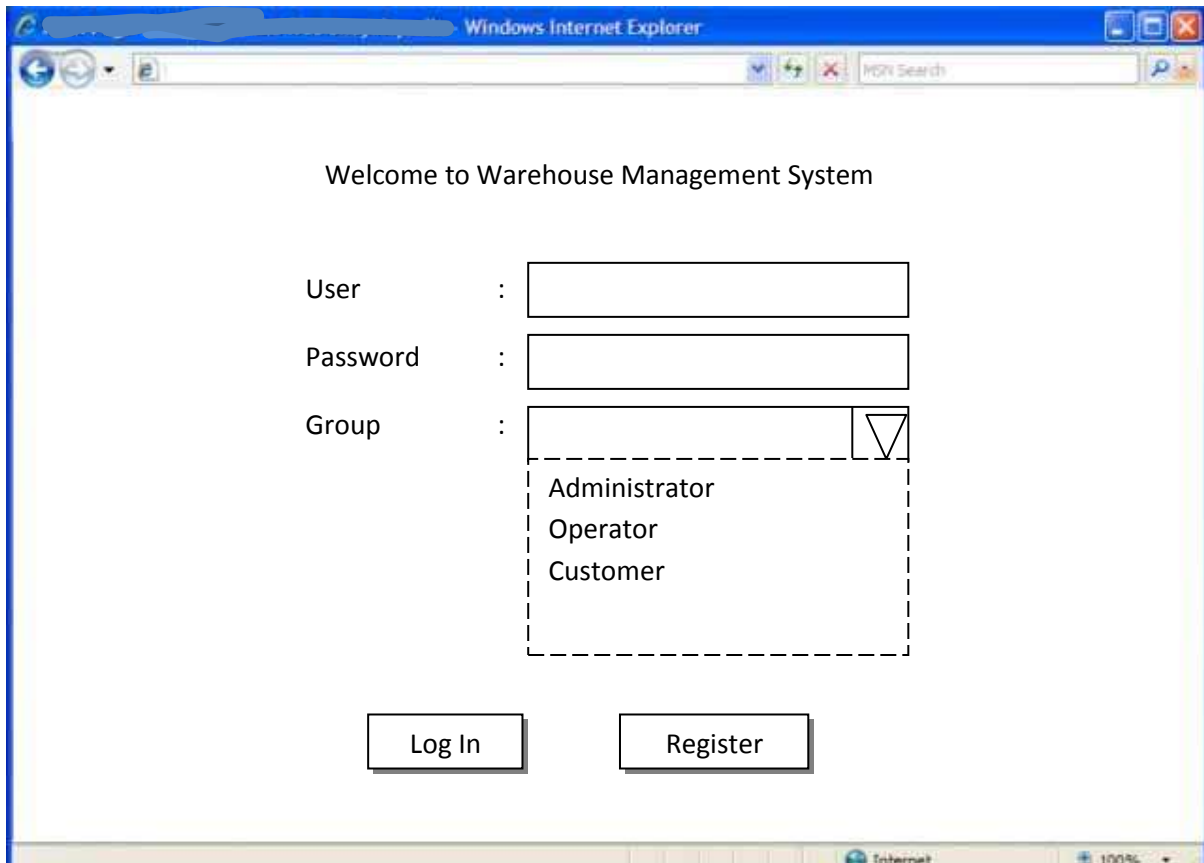


## 5. Interface Requirements

### 5.1 User Interfaces

#### Draft/Mock Up

Home.html



The screenshot shows a Windows Internet Explorer browser window displaying a web page titled "Welcome to Warehouse Management System". The page contains a login form with three input fields: "User", "Password", and "Group". The "Group" field is a dropdown menu with a downward arrow icon, and its dropdown list is open, showing three options: "Administrator", "Operator", and "Customer". Below the input fields are two buttons: "Log In" and "Register". The browser's address bar is empty, and the status bar at the bottom shows "Internet" and "100%" zoom.

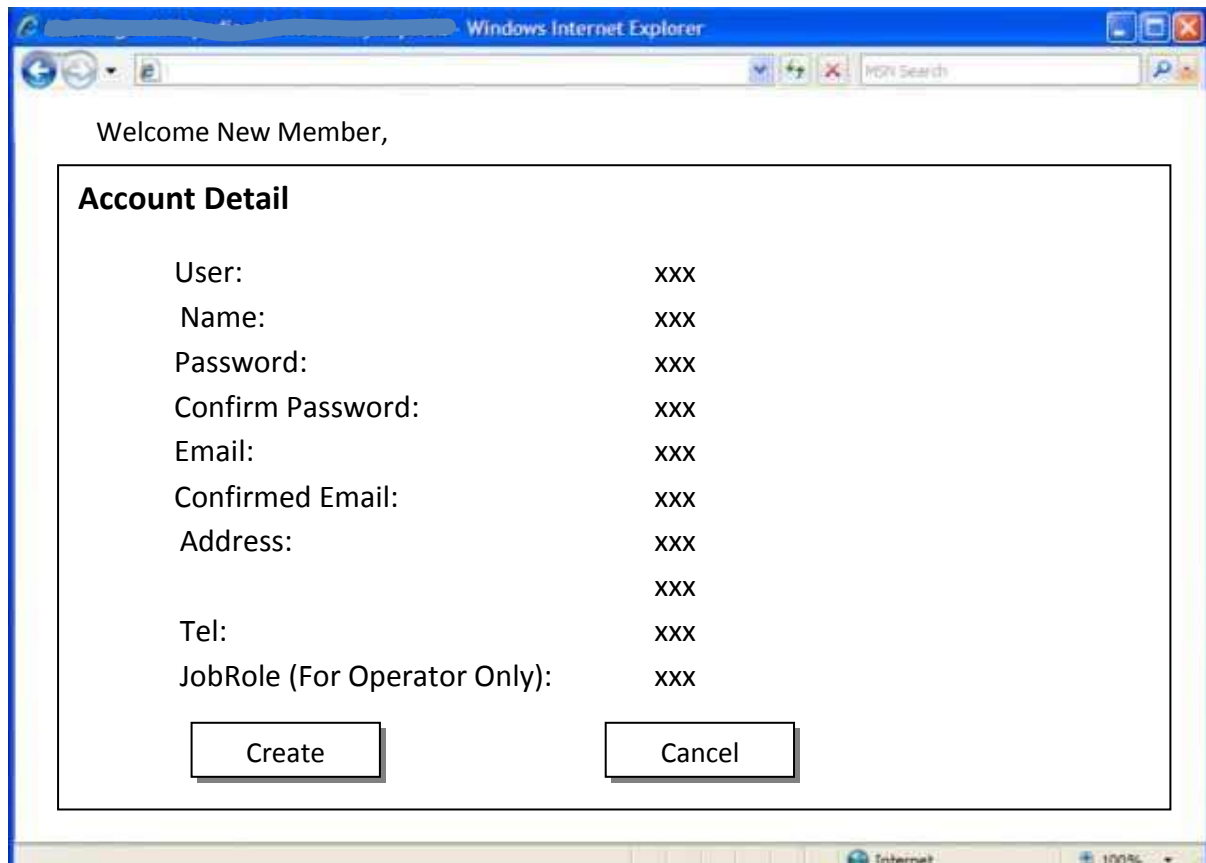
- **User:** Prompt administrator, operator or customer to enter the name in string of maximum length 30 characters.
- **Password:** Prompt administrator, operator or customer to enter the alphanumeric string, 4 to 16 characters long.
- **Group:** Prompt administrator, operator or customer to enter which role the user is in.
- **Log In:** Prompt administrator, operator or customer to click on.
- **Register:** To register as new user under selected group to log in.

Exceptions: "User and password is incorrect" message will be displayed upon Log In button press at three times. After the third attempt, "You are not authorized to access! Please contact administrator for further assistance. Thank You" will be displayed.

Additional Output: "You are successfully authorized!" message will be displayed upon Log In button press.

## Register.html

First time user (Customer or Operator) need to register for an account to access the database which contains all the details such as the inventory list at each storage location, the shipment details of each package, the customer details and more.



The screenshot shows a web browser window titled 'Windows Internet Explorer'. The address bar contains 'MSN Search'. The page content includes a greeting 'Welcome New Member,' followed by a form titled 'Account Detail'. The form contains the following fields and labels:

User:	xxx
Name:	xxx
Password:	xxx
Confirm Password:	xxx
Email:	xxx
Confirmed Email:	xxx
Address:	xxx
	xxx
Tel:	xxx
JobRole (For Operator Only):	xxx

At the bottom of the form are two buttons: 'Create' and 'Cancel'.

- User is a string of alphabet and is maximum 5 char long for log in.
- Name is a string of alphabets and is maximum 30 char long.
- Password can be maximum 10 numbers long and minimum 3 numbers.
- Confirmed Password can be maximum 10 numbers long and minimum 3 numbers to confirm it after repeating fill in the password.
- Email can be maximum 20 characters long and minimum 10 characters.
- Confirmed Email can be maximum 20 characters long and minimum 10 characters to confirm it after repeating fill in the email.
- Address is composed of Block, Street Name and Postal Index Number (PIN) Code.
- Telephone is stored as integer, 8 char long.
- JobRole is the position/job of operator that the employee carries out at the company and is stored as a string containing 0 to 20 alphanumeric characters.
- Create button is to create or insert in the database after being clicked and redirected to home page.
- Cancel button is to redirect back to home page after not wishing to create an account.

## Admin\_Page.html

When the Administrator logs in the home website page, the staff detail appears under staff (Operator tab). Operator tab describes that time that operator log in and out the WMS.

Welcome Administrator,								Log Out		
Staff(Operator)								Customer	Reservation/Order	Shipping/Handling
ID	Name	JobRole	Email	Password	Time (Log In)	Time (Log Out)	Update			
xxx	xxx	xxx	xxx	xxx	xxx	xxx	Modify/Save			

\*Remarks: The table list is displayed under staff & customer only. The six different columns are shown on ID, Name, JobRole, Email, Time (Log In), Time (Log Out), Update (Modify/Save)

- Employee Name is a string of maximum length 30 characters.
- Employee ID can be maximum eight characters long and minimum two characters long.
- Employee job role is the position/job that the employee carries out at the company and is stored as a string containing 0 to 20 alphanumeric characters.
- Employee Email can be maximum 20 characters long and minimum 10 characters.
- Employee Password can be maximum 10 numbers long and minimum 3 numbers.
- Time (Log In) & Time (Log Out) : Employ working hours stored in 24 h format.
- Modify/Save button is used for updating or save if there is any changes and to remove the row when the staff quit.

Exceptions: “Incomplete Information” message will be displayed upon Modify/Save button press if there is blank in any each of columns during modify process.

Additional Output: “The details have been saved” or “The details have been modified” message will be displayed upon Modify/Save button press.

## Admin\_Page.html

The Customer tab is clicked on admin page as shown below. This tab describes the detail of clients that have been registered.

Welcome Administrator,

Log Out

Staff(Operator) **Customer** Reservation/Order Shipping/Handling

ID	Name	Address	Email	Password	Tel	Update
XXX	XXX	XXX	XXX	XXX	XXX	Modify/ Save

- Customer ID is stored as an alphanumeric string, 1 to 16 char long.
- Customer Name is a string of alphabets and is maximum 30 char long.
- Customer Address is composed of Block, Street Name and Postal Index Number (PIN) Code.
- Customer Email can be maximum 20 characters long and minimum 10 characters.
- Customer Password can be maximum 10 numbers long and minimum 3 numbers.
- Customer Phone is stored as integer, 8 char long.
- Modify/Save button is used for updating or save if there is any changes in new company location for client.

Exceptions: “Incomplete Information” message will be displayed upon Modify/Save button press if there is blank in any each of columns during modify process.

Additional Output: “The details have been saved” or “The details have been modified” message will be displayed upon Modify/Save button press.

## Admin\_Page.html

The Reservation/Order tab is clicked on admin page as shown below. This describes the detail of the customer that has reserved or ordered. The Reservation will display orders in chronological order.

Welcome Administrator,					Log Out
Staff(Operator)	Customer	Reservation/Order	Shipping/Handling		
Customer ID	Reservation Date	Order Date	Payment Status	Update	
xxx	xxx	xxx	xxx	Modify/Save	

- Customer ID is stored as an alphanumeric string, 1 to 16 char long.
- Reservation Date is the date which the customer has reserved.
- Order Date is the date which the customer has ordered.
- Payment Status describes whether the customer has paid or not.
- Modify/Save button is used for updating or save if there is any error date input for reservation and order given by customer.

Exceptions: “Incomplete Information” message will be displayed upon Modify/Save button press if there is blank in any each of columns during modify process.

Additional Output: “The details have been saved” or “The details have been modified” message will be displayed upon Modify/Save button press.

Admin\_Page.html

The Shipping/Handling tab is clicked on admin page as shown below. This tab allows defining rules for rental and handling charges.

The screenshot shows a web browser window titled "Windows Internet Explorer". The address bar shows "MSN Search". The page content includes a "Welcome Administrator," message and a "Log Out" button. Below this is a navigation bar with four tabs: "Staff(Operator)", "Customer", "Reservation/Order", and "Shipping/Handling". The "Shipping/Handling" tab is highlighted in yellow. Below the navigation bar is a table with six columns: "Weight of Item", "Packaging Size", "Labour Charge", "Cost (w/o GST)", "Cost (w GST)", and "Update". The first row of the table has "xxx" in the first five columns and a "Modify/Save" button in the "Update" column. There are five more empty rows below the first row. The status bar at the bottom shows "Internet" and "100%".

Welcome Administrator,						Log Out
Staff(Operator)	Customer	Reservation/Order	Shipping/Handling			
Weight of Item	Packaging Size	Labour Charge	Cost (w/o GST)	Cost (w GST)	Update	
xxx	xxx	xxx	xxx	xxx	Modify/Save	

- Weight of Item is how much weight the item has.
- Packaging size is the size of the item. E.g. (Length x Breadth x Height), (20 x 20 x 30), etc in cm unit.
- Labour Charge is the amount of labour handling such as packaging work.
- Total cost without GST for handling matter is been described.
- Total cost with GST for handling matter is been described.
- Modify/Save button is used for updating or save if any changes is needed.

Exceptions: "Incomplete Information" message will be displayed upon Modify/Save button press if there is blank in any each of columns during modify process.

Additional Output: "The details have been saved" or "The details have been modified" message will be displayed upon Modify/Save button press.

## Customer.html

When the Customers/Clients logs in the home website page, the profile detail appears in the Profile tab. This page describes the detail of client, the order of the storage space, the reservation of the storage space and generates the report that been reserved or order.

Welcome XXXXXXXX, [Log Out](#)

<b>Profile</b>	Order	Reserve	GenerateReport	TransactionHistory
----------------	-------	---------	----------------	--------------------

Customer ID: xxx

Company Address: xxx

Company Tel: xxx

Company Email: xxx@xxx

[Modify](#) [Save](#)

- Customer ID is stored as an alphanumeric String, 1 to 16 char long.
- Customer Name is a string of alphabets is maximum 30 char long.
- Company Address is composed of Block, Street Name and Postal Index Number (PIN) code.
- Company Phone is stored as integer, 8 char long.
- Company Email can be maximum 20 char long and min 10 char long.
- Modify button – To change or update the customer detail.
- Save button– To save the detail after modified.

Exceptions: “Incomplete Information” message will be displayed upon Modify/Save button press when blank in any each of columns during modify process.

Additional Output: “The details have been saved” or “The details have been modified” message will be displayed upon Modify/Save button press.

## Customer.html

This order tab describes the Client/Customer want to place order of the storage space regarding to client's item specification.

Welcome XXXXXXXX,

Log Out

Profile Order Reserve GenerateReport TransactionHistory

Item ID: xxx (Automatically Generated)  
Item Name: xxx  
Item Description: xxx  
Item Size: xxx

Package type: xxx  
Package Space: xxx  
Package Cost: xxx  
Package Location: xxx

Confirmed Modify Reset

- Item ID is stored as an alphanumeric string, 1 to 16 char long. It is automatically generated.
- Item Name is a string of alphabets and is maximum 30 char long.
- Item Description is a string of alphabets and is maximum 100 char long.
- Item size is the size of item such as (Length x Breadth x Height) 20 x 20 x 20 or 50 x 50 x 50 or 100 x 100 x 100, etc, in cm unit
- Package type is the type of Package which consists of low, medium or heavy class.
  - o Low – less than 50 items
  - o Medium – between 51 to 100 items
  - o Heavy - >100 items
- Package space is how much space size the item can be stored in.
  - o For example, 3m x 3m or 6m x 6m, etc.
- Package cost is the cost will be display depend on Package space.
- Confirmed button – Make confirmed order after modify it and disabled the modify button.
- Modify button – To update the order detail while confirmed button is disabled
- Reset button – To reset all detail to nothing or null while modify button is enabled and confirmed button is disabled.



## Customer.html

This order tab describes the Client/Customer want to reserve of the storage space regarding to client's item specification.

Welcome XXXXXXXX, [Log Out](#)

[Profile](#) [Order](#) **[Reserve](#)** [GenerateReport](#) [TransactionHistory](#)

Storage Location Map  
(To let the Customer to see which one part of location is available)

Legends:  
white box – available    blue box- Reserved    red box - Occupied

Item ID	Customer ID	Location Selected	Location Reserved	Duration Reserve	Update
xxx	xxx	xxx	xxx	xxx	<a href="#">Book</a>

- Item ID is the ID of item has been generated and the order has already placed.
- Customer ID is the ID of Customer has been generated and the profile has been updated.
- Location Selected is to select the location of storage part (such as a rack set) regardless of rack row when client type in. E.g.: (Rack Set #1)
- Location Reserved is the storage area that has been reserved by the customer. For example, if the location reserved is 'Yes' or else 'No'
- Duration Reserve is the duration of reserve consists of a start date/time. Time is stored in 24 hour format in local time.
- Book button – To book it whenever the location is available.

Customer.html

This GenerateReport tab describes the report is generated and export to CSV file after GenerateReport button is clicked.

Welcome XXXXXXXX, [Log Out](#)

Profile	Order	Reserve	<b>GenerateReport</b>	TransactionHistory
---------	-------	---------	-----------------------	--------------------

Customer ID:	xxx
Company Address:	xxx
Company Tel:	xxx
Company Email:	xxx@xxx

Item ID:	xxx
Item Name:	xxx
Item Description:	xxx
Item Size:	xxx
Package type:	xxx
Package Space:	xxx
Package Cost:	xxx
Package Location:	xxx

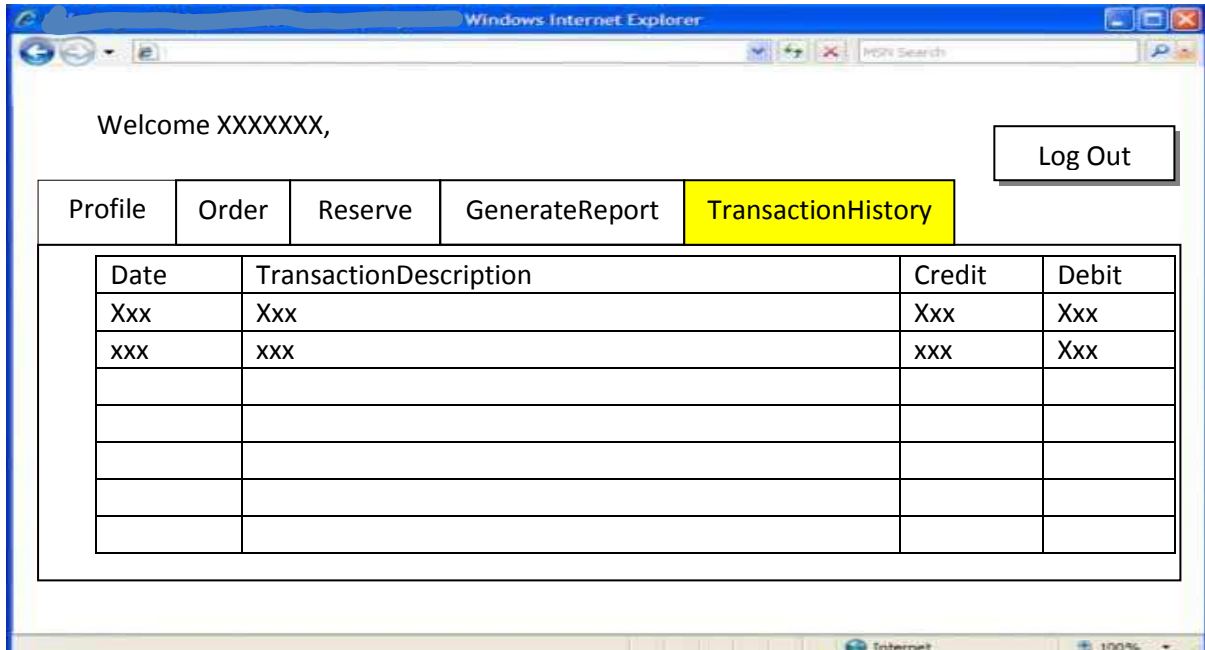
Order Status:	xxx
Reserve Status:	xxx
Total charge:	xxx

[Generate Report](#)

- Customer ID, Name, Company Address, Company Tel, and Company Email is stated as Profile tab.
- Item ID, Item Name, Item Description, Item Size, Package Type, Package Space, Package Cost, Package Location are stated as Order tab.
- Order Status is used to tell whether it is ordered or not. (Yes/No)
- Reserve Status is used to tell whether it is reserved or not. (Yes/No)
- Total charge is the amount of charge is confirmed to be paid after Client has read this page.
- Generate Report button is to generate the report and export as CSV format and store in database.

## Customer.html

This TransactionHistory tab describes the detail of transactions that clients have been made is viewed after generated report is been made.



- Date – the date which customer has been either ordered or reserved after the generated report is made.
- TransactionDescription – the detail of reservation and detail of order is shown.
- Credit – Amount of money Customer have paid.
- Debit – Amount of money Customer have not yet paid.

Operator.html

When the operator logs in the home website page, the warehouse detail appears under WarehouseData tab. This page describes the detail of storage area in the warehouse that may to be modified due to further upgrade of the warehouse structure.

Welcome Operator,

Log Out

WarehouseData   ShipmentData   GenerateReport

Warehouse ID	No. of Racks	No. of Sections	Free Storage Area	Update
xxx	xxx	xxx	xxx	Modify/Save

- WarehouseID – The alphabetical part of warehouse ID is mandatory and exactly is alphabet long. The numeric part of warehouse ID is mandatory and ranges from 1 – 1000.
- No. of Racks – The number of racks in each rackset varies from 1 to 100.
- No. of Sections – The number of sections in each rack varies from 1 to 50.
- Free Storage Area – For package that are too big to store in the racks. (Extra)  
Items in the free storage area are located with respect to their x and y distance from the north west of the free storage.
  - (i) x distance increase towards east.
  - (ii) y distance increases towards south.
- Modify/Save button is used for updating or save if any new changes need because further upgrade of additional of second warehouse storage area.

Operator.html

This page displays the reservation orders that are placed with the warehouse together with the customer and CheckIn and CheckOut dates of the shipment.

Shipment ID	Customer ID	Vehicle ID	No. of Packages	Date Time CheckIn	Date Time CheckOut	Staff ID	Delivering Company	Customer Reference	Update
xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	Modify/Save

- ShipmentID is an alphanumeric key generated by the system for tracking each shipment. It is exactly 1 to 16 char long.
- CustomerID is alphanumeric keys used identify each customer. It is 1 to 16 char long.
- VehicleID is the number on the identification plate of the transport vehicle used to deliver the package to the warehouse. Vehicle is 1 to 20 characters long. Allowed characters are alphabets, numbers, colon(:) and hyphen (-).
- No. of Packages are the number of packages in a shipment is an integer with maximum value of 100, 000.
- Date, Time, CheckIn – The date and time of check in as pickup is recorded in 24 hour format HHMM, in local time.
- Date, Time, CheckOut – The date and time of check out as delivery is recorded in 24 hour format HHMM in local time.
- Staff ID – The staff in charge of the shipment is recorded via staff /employee ID.
- Delivering Company – The company delivering the package is stored as a string of alphanumeric characters, with a maximum length of 20 chars.
- Customer Reference – Name of company that want to collect or deliver the package.

Operator.html

The GenerateReport tab describes the details of warehouse and shipment allows exporting the data as a CSV file that can be downloaded from the Server in case the Client want to see and check his/her shipment detail before submitting to auditor for auditing matter.

Welcome Operator,

Log Out

WarehouseData ShipmentData **GenerateReport**

**Shipment Detail**

Shipment ID: xxx Customer ID: xxx Vehicle ID: xxx

Number of packages: xxx

Date of CheckIn: xxx Date of CheckOut: xxx

Time of CheckIn: xxx Time of CheckOut: xxx

Staff ID: xxx

Delivering Company: xxx

Customer Reference: xxx

Generate Report

- Shipment Detail – Shipment ID, Customer ID, Vehicle ID, Number of packages, Date & Time of CheckIn, Date & Time of CheckOut, Staff ID, Company Delivering and Customer Reference have been described under the Shipment Data tab.
- Generate Report button is to generate the report and export as CSV format and store in folder in Server for reference.

## 5.2 Hardware Interfaces



Laptop  
(Customer)



Workstation PC  
(Customer)

### Warehouse



Server



Workstation PC  
(Administrator)



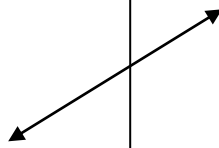
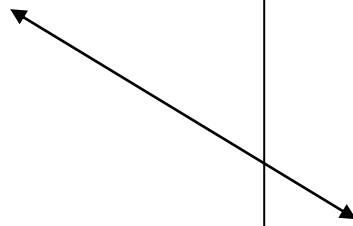
Workstation PC  
(Operator)



Scanner Station



Wireless or  
Bluetooth  
Barcode Scanner



Customer who works in Laptop or Workstation PC outside the warehouse system will fill in or update the order or reserve online through the server as well as log in/out

Inside the warehouse, there are four different types of hardware interfaces such as Server workstation, Administrator workstation, operator workstation and Scanner station or wireless scanner.

Administrator workstation pc interacts with Server for logging in/out, checking and changing the handling charges and the operator, customer details, generating reports online.

Operator Workstation pc interacts with Server for logging in/out, updating, generating, creating order online

Scanner Station or wireless scanner interacts with Server for checking in/out, recording incoming stocks.

### **5.3 Software Interfaces**

List of softwares that each actor needs to have in order to interact with Server follows below:

Client Workstation – MS Excel, Ms Win XP

Administrator Workstation –MS Win XP, CSV format(Simple Spreadsheet)

Operator Workstation - MS Win XP, Barcode Reader Software (bundled with wireless barcode scanner/reader box), CSV format (Simple Spreadsheet)

Server – Linux (server OS), CSV format (Simple Spreadsheet), MySQL

#### **5.3.1 CSV software**

CSV is a simple, text based format designed for storage and interchange of tabular data. The WMS export functions will export the data in CSV format.

#### **5.3.2 MS Excel**

Microsoft Excel is kind of spreadsheet that features formulas, charts, format, etc.

Function of MS Excel software that used for Client to download the CSV format from Server and check the order or reserve detail.

#### **5.3.2 MS Win XP**



MS Win XP is kind of operating system created by Microsoft team. Any applications such as ms internet explorer, spreadsheet that needs this operating system to run.

Function of MS Win XP that is obtained by Client, Administrator and Operator is used to visit the WMS website, scanner software (bundled with wireless barcode scanner/reader box), simple spreadsheet.

### **5.3.2 Linux Server**

Linux will be the OS running on the server.

Function of the Linux server is to act as a core heart to serve all the running programs or applications such as WMS or MySQL database to interact among Client workstation, Operator workstation or Scanner station.

### **5.3.2 MySQL**

MySQL is a relational database management system (RDBMS) that is used to query (insert, delete or update one data per row). It will be installed on the Linux server.

MySQL database interact with the Client, Administrator or Operator through querying or updating or deleting or inserting with the assist of Modify/Save button or generateReport button or log in and log out button.