basic computer operation knowledge, a user friendly interface can let user easy to find the information they needed.
3. Document sampling

Paper documents give a good idea of what is happening in the current work processes, and also provide supporting evidence for the information gathered from background reading and interview.

By analyst the documents, I can know what information the user need from the system, the input and outputs from processes, also the documents format of the output.

III. Design

1. Time table

A good design need a good planning, before start to work for design, I made a time table for this project, the first phrase will focus on analysis, software requirements and design, the second phrase will development the web application, and testing it.

Appendix A is the time table. The time table is created by Microsoft Project. Microsoft Project is very useful business software that allows the user to plan a project, produce schedules, allocate tasks and resource, and generate reports. It allow user to update these as the project progresses. [3]

The project divided to proposal, analysis/software requirements, design, development, testing, and final system five phase.

2. Software and hardware

2.1 Apache Web Server

This is a web application. The system can be run on any web server that supports PHP. For this project, I will use Apache web server. Apache has been the most popular web server on the Internet since April 1996. [4] Apache web server is easy to setup and configure and commonly use with PHP and MySQL. Apache web server is free.
2.2 MySQL

This is a database driven web application. MySQL is the most popular open source database in the world. [5]

Use MySQL with PHP and Apache web server can implement highly interactive webs application with user customization, searchable databases.

MySQL is free. The web server used to host the web site only support MySQL 4.0, so my system will use MySQL 4.0 as database.

2.3 PHP

PHP is very popular general-purpose server side scripting language. Combining it with HTML makes it very powerful. PHP currently will load into Apache, and work with MySQL.

According to NetCraft surveys, PHP is now the most popular module for the Apache server and in total running on something like two million Web sites. [6]

Apache web server, MySQL, and PHP work together can produce dynamic, data-driven web application.

2.4 XAMPP

XAMPP is an easy to install Apache Distribution for Windows. The package includes the Apache web server, MySQL, PHP. XAMPP will only use for developing the application, and not use in the web server to host the web site.

2.5 Macromedia Dreamweaver

Macromedia Dreamweaver will be used to develop the web application. It is easy to use, and has powerful abilities integrated with PHP.

2.6 PHPRunner

PHPRunner can build visually appealing web interface for MySQL database, PHP Runner is a simple but useful program for easily previewing a PHP file without saving or uploading it to a server.
2.7 Browsers

Internet Explore will be used for web client. Internet Explore is commonly used browser. The web application will support Internet Explore 6 and Internet Explore 7.

2.8 Operating system

The operating system used to develop and test the project is Windows XP. Windows XP is the commonly used operating system. The web application will develop and implement on computer which use Windows XP. The web server used to host the web site use Windows NT.

2.9 Software conclusion

Apache web server, MySQL, PHP, Dreamweaver, PHPRunner, will used to develop the web application, Windows XP will be the operation system for both develop and Windows NT will be the implement operating system. Internet Explore 6 and Internet Explore 7 will be the client to visit the web application by end users.

3. Functional design

After talk with the experts in shipping carrier, I study the work processes in Figure 1 again and find out the details functions I need for each requirement. Then I design the menu of the system to list out all the functions need in the system. Figure 2 is the menu map created by MindManager.

The first function needed is creating a booking, so in Booking, there is Main booking which will list booking, there you can create, edit, view or delete booking. Review inquiry can search a booking by booking number or other key word, such as vessel name or port name. Three report can be generate by Reports, in booking phase, there are Detailed cargo booking report, Vessel revenue summary report and Summary container booking report.

After booking input into the system, system will generate a unique booking number; booking number will be primary key in the database.

In Receiving menu, you can create, view, edit or delete receiving. There is more report available in receiving, such as Fumigation report, Dangerous cargo manifest, Loading list, Non-container loading list, Reefer loading list, Vessel revenue summary and Booking not received report.
Figure 2 System menu
In Documentation menu, there are Bills of Lading, which can create bill of lading, also can edit, view, delete or print Bill of Lading. More reports in documentation menu. After cargo shipped, the freight can be invoiced and print out the invoice. A Statistical report can generate Vessel revenue summary report. Notice of arrival and Vessel/Voyage list are in Admin menu.

Equipment control is important for shipping carrier; equipment tracking can use for find the container information, such as where is the container now, what condition of the container? Activities can record the correct activities, such as empty, or loaded by customer, etc. If container damaged, Maintenance and repair can request repair and record the details information. If do not have enough container or too many container that do not need, Export/Import Order service can request export or import container or other equipment. A report of container movement or condition can be generating by Report.

Vessel information can be manage in Admin menu, voyage master can manage vessel voyage and schedule information, Party maintenance can manage customer information, cargo information can be managed by Commodity, new container can be create recorder by Equipment menu.

4. Database design

After find out the functions, I designed the database schema.

I use Top-down design method to design the database schema. First I identify logical groupings of attributes into relations, such as, booking, receiving, Bill of lading, revenue, customer, cargo description, vessel and port, next investigating the relations and the relationships of each attribute.

A good database design should semantics of the attributes, reducing redundant values, reducing the null values and disallowing the possibility of generating spurious tuples. [7]

In the database schema, the meaning of the Booking relation is clear, it is a shipment that shipper booked with shipping line. The bookingNo is the primary key to indicate the shipment.

Figure 3 is the database schema.

Normalisation of data is a process of analysing schemas based on their primary keys and functional dependencies in order to minimise redundancy, minimise insertion, deletion and update anomalies. [7]
Figure 3 Database schema
Normalization is the process of simplifying the design of a database so that it achieves the optimum structure.

Normalization theory gives us the concept of normal forms to assist in achieving the optimum structure. The normal forms are a linear progression of rules that you apply to your database, with each higher normal form achieving a better, more efficient design.

The normal forms are:

- First Normal Form
- Second Normal Form
- Third Normal Form
- Boyce Codd Normal Form
- Fourth Normal Form
- Fifth Normal Form [8]

All the column values are atomic in my database schema, so it meets the First Normal form (1NF). In the database schema, very non-key column is full dependent on the primary key; this is what Second normal Form (2NF) required. All non-key columns are mutually independent, this meet the Third Normal Form (3NF). So my database schema implemented the third Normal Form.

Generally, most database designers do not attempt to implement anything higher than Third Normal Form. [8]

5. Storyboard

I designed the all the functions, which can implement to menu of the system, also I designed the database, and then I need an interface to link the functions and database. I use storyboard to explain the relation of each function, and describe how the system works.

Appendix B is the Storyboard. It is the process of making a rough outline of what the system will include before it is actually created.
IV. Implementation

1. System overview

The web site use PHP to access the database and combined with standard HTML.

First, I registered the domain name for the web site: http://saga.liangcity.com, and set up the web server.

Next I created the database according to the database diagram, Appendix C is the SQL script to create the database, execute the script to create the database in the web server, and then the MySQL database can be run on the web server.

Then I upload the PHP files and all other files need for the web site to the web server.

When you access the web site, it will forward to a login to ask you input username and password, after login to the system, according to the design, there is a main menu, which include Booking, Receiving, Documentation, Equipment and Admin five sub-menus. Figure 4 is the main menu after login.

![Figure 4 Main menu](image-url)
The shipping carrier or logistic company accept cargoes booking from shipper, after get the booking instruction, the booking information be inputted into the system, when shipping line received the cargo, receiving information be inputted into the system, After vessel departed, B/L and other documents are create by the system. Shipping line or logistic company can use this system for manage equipment, commodity, customer, freight code, port, shipping clause, vessel information.

The system uses for daily shipment operation and management for shipping carrier. It can use for manage vessel allocation, find cargo or container information, get updated loading information. Further more, it can also get vessel revenue information, loading list, statistic report by each vessel or each port, delivery notice of arriving cargo to consignee. It is a web application connected to Internet, so customer can track cargo or container information from Internet at any where and any time. The system is a media between carriers and shipper, customer can get on-time information, make carrier serve customer effective and efficient.

The web site also design work for portable device, such as PDA or even mobile phone with Internet connection. This is quite useful for business people with wireless Internet connection, so they can get the shipping information any time anywhere.

![Figure 5 Login the web site by using PDA](image)
Figure 6 Main menu accessed by PDA

Figure 5 is login in accessed by PDA, and Figure 6 is the man menu after login the web site.

2. Booking

Booking menu use for view booking list, add booking, search booking and generate booking report.

There are three sub-level menus in Booking menu:

- Booking list
- Add booking
- Booking report

Before make a booking, the relevant information which needed for make booking must to be inputted into Equipment and Admin menu, such as, container information in Equipment, commodity, customer, freight code, port, shipping clause, vessel and schedule information in Admin.

If the relevant information not available when make a booking, administrator need to add the information to the system. IV. 5 Equipment and IV.6 Admin will
describe details information of how to add the information to Equipment and Admin menu.

2.1 Booking list

Use Booking -> Booking list menu can list all booking.

Figure 7 show the booking list. IV.2.3 wills describe how to search and create booking list report for a particular vessel or port.

![Figure 7 Booking list](image)

2.2 Add booking

Use Booking -> Add booking menu can create new booking.

There are following attributes for a booking:

- Booking No
- Shipper
- Consignee
- Notify party
For example, to make a booking to ship 50 sheep in a 20 inch dry container from Akureyri, Iceland to Hamburg, Germany. The gross weight is 20,000 Kgs, net weight is 15,000 Kgs, and measurement is 20 CBM. The ocean freight is EUR1,500, destination delivery charge is EUR100.

First, click Add booking menu, it will prompt new booking to ask you input booking information. Figure 8 displays create new booking.
Figure 8 Create new booking

Shipper, consignee and notify party, port of loading, vessel, port of discharge can be select from the dropdown list if the information have already inputted in Equipment and Admin menu, after click ‘Save’ to create the booking, the booking will be list on ‘Booking list’, and it will show the booking number, for this booking, the booking number is 1, booking number can be use to retrieve the booking information in future.

Shipping mark, cargo description, freight revenue information are also needed to finish create the booking. Figure 9 show the link to input the information.
Figure 9 Booking information

Figure 10 show the mark menu after click 'Mark' link.

Figure 10 Mark menu

Figure 11 show the shipping mark after click ‘Add mark’ in the Mark menu.
Figure 11 Add mark

Figure 12 display the shipping mark information which is under the associated booking.
Similarly, figure 13 shows the add description after click ‘Description’ to input following cargo description information:

- Description (Name of cargo)
- Package (Number of package)
- Package unit
- Gross weight
- Net weight
- Measurement
Figure 13 Add description

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Icelandic Sheep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Sheep</td>
</tr>
<tr>
<td>Package</td>
<td>500</td>
</tr>
<tr>
<td>Package unit</td>
<td>PC</td>
</tr>
<tr>
<td>Gross weight</td>
<td>20,000</td>
</tr>
<tr>
<td>Net weight</td>
<td>15,000</td>
</tr>
<tr>
<td>Measurement</td>
<td>20</td>
</tr>
</tbody>
</table>

* - Required field

Figure 14 DG and fumigation cargo

Figure 14 show the ‘DG cargo’ and ‘Fumigation’ information associated with each description. This cargo is not dangerous cargo or fumigation cargo, so do not need to input ‘DG cargo’ and ‘Fumigation’ information. Otherwise, if the cargo is dangerous cargo, must input ‘DG cargo’ information which includes:

- Commodity
- Proper shipping name
- IMDG code
- Class
- UN number
- EmS No
- Packing group
• Package
• Package unit
• Measurement
• Weight
• Control emergency temp
• Flash point
• Marine pollutant
• MFAG No
• Gross weight
• Net weight

For details description of the above information, please refer to International Maritime Dangerous Goods (IMDG) Code description.

Figure 15 show the add DG cargo information. Figure 16 show the add fumigation cargo information.
If fumigation cargo, need to input following information in 'Fumigation':

- Description
Figure 16 Add fumigation cargo information

Also click ‘Revenue’ to input following freight revenue information:

- Freight
- Revenue

Figure 17 show the add revenue information.
All attribute may have one or more than one instance, such as there are two instances for revenue attribute:

- FAK(Freight All Kinds/Ocean freight) EUR1500
- DDC(Destination Delivery Charge) EUR100

Now, the booking created successfully.

You can edit a booking by click ‘Edit’ (Figure 18).
Figure 19 Edit booking

For management and security reason, it never allowed to delete the booking after add the booking, so there is not a button to delete a booking, alternative, a booking can be mark as inactive by click ‘Cancel’ when edit booking. Figure 19 show the edit booking.

Click ‘View’ can view existing booking information (Figure 20) and Figure 21 show the view booking.
2.3 Booking report

Use Booking -> Booking report menu can search and create booking list report for a particular vessel or port. For example, to create a report of booking list of all booking booked on vessel Iceland express voyage 701.
First click Booking -> Booking report menu (or click ‘Booking search’ in the main booking list) to define the search criteria. Figure 22 show the search booking.

![Booking report](image)

**Figure 22 Booking report**

Next, use the dropdown list to choose vessel name ‘Iceland express’ in Vessel filed and input ‘701’ in voyage field (Figure 23).

![Define search key word](image)

**Figure 23 Define search key word**

Then click the ‘Search’ button. Figure 24 shows the booking list of vessel Iceland express v.701.
There is another one-click quick search to get the booking report if only search by one key word. Input the key word in the ‘Search for’ menu bar (Figure 25). For example, to search all the booking list with shipper’s name ‘UNAK’, input ‘UNAK’ in the blank field after ‘Search for’ menu then select ‘Shipper’ from the next dropdown list, click ‘Search’ button, it will list all booking with shipper name ‘UNAK’.

Figure 25 One-click quick searches

Figure 26 show the printer-friendly version report to print out the report if click Printer-friendly version from the menu.
3. Receiving

Receiving menu use for view receiving list, add receiving, search receiving and generate receiving report.

There are three sub level menus in Receiving menu:

- Receiving list
- Add receiving
- Receiving report

3.1 Receiving list

Use Receiving -> Receiving list menu can view receiving list.

Receiving list will list all the receiving. IV.3.3 wills describe how to search and create receiving report for a particular vessel or port.

Click the booking number (Figure 27) of each receiving in the list can view the booking information, it will link to ‘View booking’ (Figure 21) to display the
booking information. Or click the equipment number to view the equipment information.

<table>
<thead>
<tr>
<th>Booking No</th>
<th>Equipment No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CAXU2213668</td>
</tr>
</tbody>
</table>

**Figure 27 Receiving list**

### 3.2 Add receiving

After cargoes arrive container yard at port of loading, and the cargoes are ready be loaded on vessel, the receiving information need to be input into the system.

There are following attributes for a receiving:

- Booking No
- Equipment No
- Seal No

For example, the cargo of booking number: 1 arrived the container yard and ready to be loaded on vessel, then the receiving information need to be inputted into the system.

There are two ways to input receiving information. One is use Receiving -> Add receiving menu create new receiving. By this way to add the receiving, click Add receiving menu, Figure 28 shows add receiving to input receiving information.
Another way is click the Receiving link associated with each booking in Booking list (Figure 29).

It will prompt the same web page to input the receiving information with click ‘Add receiving’ from Receiving menu, instead of input ‘Booking No.’ by manual, the ‘Booking No’ field is automatic inputted by this way, it only need input ‘Equipment No’ and ‘Seal No’.

**3.3 Receiving report**

Same with Booking report, it can search and create receiving list report for a particular vessel or port. For example, to create a report of receiving list of all receiving on vessel Iceland express voyage 701.

Use Receiving -> Receiving report menu (or click ‘Receiving search’ in the main receiving list) can define the search criteria to create the report.
Next, use the dropdown list to choose vessel name ‘Iceland express’ in Vessel filed and input ‘701’ in voyage field.

Then after click the ‘Search’ button, it will list all the receiving of vessel Iceland express v.701.

Still same with ‘Booking report’, there is another one-click quick search to get the receiving report if only search one key word.

For example, to search all the receiving list with shipper’s name ‘UNAK’, input ‘UNAK’ in the blank field after ‘Search for’ menu then select ‘Shipper’ from the next dropdown list, click ‘Search’ button, it will list all receiving with shipper name ‘UNAK’.

4. Documentation

Documentation menu uses for view B/L (Bills of Lading) list, add B/L, print B/L, search B/L and generate B/L report.

There are three sub level menus in Documentation menu:

- B/L list
- Add B/L
- Print B/L
- B/L report

4.1 B/L list

Use Documentation -> B/L list menu can view B/L list.

B/L list will list all the Bs/L. IV.4.4 wills describe how to search and create B/L report for a particular vessel or port.

4.2 Add B/L

After cargoes loaded on vessel, and vessel departed from the port of loading, the documentation information need to be input into the system.

There are following attributes for a B/L:

- Booking No
• B/L No
• B/L issue date
• Place of issue
• No of OB/L
• No of Copy B/L

For example, the vessel has departed from port of loading, and the cargo of booking number: 1 loaded on the vessel, then the documentation information need to be inputted into the system.

Same with receiving, There are two ways to input documentation information. One is use Documentation -> Add B/L menu create new B/L. By this way to add the documentation, click Add bill of loading menu, Figure 30 shows add bill of lading to input receiving information.

You may click Add B/L menu, then it will prompt new web page to ask you input B/L information.

![Add bill of loading](image)

Figure 30 Add bill of loading

Another way is click the B/L link associated with each booking in Booking list (Figure 31).
Another way is click the B/L link associated with each booking in Booking.

![Figure 31 Add B/L from Booking](image)

It will prompt the same web page to input the B/L information with click ‘Add B/L’ from Documentation menu, instead of input ‘Booking No.’ by manual, the ‘Booking No’ field is automatic inputted by this way.

B/L clause is also needed to finish create the B/L. Figure 32 show the link to input the information.

![Figure 32 B/L information](image)

Click B/L clause to select the B/L clause by the dropdown list (Figure 33).
4.3 Print B/L

Shipping carrier need to issue original ocean bill of lading (OB/L) after vessel departed from the port of loading. After make the B/L, the OB/L can be printed by Documentation -> Print B/L menu.
Input the B/L number in the blank field (Figure 34) and click the ‘Search’ button, the B/L will list out, the B/L will include all information inputted in booking, receiving and documentation.

Only a complement shipment can print B/L, a complement shipment must include mark, description, revenue, receiving, B/L in Booking, and B/L clause in Documentation. If miss any of the above information, the B/L can not be printed and also will not search out in Print B/L menu.

Click the Print B/L link can print out the B/L. Click the B/L no. can view the B/L information (Figure 35), or click the booking no. can view the booking information (Figure 21).
<table>
<thead>
<tr>
<th>Booking</th>
<th>Receiving</th>
<th>Documentation</th>
<th>Equipment</th>
<th>Admin</th>
</tr>
</thead>
<tbody>
<tr>
<td>B/L list</td>
<td>Add B/L</td>
<td>Print B/L</td>
<td>B/L report</td>
<td></td>
</tr>
</tbody>
</table>

**View B/L**

---

**Back to list**

<table>
<thead>
<tr>
<th>B/L No</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Booking No</td>
<td>1</td>
</tr>
<tr>
<td>Shipper</td>
<td>UNAK</td>
</tr>
<tr>
<td>Notify party</td>
<td>Notify Party</td>
</tr>
<tr>
<td>Consignee</td>
<td>Consignee 1</td>
</tr>
<tr>
<td>Pre carriage port</td>
<td></td>
</tr>
<tr>
<td>Pre carriage vessel</td>
<td></td>
</tr>
<tr>
<td>Pre carriage Voy</td>
<td></td>
</tr>
<tr>
<td>Port of loading</td>
<td>ISAEY</td>
</tr>
<tr>
<td>Vessel</td>
<td>Iceland express</td>
</tr>
<tr>
<td>Voyage</td>
<td>701</td>
</tr>
<tr>
<td>Port of discharge</td>
<td>DEHAM</td>
</tr>
<tr>
<td>Second vessel</td>
<td></td>
</tr>
<tr>
<td>Second Voy</td>
<td></td>
</tr>
<tr>
<td>Port of delivery</td>
<td></td>
</tr>
<tr>
<td>Mark</td>
<td>N/M</td>
</tr>
<tr>
<td>Package</td>
<td>500</td>
</tr>
<tr>
<td>Package unit</td>
<td>PC</td>
</tr>
<tr>
<td>Description</td>
<td>Icelandic Sheep</td>
</tr>
<tr>
<td>Equipment No</td>
<td>CAXU2213668</td>
</tr>
<tr>
<td>Seal No</td>
<td>SN6666</td>
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<tr>
<td>Gross weight</td>
<td>9.100</td>
</tr>
<tr>
<td>Net weight</td>
<td>15</td>
</tr>
<tr>
<td>Measurement</td>
<td>9.100</td>
</tr>
</tbody>
</table>

---

Figure 35 View B/L
4.4 B/L report

Same with Booking and Receiving report, it can search and create B/L list report for a particular vessel or port. For example, to create a report of Bs/L list of all receiving on vessel Iceland express voyage 701.

Use Documentation -> B/L report menu (or click ‘B/L search’ in the main documentation list) can define the search criteria to create the report.

Next, use the dropdown list to choose vessel name ‘Iceland express’ in Vessel filed and input ‘701’ in voyage field.

Then after click the ‘Search’ button, it will list all the Bs/L of vessel Iceland express v.701.

Still same with ‘Booking report’ and ‘Receiving report’, there is another one-click quick search to get the receiving report if only search one key word. For example, to search all the Bs/L list with shipper’s name ‘UNAK’, input ‘UNAK’ in the blank field after ‘Search for’ menu then select ‘Shipper’ from the next dropdown list, click ‘Search’ button, it will list all Bs/L with shipper name ‘UNAK’.

5. Equipment

Equipment menu uses for view equipment list, add equipment, search commodity and generate equipment report.

There are following attributes for equipment:

- Container No
- Type
- Size
- Lease
- Internal length
- Internal width
- Internal height
- Max load height
- Door open width
- Door open height
- Gross weight
- Tare
- Net weight
- Volume
Figure 36 show the equipment list. RF stand for refer container, if a container type is ‘RF’, it must input refer container information by click ‘Refer’ link associated with each container (Figure 37).

There are following attribute for a refer container:

- Temp
6. Admin

Admin menu use for manage commodity, customer, freight code, port, shipping clause, vessel, schedule and user.

There are eight sub level menus in Admin menu:

- Commodity
- Customer
- Freight code
- Port
- Shipping clause
- Vessel
- Schedule
- User

6.1 Commodity

Admin -> Commodity use for view commodity list, add commodity, search commodity and generate commodity report.
There are following attributes for commodity (Figure 38):

- Commodity ID
- Custom code
- Commodity

6.2 Customer

Admin -> Customer use for view customer list, add customer, search customer and generate customer report.

There are following attributes for customer (Figure 39):

- Customer ID
- Name
- Address
- City
- Post code
- Country
- Phone
- Fax
6.3 Freight code

Admin -> Freight code use for view freight code list, add freight code, search freight code and generate freight code report.

There are following attributes for freight code (Figure 40):

- Freight ID
- Freight code
6.4 Port

Admin -> Port use for view port list, add port, search port and generate port report.

There are following attributes for port (Figure 41):

- Port Id
- Port name
- City
- country
6.5 Shipping clause

Admin -> Shipping clause use for view shipping clause list, add shipping clause, search shipping clause and generate shipping clause report.

There are following attributes for term (Figure 42):

- Term
6.6 Vessel

Admin -> Vessel use for view vessel list, add vessel, search vessel and generate vessel report.

There are following attributes for vessel (Figure 43):

- Vessel ID
- Vessel Name
- Flag
6.7 Schedule

Admin -> Vessel use for view vessel voyage list, add vessel voyage, search vessel voyage and generate vessel voyage report.

There are following attributes for schedule (Figure 44):

- Voyage
- Port
- Arrive date
- Depart date
6.8 Users

This function only for web site administrator, all other users can not use this function. This function can view user list, add user, search user, generate user report, change password or delete user. For security reason, there is not a direct link from Admin menu for this function.

There are four levers of user group:

1. Site administrator
2. Administrator
3. Super user
4. User

Site administrator has all privilege, include create user and manage user information. Administrator has privilege to access Admin menu except create user and manage user information. Super user has privilege to access Booking, Receiving, Documentation and Equipment menus, they can only view Admin menu but can not create or edit the information in Admin menus. User can access Booking, Receiving, Documentation and Equipment menus, user can only view the information, can not create, or edit information, and this is use for outside users which only need to retrieve shipping information.
For each of the user group, Table 1 is a list of user names and passwords to access the web site. For security reason, there is not site administrator user name and password listed.

<table>
<thead>
<tr>
<th>User group</th>
<th>User name</th>
<th>Password</th>
<th>Privilege</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site administrator</td>
<td>-</td>
<td>-</td>
<td>All include manage users</td>
</tr>
<tr>
<td>Administrator</td>
<td>sagaadmin</td>
<td>unak2007</td>
<td>Access all menus</td>
</tr>
<tr>
<td>Super user</td>
<td>sagauser</td>
<td>iceland</td>
<td>Except Admin menu</td>
</tr>
<tr>
<td>User</td>
<td>user</td>
<td>akureyri</td>
<td>Only view information</td>
</tr>
</tbody>
</table>

Table 1 User name and password to access the web site.

V. Testing

Before the system can be delivered, it must be thoroughly tested. System need to be tested to ensure that it satisfies the user requirements accurately and completely. Individual components are tested independently, and then are tested together as a sub-system and then the sub-systems are tested together as a whole system. Also can perform some form of acceptance testing before the system is finally accepted and complete.

1. Unit test

There are five units in the system, which are booking, receiving, documentation, equipment and admin. I tested each of the unit by add equipment, commodity, customer, freight code, port, shipping clause, vessel, voyage, then make a booking, receiving, and documentation.

2. Sub-system test

It need equipment, commodity, customer, freight code, port, shipping clause, vessel, voyage information when create a booking, receiving and documents, sub-system test are test if the sub-system can work together.

3. System test

After sub-system test, I tested the whole system from make a booking request to make documents and relevant reports after cargo transported.
4. Acceptance test

Before release the web site, I also perform an acceptance test, to test if the system can work for really industry, I made more booking request, and created more complex report for make business plan, the system can meet the designed requirement.

5. Complete system

After performed the entire test, the system complete and will release on 14th May, 2007. The domain name is http://saga.liangcity.com.

VI. Future Development and Conclusions

The development of the Internet increases and speeds up the demand of customers e-commerce services. This e-commerce web site can fully committed to capitalizing on the advantage of the Internet and wants to support and accompany its customers as they venture into the web. The web site more tightly integrates services into logistic processes. It make work easier for shipping line and their customers, and enabled shipping line to turn into leading providers of integrated logistics services. Customer get full range of logistics services via a single interface.

The web application use PHP, MySQL, and Apache to provide full range of logistic application.

In future, the web application can extend the online service with additional feature, such as, more kinds of search or statistic reports may created according to difference requirement, EDI function to transfer the shipment information cross platform, and more operation of equipments activity may be developed, then user can get more accuracy information when tracking the shipment.

The project conduct a detailed study of work processes of logistic system, the project use object-oriented methods to design the web site, by study business methods, gather user requirement, to perform a detailed investigation and study of a how computer science technology work for logistic business, then design and implementation of the system.

There are various reasons why e-commerce is important, customer demand a single central platform to meet the core competencies, it need decreasing the costs of operation, there are more innovations of information technology to make the application possible. [9]
The system modernise the business with new and already existing partners, to simplify internal processes by using information technologies more efficiently and decrease processing costs.

The web based application lead to lower process costs for customers. Faster service and 24X7 hours available systems provide high degree of availability.

This open system standardising the operation processes, and improved market transparency, it connect people, technologies and work processes. It increasing the delivery of service speed, integrate supply chain and services and transparency.

This is the first time that I work individual on a specific project and I have definitely learned a lot from this project with the supervisor’s advice and clarification.

VII. References


Appendix A Project time plan
<table>
<thead>
<tr>
<th>ID</th>
<th>Task Name</th>
<th>Duration</th>
<th>Start</th>
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<th>Sep 11, 2004</th>
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</thead>
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<td>Proposal</td>
<td>1 day</td>
<td>Fri 9/8/04</td>
<td>Thu 9/11/04</td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>Purpose project and approach a supervisor</td>
<td>7 days</td>
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<td>Thu 9/14/04</td>
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<td></td>
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<tr>
<td>3</td>
<td>Planning, make timetable for project</td>
<td>7 days</td>
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<td>Thu 9/15/04</td>
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<td></td>
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<td>Thu 9/26/04</td>
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<td>Analysis/Software Requirements</td>
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<td>Fri 9/22/04</td>
<td>Thu 10/2/04</td>
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<td></td>
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<td>Needs/requirements analysis</td>
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<td>Sun 10/1/04</td>
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<td>8</td>
<td>Go over similar systems</td>
<td>5 days</td>
<td>Fri 9/22/04</td>
<td>Tue 9/26/04</td>
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<tr>
<td>9</td>
<td>Review technologies</td>
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<td>Sun 10/1/04</td>
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<td></td>
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<td>Mon 10/2/04</td>
<td>Sun 10/8/04</td>
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<td>Thu 10/12/04</td>
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<td>Thu 10/12/04</td>
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<td>Overview of the design (diagram)</td>
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<td>Tue 10/17/04</td>
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<td>Overview of user interface (storyboard)</td>
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<td>Develop prototype (in paper)</td>
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<td>Thu 11/2/04</td>
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<td>Fri 11/14/04</td>
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</tr>
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<td>Wed 11/15/04</td>
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<td></td>
</tr>
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<td>2 days</td>
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<td>Fri 11/24/04</td>
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</tr>
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<td>6 days</td>
<td>Fri 11/24/04</td>
<td>Fri 11/30/04</td>
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<td>Sun 11/3/07</td>
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<td>Sun 2/5/07</td>
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<td>Wed 1/10/07</td>
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<td>Sun 2/25/07</td>
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<td>6 days</td>
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<td>Mon 3/5</td>
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<tr>
<td>28</td>
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<td>Sun 3/11</td>
<td>Sun 3/11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Final Dysem</td>
<td>12 days</td>
<td>Sun 3/18</td>
<td>Thu 3/29</td>
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<td>12 days</td>
<td>Sun 3/18</td>
<td>Thu 3/29</td>
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<td>Thu 3/28</td>
<td>Thu 3/28</td>
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<td>42</td>
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<td>14 days</td>
<td>Fri 3/30</td>
<td>Fri 4/6</td>
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<td>Final Report</td>
<td>14 days</td>
<td>Fri 3/30</td>
<td>Fri 4/6</td>
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<td>Fri 4/13</td>
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<td>Fri 4/13</td>
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<td>Dec 31, '06</td>
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<td>W T F S</td>
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**Project: Software Development**

**Date: 11/24/20**

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<th>Milestone</th>
<th>External Tasks</th>
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<tr>
<td>Progress</td>
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<td>External Milestone</td>
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<tr>
<td></td>
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<td>Deadline</td>
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</tbody>
</table>

**Page 8**

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Appendix B Storyboard

Main Menu

| Booking | Receiving | Documentation | Equipment | Admin |

Page 1 Main menu.

You may select the menu to link to different page.

Click Booking, link to page 2.

Click Receiving, link to page 9.

Click Documentation, link to page 12.

Click Equipment, link to page 17.

Click Admin, link to page 22.
Page 2 Booking - Review inquiry

Click New booking or Report to link to create new booking page, or report page.

By ‘Search for’ text field, user can input booking number or vessel name to search and review bookings.

User also can Edit, View, Delete the booking by the menu.

User must input description and revenue information by click Description and Revenue.

Click Bill of loading, Description, Receiving or Revenue can link to relevant pages of this booking.

Or user also can input bill of loading and receiving information by input booking number by the menu in Main menu page.
Create a new booking.

Page 3 Booking – New booking

Create a new booking.
When make a new booking, user must also input the description information. By click Description in the Review inquiry in Booking.

Click New description to create a new description.

User also can Edit, View, Delete the description by the menu, each commodity need one description item, one booking may has more than one description.

User also needs input dangerous cargo information if commodity is dangerous cargo, and fumigation cargo if commodity need to be fumigate.
### Page 5 Booking – New description

Create a new description.

<table>
<thead>
<tr>
<th>commodityId</th>
<th>description</th>
<th>package</th>
<th>packageUnit</th>
<th>grossWeight</th>
<th>netWeight</th>
<th>measurement</th>
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<tbody>
<tr>
<td></td>
<td>description</td>
<td></td>
<td></td>
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</tr>
<tr>
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</tr>
</tbody>
</table>
Page 6 Booking – Dangerous cargo

Create a new dangerous cargo.
Create a new fumigations cargo.
Page 8 Booking – Report

By input Vessel name, voyage, POL (port of loading) and/or POD (port of destination), user can get summary booking report by a dropdown list menu to choose All cargo, Container cargo or Non-container cargo.

Same for Vessel revenue summary report.
Page 9 – Receiving

Click New receiving or Report to link to create new receiving or report page.

By ‘Search for’ text field, user can input booking number or vessel name to search and review receiving.

User also can Edit, View, Delete the receiving by the menu.
Create a new receiving.
### Report

<table>
<thead>
<tr>
<th>Report</th>
<th>Columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loading list</td>
<td>Vessel name, Voyage, POL, POD</td>
</tr>
<tr>
<td>Reefar loading list</td>
<td>Vessel name, Voyage, POL, POD</td>
</tr>
<tr>
<td>Dangerous cargo manifest</td>
<td>Vessel name, Voyage, POL, POD</td>
</tr>
<tr>
<td>Fumigation cargo</td>
<td>Vessel name, Voyage, POL, POD</td>
</tr>
<tr>
<td>Vessel revenue summary</td>
<td>Vessel name, Voyage, POL, POD</td>
</tr>
<tr>
<td>Booking not received</td>
<td>Vessel name, Voyage, POL, POD</td>
</tr>
</tbody>
</table>

#### Page 11 Receiving – Report

Same with booking report. By input Vessel name, voyage, POL (port of loading) and/or POD (port of destination), user can get loading list report by a dropdown list menu to choose All cargo, Container cargo or Non-container cargo.

Same for all other report.
Page 12 Documentation

Click New bill or loading or Report to link to create new bill of loading or report page.

By ‘Search for’ text field, user can input booking number or vessel name to search and review bill of loading.

User also can Edit, View, Delete the bill of loading by the menu.

User can print Bill of loading by click Print Bill of Loading.

User can click Blclause and Mark to add clause and marks.
Page 13 Documentation – New Bill of Loading

Create New bill or loading.
Create New clause for bill or loading.
New Mark

Create New mark for bill or loading.
# Report

<table>
<thead>
<tr>
<th>Category</th>
<th>Columns</th>
<th>Search</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifest</td>
<td>Vessel name, Voyage, POL, POD</td>
<td></td>
</tr>
<tr>
<td>Cargo manifest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dangerous cargo manifest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharge list</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manifest corrections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manifest corrections report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invoice</td>
<td>Vessel name, Voyage, POL, POD</td>
<td></td>
</tr>
<tr>
<td>B/L no.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice of arrival</td>
<td>Vessel name, Voyage, POL, POD</td>
<td></td>
</tr>
<tr>
<td>B/L no.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vessel Revenue summary</td>
<td>Vessel name, Voyage, POL, POD</td>
<td></td>
</tr>
<tr>
<td>Vessel / Voyage list</td>
<td>Vessel name, Voyage, POL, POD</td>
<td></td>
</tr>
</tbody>
</table>

Page 16 Documentation – Report

Same with booking report. By input Vessel name, B/L number, voyage, POL (port of loading) and/or POD (port of destination), and by the dropdown menu list, user can get manifest.

Same for all other report.
### Equipment

<table>
<thead>
<tr>
<th>Equipment tracking</th>
<th>Order service</th>
<th>Maintenance and repair</th>
<th>Report</th>
</tr>
</thead>
</table>

Page 17 Equipment

Equipment menu.
Equipment - Equipment tracking

Equipment number: (equipment number) Search

Page 18 Equipment – Equipment tracking

Input the equipment number, can get the status of the equipment.
## Equipment - Order service

<table>
<thead>
<tr>
<th>Import/Export</th>
<th>Quantity</th>
<th>Size</th>
<th>Type</th>
<th>Order</th>
</tr>
</thead>
</table>

Choose to import or export equipment, input quantity, size, type to order the equipments.
## Equipment - Order service

<table>
<thead>
<tr>
<th>Equipment no.</th>
<th>Size</th>
<th>Type</th>
<th>Details</th>
<th>Submit</th>
</tr>
</thead>
</table>

Input equipment number, size, type and detail reason to maintenance and repair the equipment.
### Equipment - Report

<table>
<thead>
<tr>
<th>Port name</th>
<th>(name of port)</th>
<th>Submit</th>
</tr>
</thead>
</table>

Page 21 Equipment – Report

Input port name can get an equipment list for this port.
Page 22 Admin

Admin menu.

Administrator can maintenance the date by this menu.
List of customers.

Click New customer link to create new customer page.

By ‘Search for’ text field, user can input customer name to search and review customer information.

User also can Edit, View, Delete the customer by the menu.
Add a new customer, the customer can be used for shipper or consignee or notify party.
Manage vessel / voyage and sailing information.

Click New schedule link to create new schedule page.

By ‘Search for’ text field, user can input vessel name to search and review sailing information.

User also can Edit, View, Delete the schedule by the menu.
Add a new schedule for vessel.
Manage commodity information.

Click New commodity link to create new commodity page.

By ‘Search for’ text field, user can input commodity name to search and review commodity information.

User also can Edit, View, Delete the commodity by the menu.
Add a new commodity.
Manage equipment information.

Click New equipment link to create equipment page.

By ‘Search for’ text field, user can input container number to search and review container information.

User also can Edit, View, Delete the container information by the menu.
Add new equipment information.
Appendix C SQL script to create the database

1. Sagacreatedb.sql

/*
Created  13/04/2007
Project  LOK0183 Final Year Project
Author   Liang Sun
Database ver MySQL 4
Database name saga`
*/

-- --------------------------------------------------------

-- create database `saga`

Create database saga;

2. Sagacreatetable.sql

/*
Created  27/01/2007
Project  LOK0183 Final Year Project
Author   Liang Sun
Database ver MySQL 4
Database name saga`
*/

-- Table structure for table `billofloading`

CREATE TABLE `billofloading` (  
    `BLNo` int(11) NOT NULL auto_increment,  
    `bookingNo` int(11) NOT NULL,  
    `BLIssueDate` date NOT NULL,  
    `placeofIssue` char(5) NOT NULL,  
    `noOBL` int(11) NOT NULL,  
    `noCopyBL` int(11) NOT NULL,  
    PRIMARY KEY (`BLNo`),  
    UNIQUE KEY `BLNo` (`BLNo`)  
) ENGINE=MyISAM ;
-- Table structure for table `blclause`

CREATE TABLE `blclause` (
    `id` int(11) NOT NULL auto_increment,
    `BLNo` int(11) NOT NULL,
    `clauseId` int(11) NOT NULL,
    PRIMARY KEY  (`id`,`BLNo`,`clauseId`)
) ENGINE=MyISAM;

-- Table structure for table `booking`

CREATE TABLE `booking` (
    `bookingNo` int(11) NOT NULL auto_increment,
    `shipperID` int(11) NOT NULL,
    `ConsigneeID` int(11) NOT NULL,
    `notifyPartyId` int(11) NOT NULL,
    `preCarriagePortID` int(11) default NULL,
    `preCarriageVesselId` int(11) default NULL,
    `preCarriageVoyId` char(20)  default NULL,
    `portofLoadingID` char(5)  NOT NULL,
    `vesselId` int(11) NOT NULL,
    `voyageId` int(11) NOT NULL,
    `portofDischargeId` int(11) NOT NULL,
    `secondVesselId` int(11) default NULL,
    `secondVslVoyId` int(11) default NULL,
    `portofDeliveryId` int(11) default NULL,
    `Cancel` tinyint(1) default NULL,
    PRIMARY KEY  (`bookingNo`),
    UNIQUE KEY `bookingNo` (`bookingNo`)
) ENGINE=MyISAM;

-- Table structure for table `commodity`

CREATE TABLE `commodity` (
    `commodityId` int(11) NOT NULL auto_increment,
CREATE TABLE `containerinfo` (  
`containerNo` char(11) NOT NULL,  
`type` char(20) NOT NULL,  
`size` char(20) NOT NULL,  
`lease` tinyint(1) NOT NULL,  
`internalLength` int(11) default NULL,  
`InternalWidth` int(11) default NULL,  
`internalHeight` char(20) default NULL,  
`maxLoadheight` int(11) default NULL,  
`doorOpenWidth` int(11) default NULL,  
`doorOpenHeight` int(11) default NULL,  
`grossWeight` int(11) default NULL,  
`Tare` int(11) default NULL,  
`net` int(11) default NULL,  
`volume` int(11) default NULL,  
PRIMARY KEY (`containerNo`)  
) ENGINE=MyISAM;
UNIQUE KEY `customerId` (`customerId`),
UNIQUE KEY `name` (`name`)
) ENGINE=MyISAM ;

-- --------------------------------------------------------

--
-- Table structure for table `dangerouscargo`
--
--
CREATE TABLE `dangerouscargo` (  
  `dangerouscargoId` int(11) NOT NULL auto_increment,  
  `properShippingName` char(50) NOT NULL,  
  `IMDGCode` char(20) NOT NULL,  
  `class` char(20) NOT NULL,  
  `UNnumber` int(11) NOT NULL,  
  `EmSNo` int(11) NOT NULL,  
  `packingGroup` char(20) NOT NULL,  
  `package` int(11) NOT NULL,  
  `packageUnit` char(20) NOT NULL,  
  `measurement` double(5,4) NOT NULL,  
  `weight` double(5,4) NOT NULL,  
  `controlEmergencyTemp` double(3,3) NOT NULL,  
  `flashpoint` double(3,3) default NULL,  
  `marinePolutant` tinyint(1) NOT NULL,  
  `MFAGNo` int(11) default NULL,  
  `grossWeight` double(5,4) NOT NULL,  
  `netWeight` double(5,4) NOT NULL,  
  `descriptionID` int(11) NOT NULL,  
  `commodityId` int(11) NOT NULL,  
  `bookingNo` int(11) NOT NULL,  
  PRIMARY KEY (`dangerouscargoId`, `descriptionID`, `commodityId`, `bookingNo`),  
  UNIQUE KEY `dangerouscargoId` (`dangerouscargoId`)
) ENGINE=MyISAM;

--
-- Table structure for table `description`
--
--
CREATE TABLE `description` (  
  `descriptionID` int(11) NOT NULL,  
  `commodityId` int(11) NOT NULL,  
  `description` char(200) NOT NULL,  
  `package` int(11) NOT NULL,  
  `packageUnit` char(20) NOT NULL,  
  `grossWeight` double(5,4) NOT NULL,  
  `netWeight` double(5,4) NOT NULL,  
  `descriptionID` int(11) NOT NULL,  
  `commodityId` int(11) NOT NULL,  
  `bookingNo` int(11) NOT NULL,  
  PRIMARY KEY (`descriptionID`, `commodityId`, `bookingNo`),  
  UNIQUE KEY `descriptionID` (`descriptionID`)
) ENGINE=MyISAM;
'bookingNo' int(11) NOT NULL,
PRIMARY KEY ("descriptionID","commodityId","bookingNo")
) ENGINE=MyISAM;

-- --------------------------------------------------------

-- -- Table structure for table `freightcode`
--

CREATE TABLE `freightcode` (  
`FreightId` int(11) NOT NULL auto_increment, 
`freightCode` char(20) NOT NULL, 
PRIMARY KEY ("FreightId"),
UNIQUE KEY `FreightId` ("FreightId"),
UNIQUE KEY `freightCode` ("freightCode")
) ENGINE=MyISAM ;

-- --------------------------------------------------------

-- -- Table structure for table `fumigationcargo`
--

CREATE TABLE `fumigationcargo` (  
`fumigationId` int(11) NOT NULL auto_increment, 
`description` char(200) NOT NULL, 
`descriptionID` int(11) NOT NULL, 
`commodityId` int(11) NOT NULL, 
`bookingNo` int(11) NOT NULL, 
PRIMARY KEY ("fumigationId","descriptionID","commodityId","bookingNo")
) ENGINE=MyISAM;

-- --------------------------------------------------------

-- -- Table structure for table `mark`
--

CREATE TABLE `mark` (  
`bookingNo` int(11) NOT NULL, 
`mark` char(200) NOT NULL, 
PRIMARY KEY ("bookingNo")
) ENGINE=MyISAM;

-- --------------------------------------------------------
CREATE TABLE `port` (
    `portId` int(11) NOT NULL auto_increment,
    `portName` char(5) NOT NULL,
    `city` char(20) NOT NULL,
    `country` char(20) NOT NULL,
    PRIMARY KEY (`portId`),
    UNIQUE KEY `portId` (`portId`),
    UNIQUE KEY `portName` (`portName`)
) ENGINE=MyISAM;

-- Table structure for table `receiving` --

CREATE TABLE `receiving` (
    `id` int(11) NOT NULL auto_increment,
    `bookingNo` int(11) NOT NULL,
    `equipmentNo` char(20) default NULL,
    `sealNo` char(20) NOT NULL,
    PRIMARY KEY (`id`, `bookingNo`),
    UNIQUE KEY `sealNo` (`sealNo`)
) ENGINE=MyISAM;

-- Table structure for table `refer` --

CREATE TABLE `refer` (
    `containerNo` char(11) NOT NULL,
    `temp` char(20) NOT NULL,
    PRIMARY KEY (`containerNo`)
) ENGINE=MyISAM;

-- Table structure for table `revenue` --
CREATE TABLE `revenue` (  `id` int(11) NOT NULL auto_increment,  `bookingNo` int(11) NOT NULL,  `FreightId` int(11) NOT NULL,  `Revenue` double(6,2) default NULL,  PRIMARY KEY (`id`,`bookingNo`,`FreightId`) ) ENGINE=MyISAM;

-- --------------------------------------------------------

-- Table structure for table `schedule`

CREATE TABLE `schedule` (  `id` int(11) NOT NULL auto_increment,  `vesselID` int(11) NOT NULL,  `voyageID` int(11) NOT NULL,  `portId` int(11) NOT NULL,  `arriveDate` date default NULL,  `departDate` date default NULL,  PRIMARY KEY (`id`,`vesselID`,`voyageID`,`portId`) ) ENGINE=MyISAM;

-- --------------------------------------------------------

-- Table structure for table `shippingclause`

CREATE TABLE `shippingclause` (  `clauseId` int(11) NOT NULL auto_increment,  `term` char(150)  NOT NULL,  PRIMARY KEY (`clauseId`),  UNIQUE KEY `clauseId` (`clauseId`),  UNIQUE KEY `term` (`term`) ) ENGINE=MyISAM;

-- --------------------------------------------------------

-- Table structure for table `vessel`

CREATE TABLE `vessel` (  `vesselID` int(11) NOT NULL auto_increment,  `vesselName` char(20) NOT NULL,  `Flag` char(20) NOT NULL,  PRIMARY KEY (`vesselID`) ) ENGINE=MyISAM;
PRIMARY KEY ('vesselID')
) ENGINE=MyISAM;

-- --------------------------------------------------------
-- Table structure for table `users`
--

CREATE TABLE `users` (
  `userID` int(11) NOT NULL auto_increment,
  `userName` char(20) NOT NULL,
  `password` char(20) NOT NULL,
  `groupID` int(11) NOT NULL,
  PRIMARY KEY (`userID`),
  UNIQUE KEY `userName` (`userName`)
) ENGINE=MyISAM;

--
-- Dumping data for table `users`
--

INSERT INTO `users` VALUES (3, 'sagaadmin', 'unak2007', 1);
INSERT INTO `users` VALUES (4, 'sagauser', 'iceland', 2);
INSERT INTO `users` VALUES (5, 'user', 'akureyri', 3);