



GROUP ASSIGNMENT

TECHNOLOGY PARK MALAYSIA

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INSTRUCTIONS TO CANDIDATES:

1. Submit your assignment online in Moodle Folder unless advised otherwise
2. Late submission will be awarded zero (0) unless Extenuating Circumstances (EC) are upheld
3. Cases of plagiarism will be penalized
4. You must obtain at least 50% in each component to pass this module

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1.0 Introduction to PPE Inventory Management System

PPE Inventory Management System is a program created to help the Department of Health in Kuala Lumpur manage the personal protective equipment supplies more systematically and efficiently. By having connection with suppliers and hospitals, it enables the organization to avoid PPE shortages and enhance patient care within the state. The system can track and manage PPE items, oversee stock levels, order PPE from suppliers, distribute PPE to hospitals, and generate report. It is critical to optimize the process of procurement and sourcing, ensuring there is sufficient stock of PPE during emergency situations such as pandemics (Hector, 2024).

1.1 Assumptions on PPE Inventory Management System

The system will be established using APACHE NETBEANS IDE 23 with Java programming language to achieve the following features. A JFrame Form is used for the main system interface and every feature will be created inside the frame using card layout. All date input is unable to select for future date logically.

1.1.1 Dashboard

It is assumed that the dashboard will display the overview of PPE data, including the total number of PPE items received and distributed on the current day. Besides, a bar chart will visually represent the current PPE stock level, using colour indicators: red for very low stock, orange for running low, yellow for sufficient stock and green for well stocked.

1.1.2 User Management

In the PPE Inventory Management System, only admin has access to the user management panel. Within this panel, admin can view and manage user data such as user ID, name, contact number, password and user type (admin or staff). Additionally, admin is able to add, edit and delete user. The system automatically generates a unique user ID when user is added, and the admin can edit all the other user details except user ID. A user list will be shown, with real-time update of add,

edit and delete actions. To find for specific user, admin can utilize the search and sort function, as well as export the search results as PDF. A user log table is also included in the user management panel to track system activity, recording the log in time and log out time of all users.

1.1.3 Inventory Management

It is assumed that users can manage the items by inserting the details of items received from suppliers and items distributed to hospitals separately. Some necessary details that supposed to be included are item code, item name, supplier code, hospital code and quantity. Each PPE can only supply by one supplier; however, each supplier can supply more than one PPE. The quantity of PPE in the table is assumed to increase or decrease progressively based on the user's actions. While distributing items to selected hospitals, current stock of the selected PPE will be displayed to remind users the maximum quantity they can enter to prevent wasting time on repeated attempts. In the function of add new inventory the quantity is intendedly set to disabled and it is 0. Users can record the details of received items through the receive item form. It is assumed that the new supplier has been added to the system before and the unit price of each new item will be recorded for the usage of distribution later. If the users want to edit the inventory, quantity is not allowed to edit to avoid data confusion, but they can delete a record when an item is no longer needed. An overview table of all PPE items will be displayed at the bottom of the page, allowing users to search, sort, filter the results, and print it in PDF.

1.1.4 Supplier Management

In supplier management panel, total suppliers, most frequent supplier, active suppliers and inactive suppliers are displayed at the top, allowing users to make further decisions on ordering PPE supplies. All suppliers that are added with no PPE supplies are considered as inactive, otherwise they are considered active. Every new supplier that are added has no record of PPE supplies. It will only be recorded when users filling out the 'Receive Items' form. It is assumed that users can add, edit or delete suppliers for some situations such as a new PPE is required to supplied by a new supplier, suppliers have changed their contact number, or the supplier is no longer supplies the specific item anymore. The details of suppliers supposed to include supplier code that

generated randomly, supplier name, contact number, email and address. A list of suppliers will be presented in a table with search, sort, and print function. Users can search for suppliers using all details in the table.

1.1.5 Hospital Management

Hospital management panel is assumed to consists of almost the same features as supplier management panel. Basic details such as hospital code, hospital name, contact number, email and address should be recorded during adding, deleting and editing hospitals. The information will facilitate the management in resource allocation, coordination with suppliers and enhance emergency preparedness. The total numbers of hospitals registered into the system, and top distributed hospitals will be shown to help users to analyse distribution trends. A full hospitals list is attached below for users to search, sort and generate hospital details into PDF.

1.1.6 Report

The report panel is designed to provide a visual summary of PPE inventory transaction within a selected period. A pie chart will display the total number of PPE items received from suppliers, while the other pie chart will display the total number of PPE items distributed to hospitals. User can specify a custom time range for the pie chart, allowing for flexible data analysis. If no time period is selected, it is assumed that the pie chart will be generated using data from the first day of the current month to the present day. Users can choose to view transaction trends for PPE items, hospitals, or suppliers, similar to the pie chart. They can track both the receive and distribution trends of a specific PPE item by selecting an item code and a time frame. Similarly, they can view the receiving trends of PPE items from a specific supplier or the distribution trends to a specific hospital using the same method. If no time period or code is selected, the system will automatically generate the bar chart using data from the first day of the current month to today, filtered by the first available code in the combo box.

1.1.7 Transaction

In the transaction panel, the records of item received, and item distributed is presented in tables with each record hold a unique transaction ID. For each type of transactions, additional details such as date, time, income and expenses will be recorded to optimize the tracking process. Users can track the received items or distributed items within a certain time frame and generate the results in PDF form. They can also search, sort, and filtered by quantity, income or expenses to obtain desired data.

1.1.8 Initial Inventory Creation

When the system runs for the first time, the initial inventory creation process will be triggered. If users want to add inventory items, they must enter the item code, item name, and price per box. The supplier code will default to NULL, and the quantity will be set to 100 by default. Users can choose to add inventory items or skip this step and finish the setup directly.

2.0 Object-Oriented Concept

2.1 Abstraction

```
public abstract class AddEntity {  
  
    protected String id;  
    protected String name;  
  
    public AddEntity(String id, String name) {  
        this.id = id;  
        this.name = name;  
    }  
  
    // assume the data will and must be save into file after call add method  
    public abstract boolean validate();  
    public abstract void saveToFile(boolean isEdit, JTable table) throws IOException;  
    public abstract void returnToDefault();  
}
```

Figure 2.1.1 Code snippet of abstraction

Abstraction in Java focuses on hiding implementation details and only exposing the essential functionality. This simplifies the system by hiding an object's internal working, letting user to interact with the features without needing to understand the underlying implementation details. (GeeksforGeeks, 2025). Based on the example given, the AddEntity class defines a structure that specifies what an entity should include and do, but without providing the actual implementation. Serving as a template for its subclasses, AddEntity class defines a common structure that must be implemented by its subclasses. It declares three abstract methods which are validate(), saveToFile() and returnToDefault(), ensuring that any class extending it provides its own implementation of these methods. This ensures a consistent interface across different entity types, as well as allow each subclass to define specific behaviours. Through abstraction, the modularity and reusability of the code can be improved.

2.2 Encapsulation

```
public abstract class EditEntity {

    protected JTable table;
    protected JComboBox<String> combobox;

    public EditEntity(JTable table, JComboBox<String> combobox) {
        this.table = table;
        this.combobox = combobox;
        populateComboBox();
    }

    private void populateComboBox() {
        DefaultTableModel model = (DefaultTableModel) table.getModel();
        combobox.removeAllItems();
        combobox.addItem("Please select");

        for (int i = 0; i < model.getRowCount(); i++) {
            String id = model.getValueAt(i, 0).toString();
            combobox.addItem(id);
        }
    }
}
```

Figure 2.2.1 Code snippet of encapsulation

Encapsulation in Java is a practice of restricting direct access to data from outside classes and providing controlled access through methods. It combines code and data needed through declaring instance variables as private, while user can retrieve variable value through getter methods, and modify them through setter methods. (GeeksforGeeks, 2025). In the EditEntity class, encapsulation is demonstrated through the protected fields (table and combobox), which prevent direct modification from outside the class but still allowing access within subclasses. This supports code reusability and inheritance, as the subclasses are allowed to customize behaviour while still following the structure of parent class. Besides, the populateComboBox method is private, means that it can only be accessed within the class, which important for ensuring the items added into the combo box cannot be altered externally. This approach enhances data security and modularity by preventing unintended modifications.

```

public DefaultTableModel getModel() {
    return (DefaultTableModel) table.getModel();
}

```

Figure 2.2.2 Code snippet of getter method

The getter method provides controlled access to a class's private or protected fields. In `EditEntity` class, the method `getModel()` serves as a getter by returning the table's model for further implementation. This method encapsulates the returns of data, ensuring that subclasses can obtain the model without modifying the table field itself.

2.3 Polymorphism

```

public class LoadData extends FileHandling {

    public void loadDataToTable(String filename, JTable table) throws IOException {

        ArrayList<String[]> data = ReadDataFromFile(filename);
        DefaultTableModel model = (DefaultTableModel) table.getModel();
        int columnCount = model.getColumnCount();
        model.setRowCount(0);

        for (String[] row : data) {
            if (row.length == columnCount) {
                model.addRow(row);
            }
        }
    }

    public void loadDataToTable(String filename, JTable table, String transactionType) throws IOException {
        ArrayList<String[]> data = ReadDataFromFile(filename);
        DefaultTableModel model = (DefaultTableModel) table.getModel();
        int columnCount = model.getColumnCount();
        model.setRowCount(0);
    }
}

```

Figure 2.3.1 Code snippet of overloading polymorphism

```

combobox.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
        String selected_id = (String) combobox.getSelectedItem();

        if (selected_id != null && !selected_id.equals("Please select")) {
            for (int i = 0; i < model.getRowCount(); i++) {
                if (model.getValueAt(i, 0).toString().equals(selected_id)) {
                    name.setText(model.getValueAt(i, 1).toString());
                    password.setText(model.getValueAt(i, 2).toString());
                    contact.setText(model.getValueAt(i, 3).toString());
                    String userType = model.getValueAt(i, 4).toString();

                    if (userType.equals("Admin")) {
                        rbEditAdmin.setSelected(true);
                    } else if (userType.equals("Staff")) {
                        rbEditStaff.setSelected(true);
                    }
                }
            }
        } else {
    }
}

```

Figure 2.3.2 Code snippet of overriding polymorphism

Polymorphism is a concept that bring out the meaning of ‘having many forms’, which offering objects to behave differently in different situations (GeeksforGeeks, 2025). Java consists of two types of polymorphism including method overloading and method overriding. Figure 2.3.1 shows the method overloading which two methods have the same name, ‘LoadDataToTable()’, but will behave differently due to different number and types of arguments needed. The first ‘LoadDataToTable()’ function will load all data from file into table while the second function is used to exclude the first column before loading data into table. **Method overloading** also known as compile-time polymorphism, because the compiler will decide which method to call according to the arguments or parameters passed during the program execution. On the other hand, **method overriding** or runtime polymorphism will occur when a function has the same name, parameters and return type override the original function (Singh, 2024). Figure 2.3.2 demonstrates an ‘actionPerformed()’ function of the ‘combobox’ overrides its original actionPerformed function, to perform specific tasks.

2.4 Class

```
public class FileHandling {

    // WRITE FILE
    public void WriteDataToFile(String filename, String[] headers, String[] data) throws IOException {
        if (data.length == 0) {
            System.out.println("No data to write!");
            return;
        }

        File file = new File(filename);
        if(!file.exists()) {
            file.createNewFile();
            System.out.println("created new file: " + filename);
        }

        try (BufferedWriter writeFile = new BufferedWriter(new FileWriter(filename, true))) {
            for (int i = 0; i < headers.length; i++) {
                writeFile.write(headers[i] + ":" + data[i] + "\n");
            }
            writeFile.write("-----\n");
        }
    }
}
```

Figure 2.4.1 Code snippet of ‘FileHandling’ class

A class in object-oriented programming is identified by the keyword ‘class’, it can be represented as a prototype of an object, or a set of objects that shared the common structures and behaviours. It can contain data member, constructor, method, nested class and interface. A class does not have memory allocated to it and can only be declared once (GeeksforGeeks, 2025). The code snippet above illustrates a class called ‘FileHandling’ that contains some methods in it that are used to handle the input and output of data. Every class will have a default constructor with no argument which usually not be written by programmer, however, programmers can also create constructors with different parameters. Constructors have the same name as class, and it is used to initialized objects by using ‘new’ keyword. For example, if other classes need to use the ‘WriteDataToFile()’ method, they must use the default constructor to initialize an object, then use the object to call the methods under ‘FileHandling’ class.

2.5 Object

```
ReportChart pieChart = new ReportChart();
DefaultPieDataset supplierDataset = pieChart.readPPEData(fromDate, toDate, true);
pieChart.showPieChart(supplierDataset, pSupplierPieChart, true);
```

Figure 2.5.1 Code snippet of object

In Java, an object is a fundamental unit of Object-Oriented Programming, representing an instance of a class that allows access to its attributes and methods. (GeeksforGeeks, 2025). In the given example, object pieChart is created as an instance of the ReportChart class. This object is then used to call method readPPEData() with parameters of fromDate and toDate, which store pie chart data based on the provided date range. Next, the showPieChart method is called, which displays the pie chart using the dataset. Instead of writing standalone functions, the objects provide a structured way to encapsulate both data and behaviour, making the code more modular and reusable.

2.6 Inheritance

```
public abstract class EditEntity {  
  
    protected JTable table;  
    protected JComboBox<String> combobox;  
  
    public EditEntity(JTable table, JComboBox<String> combobox) {  
        this.table = table;  
        this.combobox = combobox;  
        populateComboBox();  
    }  
  
    private void populateComboBox() {  
        DefaultTableModel model = (DefaultTableModel) table.getModel();  
        combobox.removeAllItems();  
        combobox.addItem("Please select");  
  
        for (int i = 0; i < model.getRowCount(); i++) {  
            String id = model.getValueAt(i, 0).toString();  
            combobox.addItem(id);  
        }  
    }  
}
```

Figure 2.6.1 Code snippet of superclass, ‘EditEntity’

```
public class EditUser extends EditEntity {  
  
    public EditUser(JTable table, JComboBox<String> combobox, JTextField name,  
                   JPasswordField password, JTextField contact, ButtonGroup buttonGroup,  
                   JRadioButton rbEditAdmin, JRadioButton rbEditStaff) {  
  
        super(table, combobox);  
  
        DefaultTableModel model = getModel();  
  
        combobox.addActionListener(new ActionListener() {  
            @Override  
            public void actionPerformed(ActionEvent e) {  
                String selected_id = (String) combobox.getSelectedItem();  
  
                if (selected_id != null && !selected_id.equals("Please select")) {  
                    for (int i = 0; i < model.getRowCount(); i++) {  
                        if (model.getValueAt(i, 0).toString().equals(selected_id))  
                            name.setText(model.getValueAt(i, 1).toString());  
                }  
            }  
        });  
    }  
}
```

Figure 2.6.2 Code snippet of subclass, ‘EditUser’

Inheritance concept in Java is creating new class based on the existing class. It can be achieved using ‘extends’ keyword, and the variables in superclass can be used in subclasses by applying ‘super()’. ‘super()’ enables subclasses to call the constructor of their parent class and access to the existing behaviours, ensuring the superclass is initialized appropriately. For instance, figure 2.6.1 displays an ‘EditEntity’ superclass that is used in ‘EditUser’ subclass. In figure 2.6.2, ‘EditUser’ will inherit all methods in superclass while adding other methods to it such as actionPerformed(). Inheritance allow ‘EditUser’ to reuse the existing functionality of ‘EditEntity’ without create another extra function to reduce the redundancy and make the code look more organized.

3.0 Graphical User Interface (GUI)

3.1 Log In & Initial Inventory Creation

3.1.1 Log In Validation

Input: The user id and password are entered before “Log In” button is clicked.

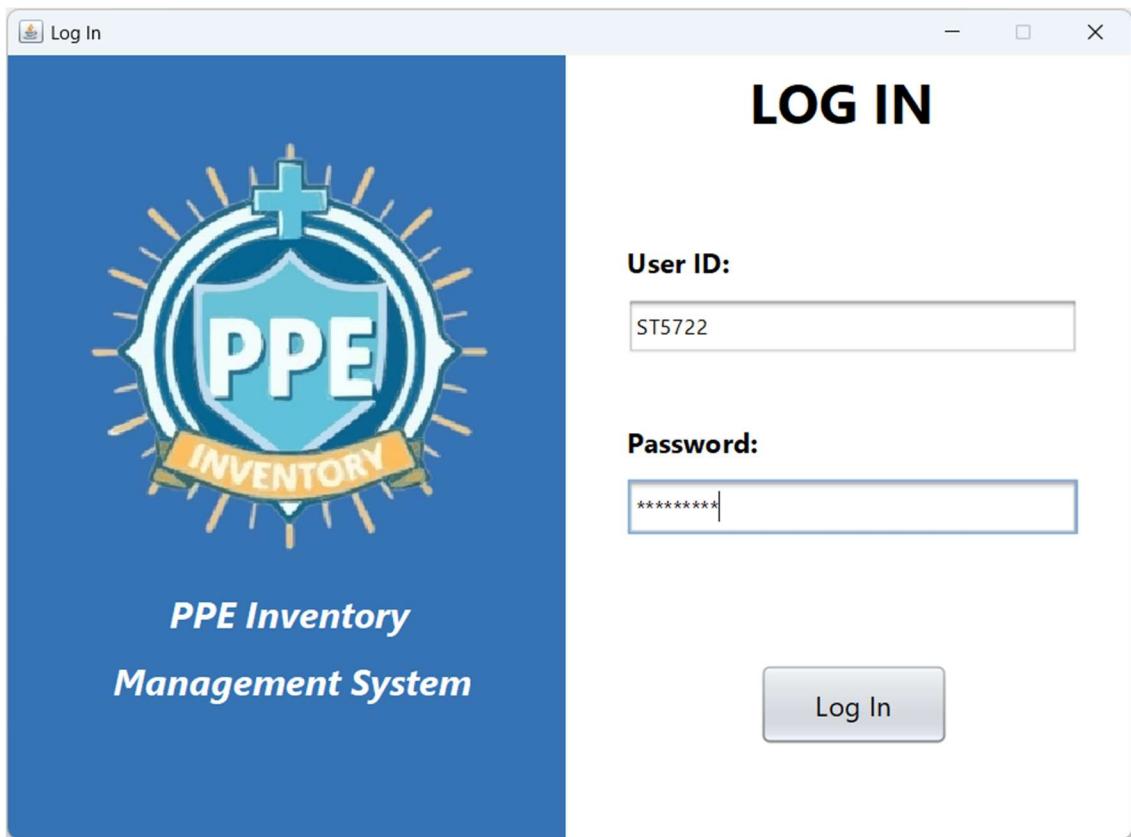


Figure 3.1.1.1 Log In Page

Output: If user id and password are correctly verified, user will be redirected to the dashboard page.

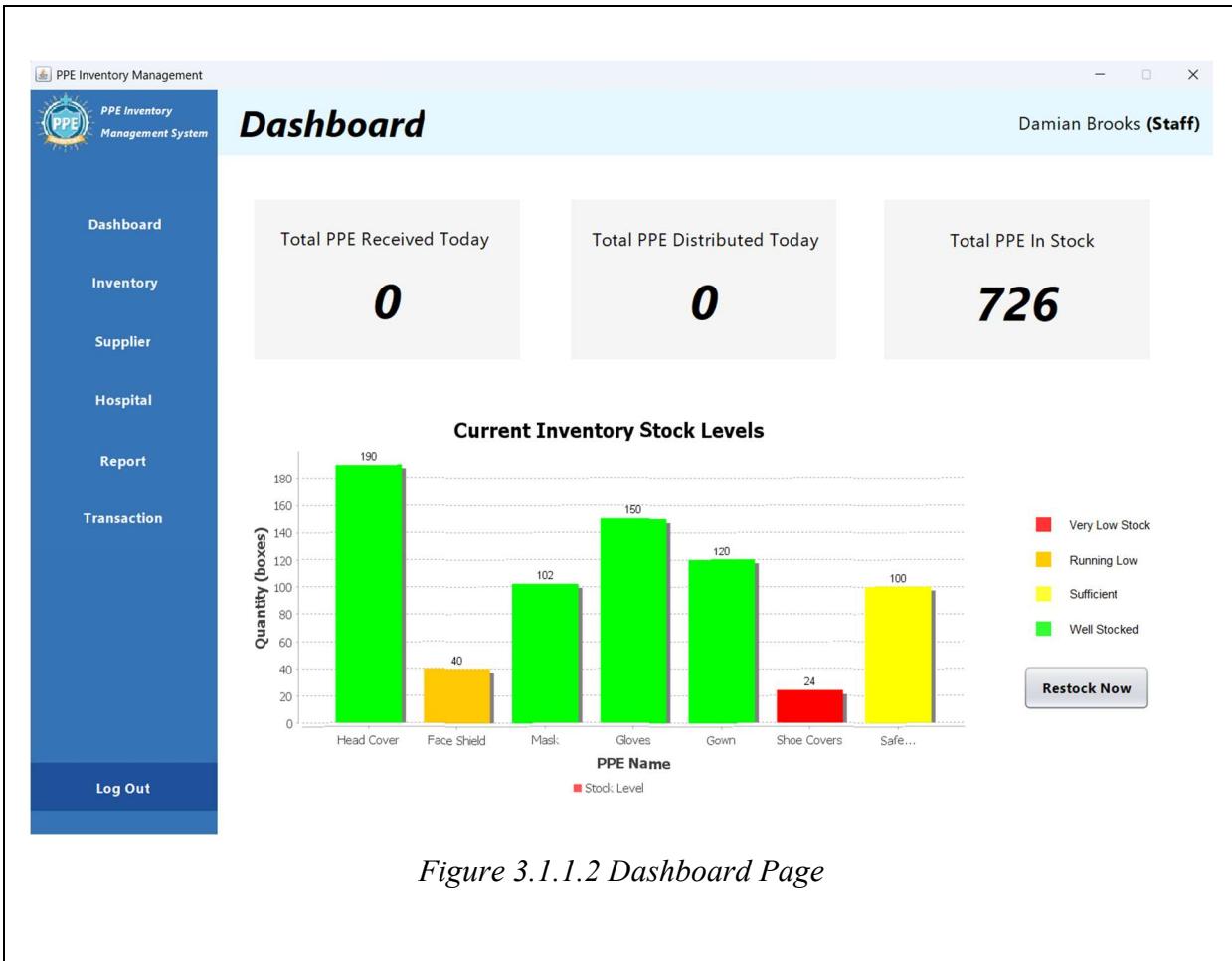


Figure 3.1.1.2 Dashboard Page

Input: The user id or password are leave empty and “Log In” button is clicked.

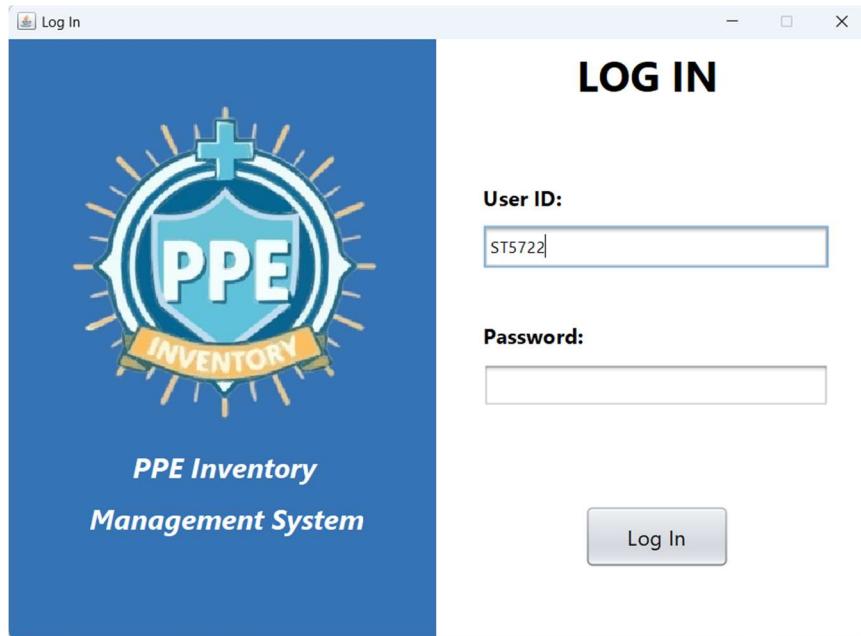


Figure 3.1.1.3 Log in details with null value

Output: An error message dialog box will appear, and the login attempt will fail.



Figure 3.1.1.4 Error message with unsuccessful login for null value

Input: The user id or password are entered but the credentials are incorrect.



Figure 3.1.1.5 Incorrect login credentials

Output: An error message dialog box will appear, and the login attempt will fail.



Figure 3.1.1.6 Error message with unsuccessful login for incorrect credentials

3.1.2 Initial Inventory Creation

Input: When the system runs for the first time, the initial inventory creation process will be triggered after a successful login. The user can enter the required details to add a PPE item.

Welcome to the PPE Inventory Management System!

This is the first time the program is running, and initial inventory setup is required. All PPE items will be recorded with an initial stock of 100 boxes each.
Please follow the instructions to complete the setup.

Initial Inventory Creation

Item Code:	<input type="text" value="MS"/>	Unit Price (RM):	<input type="text" value="10"/>
Item Name:	<input type="text" value="Mask"/>	Quantity:	<input type="text" value="100"/>
Supplier Code:	<input type="text" value="NULL"/>		

Save

Reset

Inventory List

Item Code	Name	Supplier Code	Quantity	Price per Box (RM)

Finish Setup

Figure 3.1.2.1 Initial Inventory Creation

Output: If all required fields are filled and successfully validated, the PPE item will be added to the text file and table, and a success message box will appear.

Welcome to the PPE Inventory Management System!

This is the first time the program is running, and initial inventory setup is required. All PPE items will be recorded with an initial stock of 100 boxes each.
Please follow the instructions to complete the setup.

Initial Inventory Creation

Item Code: Unit Price (RM):

Item Name: Supplier Code:

Message

PPE item added successfully!

OK **Save** **Reset**

Inventory List

Item Code	Name	Supplier Code	Quantity	Price per Box (RM)
MS	Mask	NULL	100	10.00

Finish Setup

Figure 3.1.2.2 Message box for successfully added PPE item

Welcome to the PPE Inventory Management System!

This is the first time the program is running, and initial inventory setup is required. All PPE items will be recorded with an initial stock of 100 boxes each.
Please follow the instructions to complete the setup.

Initial Inventory Creation

Item Code: Unit Price (RM):

Item Name: Quantity:

Supplier Code:

Save **Reset**

Inventory List

Item Code	Item Name	Supplier Code	Quantity/boxes	Price per box(RM)
MS	Mask	NULL	100	10.00

Finish Setup

Figure 3.1.2.3 Inventory list is updated

Input: If any required field is left empty and the user clicks the "Save" button.

Initial Inventory Creation

The screenshot shows a form titled "Initial Inventory Creation". It contains three input fields: "Item Code" with value "FS", "Unit Price (RM)" with value "20", and "Supplier Code" with value "NULL". Below the form are two buttons: "Save" and "Reset".

Figure 3.1.2.4 Empty required field

Output: An error message dialog box will appear, and the PPE item will not be added.

Initial Inventory Creation

The screenshot shows the same form as above, but with an "Message" dialog box overlaid. The dialog has an "i" icon and the text "Please enter valid PPE item details!". It includes an "OK" button and standard "Save" and "Reset" buttons.

Figure 3.1.2.5 Error message for empty entry

Input: If any required field contains a value in the wrong format and user clicks "Save" button.

Initial Inventory Creation

The screenshot shows the form again, but with an invalid value "DGF5%3" entered into the "Item Name" field. The other fields ("Item Code" and "Supplier Code") have their original values ("FS" and "NULL").

Figure 3.1.2.6 Entry with invalid format

Output: An error message dialog box will appear, and the PPE item will not be added.

Initial Inventory Creation

The screenshot shows a 'Initial Inventory Creation' form. The 'Item Code' field contains 'FS'. The 'Unit Price (RM)' field has a dropdown menu open with '20' selected. The 'Item Name' field contains 'DGF5%*3'. The 'Supplier Code' field contains 'NULL'. A modal dialog box titled 'Message' is displayed in the center. It features a blue circular icon with a white 'i' and the text 'Please enter valid PPE item details!' below it. There are 'OK', 'Save', and 'Reset' buttons at the bottom right of the dialog.

Figure 3.1.2.7 Error message for invalid item details

Input: If the unit price field is filled with '0' and user clicks "Save" button.

Initial Inventory Creation

The screenshot shows a 'Initial Inventory Creation' form. The 'Item Code' field contains 'FS'. The 'Unit Price (RM)' field has a dropdown menu open with '0' selected. The 'Item Name' field contains 'Face Shield'. The 'Quantity' field contains '100'. The 'Supplier Code' field contains 'NULL'. There are 'Save' and 'Reset' buttons at the bottom right.

Figure 3.1.2.8 Invalid unit price entry

Output: An error message dialog box will appear, and the PPE item will not be added.

Initial Inventory Creation

The screenshot shows a Windows-style application window titled "Initial Inventory Creation". Inside, there are three input fields: "Item Code" with value "FS", "Unit Price (RM)" with value "0", and "Item Name" with value "Face Shield". Below these is a "Supplier Code" field with value "NULL". A modal dialog box titled "Message" is centered over the form, displaying the text "Please enter valid PPE item details!" next to a blue information icon. At the bottom right of the dialog are "OK", "Save", and "Reset" buttons.

Figure 3.1.2.9 Error message for invalid unit price

Input: If the item code is duplicate with the existing PPE item code saved in the text file and user clicks “Save” button.

Initial Inventory Creation

The screenshot shows the same "Initial Inventory Creation" window. The "Item Code" field now contains "MS". The "Unit Price (RM)" field has a dropdown arrow pointing down. The "Item Name" field still contains "Face Shield". The "Supplier Code" field is empty. Below the form is a table titled "Inventory List" with one row of data.

Item Code	Name	Supplier Code	Quantity	Price per Box (RM)
MS	Mask	NULL	100	10.00

Figure 3.1.2.10 Duplicate item code

Output: An error message dialog box will appear, and the PPE item will not be added.

Initial Inventory Creation

The screenshot shows a user interface for creating initial inventory. The form has fields for Item Code (MS), Unit Price (RM) (20), Item Name (Face Shield), and Supplier Code (NULL). A validation error dialog box is displayed in the center, titled "Validation Error", with the message "Duplicate item code!" and an exclamation mark icon. Buttons for "OK", "Save", and "Reset" are visible.

Figure 3.1.2.11 Error message for duplicate item code

Input: If user entered item details and click “Reset” button.

Initial Inventory Creation

The screenshot shows the same inventory creation form as Figure 3.1.2.11, but the "Item Code" field now contains "FS". The "Supplier Code" field is still "NULL". The "Save" and "Reset" buttons are at the bottom.

Inventory List

Item Code	Name	Supplier Code	Quantity	Price per Box (RM)
MS	Mask	NULL	100	10.00

Figure 3.1.2.12 User enter item details and click “Reset” button

Output: All required fields will be reset to their default values, and the PPE item will not be added.

Initial Inventory Creation

Item Code:	<input type="text"/>	Unit Price (RM):	<input type="text" value="0"/>
Item Name:	<input type="text"/>	Quantity:	<input type="text" value="100"/>
Supplier Code:	<input type="text" value="NULL"/>		
<input type="button" value="Save"/> <input type="button" value="Reset"/>			

Inventory List

Item Code	Name	Supplier Code	Quantity	Price per Box (RM)
MS	Mask	NULL	100	10.00

Figure 3.1.2.13 All required fields are reset to default

Input: If user decided to finish entering and click “Finish Setup” button.

Welcome to the PPE Inventory Management System!

This is the first time the program is running, and initial inventory setup is required. All PPE items will be recorded with an initial stock of 100 boxes each.
Please follow the instructions to complete the setup.

Initial Inventory Creation

Item Code:	<input type="text"/>	Unit Price (RM):	<input type="text" value="0"/>
Item Name:	<input type="text"/>	Quantity:	<input type="text" value="100"/>
Supplier Code:	<input type="text" value="NULL"/>		
<input type="button" value="Save"/> <input type="button" value="Reset"/>			

Inventory List

Item Code	Item Name	Supplier Code	Quantity(boxes)	Price per box(RM)
MS	Mask	NULL	100	10.00
HC	Head Cover	NULL	100	20.00
FS	Face Shield	NULL	100	25.00
GL	Gloves	NULL	100	18.30
GW	Gown	NULL	100	35.00
SC	Shoe Covers	NULL	100	20.00

Figure 3.1.2.14 “Finish Setup” button is clicked

Output: The initial inventory creation process will be completed, and the user will be redirected to dashboard page.

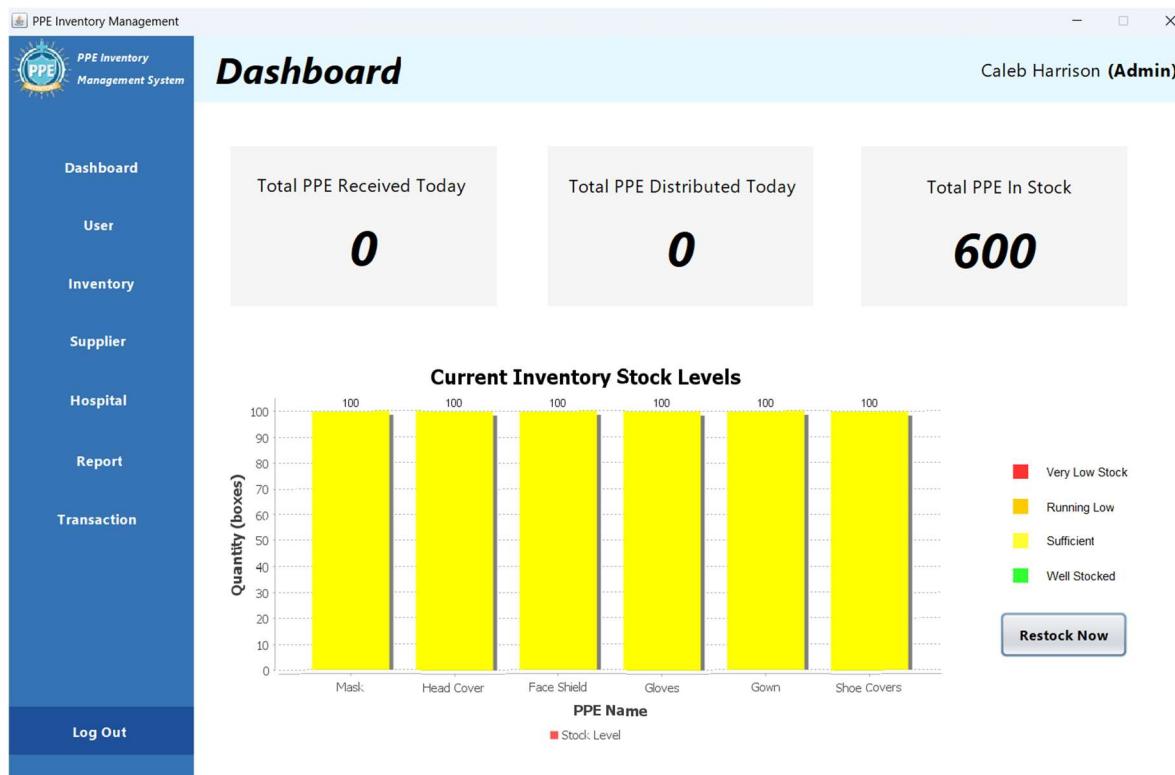


Figure 3.1.2.15 Dashboard page

3.1.3 Logging In with Admin Account

Input: If the user successfully logs in with an admin account.

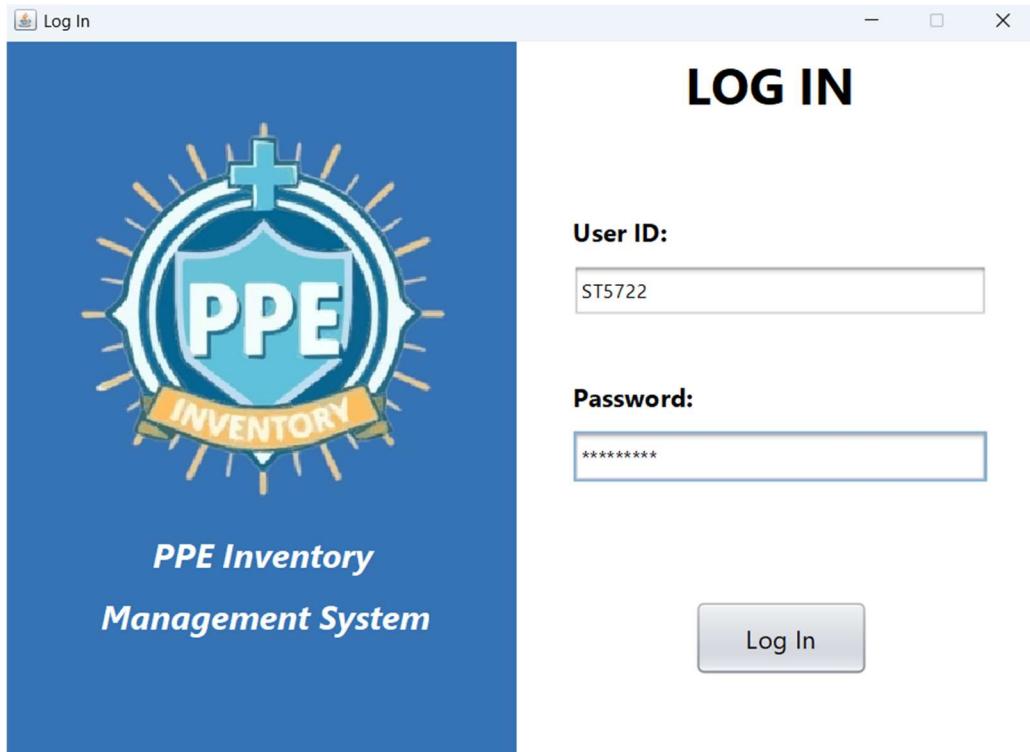
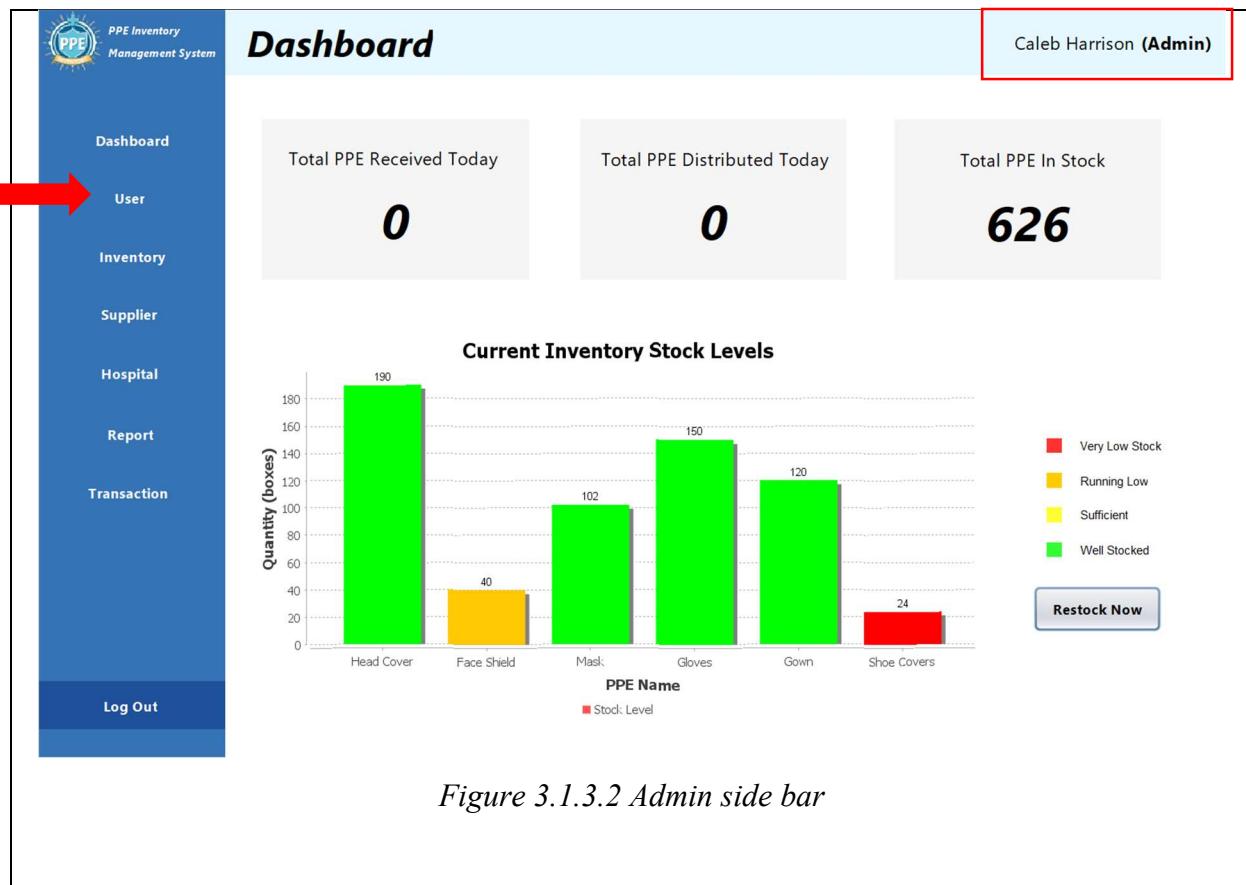


Figure 3.1.3.1 Log in with admin account

Output: For the admin account, the side bar will include an additional User Management panel. Additionally, the top right corner of the top bar will display the username and role of the logged-in account.



3.1.4 Logging In with Staff Account

Input: If the user successfully logs in with a staff account.

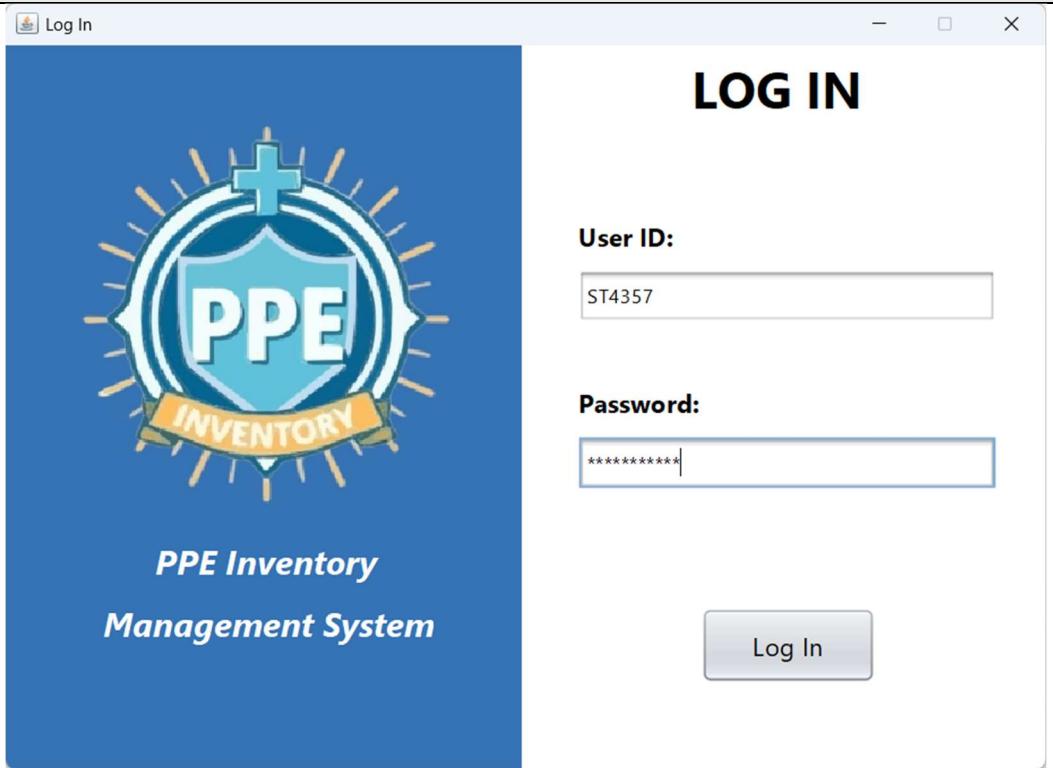
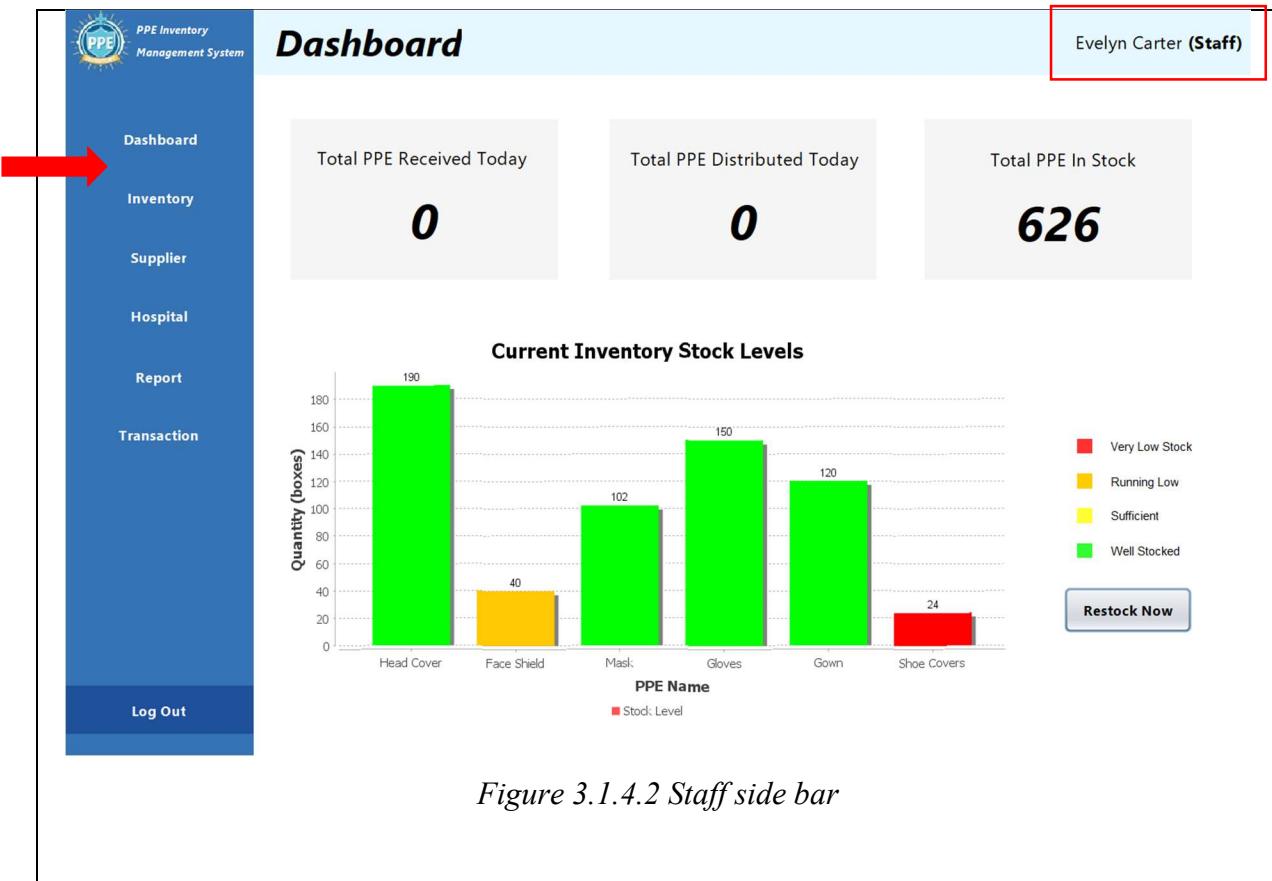


Figure 3.1.4.1 Log in with staff account

Output: For the staff account, the side bar will not include the User Management panel. Similarly, the top right corner of the top bar will display the username and role of the logged-in account.



3.2 Dashboard

3.2.1 Quick Action for Restock

Input: If user click the “Restock Now” button.

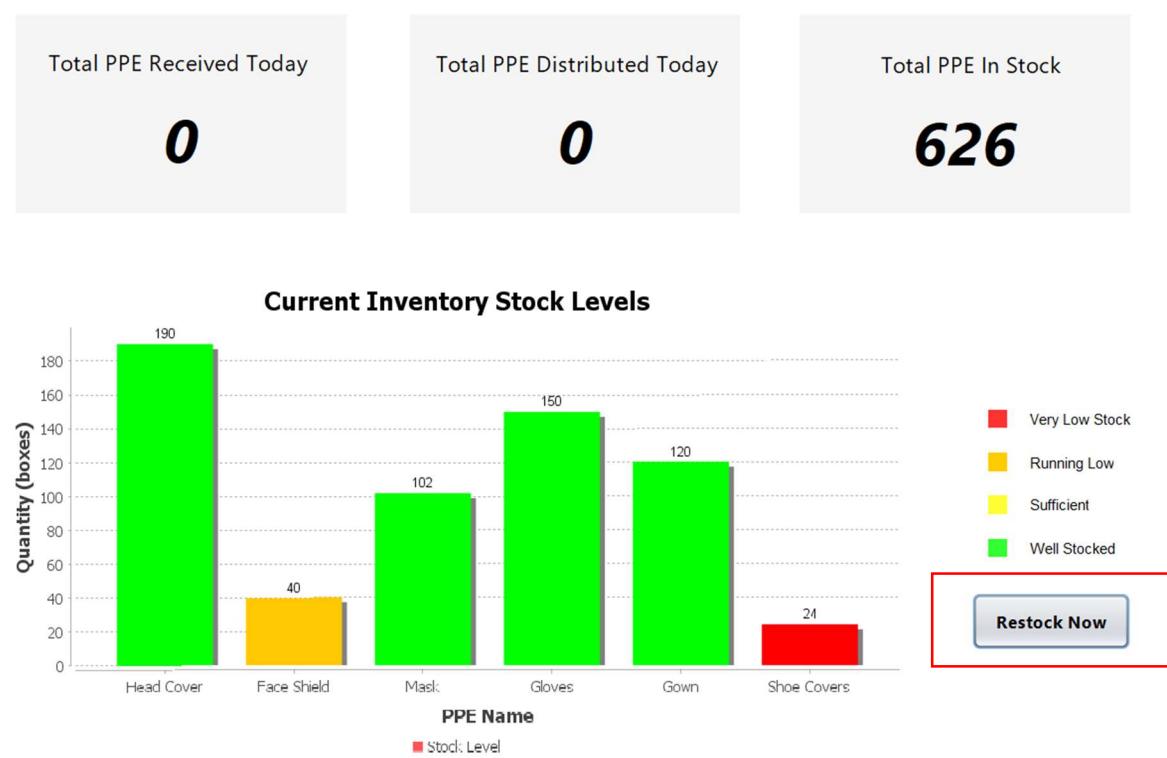


Figure 3.2.1.1 If “Restock Now” button is clicked

Output: User will be redirected to Inventory Management panel.

Inventory Management

Evelyn Carter (Staff)

The following item is/are running critically low: SC (Shoe Covers). Please restock immediately!

Receive Items

Item Code:

Supplier Code:

Quantity:

Received Date:

Received Time:

Distribute Items

Item Code:

Hospital Code:

Quantity:
Current quantity in stock:

Distributed Date:

Distributed Time:

Please make sure suppliers are added before adding new inventory !

Figure 3.2.1.2 Inventory Management panel

3.2.2 PPE Data and Current Stock Level Overview

Input: If the user updates a PPE item by adding stock through the receive action.

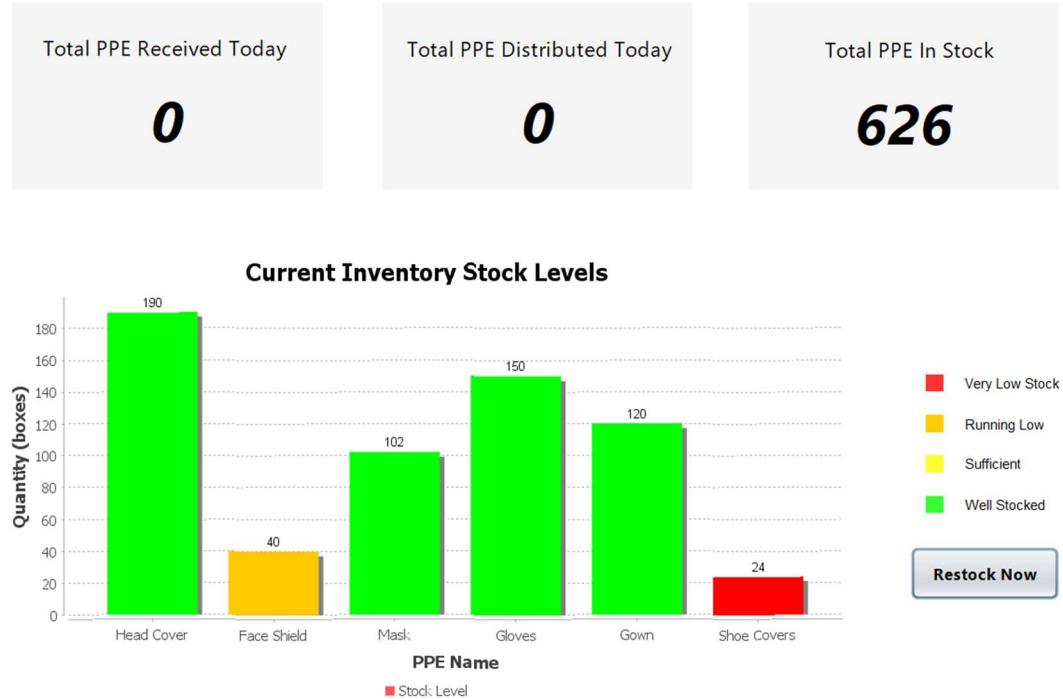


Figure 3.2.2.1 Previous PPE data and stock level

The screenshot shows the PPE management interface with two main sections: 'Receive Items' and 'Distribute Items'.

Receive Items: This section contains fields for Item Code (SC), Supplier Code (SP7996), Quantity (50), Received Date (Mar 19, 2025), and Received Time (18:59:54). A red box highlights the 'Item Code' field.

Distribute Items: This section contains fields for Item Code (Please select) and Hospital Code (Please select). A success message box is overlaid on this section, stating "PPE has been restocked successfully!" with an "OK" button.

Figure 3.2.2.2 PPE item has been restocked

Output: The "Total PPE Received Today", "Total PPE In Stock" card will be updated, and the current stock level will also be adjusted accordingly.

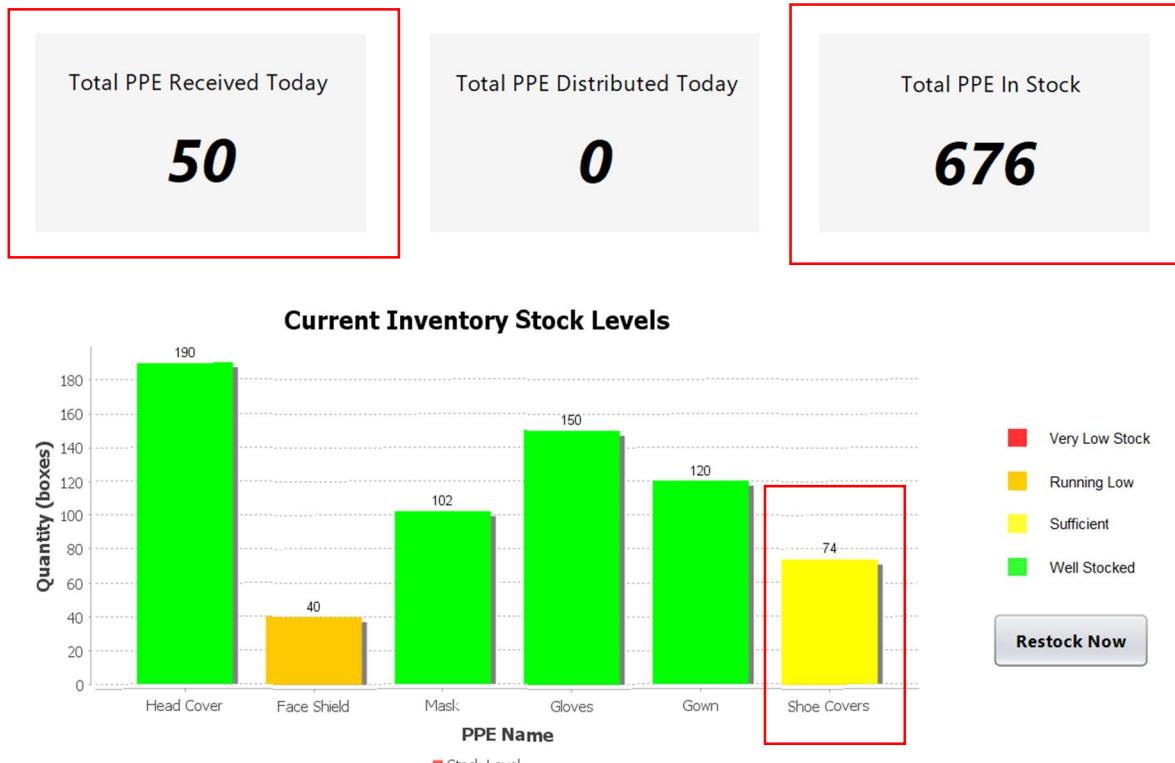


Figure 3.2.2.3 Updated dashboard page

Input: If the user updates a PPE item by subtracting stock through the distribution action.

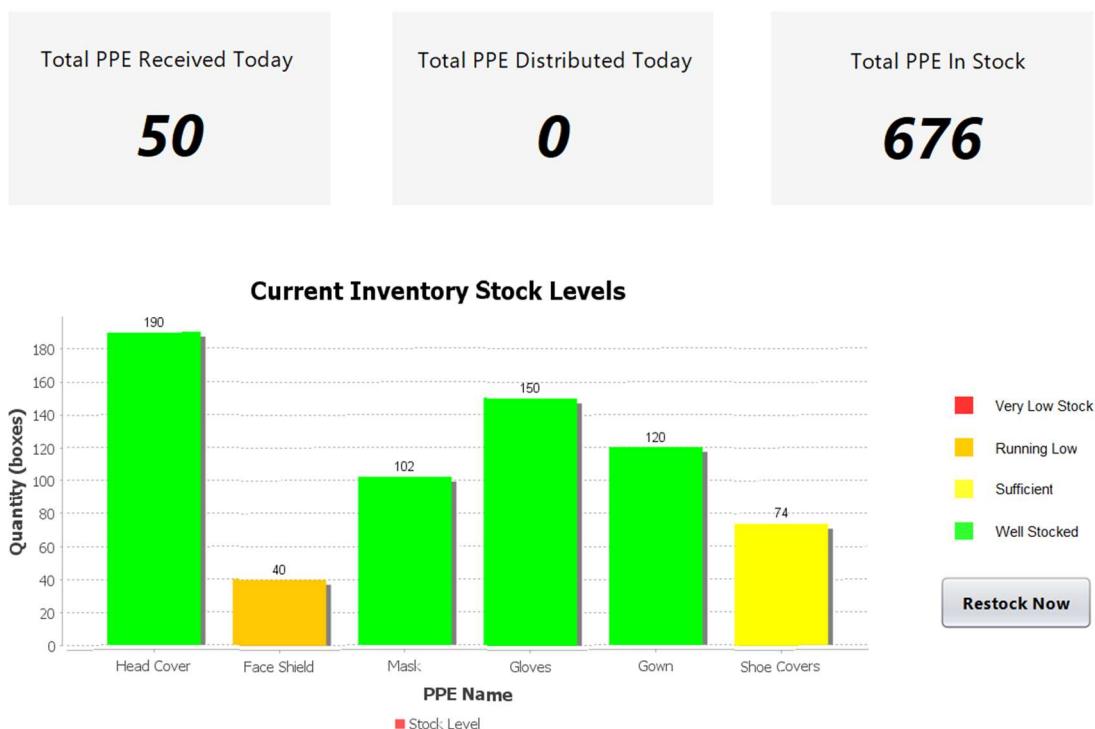


Figure 3.2.2.1 Previous PPE data and stock level

Receive Items

Please select

Distribute Items

Success

PPE has been distributed successfully!

OK

00:00:00

Reset Save

Item Code: GL

Hospital Code: HP5772

Quantity: 60
Current quantity in stock: 150

Distributed Date: Mar 21, 2025

Distributed Time: 18:59:58

Reset Save

Figure 3.2.2.4 PPE item has been restocked

Output: The "Total PPE Distribute Today", "Total PPE In Stock" card will be updated, and the current stock level will also be adjusted accordingly.

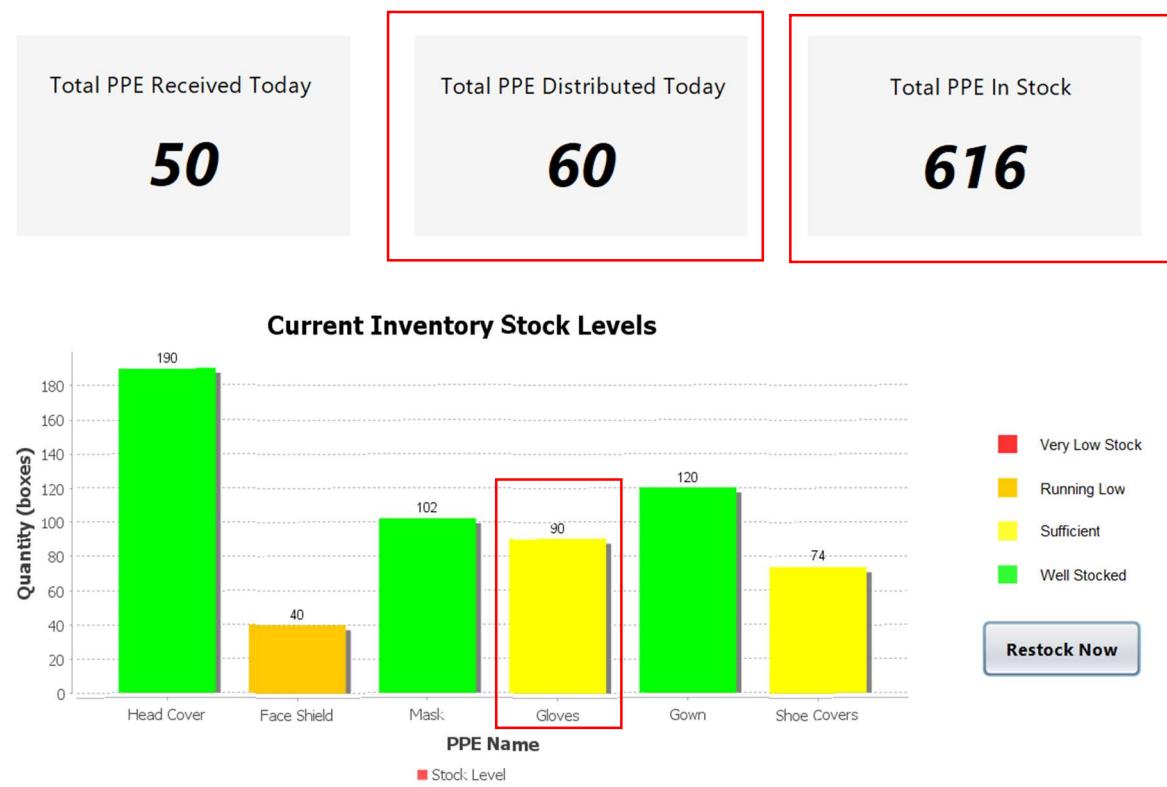
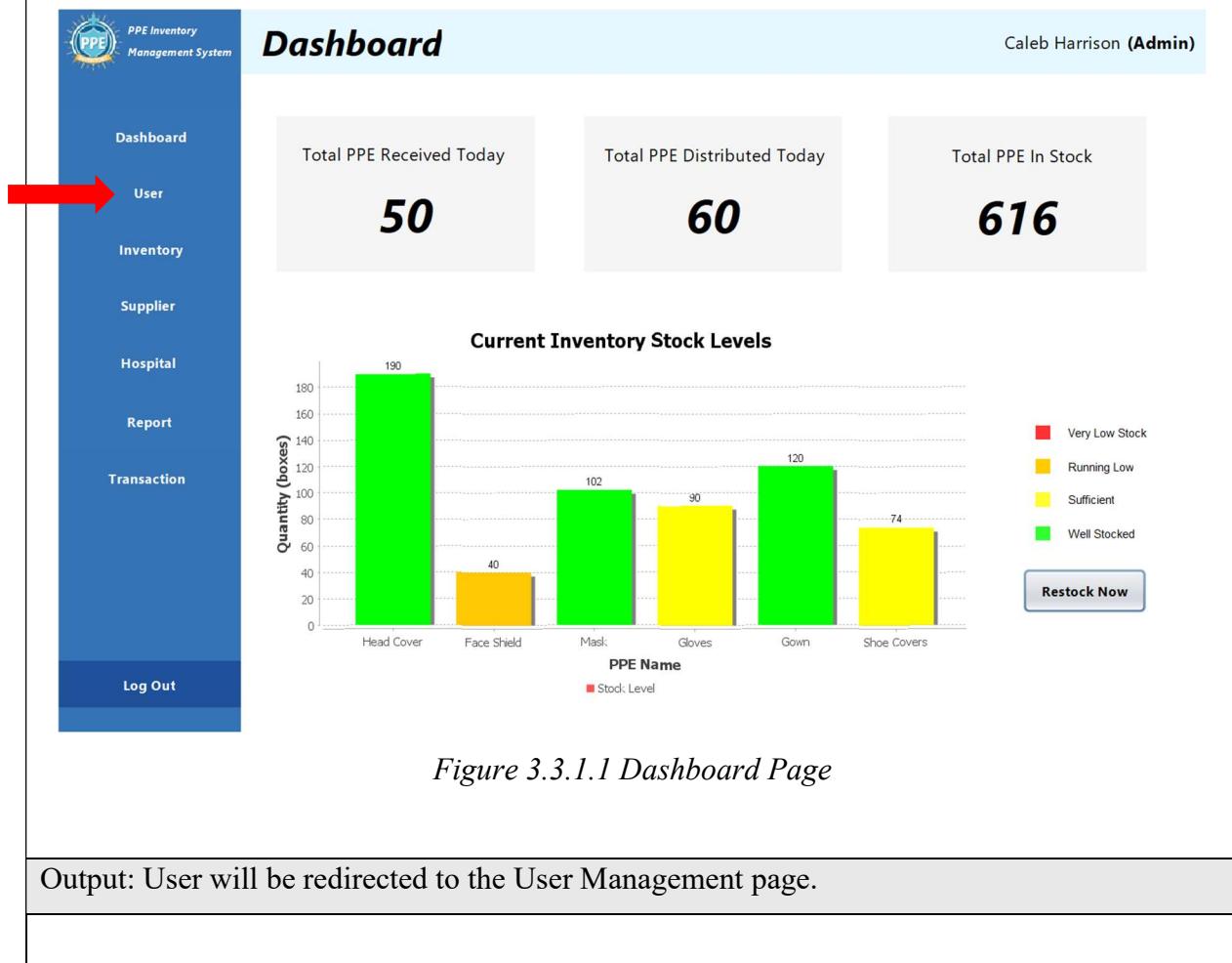


Figure 3.2.2.5 Updated dashboard page

3.3 User Management

3.3.1 User Log

Input: If user click “User” button in the side bar.



Output: User will be redirected to the User Management page.

User Management

Caleb Harrison (Admin)

User ID	Name	Password	Contact	User Type	Login Time
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin	Log In : 2025-03-21 00:28:44

User Log

User ID	Name	Password	Contact	User Type	Login Time
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin	Log In : 2025-03-21 00:28:44

User List

User ID	Name	Password	Contact No	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin
ST8168	Damian Brooks	HG7*84fj	018-4285925	Staff
ST4357	Evelyn Carter	HGhgf%483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

Add User / Edit User

Name:

Password: At least 8 characters
At least 1 uppercase
At least 1 lowercase
At least 1 number
At least 1 special character

Contact No:

User Type: Admin Staff

Save **Reset**

Search **Sorted by** **Reset** **Print**

Figure 3.3.1.2 User Management Page

Input: When a user logs into the system.

LOG IN

User ID:

Password:

Log In

Figure 3.3.1.3 User logs into the system

Output: The login details of the specific user will be recorded.

User Log

User ID	Name	Password	Contact	User Type	Login Time
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin	Log In : 2025-03-21 00:28:44
ST8168	Damian Brooks	HG7^84fj	018-4285925	Staff	Log In : 2025-03-21 00:41:12
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin	Log In : 2025-03-21 00:41:35

Figure 3.3.1.4 Updated User Log table

Input: When a user logs out of the system.

The screenshot shows the User Management section of the PPE Inventory Management System. On the left, a vertical sidebar lists navigation options: Dashboard, User, Inventory, Supplier, Hospital, Report, and Transaction. A red box highlights the 'Log Out' button at the bottom of this sidebar. The main content area has a light blue header 'User Management'. Below it, there are two tables: 'User Log' and 'User List'. The 'User Log' table shows three entries:

User ID	Name	Password	Contact	User Type	Login Time
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin	Log In : 2025-03-21 00:28:44
ST8168	Damian Brooks	HG7*84fj	018-4285925	Staff	Log In : 2025-03-21 00:41:12
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin	Log In : 2025-03-21 00:41:35

The 'User List' table shows four users:

User ID	Name	Password	Contact No	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin
ST8168	Damian Brooks	HG7*84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFGhf%483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

To the right of the tables is a form for 'Add User' or 'Edit User'. It includes fields for Name, Password (with validation rules: At least 8 characters, At least 1 uppercase, At least 1 lowercase, At least 1 number, At least 1 special character), Contact No, User Type (radio buttons for Admin and Staff), and Save/Reset buttons. A red box highlights the 'Caleb Harrison (Admin)' entry in the 'User Log' table.

Figure 3.3.1.5 “Log Out” button is clicked

Output: The log out details of the specific user will be recorded.

User Log

User ID	Name	Password	Contact	User Type	Login Time
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin	Log In : 2025-03-21 00:28:44
ST8168	Damian Brooks	HG7^84fj	018-4285925	Staff	Log In : 2025-03-21 00:41:12
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin	Log In : 2025-03-21 00:41:35
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin	Log Out : 2025-03-21 00:49:01

Figure 3.3.1.4 Updated User Log table

3.3.2 Add User

Input: All required user details have been correctly entered, and user clicks “Save” button.

The screenshot shows the 'Add User' interface. On the left is a table of log entries. In the center is a modal dialog titled 'Message' with an info icon and the text 'User added successfully!' with an 'OK' button. To the right is the main form fields: Name (Ethan Cross), Password (*****), Contact No (015-3462856), User Type (radio buttons for Admin and Staff, with Staff selected), and Save/Reset buttons.

Contact	User Type	Login Time
ST-7563849	Admin	Log In : 2025-03-21 00:28:44
ST-4285925	Staff	Log In : 2025-03-21 00:41:12
ST-7563849	Admin	Log In : 2025-03-21 00:41:35
ST-7563849	Admin	Log Out : 2025-03-21 00:49:01

Figure 3.3.2.1 Add User form

User List				
User ID	Name	Password	Contact No	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin
ST8168	Damian Brooks	HG7%84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

Figure 3.3.2.2 Previous user list before adding user

Output: The new user has been successfully saved to the text file and displayed in the user list.

User List				
User ID	Name	Password	Contact	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin
ST8168	Damian Brooks	HG7%84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff
ST2490	Ethan Cross	DFgrs&548	015-3462856	Staff

Figure 3.3.2.3 Updated user list

Input: If any required field is left empty and user click “Save” button.

The screenshot shows the 'Add User' form. At the top, there are two buttons: 'Add User' (highlighted in blue) and 'Edit User'. Below these are input fields for 'Name' (empty) and 'Password' (containing only asterisks). To the right of the password field is a list of validation rules in green: 'At least 8 characters', 'At least 1 uppercase', 'At least 1 lowercase', 'At least 1 number', and 'At least 1 special character'. The 'Contact No.' field contains the value '012-5673548'. Under 'User Type', the 'Staff' radio button is selected. At the bottom are 'Save' and 'Reset' buttons.

Figure 3.3.2.4 Add user form with empty entry

Output: An error message dialog box will appear, and the user will not be added.

The screenshot shows the 'Add User' form with an error message dialog box overlaid. The dialog box has a title 'Message' and a blue circular icon with an 'i'. The message text says 'Invalid input! Please enter valid data.' and has an 'OK' button. The rest of the form is identical to Figure 3.3.2.4, with empty 'Name' and 'Password' fields, and the 'Staff' radio button selected.

Figure 3.3.2.5 Error message box for empty entry

Input: If any required field contains a value in the wrong format and user clicks "Save" button.

Add User Edit User

Name: 657&^g

Password: *****

At least 8 characters
At least 1 uppercase
At least 1 lowercase
At least 1 number
At least 1 special character

Contact No: 036dg4532

User Type: Admin Staff

Save **Reset**

Figure 3.3.2.6 Name, password and contact number field with invalid entry

Output: An error message dialog box will appear, and the user will not be added.

Contact	User Type	Login Time
12-7563849	Admin	Log In : 2025-03-21 00:28:44
18-4285925	Staff	Log In : 2025-03-21 00:41:12
12-7563849	Admin	Log In : 2025-03-21 00:41:35
12-7563849	Admin	Log Out : 2025-03-21 00:49:01

Message X

i Invalid input! Please enter valid data.

OK

Name: 657&g

Password: *****

At least 8 characters
At least 1 uppercase
At least 1 lowercase
At least 1 number
At least 1 special character

Contact No: 036dg4532

User Type: Admin Staff

Save **Reset**

Figure 3.3.2.7 Error message for invalid entry

Input: If the user type is not selected and user click “Save” button.

Name: Sophia Reed

Password: *****

At least 8 characters
At least 1 uppercase
At least 1 lowercase
At least 1 number
At least 1 special character

Contact No: 013-5746382

User Type: Admin Staff

Save **Reset**

Figure 3.3.2.8 Invalid user type entry

Output: An error message dialog box will appear, and the user will not be added.

The screenshot shows a user interface for adding a new user. At the top, there are two buttons: "Add User" (highlighted in blue) and "Edit User". Below these are two tabs: "Contact" and "User Type". The "Contact" tab is selected, displaying a table with four rows of log entries:

Contact	User Type	Login Time
012-7563849	Admin	Log In : 2025-03-21 00:28:44
018-4285925	Staff	Log In : 2025-03-21 00:41:12
012-7563849	Admin	Log In : 2025-03-21 00:41:35

Below the table is a "Message" dialog box with an "i" icon. It contains the text "Invalid input! Please enter valid data." and an "OK" button. To the right of the table, there is a "Login Time" section with four entries: "Log Out : 2025-03-21 00:49:01".

The "User Type" tab is selected, showing fields for "Name" (Sophia Reed), "Password" (*****), and "Contact No" (013-5746382). Below the password field are five validation rules: "At least 8 characters", "At least 1 uppercase", "At least 1 lowercase", "At least 1 number", and "At least 1 special character". Under "User Type", there are two radio buttons: "Admin" (unchecked) and "Staff" (checked). At the bottom are "Save" and "Reset" buttons.

Figure 3.3.2.9 Error message for invalid user type entry

Input: If user enter user details and click “Reset” button.

This screenshot shows the same user addition interface as the previous one, but with different input values. The "Name" field now contains "Sophia Reed", and the "User Type" field has a radio button selected for "Staff". All other fields and validation messages remain the same as in the previous screenshot.

Figure 3.3.2.10 Add user form

Output: All required fields will be reset to their default values, and the user will not be added.

The screenshot shows a user interface for adding a new user. At the top, there are two buttons: 'Add User' (highlighted in blue) and 'Edit User'. Below these are four input fields: 'Name' (empty), 'Password' (empty), 'Contact No.' (empty), and 'User Type' (radio buttons for 'Admin' and 'Staff'). To the right of the 'Password' field, there is a note in red text: 'At least 8 characters', 'At least 1 uppercase', 'At least 1 lowercase', 'At least 1 number', and 'At least 1 special character'. At the bottom of the form are two buttons: 'Save' (disabled, greyed out) and 'Reset' (highlighted in blue).

Figure 3.3.2.11 “Reset” button is clicked

3.3.3 Edit User

Input: User selects a user code to view the details of that specific user.

The screenshot shows a user interface for editing a user. At the top, there are two buttons: "Add User" and "Edit User". Below them is a form with the following fields:

- User ID:** A dropdown menu with the placeholder "Please select".
- Name:** An input field containing "ST5722".
- Password:** An input field containing "ST5722". Below it are validation messages: "At least 1 lowercase", "At least 1 number", and "At least 1 special character".
- Contact No:** An input field containing "012-7563849".
- User Type:** Radio buttons for "Admin" (selected) and "Staff".

At the bottom are three buttons: "Save", "Delete", and "Reset".

Figure 3.3.3.1 Edit user form

Output: The user details of that specific user code will be displayed.

The screenshot shows the same user interface after selecting a user ID. The "User ID" dropdown now shows "ST5722". The "Name" field contains "Caleb Harrison". The "Password" field contains "*****". Below it are validation messages: "At least 8 characters", "At least 1 uppercase", "At least 1 lowercase", "At least 1 number", and "At least 1 special character". The "Contact No" field contains "012-7563849". The "User Type" section shows "Admin" selected. At the bottom are the "Save", "Delete", and "Reset" buttons.

Figure 3.3.3.2 User details of chosen user code

Input: User can edit the name, password, contact number and user type of chosen user. If all required fields are in the correct format and user click “Save” button, the user details will be updated.

The screenshot shows a user interface for editing user details. At the top, there are two buttons: 'Add User' and 'Edit User'. Below these are four input fields: 'User ID' (dropdown menu showing 'ST5722'), 'Name' (text input showing 'Olivia Hayes'), 'Password' (text input showing '*****'), and 'Contact No.' (text input showing '018-5634475'). To the right of the password input, there is a note: 'At least 8 characters', 'At least 1 uppercase', 'At least 1 lowercase', 'At least 1 number', and 'At least 1 special character'. Below the password note is a 'User Type' section with two radio buttons: 'Admin' (unchecked) and 'Staff' (checked). At the bottom are three buttons: 'Save', 'Delete', and 'Reset'.

Figure 3.3.3.3 Edit user form with valid data entry

The screenshot shows a table titled 'User List' with columns: User ID, Name, Password, Contact, and User Type. There are six rows of data. The first row, which contains the values 'ST5722', 'Caleb Harrison', 'Ahfgt%648', '012-7563849', and 'Admin', is highlighted with a red border. The other five rows are standard table rows.

User ID	Name	Password	Contact	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-7563849	Admin
ST8168	Damian Brooks	HG7%84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff
ST2490	Ethan Cross	DFgrs&548	015-3462856	Staff

Figure 3.3.3.4 Previous user list

Output: The chosen user details will be successfully updated.

ct	User Type	Login Time
563849	Admin	Log In : 2025-03-21 00:28:44
285925	Staff	Log In : 2025-03-21 00:41:12
563849	Admin	Log In : 2025-03-21 00:41:35
563849	Admin	Log Out : 2025-03-21 00:49:01

Add User Edit User

User ID: ST5722

Name: Olivia Hayes

Password: *****
At least 8 characters
At least 1 uppercase
At least 1 lowercase
At least 1 number
At least 1 special character

Contact No: 018-5634475

User Type: Admin Staff

Message X
User updated successfully!
OK

Save Delete Reset

Figure 3.3.3.5 Success message box

User List

Search Sorted by Reset Print

User ID	Name	Password	Contact	User Type
ST5722	Olivia Hayes	GHFGg%^43	018-5634475	Staff
ST8168	Damian Brooks	HG7^84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFgh%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%^74h4	013-5736839	Staff
ST2490	Ethan Cross	DFgrs&548	015-3462856	Staff

Figure 3.3.3.6 Updated user list

Input: If any required field contains a value in the wrong format and user clicks "Save" button.

Add User Edit User

User ID:	ST5722
Name:	HGARDGAGV
Password:	*****
At least 8 characters At least 1 uppercase At least 1 lowercase At least 1 number At least 1 special character	
Contact No:	GHfd6%
User Type:	<input checked="" type="radio"/> Admin <input type="radio"/> Staff
Save Delete Reset	

Figure 3.3.3.7 Invalid user details

Output: An error message box will appear, and the user details will not be updated.

Add User Edit User

Contact	User Type	Login Time
2-7563849	Admin	Log In : 2025-03-21 00:28:44
8-4285925	Staff	Log In : 2025-03-21 00:41:12
2-7563849	Admin	Log In : 2025-03-21 00:41:35
2-7563849	Admin	Log Out : 2025-03-21 00:49:01

Message

i Invalid input! Please enter valid data.

OK

User ID:	ST5722
Name:	HGARDGAGV
Password:	*****
At least 8 characters At least 1 uppercase At least 1 lowercase At least 1 number At least 1 special character	
Contact No:	GHfd6%
User Type:	<input checked="" type="radio"/> Admin <input type="radio"/> Staff
Save Delete Reset	

Figure 3.3.3.8 Error message box for invalid user details

Input: User enter user details and click “Reset” button.

The screenshot shows a user interface for editing a user. At the top, there are two buttons: "Add User" and "Edit User". Below them is a "User ID" dropdown set to "ST5722". The "Name" field contains "Olivia Hayes". The "Password" field contains "*****". To the right of the password field, there are five green validation messages: "At least 8 characters", "At least 1 uppercase", "At least 1 lowercase", "At least 1 number", and "At least 1 special character". The "Contact No." field contains "018-5634475". Under "User Type", the "Admin" radio button is unselected, and the "Staff" radio button is selected. At the bottom are three buttons: "Save", "Delete", and "Reset".

Figure 3.3.3.9 Edit user form

Output: All required fields will be reset to their default values, and the user details will not be updated.

This screenshot shows the same "Edit User" form after a "Reset" operation. The "Name" and "Password" fields are now empty. The validation messages for password requirements are displayed in red. The "Contact No." field is also empty. The "User Type" section shows that the "Admin" radio button is selected. The "Save", "Delete", and "Reset" buttons are at the bottom.

Figure 3.3.3.10 Required fields return to default value

3.3.4 Delete User

Input: User selects a user code from the combo box, clicks “Delete” button and confirms the deletion.

The screenshot shows a user details form. At the top are two buttons: "Add User" and "Edit User". Below them is a "User ID" dropdown set to "ST2490", a "Name" input field containing "Ethan Cross", and a "Password" input field with masked text. To the right of the password field are five red validation messages: "At least 8 characters", "At least 1 uppercase", "At least 1 lowercase", "At least 1 number", and "At least 1 special character". Below these are fields for "Contact No." (015-3462856) and "User Type" (radio buttons for "Admin" and "Staff", with "Staff" selected). At the bottom are three buttons: "Save", "Delete" (which has a red border), and "Reset".

Figure 3.3.4.1 Selected user details

The screenshot shows the same user details form as Figure 3.3.4.1. On the left, there is a table with columns "Contact", "User Type", and "Login Time". The table contains four rows of data. A modal dialog box titled "Confirm Deletion" is overlaid on the form. It features a question mark icon and the text "Are you sure you want to delete User ST2490?". At the bottom of the dialog are two buttons: "Yes" (which has a red border) and "No". The rest of the form fields are identical to Figure 3.3.4.1.

Figure 3.3.4.2 Confirm deletion message box

User List				
User ID	Name	Password	Contact	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-5763849	Admin
ST8168	Damian Brooks	HG7*84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFgh%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff
ST2490	Ethan Cross	DFgrs&548	015-3462856	Staff

Figure 3.3.4.3 Previous user list

Output: The selected user will be deleted from the text file and user list table.

The screenshot shows a user deletion interface. On the left, there is a table titled "User List" with columns: Contact, User Type, and Login Time. It contains four rows of data. On the right, there is a form for adding or editing a user. The "User ID" field has a dropdown menu with "Please select" and a red warning message below it. The "Name" and "Password" fields are empty. Below them are five red validation messages: "At least 8 characters", "At least 1 uppercase", "At least 1 lowercase", "At least 1 number", and "At least 1 special character". The "Contact No." field is empty. The "User Type" section contains two radio buttons: "Admin" (selected) and "Staff". At the bottom are three buttons: "Save", "Delete" (disabled), and "Reset". A modal dialog box in the center says "Success" and "User ST2490 deleted successfully!" with an "OK" button.

Figure 3.3.4.4 Success message box for deletion

User List				
User ID	Name	Password	Contact	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-5763849	Admin
ST8168	Damian Brooks	HG7*84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFgh%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

Figure 3.3.4.5 Updated user list

3.3.5 Search User

Input: User enters a search value (item code) in search box and pressed the “ENTER” key.

User List				
User ID	Name	Password	Contact	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-5763849	Admin
ST8168	Damian Brooks	HG7'84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

Figure 3.3.5.1 Search box

Output: The user list table will display the search results accordingly.

User List				
User ID	Name	Password	Contact	User Type
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff

Figure 3.3.5.2 Search result

Input: After searching, user click the “Reset” button.

User List				
User ID	Name	Password	Contact	User Type
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff

Figure 3.3.5.3 Previous search result

Output: The user list table will return to its default state.

User List				
User ID	Name	Password	Contact	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-5763849	Admin
ST8168	Damian Brooks	HG7^84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

Figure 3.3.5.6 User list table in default state

Input: User clicks the “Sort by” button and clicks “Ascending” button.

User List				
User ID	Name	Password	Contact	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-5763849	Admin
ST8168	Damian Brooks	HG7^84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

Figure 3.3.5.7 User list table in default state

Output: The data in the user list table will be sorted in ascending order based on the item code.

User List				
User ID	Name	Password	Contact	User Type
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff
ST5722	Caleb Harrison	Ahfgt%648	012-5763849	Admin
ST8168	Damian Brooks	HG7^84fj	018-4285925	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

Figure 3.3.5.8 User list table displayed in ascending order

Input: User clicks the “Sort by” button and clicks “Descending” button.

User List				
User ID	Name	Password	Contact	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-5763849	Admin
ST8168	Damian Brooks	HG7%84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

Figure 3.3.5.9 User list table in default state

Output: The data in the user list table will be sorted in descending order based on the item code.

User List				
User ID	Name	Password	Contact	User Type
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff
ST8168	Damian Brooks	HG7%84fj	018-4285925	Staff
ST5722	Caleb Harrison	Ahfgt%648	012-5763849	Admin
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff

Figure 3.3.5.10 User list table displayed in descending order

3.3.6 Print User List in PDF

Input: The print button is clicked to generate a PDF copy of the table. A message dialog is shown to notify users that the file is successfully created.

The screenshot shows a user management application. On the right, there is a form with fields for 'Contact No.' (with validation messages: 'At least 1 uppercase', 'At least 1 number', 'At least 1 special character'), 'User Type' (radio buttons for 'Admin' and 'Staff'), and buttons for 'Save', 'Delete', and 'Reset'. On the left, there is a 'User List' table with columns: User ID, Name, Password, Contact, and User Type. The table contains four rows of data. At the top, there is a search bar, a 'Sorted by' dropdown, a 'Reset' button, and a 'Print' button. A modal dialog box titled 'Success' is displayed in the center, containing the message 'PDF is created and saved successfully!' with an 'OK' button.

User ID	Name	Password	Contact	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-5763849	Admin
ST8168	Damian Brooks	HG7^84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

Figure 3.3.6.1 PDF export confirmation message

Output: The data in user list table will be exported to PDF file.



Figure 3.3.6.2 User list PDF file downloaded

User List

User ID	Name	Password	Contact	User Type
ST5722	Caleb Harrison	Ahfgt%648	012-5763849	Admin
ST8168	Damian Brooks	HG7^84fj	018-4285925	Staff
ST4357	Evelyn Carter	HFghf%^483h	014-8563749	Staff
ST9678	Lillian Hayes	BDgt%74h4	013-5736839	Staff

Figure 3.3.6.3 User list PDF

3.4 Inventory Management

3.4.1 Receiving Items

Input: All details of the received items are filled out. Figure 3.4.1.2 shows the table before updating the receive record.

Receive Items

Item Code:	MS
Supplier Code:	SP2029
Quantity:	102
Received Date:	18 Mar 2025
Received Time:	14:55:33

Reset **Save**

Figure 3.4.1.1 'Receive Items' form with details filling out

Inventory List

Search		Sorted by	Filtered by	Reset	Print
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)	
HC	Head Cover	SP2029	190	20.00	
FS	Face Shield	SP7463	100	25.00	
MS	Mask	SP2029	50	10.00	
GL	Gloves	SP2029	150	18.00	
GW	Gown	SP7463	140	35.00	
SC	Shoe Covers	SP7996	110	20.00	

Figure 3.4.1.2 Inventory list before receiving item

Output: The input details are successfully saved, and the quantity in the table is updated.

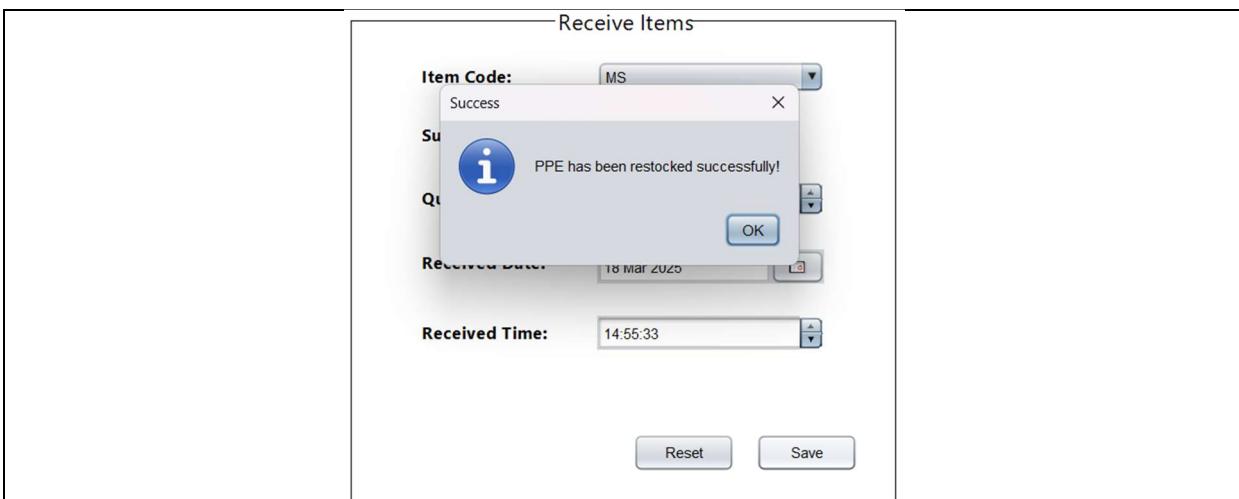


Figure 3.4.1.3 Message dialog of received item successfully saved

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
HC	Head Cover	SP2029	190	20.00
FS	Face Shield	SP7463	100	25.00
MS	Mask	SP2029	152	10.00
GL	Gloves	SP2029	150	18.00
GW	Gown	SP7463	140	35.00
SC	Shoe Covers	SP7996	110	20.00

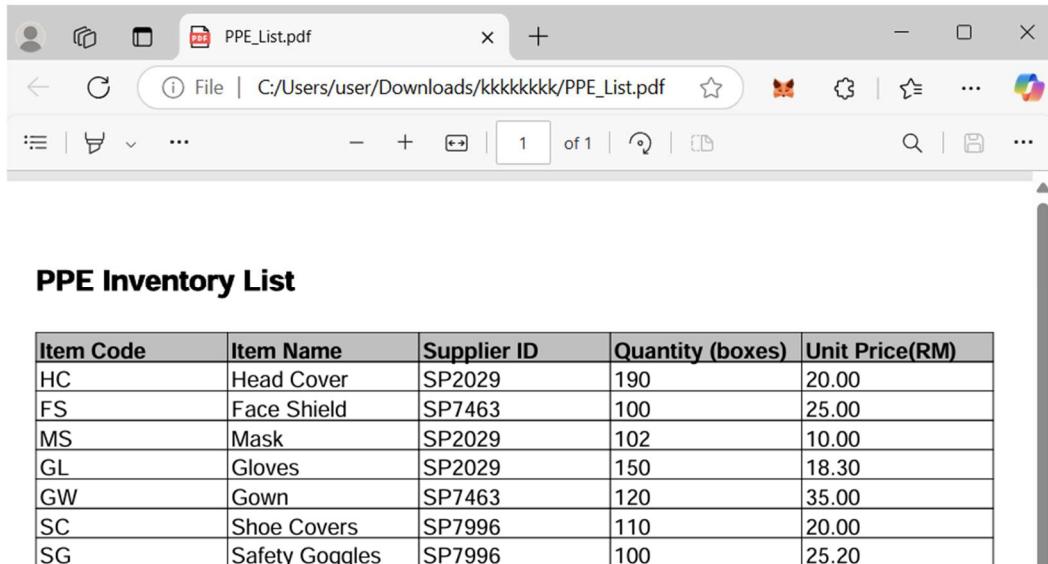
Figure 3.4.1.4 Inventory list updated after receiving item

Input/output: Print button is clicked, and the inventory list is printed in PDF.

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
HC	Head Cover	SP2029	190	20.00
FS	Face Shield	SP7463	100	25.00
MS	Mask	SP2029	102	10.00
GL	Gloves	SP2029	150	18.30
GW	Gown	SP7463	120	35.00
SC	Shoe Covers	SP7996	110	20.00
SG	Safety Goggles	SP7996	100	25.20

Figure 3.4.1.5 A message dialog appears when clicking the print button



Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
HC	Head Cover	SP2029	190	20.00
FS	Face Shield	SP7463	100	25.00
MS	Mask	SP2029	102	10.00
GL	Gloves	SP2029	150	18.30
GW	Gown	SP7463	120	35.00
SC	Shoe Covers	SP7996	110	20.00
SG	Safety Goggles	SP7996	100	25.20

Figure 3.4.1.6 Generated PDF file of inventory list

Input: Unable to save without filling out all fields.

Receive Items

Item Code:	MS
Supplier Code:	SP2029
Quantity:	0
Received Date:	
Received Time:	00:00:00

Reset **Save**

Figure 3.4.1.7 Incomplete 'Receive Items' form

Output: A warning message appears to notify users to fill out all fields before saving.

Receive Items

Item Code:	MS
Supplier Code:	SP2029
Quantity:	0

Recei Warning **X**

Please fill out all fields!

OK

Reset **Save**

Figure 3.4.1.8 Warning message dialog of incomplete form

3.4.2 Distributing Items

Input: All details of the distributed items are fill out. Figure 3.4.2.2 shows the table before updating the distribute record.

Distribute Items

Item Code:	MS
Hospital Code:	Please select
Quantity:	50
Current quantity in stock: 152	
Distributed Date:	19 Mar 2025
Distributed Time:	13:47:00
<input type="button" value="Reset"/> <input type="button" value="Save"/>	

Figure 3.4.2.1 ‘Distribute Items’ form with details filling out

Inventory List

Inventory List				
Search		Sorted by	Filtered by	Reset
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
HC	Head Cover	SP2029	190	20.00
FS	Face Shield	SP7463	100	25.00
MS	Mask	SP2029	152	10.00
GL	Gloves	SP2029	150	18.00
GW	Gown	SP7463	140	35.00
SC	Shoe Covers	SP7996	110	20.00

Figure 3.4.2.2 Inventory list before distributing item

Output: The input details are successfully saved, and the quantity in the table is updated.

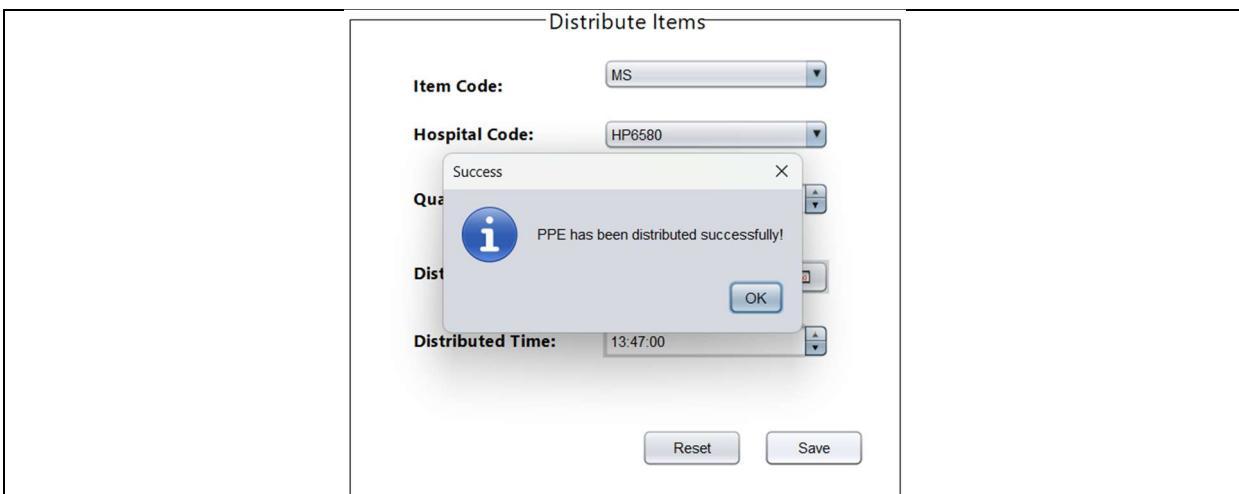


Figure 3.4.2.3 Message dialog of distributed item successfully saved

Inventory List

Search		Sorted by	Filtered by	Reset	Print
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)	
HC	Head Cover	SP2029	190	20.00	
FS	Face Shield	SP7463	100	25.00	
MS	Mask	SP2029	102	10.00	
GL	Gloves	SP2029	150	18.00	
GW	Gown	SP7463	140	35.00	
SC	Shoe Covers	SP7996	110	20.00	

Figure 3.4.2.4 Inventory list updated after distributing item

Input: Unable to save without filling out all fields.

Distribute Items

Item Code:	MS
Hospital Code:	Please select
Quantity:	0 Current quantity in stock: 102
Distributed Date:	[date input field]
Distributed Time:	13:47:00

Reset Save

Figure 3.4.2.5 Incomplete 'Distribute Items' form

Output: A warning message appears to notify users to fill out all fields before saving.

Distribute Items

Item Code:	MS
Hospital Code:	Please select
Quantity:	0 Current quantity in stock: 102
Distributed Date:	[date input field]
Distrib	<p>Warning</p> <p>Please fill out all fields!</p> <p>OK</p> <p>Save</p>

Figure 3.4.2.6 Warning message dialog of incomplete form

Input: Enter quantity that larger than current stock is not allowed.

Distribute Items

Item Code:	MS
Hospital Code:	HP6580
Quantity:	200
Current quantity in stock: 102	
Distributed Date:	19 Mar 2025
Distributed Time:	13:47:00

Reset Save

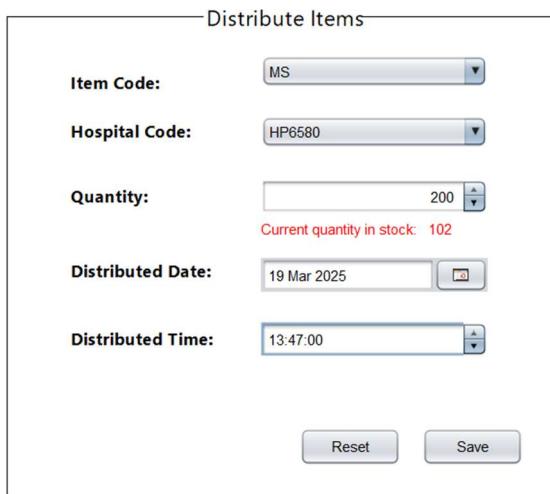


Figure 3.4.2.7 Input quantity that larger than current stock

Output: The item will not be distributed because of not enough stock.

Distribute Items

Item Code:	MS
Hospital Code:	HP6580
Quantity:	200
Current quantity in stock: 152	

Warning

Not enough stock, please select again.

OK

Reset Save

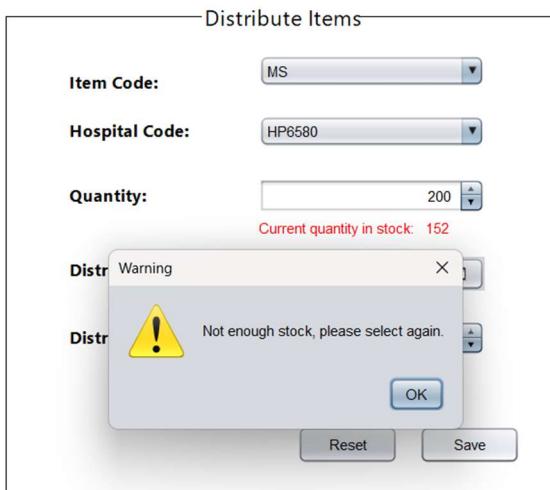


Figure 3.4.2.8 Warning message dialog of insufficient stock

3.4.3 Add New Inventory

Input: All details of the new inventory are fill out. Figure 3.4.3.2 shows the original inventory list before adding.

Add New Inventory Edit Inventory

Please make sure suppliers are added before adding new inventory !

Item Code: SG Unit Price (RM): 25.2

Item Name: Safety Goggles Quantity: 0

Supplier Code: SP7996

Save Reset

Figure 3.4.3.1 'Add New Inventory' form

Inventory List

Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
HC	Head Cover	SP2029	190	20.00
FS	Face Shield	SP7463	100	25.00
MS	Mask	SP2029	102	10.00
GL	Gloves	SP2029	150	18.00
GW	Gown	SP7463	140	35.00
SC	Shoe Covers	SP7996	110	20.00

Figure 3.4.3.2 Inventory list before adding new inventory

Output: The new inventory is successfully saved and added into the table in figure 3.4.3.4.

Add New Inventory Edit Inventory

Please make sure suppliers are added before adding new inventory !

Item Code: SG Unit Price (RM): 25.2

Item Name: Safety Goggles Quantity: 0

Supplier Code: SP7996

Message

PPE added successfully!

OK

Save Reset

Figure 3.4.3.3 A message dialog that notify users the new inventory is saved

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
HC	Head Cover	SP2029	190	20.00
FS	Face Shield	SP7463	100	25.00
MS	Mask	SP2029	102	10.00
GL	Gloves	SP2029	150	18.00
GW	Gown	SP7463	140	35.00
SC	Shoe Covers	SP7996	110	20.00
SG	Safety Goggles	SP7996	0	25.20

Figure 3.4.3.4 Updated inventory list with the new inventory

Input: Duplicate code entered when add an inventory.

Add New Inventory Edit Inventory

Please make sure suppliers are added before adding new inventory !

Item Code:	HC	Unit Price (RM):	25.2
Item Name:	Safety Goggles	Quantity:	0
Supplier Code:	SP7996	Save	Reset

Figure 3.4.3.5 Duplicate item code input

Output: An error message dialog is shown, and data is unable to save.

Add New Inventory Edit Inventory

Please make sure suppliers are added before adding new inventory !

Item Code:	HC	Unit Price (RM):	25.2
Item Name:	Safety Goggles	Quantity:	0
Supplier Code:	SP7996	Save	Reset

Validation Error

Duplicate item code!

OK

Figure 3.4.3.6 Error message dialog of duplicate item code

Input: Invalid item name.

The screenshot shows a web-based inventory management system. At the top, there are two buttons: "Add New Inventory" and "Edit Inventory". Below them, a red warning message is displayed: "Please make sure suppliers are added before adding new inventory !". The form fields are as follows: Item Code is "SG", Unit Price (RM) is "25.2", Item Name is "123", and Quantity is "0". Supplier Code is "SP7996". At the bottom right are "Save" and "Reset" buttons.

Figure 3.4.3.7 Invalid item name in the form of number

Output: A message dialog is displayed to alert users to re-enter the item name.

This screenshot is similar to the previous one, showing the same inventory addition form. However, a "Warning" dialog box has appeared over the form. The dialog contains a yellow exclamation mark icon and the text "Please enter valid information!". It has an "OK" button at the bottom. The rest of the form fields and buttons are visible beneath the dialog.

Figure 3.4.3.8 Warning message dialog appeared for the invalid item name

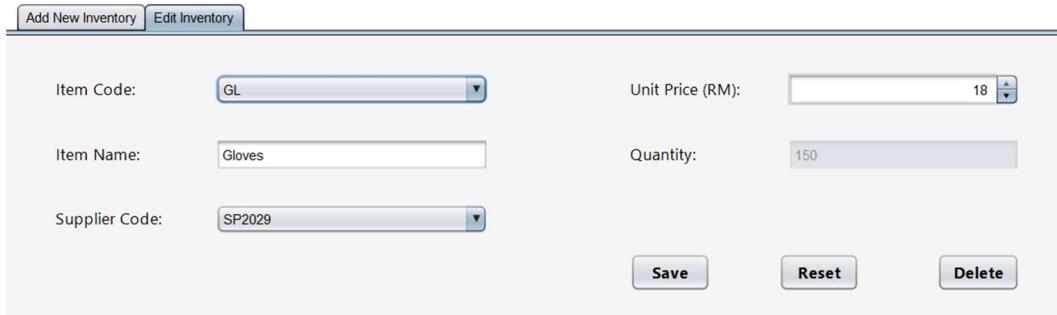
3.4.4 Edit Inventory

Input: Users select an item that they want to edit from the dropdown list.

The screenshot shows a user interface for editing inventory. At the top, there are two buttons: 'Add New Inventory' and 'Edit Inventory'. Below these are three input fields: 'Item Code' (dropdown menu showing 'Please Select' and a list of options including 'HC', 'FS', 'MS', 'GL', 'GW', 'SC', 'SG'), 'Unit Price (RM)' (text input field with value '0'), and 'Quantity' (text input field). To the right of the dropdown are three buttons: 'Save', 'Reset', and 'Delete'. The 'GL' option is currently selected in the dropdown menu.

Figure 3.4.4.1 Selecting an item to edit

Output: The selected item and its details are shown accordingly. Figure 3.4.4.3 shows the table that indicates the original data before edited.



The screenshot shows the same interface as Figure 3.4.4.1, but with the 'GL' item selected. The dropdown now shows 'GL' and the text inputs show 'Gloves' for Item Name and '150' for Quantity. The 'Unit Price (RM)' field still shows '18'. The 'Save', 'Reset', and 'Delete' buttons are visible at the bottom.

Figure 3.4.4.2 Details of the selected item are displayed

Inventory List

Search		Sorted by	Filtered by	Reset	Print
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)	
HC	Head Cover	SP2029	190	20.00	
FS	Face Shield	SP7463	100	25.00	
MS	Mask	SP2029	102	10.00	
GL	Gloves	SP2029	150	18.00	
GW	Gown	SP7463	140	35.00	
SC	Shoe Covers	SP7996	110	20.00	
SG	Safety Goggles	SP7996	0	25.20	

Figure 3.4.4.3 Data of the selected item before edited

Input: Edit the field of the item and click save button.

Add New Inventory Edit Inventory

Item Code: GL Unit Price (RM): 18.3

Item Name: Gloves Quantity: 150

Supplier Code: SP2029

Save Reset Delete

Figure 3.4.4.4 Edit the unit price of the selected item

Output: The unit price is successfully be edited and update in the table in figure 3.4.4.6.

Add New Inventory Edit Inventory

Item Code: GL Message Price (RM): 18.3

Item Name: Gloves PPE updated successfully! Quantity: 150

Supplier Code: SP2029

OK

Save Reset Delete

Figure 3.4.4.5 A message dialog with PPE successfully updated

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
HC	Head Cover	SP2029	190	20.00
FS	Face Shield	SP7463	100	25.00
MS	Mask	SP2029	102	10.00
GL	Gloves	SP2029	150	18.30
GW	Gown	SP7463	140	35.00
SC	Shoe Covers	SP7996	110	20.00
SG	Safety Goggles	SP7996	0	25.20

Figure 3.4.4.6 Inventory list that included the updated data

Input: Invalid edited item name is entered.

The screenshot shows a user interface for managing inventory. At the top, there are two buttons: "Add New Inventory" and "Edit Inventory". Below these are four input fields: "Item Code" (containing "GL"), "Unit Price (RM)" (containing "18.3"), "Item Name" (containing "123", which is highlighted with a red border), and "Quantity" (containing "150"). There is also a dropdown field for "Supplier Code" (containing "SP2029"). At the bottom of the form are three buttons: "Save", "Reset", and "Delete".

Figure 3.4.4.7 Invalid item name in numeric

Output: A warning message dialog that prompt users to re-enter a valid information. In this case, it refers to item name.

The screenshot shows the same inventory management application as Figure 3.4.4.7. However, a "Warning" dialog box is overlaid on the form. The dialog has a yellow exclamation mark icon and the text "Please enter valid information!". It contains an "OK" button. The background form fields are visible but appear slightly dimmed or faded.

Figure 3.4.4.8 Warning message dialog existed due to invalid item name

3.4.5 Delete Inventory

Input: An item to delete is selected. Figure 3.4.5.2 shows the inventory list before deleting the selected item.

The screenshot shows a user interface for managing inventory. At the top, there are two buttons: 'Add New Inventory' and 'Edit Inventory'. Below these are four input fields: 'Item Code' (set to 'SG'), 'Unit Price (RM)' (set to '25.2'), 'Item Name' ('Safety Goggles'), and 'Quantity' (set to '0'). Underneath these fields are three buttons: 'Save', 'Reset', and 'Delete'. The 'Delete' button is highlighted with a red border.

Figure 3.4.5.1 'SG' is selected to delete

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
HC	Head Cover	SP2029	190	20.00
FS	Face Shield	SP7463	100	25.00
MS	Mask	SP2029	102	10.00
GL	Gloves	SP2029	150	18.30
GW	Gown	SP7463	140	35.00
SC	Shoe Covers	SP7996	110	20.00
SG	Safety Goggles	SP7996	0	25.20

Figure 3.4.5.2 Inventory list before deleting item SG

Output: The delete button is click and the item is successfully deleted. Before this, a confirm message dialog will appear for users to confirm deletion. The table of inventory list will also be updated.

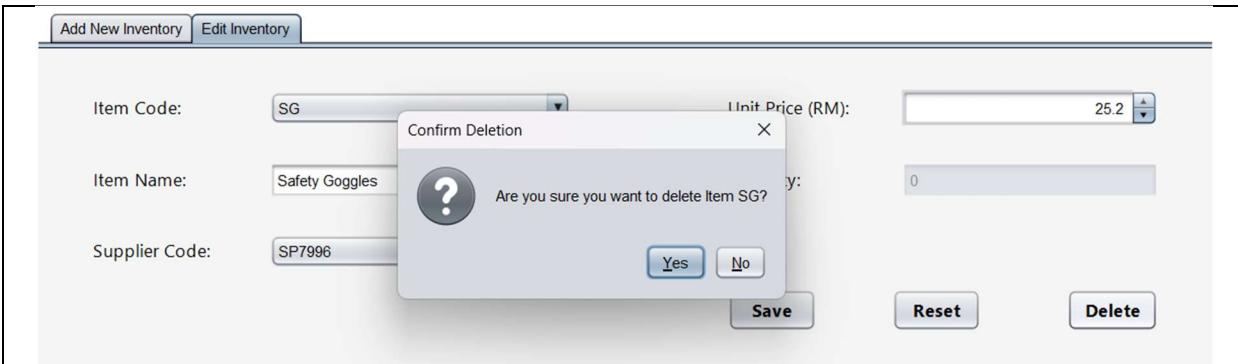


Figure 3.4.5.3 A confirmation dialog is displayed for users to confirm

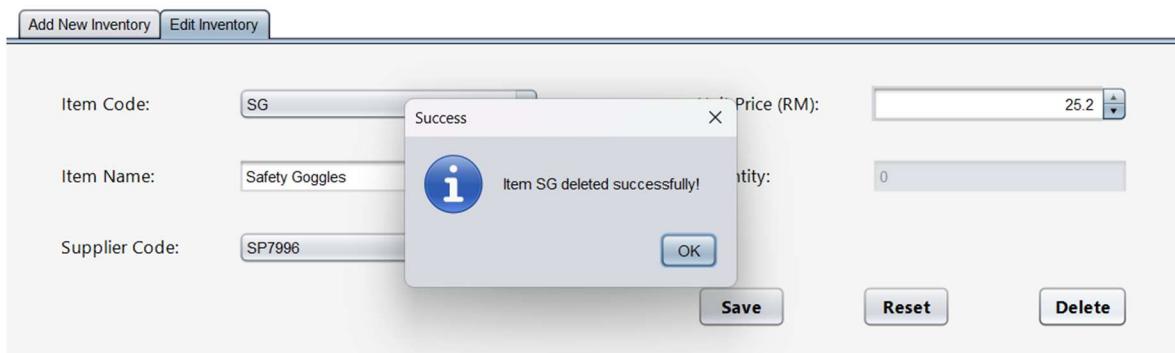


Figure 3.4.5.4 Item SG is successfully deleted

Inventory List

Inventory List				
Search		Sorted by	Filtered by	Reset
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
HC	Head Cover	SP2029	190	20.00
FS	Face Shield	SP7463	100	25.00
MS	Mask	SP2029	102	10.00
GL	Gloves	SP2029	150	18.30
GW	Gown	SP7463	140	35.00
SC	Shoe Covers	SP7996	110	20.00

A red arrow points to the last row of the table, specifically to the 'SC' entry.

Figure 3.4.5.5 Selected item is deleted from the table

Input: Users click the delete button without selecting any item.

The screenshot shows a user interface for managing inventory. At the top, there are two buttons: "Add New Inventory" and "Edit Inventory". Below these are four input fields: "Item Code" (dropdown menu "Please Select"), "Unit Price (RM)" (input field with value "0"), "Item Name" (input field), and "Quantity" (input field). Underneath these fields are three buttons: "Save", "Reset", and "Delete". The "Delete" button is highlighted with a red border, indicating it is the focus of the interaction.

Figure 3.4.5.6 No selected item to delete

Output: A warning message is popped up to prompt users that they must select an item to delete.

This screenshot shows the same application interface as Figure 3.4.5.6, but with a modal "Warning" dialog box overlaid. The dialog has a yellow exclamation mark icon and the text "Please select an item to delete." It includes an "OK" button at the bottom. The background interface remains largely the same, with the "Delete" button still highlighted.

Figure 3.4.5.7 Warning message that notify users to select an item

3.4.6 Clear Existing Input

Input: Existing input that are going to clear by users all at once in each figure.

The image shows two separate input forms side-by-side. The left form is titled 'Receive Items' and the right form is titled 'Distribute Items'. Both forms contain fields for Item Code (dropdown), Supplier Code (dropdown), Quantity (text input with a spin button), Received Date (date input with a calendar icon), Received Time (time input with a dropdown menu), and a 'Reset' and 'Save' button at the bottom. The 'Distribute Items' form also includes fields for Hospital Code (dropdown), Current quantity in stock (text input showing '152'), Distributed Date (date input with a calendar icon), and Distributed Time (time input with a dropdown menu).

Figure 3.4.6.1 Input fields of receive and distribute items

The image shows an 'Add New Inventory' form. At the top, there are two buttons: 'Add New Inventory' and 'Edit Inventory'. A red note below the buttons says 'Please make sure suppliers are added before adding new inventory !'. The form contains fields for Item Code (SG), Item Name (Safety Goggles), Unit Price (RM) (25.2), Quantity (0), Supplier Code (SP7463), and a 'Save' and 'Reset' button at the bottom.

Figure 3.4.6.2 Input fields of add new inventory

The image shows an 'Edit Inventory' form. At the top, there are two buttons: 'Add New Inventory' and 'Edit Inventory'. The form contains fields for Item Code (MS), Item Name (Mask), Unit Price (RM) (10), Quantity (152), Supplier Code (SP2029), and a 'Save', 'Reset', and 'Delete' button at the bottom.

Figure 3.4.6.3 Input fields of edit inventory

Output: Users click the reset button, and all fields are cleared to prepare for users to re-enter new data.

Figure 3.4.6.4 Input fields of receive and distribute items after reset

Figure 3.4.6.5 Input fields of add new inventory after reset

Figure 3.4.6.6 Input fields of edit inventory after reset

3.4.7 Notification

Input: Some items in the inventory list have stock less than 25 boxes.

Inventory List

Search		Sorted by	Filtered by	Reset	Print
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)	
HC	Head Cover	SP2029	190	20.00	
FS	Face Shield	SP7463	100	25.00	
MS	Mask	SP2029	102	10.00	
GL	Gloves	SP2029	150	18.30	
GW	Gown	SP7463	20	35.00	
SC	Shoe Covers	SP7996	110	20.00	

Figure 3.4.7.1 Inventory list with item 'GW' have stock less than 25 boxes

Output: The notification panel will turn red and display the item that is insufficient and remind users to restock.

The following item is/are running critically low: GW (Gown). Please restock immediately!

Receive Items

Item Code:

Supplier Code:

Quantity:

Distribute Items

Item Code:

Hospital Code:

Quantity:

Figure 3.4.7.2 Low stock notification alert users to restock

Input: All items are in sufficient stock.

Inventory List

Search		Sorted by	Filtered by	Reset	Print
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)	
HC	Head Cover	SP2029	190	20.00	
FS	Face Shield	SP7463	100	25.00	
MS	Mask	SP2029	102	10.00	
GL	Gloves	SP2029	150	18.30	
GW	Gown	SP7463	120	35.00	
SC	Shoe Covers	SP7996	110	20.00	
SG	Safety Goggles	SP7996	100	25.20	

Figure 3.4.7.3 Inventory list with all items in sufficient stock

Output: The notification panel appears green when all items are sufficient.

All item are sufficiently stocked. No immediate restocking is needed.

Receive Items

Item Code:

Supplier Code:

Distribute Items

Item Code:

Hospital Code:

Figure 3.4.7.4 Notification that shows no restock is needed

3.4.8 Filter Inventory

Input: Users tend to filter the inventory list by quantity – below 25 boxes.

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity	Unit Price(RM)
HC	Head Cover	SP2029	190	
FS	Face Shield	SP7463	100	25.00
MS	Mask	SP2029	102	10.00
GL	Gloves	SP2029	150	18.30
GW	Gown	SP7463	20	35.00
SC	Shoe Covers	SP7996	110	20.00
SG	Safety Goggles	SP7996	0	25.20

Figure 3.4.8.1 Filter option of 'Below 25 boxes' is selected

Output: The records of item that is below 25 boxes is filtered out.

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
GW	Gown	SP7463	20	35.00

Figure 3.4.8.2 Items below 25 boxes is displayed

Input: Users tend to filter the inventory list by quantity – above 25 boxes, which is all sufficient items.

Inventory List

Search		Sorted by		Filtered by		Reset	Print
Item Code	Item Name	Supplier ID	Quantity	Quantity	Unit Price	Below 25 boxes	
HC	Head Cover	SP2029	190			Above 25 boxes	(M)
FS	Face Shield	SP7463	100			Out Of Stock	
MS	Mask	SP2029	102			25.00	
GL	Gloves	SP2029	150			10.00	
GW	Gown	SP7463	20			18.30	
SC	Shoe Covers	SP7996	110			35.00	
SG	Safety Goggles	SP7996	0			20.00	
						25.20	

Figure 3.4.8.3 Filter option of 'Above 25 boxes' is selected

Output: The records of item that is above 25 boxes is filtered out.

Inventory List

Search		Sorted by		Above 25 box...	Reset	Print
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)		
HC	Head Cover	SP2029	190	20.00		
FS	Face Shield	SP7463	100	25.00		
MS	Mask	SP2029	102	10.00		
GL	Gloves	SP2029	150	18.30		
SC	Shoe Covers	SP7996	110	35.00		
				20.00		

Figure 3.4.8.4 Items above 25 boxes is displayed

Input: Users tend to filter the inventory list by quantity – Out of Stock.

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity	Unit Price(RM)
HC	Head Cover	SP2029	190	25.00
FS	Face Shield	SP7463	100	10.00
MS	Mask	SP2029	102	18.30
GL	Gloves	SP2029	150	35.00
GW	Gown	SP7463	20	20.00
SC	Shoe Covers	SP7996	110	
SG	Safety Goggles	SP7996	0	25.20

Figure 3.4.8.5 Filter option of ‘Out of Stock’ is selected

Output: The records of item that is out of stock is filtered out.

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
SG	Safety Goggles	SP7996	0	25.20

Figure 3.4.8.6 Items that is out of stock is displayed

Input: Users tend to filter the inventory list by unit price – Below RM20.

Inventory List

Search				Sorted by	Filtered by	Reset	Print
Item Code	Item Name	Supplier ID	Quantity	Quantity ►	Unit Price ►	(RM)	
HC	Head Cover	SP2029	190			Below RM 20	
FS	Face Shield	SP7463	100			RM 21 - 30	
MS	Mask	SP2029	102			RM 31 - 50	
GL	Gloves	SP2029	150			Above RM 50	
GW	Gown	SP7463	20			18.30	
SC	Shoe Covers	SP7996	110			35.00	
SG	Safety Goggles	SP7996	0			20.00	
						25.20	

Figure 3.4.8.7 Filter option of unit price ‘Below RM20’ is selected

Output: The records of item that have unit price below RM20 is filtered out.

Inventory List

Search				Sorted by	Below RM 20	Reset	Print
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)			
MS	Mask	SP2029	102	10.00			
GL	Gloves	SP2029	150	18.30			

Figure 3.4.8.8 Items with unit price below RM20 is displayed

Input: Users tend to filter the inventory list by unit price – RM21 to RM30.

Inventory List

Search				Sorted by	Filtered by	Reset	Print
Item Code	Item Name	Supplier ID	Quantity	Quantity ►	Unit Price ►	(RM)	
HC	Head Cover	SP2029	190			Below RM 20	
FS	Face Shield	SP7463	100			RM 21 - 30	
MS	Mask	SP2029	102			RM 31 - 50	
GL	Gloves	SP2029	150			Above RM 50	
GW	Gown	SP7463	20			18.30	
SC	Shoe Covers	SP7996	110			35.00	
SG	Safety Goggles	SP7996	0			20.00	
						25.20	

Figure 3.4.8.9 Filter option of unit price 'RM21 - RM30' is selected

Output: The records of item that have unit price from RM21 and RM30 is filtered out.

Inventory List

Search				Sorted by	RM 21 - 30	Reset	Print
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)			
FS	Face Shield	SP7463	100	25.00			
SG	Safety Goggles	SP7996	0	25.20			

Figure 3.4.8.10 Items with unit price from RM21 and RM30 is displayed

Input: Users tend to filter the inventory list by unit price – RM31 to RM50.

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity	Unit Price (RM)
HC	Head Cover	SP2029	190	
FS	Face Shield	SP7463	100	
MS	Mask	SP2029	102	
GL	Gloves	SP2029	150	18.30
GW	Gown	SP7463	20	35.00
SC	Shoe Covers	SP7996	110	20.00
SG	Safety Goggles	SP7996	0	25.20

Figure 3.4.8.11 Filter option of unit price ‘RM31 – RM50’ is selected

Output: The records of item that have unit price from RM31 and RM50 is filtered out.

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)
GW	Gown	SP7463	20	35.00

Figure 3.4.8.12 Items with unit price from RM31 and RM30 is displayed

Input: Users tend to filter the inventory list by unit price – Above RM50.

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity	Unit Price(RM)
HC	Head Cover	SP2029	190	18.30
FS	Face Shield	SP7463	100	35.00
MS	Mask	SP2029	102	20.00
GL	Gloves	SP2029	150	25.20
GW	Gown	SP7463	20	
SC	Shoe Covers	SP7996	110	
SG	Safety Goggles	SP7996	0	

Figure 3.4.8.13 Filter option of unit price ‘Above RM50’ is selected

Output: The records of item that have unit price above RM50 is filtered out.

Inventory List

Inventory List				
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)

Figure 3.4.8.14 Items with unit price Above RM50 is displayed

3.4.9 Search Inventory

Input: Users search an inventory record using item code.

Inventory List

FS		Sorted by	Filtered by	Reset	Print
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)	
HC	Head Cover	SP2029	190	20.00	
FS	Face Shield	SP7463	100	25.00	
MS	Mask	SP2029	102	10.00	
GL	Gloves	SP2029	150	18.30	
GW	Gown	SP7463	120	35.00	
SC	Shoe Covers	SP7996	110	20.00	
SG	Safety Goggles	SP7996	100	25.20	

Figure 3.8.4.1 Search item using item code FS

Output: The search result is displayed in the table.

Inventory List

FS		Sorted by	Filtered by	Reset	Print
Item Code	Item Name	Supplier ID	Quantity (boxes)	Unit Price(RM)	
FS	Face Shield	SP7463	100	25.00	

Figure 3.8.4.2 Result of FS is shown

3.5 Supplier Management

3.5.1 Supplier Information Cards

Input: The total number of suppliers, active suppliers and inactive suppliers is calculated using supplier list table. The most frequent supplier is calculated using table of PPE received from suppliers in the Transaction panel.

Supplier List

Supplier List					
Supplier ID		Supplier Name	Supplier Contact	Supplier Email	Supplier Address
PPE Supplies					
SP2029	Bob	012-3754704	bob@gmail.com	123, Taman Perindustrian ...	HC, MS, GL
SP7463	John	014-0577584	john@gmail.com	45, Jalan Berapit, Taman B...	NULL
SP7996	Pricilla	015-8073695	pricilla@gmail.com	56, Jalan Caunaught, Tama...	SC, SG

Figure 3.5.1.1 Supplier list with 3 suppliers' details

PPE Received From Suppliers

PPE Received From Suppliers								
Search		From:	To:					
				Sorted by		Filtered by	Reset	Print
Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)	
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00	
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	1250.00	
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00	
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00	
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00	
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00	
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00	
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00	
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00	

Figure 3.5.1.2 Transaction list of PPE received

Output: All result calculated from the tables are illustrated in the information cards.

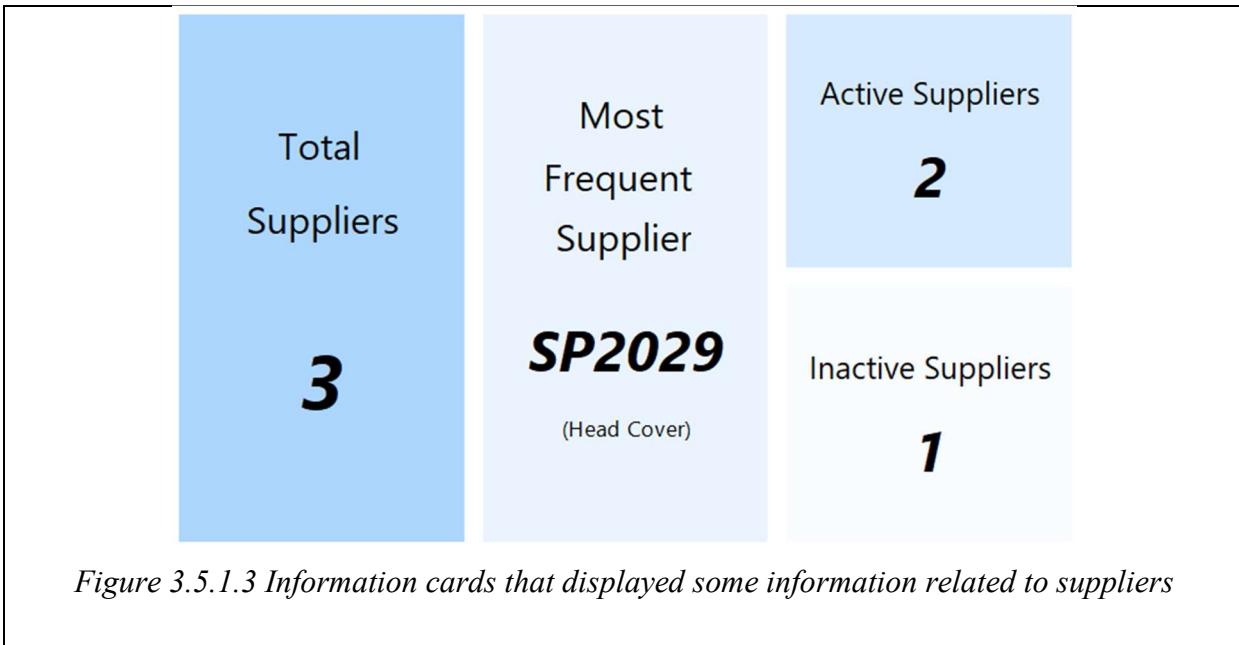


Figure 3.5.1.3 Information cards that displayed some information related to suppliers

3.5.2 Add New Supplier

Input: All details of the supplier are fill out. Figure 3.4.3.2 shows the original supplier list before adding.

The screenshot shows a 'Supplier Details' form with the following fields:

- Name:** Tom
- Contact:** 012-4059570
- Email:** tom@gmail.com
- Address:** 12, Lorong BungaRaya, Taman BungaRaya, 73970 Kuala Lumpur

At the bottom are two buttons: **Save** and **Reset**.

Figure 3.5.2.1 'Add Supplier' form with new supplier details

Supplier List

Supplier List					
Search		Sorted by		Reset	Print
Supplier ID	Supplier Name	Supplier Contact	Supplier Email	Supplier Address	PPE Supplies
SP2029	Bob	012-3754704	bob@gmail.com	123, Taman Perindustrian ...	HC, MS, GL
SP7463	John	014-0577584	john@gmail.com	45, Jalan Berapit, Taman B...	NULL
SP7996	Pricilla	015-8073695	pricilla@gmail.com	56, Jalan Caunaught, Tama...	SC, SG

Figure 3.5.2.2 Supplier list before adding new supplier

Output: The new supplier is successfully saved and added into the table in figure 3.5.2.4.

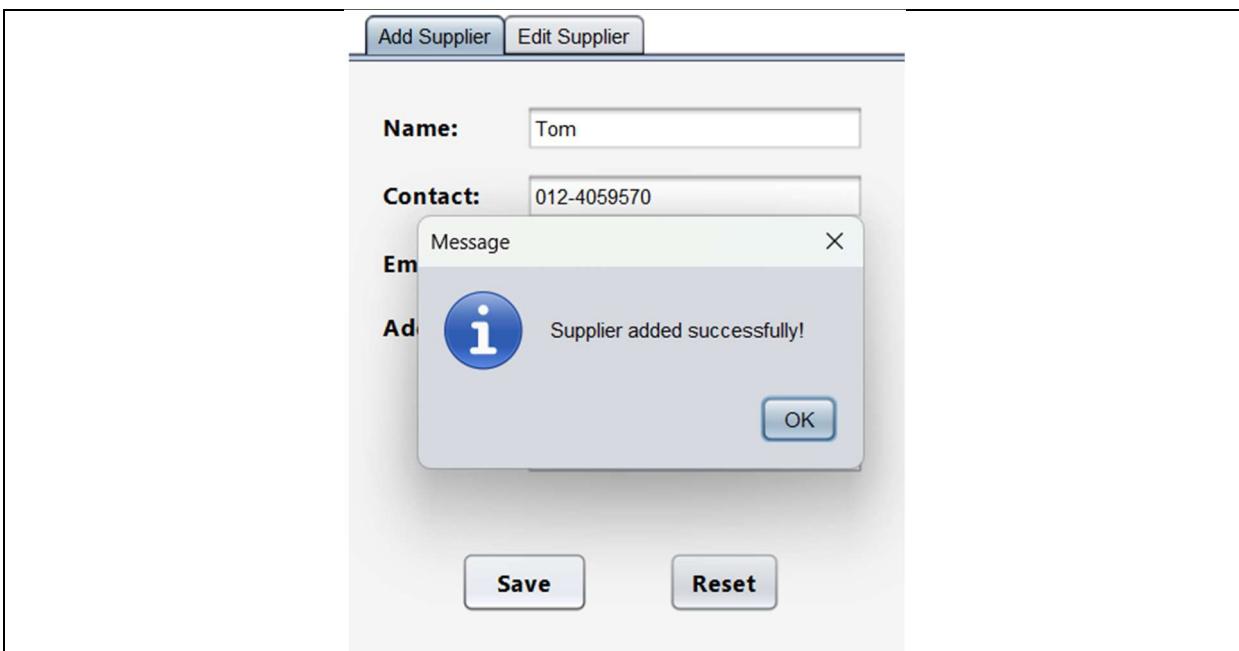


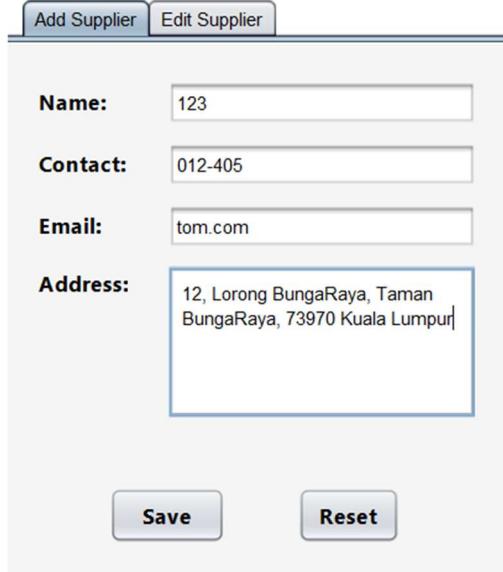
Figure 3.5.2.3 A message dialog that notify users the new supplier is saved

Supplier List

Supplier List					
Search		Sorted by		Reset	Print
Supplier ID	Supplier Name	Supplier Contact	Supplier Email	Supplier Address	PPE Supplies
SP2029	Bob	012-3754704	bob@gmail.com	123, Taman Perindustrian ... HC, MS, GL	
SP7463	John	014-0577584	john@gmail.com	45, Jalan Berapit, Taman B... NULL	
SP7996	Pricilla	015-8073695	pricilla@gmail.com	56, Jalan Caunaught, Tama... SC, SG	
SP7476	Tom	012-4059570	tom@gmail.com	12, Lorong BungaRaya, Ta... NULL	

Figure 3.5.2.4 Updated supplier list with the new supplier

Input: Invalid input of supplier name, contact and email.



A screenshot of a web-based supplier management system. At the top, there are two buttons: "Add Supplier" and "Edit Supplier". Below these are four input fields: "Name" containing "123", "Contact" containing "012-405", "Email" containing "tom.com", and "Address" containing "12, Lorong BungaRaya, Taman BungaRaya, 73970 Kuala Lumpur". At the bottom are two buttons: "Save" and "Reset".

Figure 3.5.2.5 Invalid input of name, contact, and email

Output: A warning message dialog appeared to prompt users to enter again.

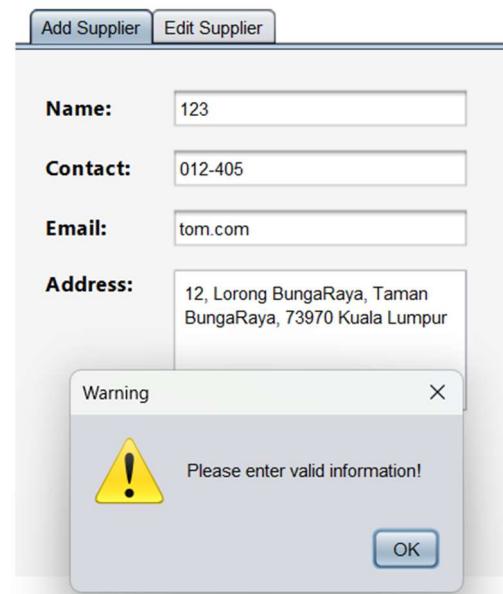
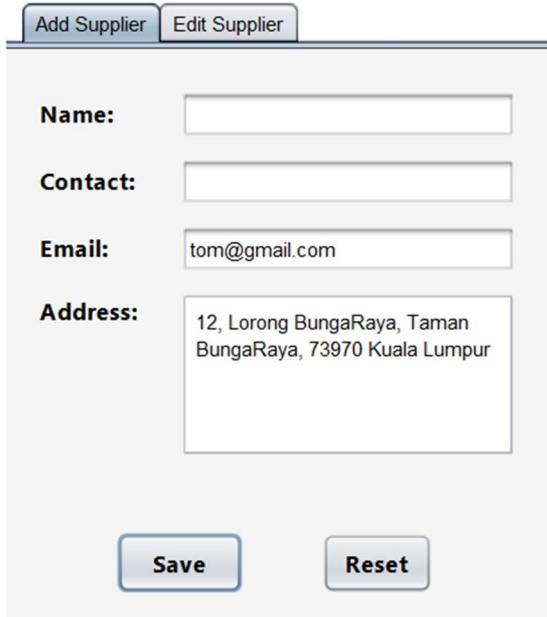


Figure 3.5.2.6 Warning message dialog existed due to invalid supplier name, contact and email

Input: Some input fields are miss out.



A screenshot of a web-based supplier management system. At the top, there are two buttons: "Add Supplier" and "Edit Supplier". Below these are four input fields: "Name" (empty), "Contact" (empty), "Email" (containing "tom@gmail.com"), and "Address" (containing "12, Lorong BungaRaya, Taman BungaRaya, 73970 Kuala Lumpur"). At the bottom are two buttons: "Save" and "Reset".

Figure 3.5.2.7 Empty field of supplier name and contact

Output: The Warning message prompt users to fill out all fields.

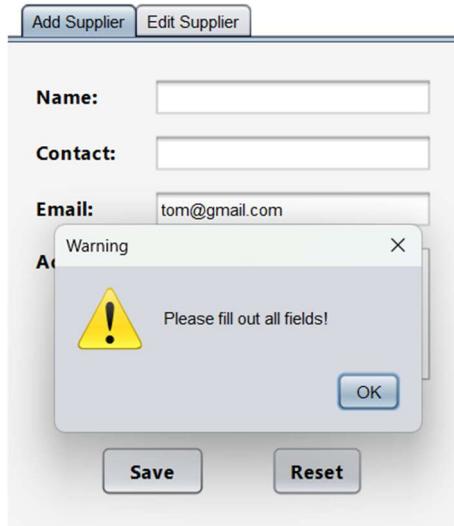


Figure 3.5.2.8 Warning message dialog existed due to some empty fields

Input: A supplier is selected, and users tend to modify the contact number.

Supplier List					
Search		Sorted by		Reset	Print
Supplier ID	Supplier Name	Supplier Contact	Supplier Email	Supplier Address	PPE Supplies
SP2029	Bob	012-3754704	bob@gmail.com	123, Taman Perindustrian ... HC, MS, GL	
SP7463	John	014-0577584	john@gmail.com	45, Jalan Berapit, Taman ... NULL	
SP7996	Pricilla	015-8073695	pricilla@gmail.com	56, Jalan Caunaught, Tam... SC, SG	
SP7476	Tom	012-4059570	tom@gmail.com	12, Lorong BungaRaya, T... NULL	

Figure 3.5.2.9 Supplier list before editing

Add Supplier
Edit Supplier

Supplier ID:

Name:

Contact:

Email:

Address:

123, Taman Perindustrian
 Bukit Jalil, 57600 Kuala
 Lumpur

PPE supplies:

Save
Reset
Delete

Figure 3.5.2.10 Supplier SP2029 is selected

Output: The modification of contact is successfully saved and notify users through the message dialog after save button is clicked.

The screenshot shows a user interface for managing suppliers. At the top, there are two buttons: "Add Supplier" and "Edit Supplier". Below them, there are three input fields: "Supplier ID" (set to "SP2029"), "Name" (set to "Bob"), and "Contact" (set to "012-3752333"). A modal dialog box is overlaid on the page, titled "Message". It contains a blue circular icon with a white "i" (information) symbol. The main text in the dialog says "Supplier updated successfully!". There are "OK", "Save", "Reset", and "Delete" buttons at the bottom of the dialog. The background of the main window is dimmed.

Figure 3.5.2.11 The message dialog indicates that the modification is saved

Input: A supplier to delete is selected. Figure 3.5.2.13 shows the supplier list before deleting the selected supplier.

The screenshot shows a user interface for managing suppliers. At the top, there are two buttons: "Add Supplier" and "Edit Supplier". Below them, there are five input fields: "Supplier ID" (set to "SP7476"), "Name" (set to "Tom"), "Contact" (set to "012-4059570"), "Email" (set to "tom@gmail.com"), and "Address" (containing the text "12, Lorong BungaRaya, Taman BungaRaya, 73970 Kuala Lumpur"). Below these is a field labeled "PPE supplies" with the value "NULL". At the bottom, there are "Save", "Reset", and "Delete" buttons. The "Delete" button is highlighted with a red border, indicating it is the active or selected button.

Figure 3.5.2.12 'SP7476' is selected to delete

Supplier List

Supplier List					
Supplier ID	Supplier Name	Supplier Contact	Supplier Email	Supplier Address	PPE Supplies
SP2029	Bob	012-3754704	bob@gmail.com	123, Taman Perindustrian ... HC, MS, GL	
SP7463	John	014-0577584	john@gmail.com	45, Jalan Berapit, Taman ...	NLL
SP7996	Pricilla	015-8073695	pricilla@gmail.com	56, Jalan Caunaught, Tam...	SC, SG
SP7476	Tom	012-4059570	tom@gmail.com	12, Lorong BungaRaya, T...	NLL

Figure 3.5.2.13 Supplier list before deleting supplier SP7476

Output: The delete button is click and the supplier is successfully deleted. Before this, a confirm message dialog will appear for users to confirm deletion. The table of supplier list will also be updated.

Add Supplier Edit Supplier

Supplier ID: SP7476

Name: Tom

Confirm Deletion

Are you sure you want to delete Supplier SP7476?

Yes No

PPE supplies: NULL

Save Reset Delete

Figure 3.5.2.14 A confirmation dialog is displayed for users to confirm

[Add Supplier](#) [Edit Supplier](#)

Supplier ID:

Name:

Success X

i Supplier SP7476 deleted successfully!

[OK](#)

PPE supplies:

[Save](#) [Reset](#) [Delete](#)

Figure 3.5.2.15 Supplier SP7476 is successfully deleted

Supplier List

[Sorted by](#) [Reset](#) [Print](#)

Supplier ID	Supplier Name	Supplier Contact	Supplier Email	Supplier Address	PPE Supplies
SP2029	Bob	012-3752333	bob@gmail.com	123, Taman Perindustrian ...	NULL
SP7463	John	014-0577584	john@gmail.com	45, Jalan Berapit, Taman B...	NULL
SP7996	Pricilla	015-8073695	pricilla@gmail.com	56, Jalan Caunaught, Tama...	SC, SG

→

Figure 3.5.2.16 Selected supplier is deleted from the table

Input: Users click the delete button without selecting any supplier.

The screenshot shows a user interface for managing suppliers. At the top, there are two buttons: "Add Supplier" and "Edit Supplier". Below these are five input fields: "Supplier ID" (a dropdown menu with "Please select" as the default value), "Name" (an empty text input), "Contact" (an empty text input), "Email" (an empty text input), and "Address" (a text input with scroll bars). Underneath these fields is a section labeled "PPE supplies" which contains a single input field. At the bottom of the form are three buttons: "Save", "Reset", and "Delete".

Figure 3.5.2.17 No selected supplier to delete

Output: A warning message is popped up to prompt users that they must select a supplier to delete.

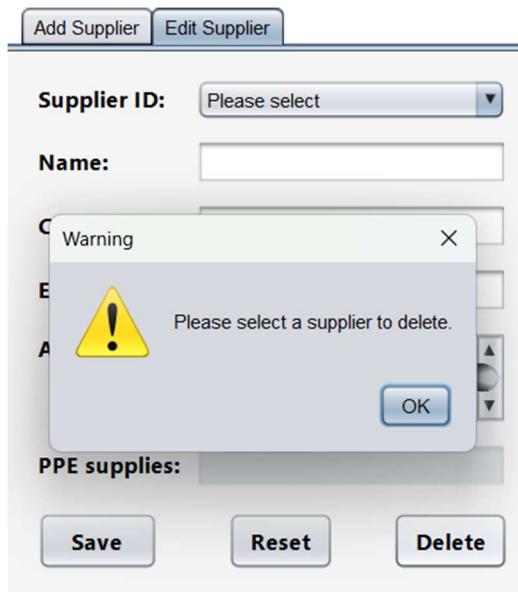


Figure 3.5.2.18 Warning message that notify users to select a supplier

3.6 Hospital Management

3.6.1 Hospital Information Cards

Input: The total number of hospitals is calculated using hospital list table. The top distributed hospital is calculated using table of PPE distributed to hospitals in the Transaction panel.

Hospital List

Hospital List					
Search		Sorted by		Reset	Print
Hospital ID	Hospital Name	Contact	Email	Address	
HP6580	Hospital Kuchai Lama	015-3790235	hospitalkuchai@gmail.com	33, Jalan Kuchai Lama, Taman K...	
HP5772	Sunway Medical Centre Velocity	012-3469028	sunwaymedic@gmail.com	Lingkaran SV, Sunway Velocity, 5...	
HP6628	Utama Hospital	014-5703732	utamahospital@gmail.com	12, Utama, Pusat Perniagaan Ber...	

Figure 3.6.1.1 Hospital list with 3 hospitals' details

PPE Distributed To Hospitals

PPE Distributed To Hospitals							
Search		From:		To:			
						Sorted by	Filtered by
Transaction ID	Distributed Date	Distributed Time	Item Code	Item Name	Hospital ID	Quantity (boxes)	Income(RM)
TR2240	2025-03-18	00:00:00	HC	Head Cover	HP6580	100	2000.00
TR7881	2025-03-14	12:00:00	FS	Face Shield	HP4138	50	1250.00
TR1641	2025-03-18	12:00:00	MS	Mask	HP4138	100	1000.00
TR4987	2025-03-14	05:23:00	GL	Gloves	HP5772	50	900.00
TR7344	2025-03-14	22:34:00	GW	Gown	HP4138	10	350.00
TR4748	2025-03-19	13:47:00	MS	Mask	HP6580	50	500.00
TR8803	2025-03-10	06:23:00	GW	Gown	HP6580	120	4200.00

Figure 3.6.1.2 Transaction list of PPE distributed

Output: All result calculated from the tables are illustrated in the information cards.

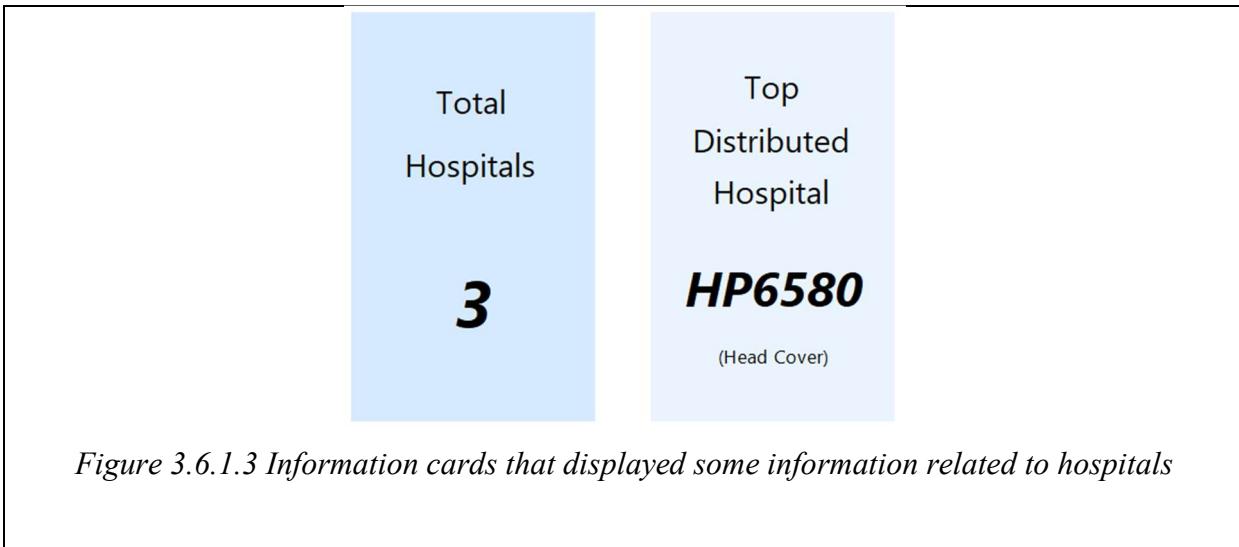


Figure 3.6.1.3 Information cards that displayed some information related to hospitals

3.6.2 Add New Hospital

Input: All details of the hospital are fill out. Figure 3.6.2.2 shows the original hospital list before adding.

The screenshot shows a web-based form titled 'Add Hospital'. At the top are two buttons: 'Add Hospital' and 'Edit Hospital'. Below these are four input fields: 'Name' (Prince Court Medical Centre), 'Contact' (012-4693207), 'Email' (princecourt@gmail.com), and 'Address' (39, Jalan Kia Peng, 50450 Kuala Lumpur). The 'Address' field is highlighted with a blue border. At the bottom are two buttons: 'Save' and 'Reset'.

Figure 3.6.2.1 'Add Hospital' form with new hospital details

Hospital List

Hospital List				
Search		Sorted by		
Hospital ID	Hospital Name	Contact	Email	Address
HP6580	Hospital Kuchai Lama	015-3790235	hosptalkuchai@gmail.com	33, Jalan Kuchai Lama, Taman K...
HP5772	Sunway Medical Centre Velocity	012-3469028	sunwaymedic@gmail.com	Lingkaran SV, Sunway Velocity, 5...
HP6628	Utama Hospital	014-5703732	utamahospital@gmail.com	12, Utama, Pusat Perniagaan Ber...

Figure 3.6.2.2 Hospital list before adding new hospital

Output: The new supplier is successfully saved and added into the table in figure 3.6.2.4.



Figure 3.6.2.3 A message dialog that notify users the new hospital is saved

Hospital List				
<input type="text" value="Search"/> <input type="button" value="Sorted by"/> <input type="button" value="Reset"/> <input type="button" value="Print"/>				
Hospital ID	Hospital Name	Hospital Contact	Hospital email	Hospital Address
HP8580	Hospital Kuchai Lama	015-3790235	hospitalkuchai@gmail.com	33, Jalan Kuchai Lama, Taman K...
HP5772	Sunway Medical Centre Velocity	012-3469028	sunwaymedic@gmail.com	Lingkaran SV, Sunway Velocity, 5...
HP6628	Utama Hospital	014-5703732	utamahospital@gmail.com	12, Utama, Pusat Perniagaan Ber...
HP9977	Prince Court Medical Centre	012-4693207	princecourt@gmail.com	39, Jalan Kia Peng, 50450 Kuala ...

Figure 3.6.2.4 Updated hospital list with the new hospital

Input: Invalid input of hospital name, contact and email.

Add Hospital Edit Hospital

Name: 123

Contact: 014-5033

Email: prince@com

Address: 39, Jalan Kia Peng, 50450 Kuala Lumpur

Save **Reset**

Figure 3.6.2.5 Invalid input of name, contact, and email

Output: A warning message dialog appeared to prompt users to enter again.

Add Hospital Edit Hospital

Name: 123

Contact: 014-5033

Email: prince@com

Address: 39, Jalan Kia Peng, 50450 Kuala Lumpur

Warning

Please enter valid information!

OK

Save **Reset**

Figure 3.6.2.6 Warning message dialog existed due to invalid hospital name, contact and email

Input: Some input fields are miss out.

The screenshot shows a user interface for managing hospitals. At the top, there are two buttons: "Add Hospital" and "Edit Hospital". Below these are four input fields: "Name" (empty), "Contact" (empty), "Email" (containing "princecourt@gmail.com"), and "Address" (containing "39, Jalan Kia Peng, 50450 Kuala Lumpur"). At the bottom are two buttons: "Save" and "Reset".

Figure 3.6.2.7 Empty field of hospital name and contact

Output: the Warning message prompt users to fill out all fields.

The screenshot shows the same user interface as Figure 3.6.2.7, but with a "Warning" dialog box overlaid. The dialog has a yellow exclamation mark icon and the text "Please fill out all fields!". It includes an "OK" button. The "Save" and "Reset" buttons are visible at the bottom of the main window.

Figure 3.6.2.8 Warning message dialog existed due to some empty fields

Input: A hospital is selected, and users tend to modify the contact number.

Hospital List

Hospital List				
Hospital ID	Hospital Name	Hospital Contact	Hospital email	Hospital Address
HP6580	Hospital Kuchai Lama	015-3790235	hospitalkuchai@gmail.com	33, Jalan Kuchai Lama, Taman K...
HP5772	Sunway Medical Centre Velocity	012-3469028	sunwaymedic@gmail.com	Lingkaran SV, Sunway Velocity, 5...
HP6628	Utama Hospital	014-5703732	utamahospital@gmail.com	12, Utama, Pusat Perniagaan Ber...
HP9977	Prince Court Medical Centre	012-4693207	princecourt@gmail.com	39, Jalan Kia Peng, 50450 Kuala ...

Figure 3.6.2.9 Hospital list before editing

Add Hospital Edit Hospital

Hospital ID: HP6580

Name: Hospital Kuchai Lama

Contact: 015-3790235

Email: hospitalkuchai@gmail.com

Address: 33, Jalan Kuchai Lama, Taman Kuchai Lama, 75930 Kuala Lumpur

Save **Reset** **Delete**

Figure 3.6.2.10 Hospital HP6580 is selected

Output: The modification of email is successfully saved and notify users through the message dialog after save button is clicked.

[Add Hospital](#) [Edit Hospital](#)

Hospital ID: HP6580

Name: Hospital Kuchai Lama

Contact: 015-3790235

Email: hospitalkuchailama@gmail.com

Address: Message X

 Hospital updated successfully!

[OK](#)

Figure 3.6.2.11 The message dialog indicates that the modification is saved

Input: A hospital to delete is selected. Figure 3.6.2.13 shows the supplier list before deleting the selected hospital.

[Add Hospital](#) [Edit Hospital](#)

Hospital ID: HP6628

Name: Utama Hospital

Contact: 014-5703732

Email: utamahospital@gmail.com

Address:
12, Utama, Pusat Perniagaan Bersatu, 93032 Kuala Lumpur

[Save](#) [Reset](#) [Delete](#)

Figure 3.6.2.12 'HP6628' is selected to delete

Hospital List

Hospital List				
Hospital ID	Hospital Name	Hospital Contact	Hospital email	Hospital Address
HP6580	Hospital Kuchai Lama	015-3790235	hosptalkuchai@gmail.com	33, Jalan Kuchai Lama, Taman K...
HP5772	Sunway Medical Centre Velocity	012-3469028	sunwaymedic@gmail.com	Lingkaran SV, Sunway Velocity, 5...
HP6628	Utama Hospital	014-5703732	utamahospital@gmail.com	12, Utama, Pusat Perniagaan Ber...
HP9977	Prince Court Medical Centre	012-4693207	princecourt@gmail.com	39, Jalan Kia Peng, 50450 Kuala ...

Figure 3.6.2.13 Hospital list before deleting hospital HP6628

Output: The delete button is click and the hospital is successfully deleted. Before this, a confirm message dialog will appear for users to confirm deletion. The table of hospital list will also be updated.

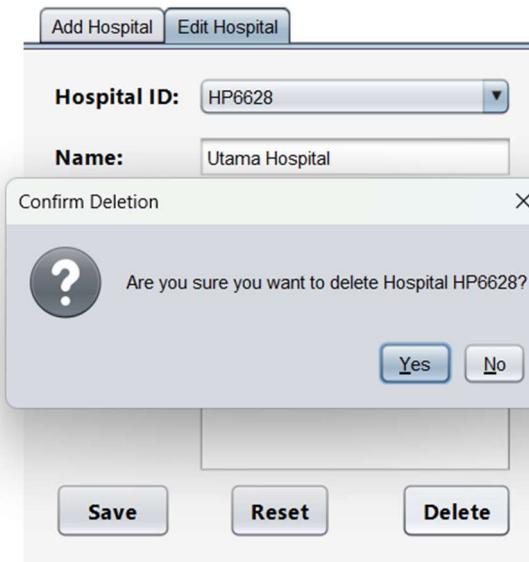


Figure 3.6.2.14 A confirmation dialog is displayed for users to confirm



Figure 3.6.2.15 Hospital 6628 is successfully deleted

Hospital List				
<input type="text" value="Search"/> <input type="button" value="Sorted by"/> <input type="button" value="Reset"/> <input type="button" value="Print"/>				
Hospital ID	Hospital Name	Hospital Contact	Hospital email	Hospital Address
HP6580	Hospital Kuchai Lama	015-3790235	hosptalkuchailama@gmail.com	33, Jalan Kuchai Lama, Taman K...
HP5772	Sunway Medical Centre Velocity	012-3469028	sunwaymedic@gmail.com	Lingkaran SV, Sunway Velocity, 5...
HP9977	Prince Court Medical Centre	012-4693207	princecourt@gmail.com	39, Jalan Kia Peng, 50450 Kuala ...

A red arrow points to the row containing "HP9977" in the table.

Figure 3.6.2.16 Selected hospital is deleted from the table

Input: Users click the delete button without selecting any hospital.

The screenshot shows a user interface for managing hospitals. At the top, there are two buttons: "Add Hospital" and "Edit Hospital". Below them is a form with the following fields:

- Hospital ID:** A dropdown menu with the placeholder text "Please select".
- Name:** An input field.
- Contact:** An input field.
- Email:** An input field.
- Address:** A large input field.

At the bottom of the form are three buttons: "Save", "Reset", and "Delete", with "Delete" being the one currently highlighted with a blue border.

Figure 3.6.2.17 No selected hospital to delete

Output: A warning message is popped up to prompt users that they must select a hospital to delete.



Figure 3.6.2.18 Warning message that notify users to select a hospital

3.7 Report

3.7.1 Received PPE Overview

Input: User clicks on “Report” button on side bar.

The screenshot shows the PPE Inventory Management System dashboard. On the left, a vertical sidebar menu lists: Dashboard, User, Inventory, Supplier, Hospital, Report (with a red arrow pointing to it), Transaction, and Log Out. The main area is titled "Dashboard" and shows three summary metrics: "Total PPE Received Today" (50), "Total PPE Distributed Today" (60), and "Total PPE In Stock" (546). Below these is a chart titled "Current Inventory Stock Levels" showing the quantity of various PPE items in boxes. The Y-axis is "Quantity (boxes)" from 0 to 180. The X-axis is "PPE Name". The legend indicates stock levels: Very Low Stock (red), Running Low (orange), Sufficient (yellow), and Well Stocked (green). The data is as follows:

PPE Name	Stock Level	Quantity (boxes)
Head Cover	Well Stocked	190
Face Shield	Running Low	40
Mask	Sufficient	62
Gloves	Sufficient	90
Gown	Sufficient	90
Shoe Covers	Sufficient	74

A "Restock Now" button is located at the bottom right of the chart area.

Figure 3.7.1.1 “Report” button on side bar

Output: User will be redirected to report page.

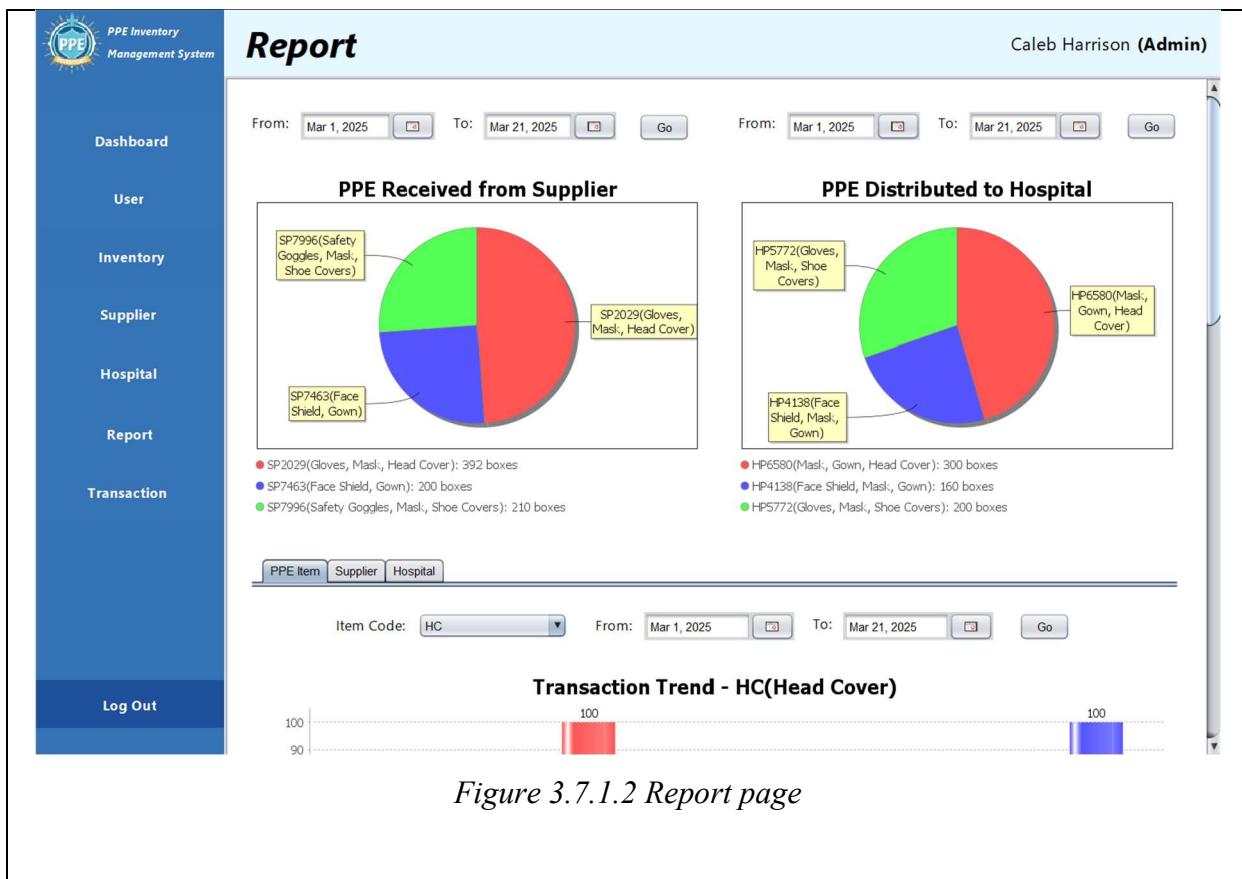


Figure 3.7.1.2 Report page

Input: The user selects a specific time period to generate the PPE Receive Report. If no time frame is selected, the start date will default to the first day of the current month, and the end date will default to the current date.

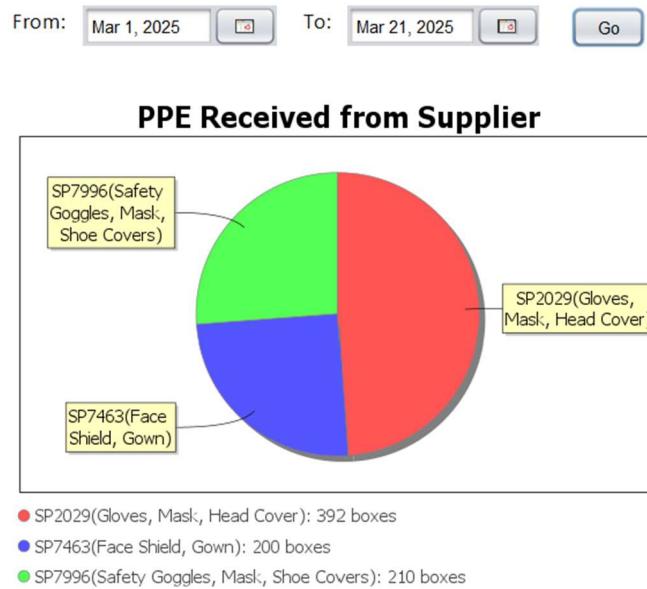


Figure 3.7.1.3 Default Pie Chart of PPE Receive report

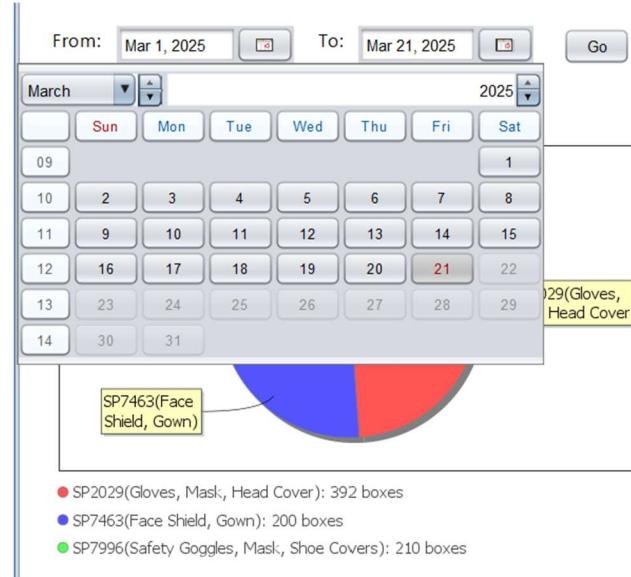
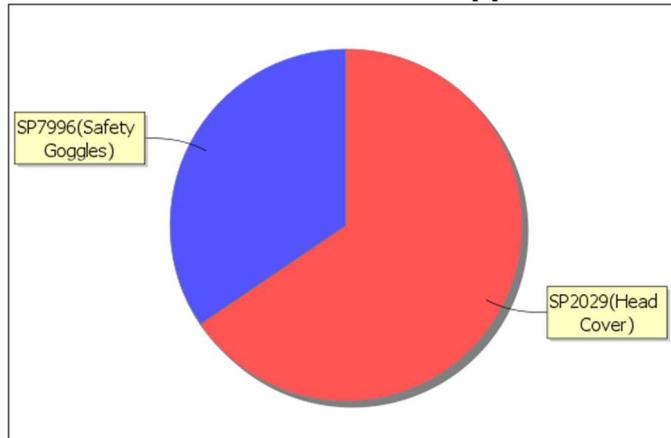


Figure 3.7.1.3 Date chooser for PPE Receive Report

Output: The system will generate a pie chart based on chosen from date and to date.

From: To:

PPE Received from Supplier



● SP2029(Head Cover): 190 boxes ● SP7996(Safety Goggles): 100 boxes

Figure 3.7.1.4 Generated PPE Receive Report

3.7.2 Distributed PPE Overview

Input: The user selects a specific time period to generate the PPE Distribution Report. If no time frame is selected, the start date will default to the first day of the current month, and the end date will default to the current date.

From: To: Go

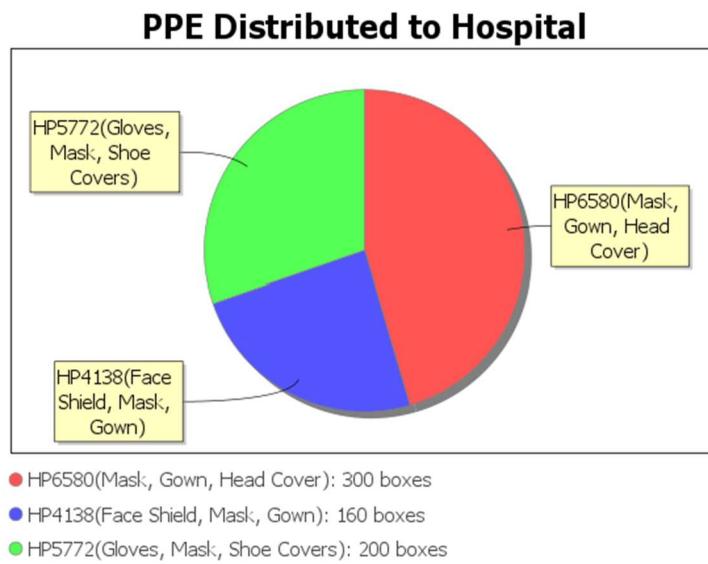


Figure 3.7.2.1 Default Pie Chart of PPE Distribution report

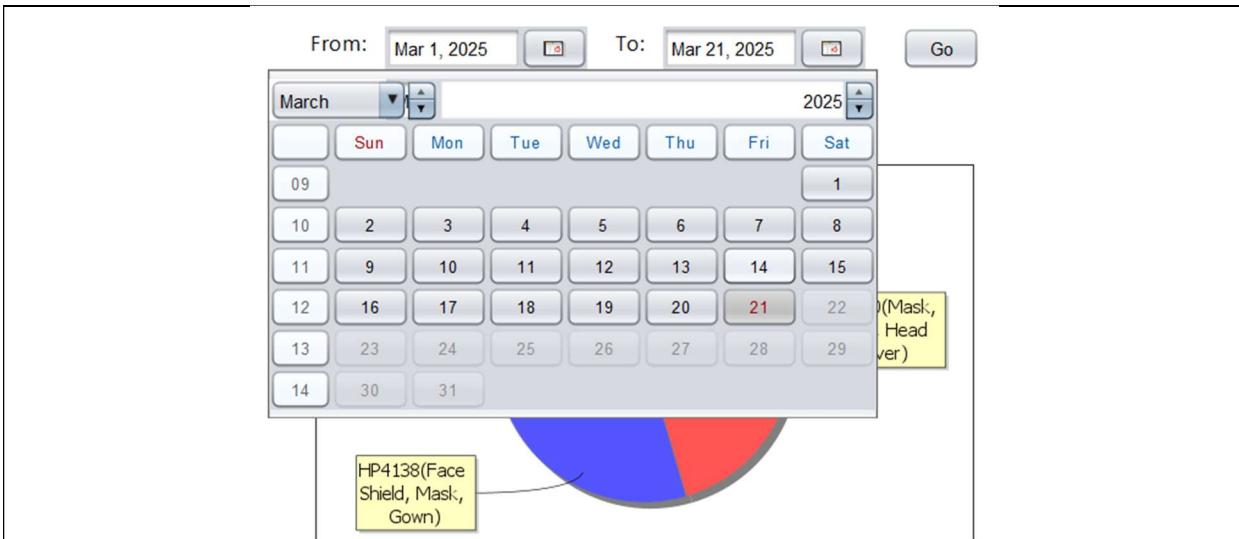


Figure 3.7.2.2 Date chooser for PPE Distribution Report

Output: The system will generate a pie chart based on chosen from date and to date.

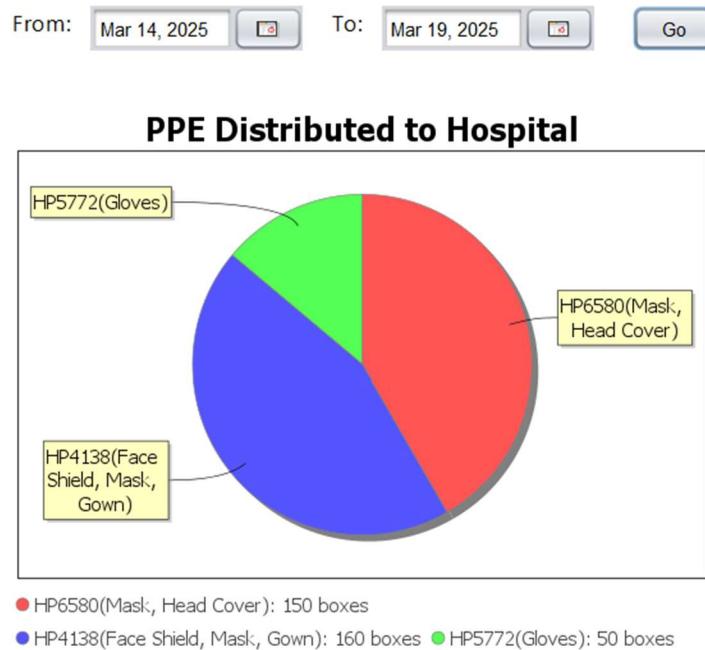


Figure 3.7.2.3 Generated PPE Receive Report

3.7.3 Transaction Trends

Input: The user can select an item code and specify a date range (from date and to date) to view the transaction trend of PPE items. If no time frame is selected, the start date will default to the first day of the current month, the end date will default to the current date, and the item code will default to the first option of combo box.

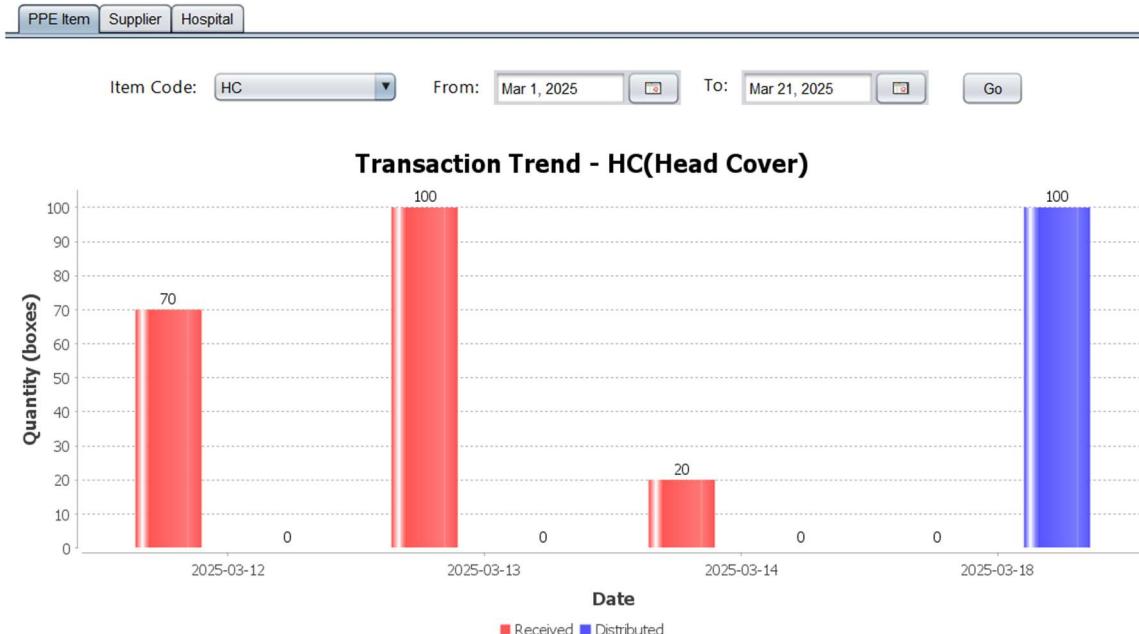


Figure 3.7.3.1 Default PPE transaction trend bar chart

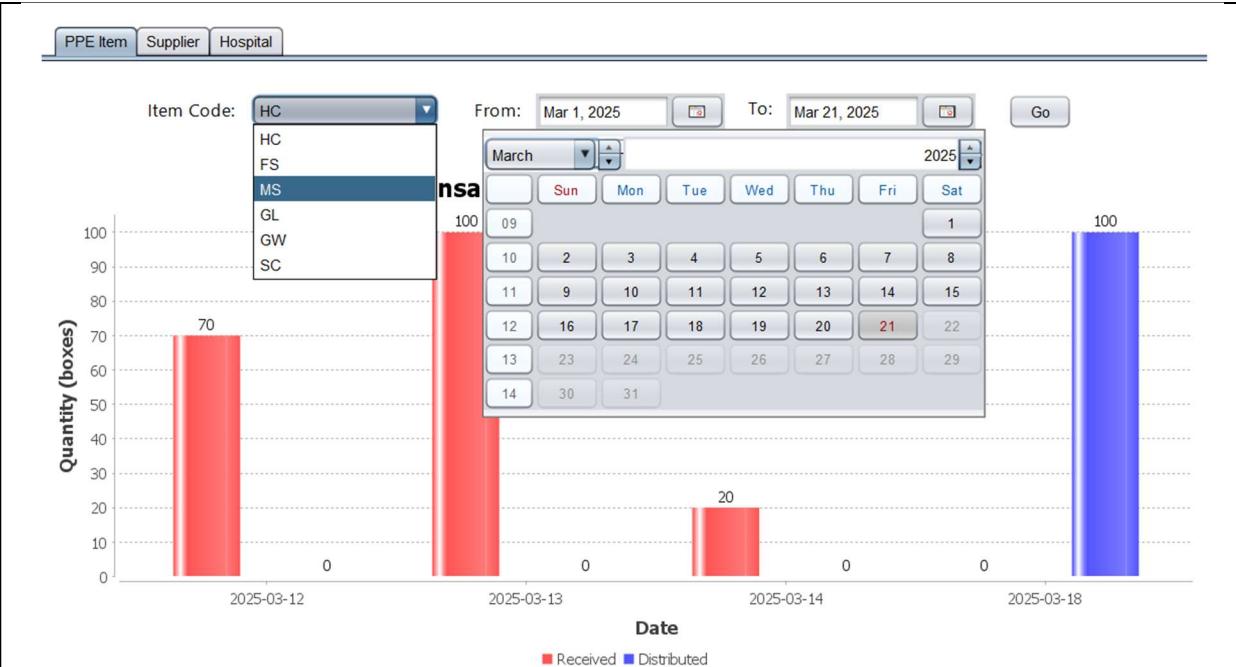


Figure 3.7.3.2 PPE transaction trend selection

Output: The system will generate bar chart based on chosen item code, from date and to date.

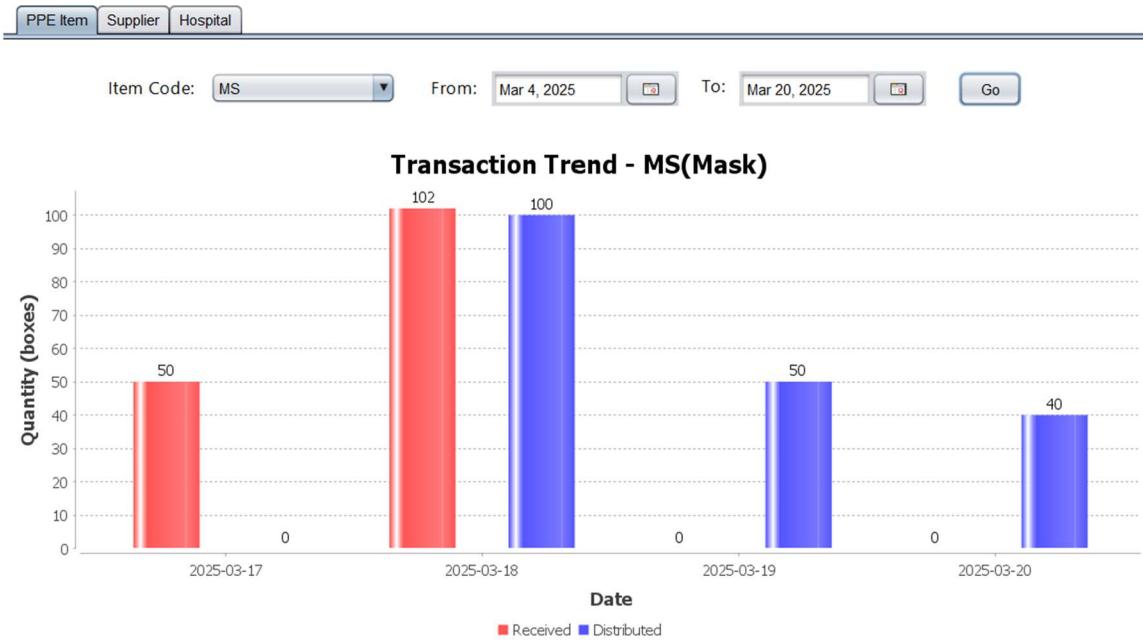


Figure 3.7.3.3 Generated PPE transaction trend bar chart

Input: The user can select a supplier code and specify a date range (from date and to date) to view the transaction trend of each supplier. If no time frame is selected, the start date will default to the first day of the current month, the end date will default to the current date, and the supplier code will default to the first option of combo box.

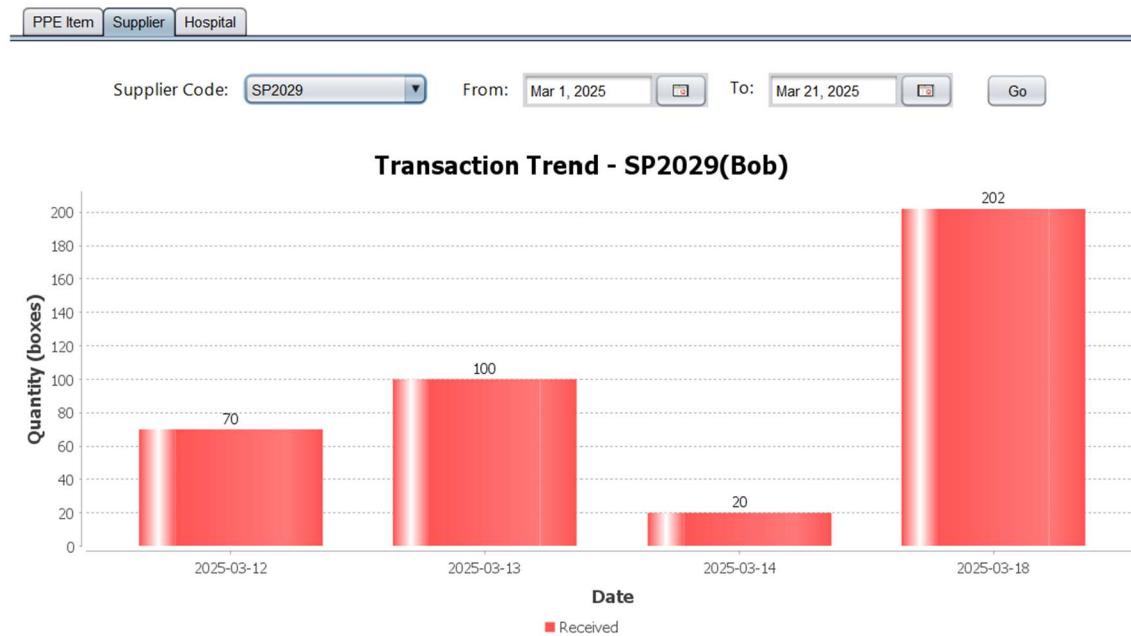


Figure 3.7.3.4 Default supplier transaction trend bar chart

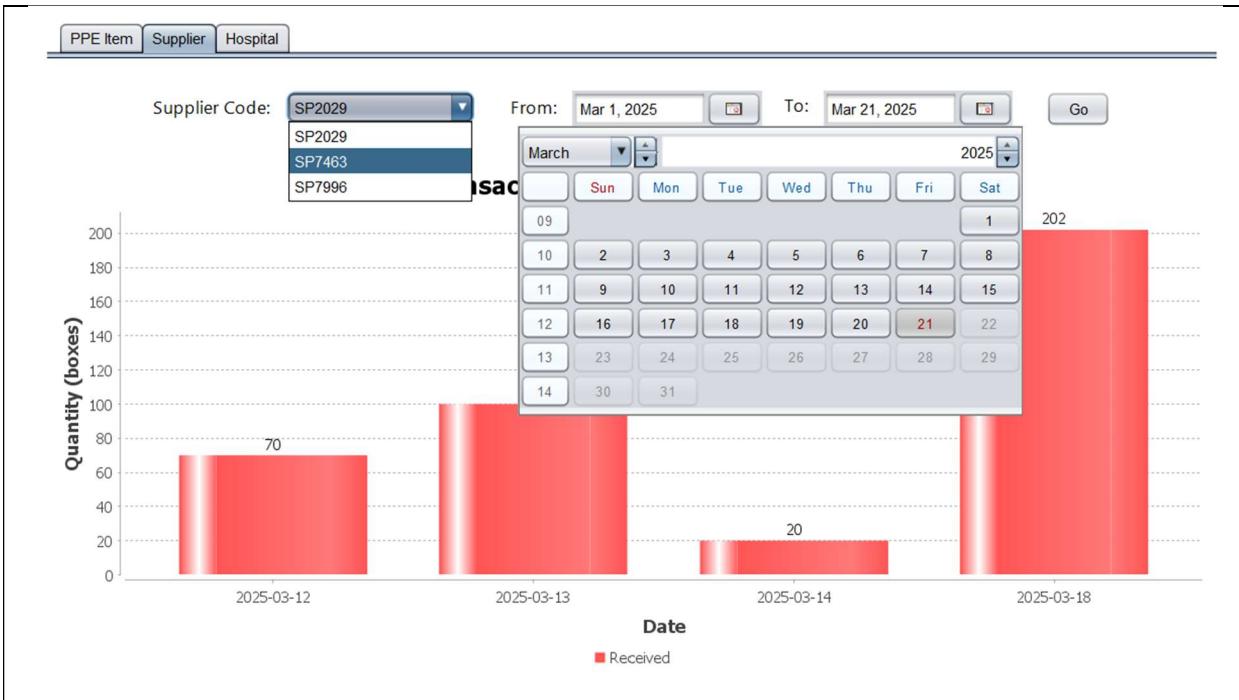


Figure 3.7.3.5 Supplier transaction trend selection

Output: The system will generate bar chart based on chosen supplier code, from date and to date.

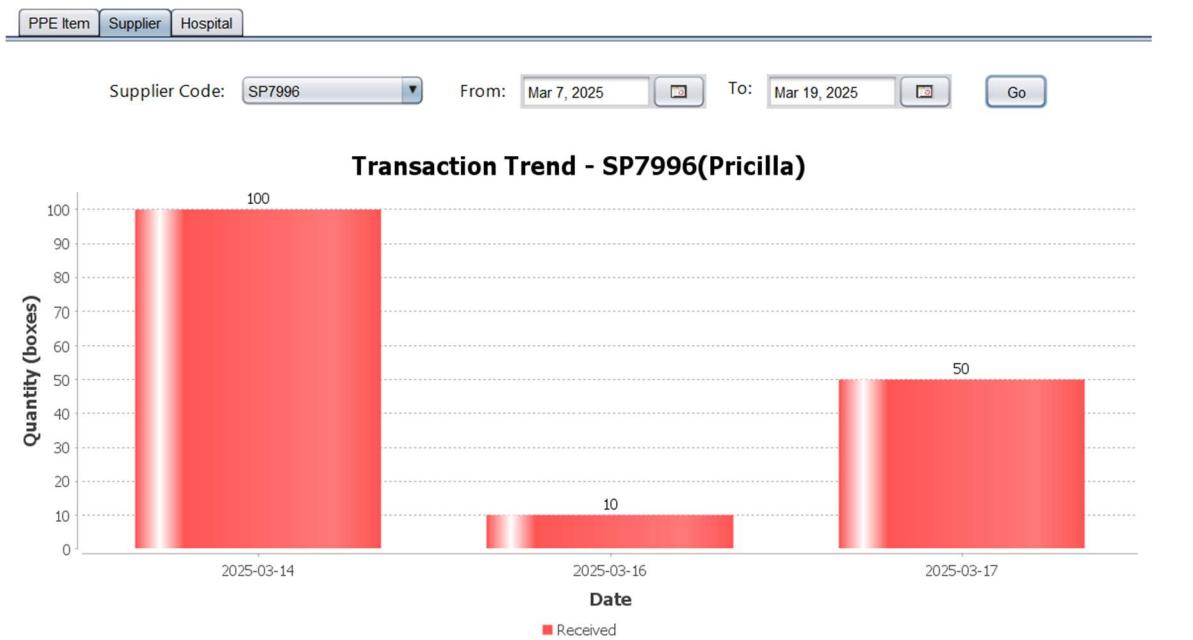


Figure 3.7.3.6 Generated supplier transaction trend bar chart

Input: The user can select a hospital code and specify a date range (from date and to date) to view the transaction trend of each hospital. If no time frame is selected, the start date will default to the first day of the current month, the end date will default to the current date, and the hospital code will default to the first option of combo box.

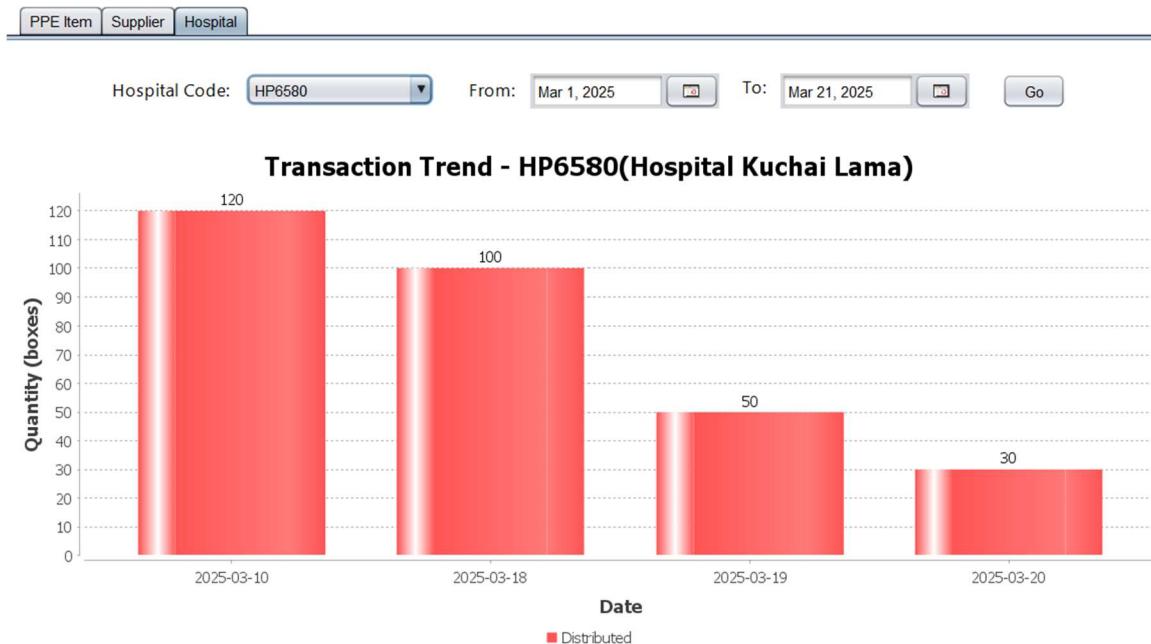


Figure 3.7.3.4 Default hospital transaction trend bar chart

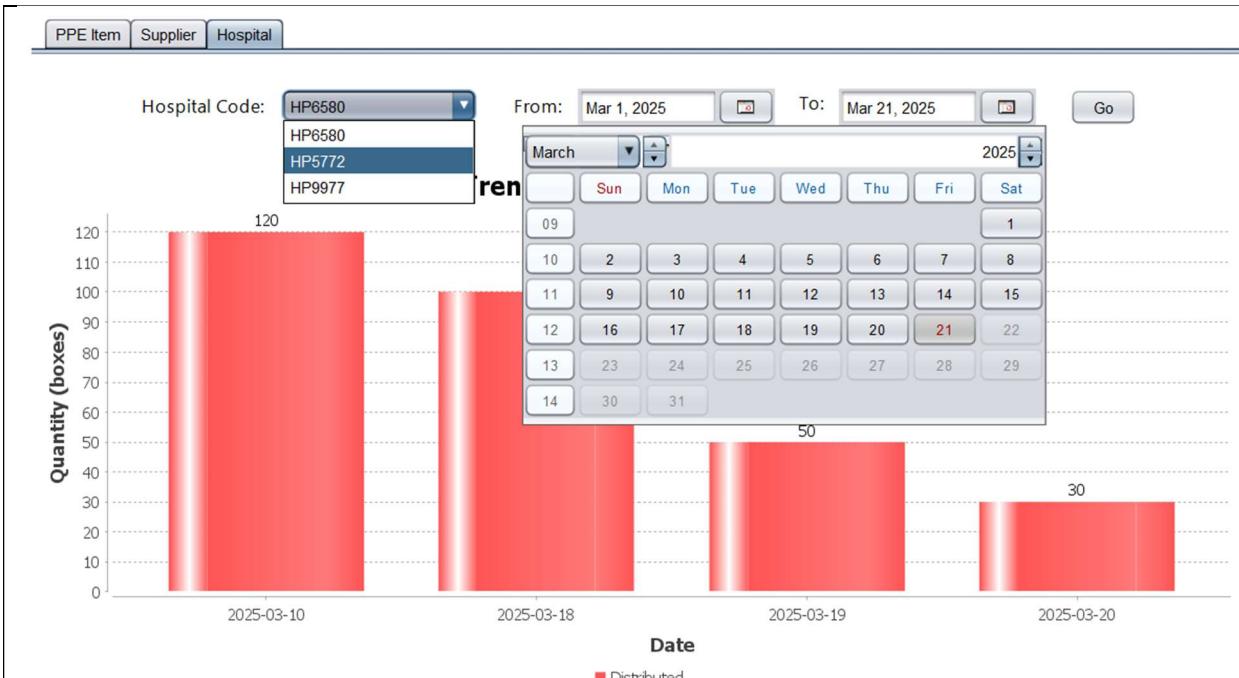


Figure 3.7.3.5 Hospital transaction trend selection

Output: The system will generate bar chart based on chosen hospital code, from date and to date.

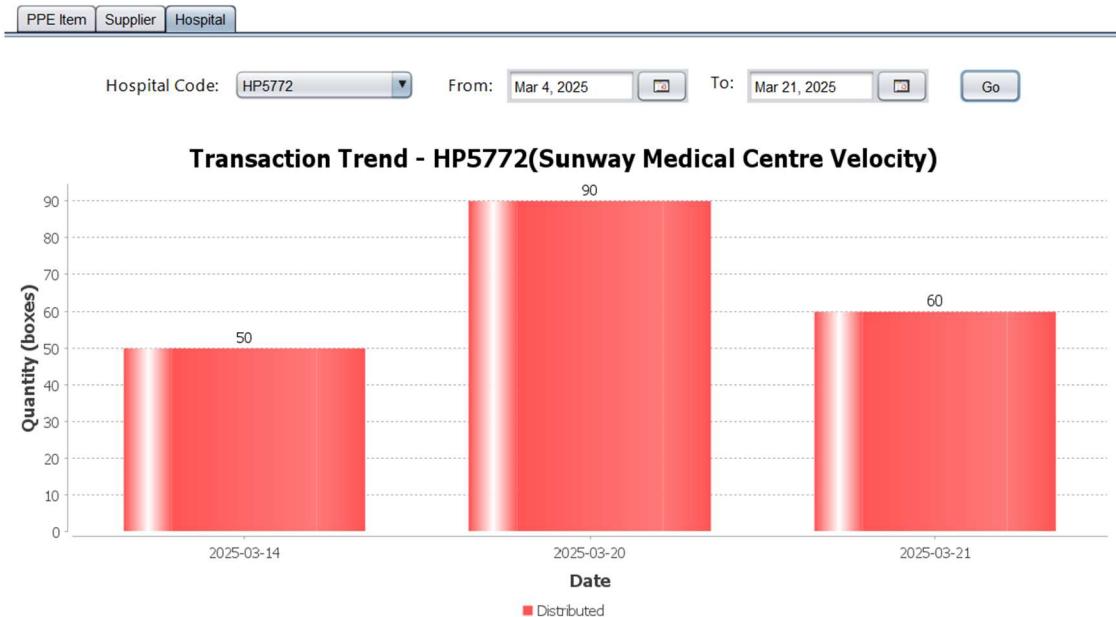


Figure 3.7.3.6 Generated hospital transaction trend bar chart

3.8 Transaction

3.8.1 Generate Transaction

Input: Users fill out the ‘Receive Items’ and ‘Distribute Items’ form and click the save button and a transaction is generated.

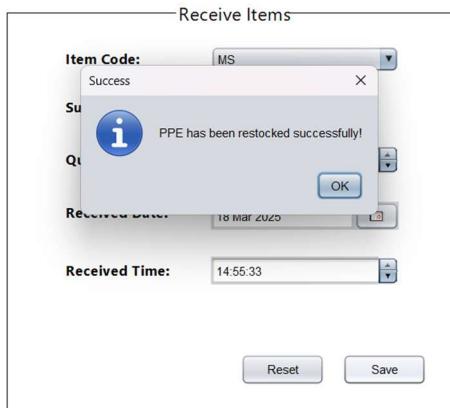


Figure 3.8.1.1 Message dialog of received item successfully saved

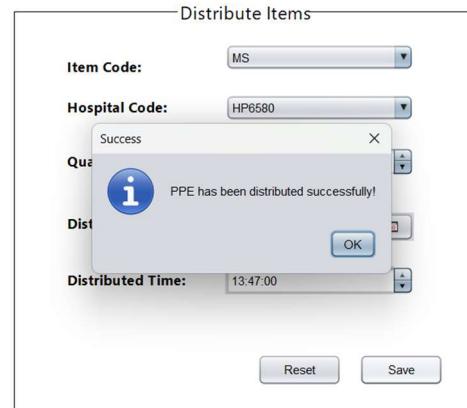


Figure 3.8.1.2 Message dialog of distributed item successfully saved

Output: The transaction of the received and distributed item is recorded in tables show in figure 3.8.1.3 and figure 3.8.1.4.

PPE Received From Suppliers

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00
TR3051	2025-03-14	13:00:00	SG	Safety Goggles	SP7996	100	2520.00
TR9538	2025-03-15	12:00:00	GW	Gown	SP7463	100	3500.00

Figure 3.8.1.3 Transaction record of the received item

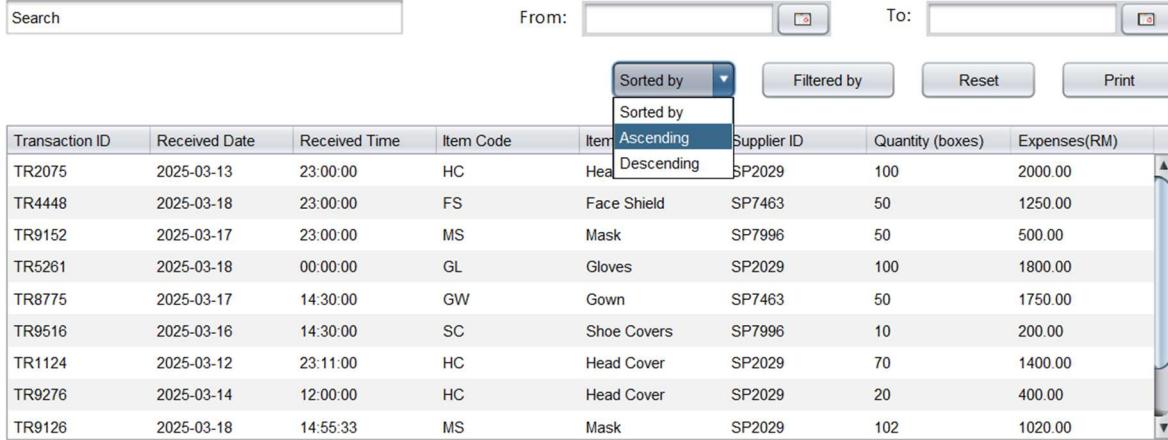
PPE Distributed To Hospitals

Search		From:		To:			
						Sorted by	Filtered by
						Reset	Print
Transaction ID	Distributed Date	Distributed Time	Item Code	Item Name	Hospital ID	Quantity (boxes)	Income(RM)
TR2240	2025-03-18	00:00:00	HC	Head Cover	HP6580	100	2000.00
TR7881	2025-03-14	12:00:00	FS	Face Shield	HP4138	50	1250.00
TR1641	2025-03-18	12:00:00	MS	Mask	HP4138	100	1000.00
TR4987	2025-03-14	05:23:00	GL	Gloves	HP5772	50	900.00
TR7344	2025-03-14	22:34:00	GW	Gown	HP4138	10	350.00
TR4748	2025-03-19	13:47:00	MS	Mask	HP6580	50	500.00
TR8803	2025-03-10	06:23:00	GW	Gown	HP6580	120	4200.00

Figure 3.8.1.4 Transaction record of the distributed item

3.8.2 Sort Transaction

Input: Users tend to sort the table by ascending order.

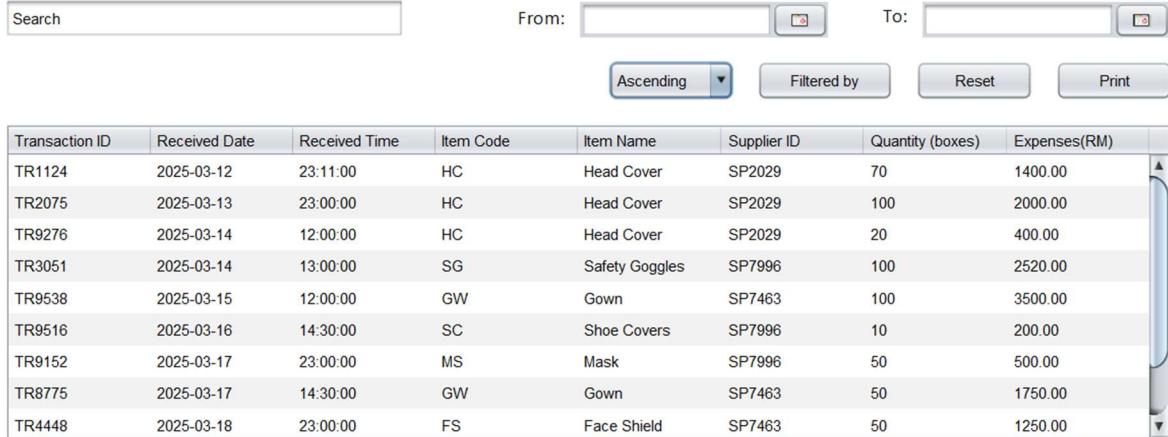


The screenshot shows a user interface for managing transaction records. At the top, there are search fields for 'Search', 'From:', and 'To:' with date pickers. Below these are buttons for 'Sorted by', 'Filtered by', 'Reset', and 'Print'. A dropdown menu for 'Sorted by' is open, showing 'Ascending' as the selected option. The main area displays a table of transaction data with columns: Transaction ID, Received Date, Received Time, Item Code, Item Name, Supplier ID, Quantity (boxes), and Expenses(RM). The data is sorted by Received Date in ascending order. The table includes rows for various items like HC, MS, GL, GW, SC, HC, and MS, with corresponding supplier IDs and expense amounts.

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	1250.00
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00

Figure 3.8.2.1 Sorted by ascending order is selected by users

Output: The table is sorted in ascending order in terms of date.



The screenshot shows a user interface for managing transaction records. At the top, there are search fields for 'Search', 'From:', and 'To:' with date pickers. Below these are buttons for 'Sorted by', 'Filtered by', 'Reset', and 'Print'. A dropdown menu for 'Sorted by' is open, showing 'Ascending' as the selected option. The main area displays a table of transaction data with columns: Transaction ID, Received Date, Received Time, Item Code, Item Name, Supplier ID, Quantity (boxes), and Expenses(RM). The data is sorted by Received Date in ascending order. The table includes rows for various items like HC, MS, SG, GW, SC, HC, and FS, with corresponding supplier IDs and expense amounts.

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR3051	2025-03-14	13:00:00	SG	Safety Goggles	SP7996	100	2520.00
TR9538	2025-03-15	12:00:00	GW	Gown	SP7463	100	3500.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	1250.00

Figure 3.8.2.2 Transaction record is displayed in ascending order of by date

Input: Users tend to sort the table by descending order.

The screenshot shows a user interface for managing transaction records. At the top, there are search fields for 'Search', 'From', and 'To', followed by buttons for 'Filtered by', 'Reset', and 'Print'. Below these are two dropdown menus: 'Sorted by' (set to 'Descending') and 'Filtered by'. The main area contains a table with the following data:

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	1250.00
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00

Figure 3.8.2.3 Sorted by descending order is selected by users

Output: The table is sorted in descending order in terms of date.

The screenshot shows a user interface for managing transaction records. At the top, there are search fields for 'Search', 'From', and 'To', followed by buttons for 'Filtered by', 'Reset', and 'Print'. Below these are two dropdown menus: 'Sorted by' (set to 'Descending') and 'Filtered by'. The main area contains a table with the following data:

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	1250.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR9538	2025-03-15	12:00:00	GW	Gown	SP7463	100	3500.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR3051	2025-03-14	13:00:00	SG	Safety Goggles	SP7996	100	2520.00

Figure 3.8.2.4 Transaction record is displayed in descending order by date

3.8.3 Filter Transaction

Input: Users tend to filter the transaction history by quantity – Below 50.

Search		From:		To:		Sorted by		Filtered by		Reset	Print
Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity	Expenses	Below 50	50 - 100	101 - 200	Above 200
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00	Below 50	50 - 100	101 - 200	Above 200
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	1250.00				
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00				
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00				
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00				
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00				
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00				
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00				
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00				

Figure 3.8.3.1 Filter option of 'Below 50' is selected

Output: The transaction record items below 50 is filtered out.

Search		From:		To:		Sorted by		Below 50	Reset	Print
Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)			
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00			
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00			

Figure 3.8.3.2 Records below 50 is displayed

Input: Users tend to filter the transaction history by quantity – 50 - 100.

The screenshot shows a table of transaction history with columns: Transaction ID, Received Date, Received Time, Item Code, Item Name, Supplier ID, Quantity, and Expenses(RM). A dropdown menu is open under the 'Filtered by' button, showing options: 'Quantity' (with sub-options 'Below 50', '50 - 100', and 'Above 200'), 'Supplier Expenses' (with sub-options 'SP2029', 'SP7463', and 'SP7996'), and 'Expenses(RM)' (with sub-options '2000.00', '1250.00', and '500.00'). The '50 - 100' option is highlighted.

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	1250.00
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00

Figure 3.8.3.3 Filter option of '50 – 100' is selected

Output: The transaction record items from 50 to 100 is filtered out.

The screenshot shows the same transaction history table, but only the rows for TR2075 (Quantity 100) and TR5261 (Quantity 100) are visible, while the other rows are hidden. The 'Sorted by' dropdown is set to '50 - 100'.

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR3051	2025-03-14	13:00:00	SG	Safety Goggles	SP7996	100	2520.00
TR9538	2025-03-15	12:00:00	GW	Gown	SP7463	100	3500.00

Figure 3.8.3.4 Records from 50 to 100 is displayed

Input: Users tend to filter the transaction history by quantity – 101 - 200.

Search		From:		To:	
Sorted by		Filtered by		Reset	Print
Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029

Figure 3.8.3.5 Filter option of '101 – 200' is selected

Output: The transaction record items from 101 to 200 is filtered out.

Search		From:		To:	
Sorted by		101 - 200		Reset	Print
Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029

Figure 3.8.3.6 Records from 101 to 200 is displayed

Input: Users tend to filter the transaction history by quantity – Above 200.

Search		From:		To:	
Sorted by		Filtered by		Reset	Print
Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029

Figure 3.8.3.7 Filter option of 'Above 200' is selected

Output: The transaction record items above 200 is filtered out.

Search		From:		To:	
Sorted by		Filtered by		Reset	Print
Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID

Figure 3.8.3.8 No record found for the item received above 200

Input: Users tend to filter the transaction history by expenses – Below RM500.

The screenshot shows a user interface for searching transaction history. At the top, there are fields for 'Search', 'From', and 'To'. Below these are buttons for 'Sorted by' (with a dropdown arrow), 'Filtered by' (also with a dropdown arrow), 'Reset', and 'Print'. A dropdown menu under 'Filtered by' is open, showing options: 'Quantity', 'Expenses', and 'Below RM 500'. The 'Below RM 500' option is highlighted. The main table lists transactions with columns: Transaction ID, Received Date, Received Time, Item Code, Item Name, Supplier ID, Quantity, and Expenses(RM). The table shows several rows of data, with the last row being TR9126.

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	1800.00
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	250.00
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	0.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00

Figure 3.8.3.9 Filter option of 'below RM500' is selected

Output: The transaction record of expenses below RM500 is filtered out.

This screenshot shows the same user interface as Figure 3.8.3.9, but with the 'Below RM 500' filter applied. The dropdown menu under 'Filtered by' is now showing only the 'Below RM 500' option, which is highlighted. The main table now only displays two rows of data: TR9516 and TR9276, both of which have expenses below RM 500.

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00

Figure 3.8.3.10 Records below RM500 is displayed

Input: Users tend to filter the transaction history by expenses – RM500 - RM1000.

The screenshot shows a table of transaction history with columns: Transaction ID, Received Date, Received Time, Item Code, Item Name, Supplier ID, Quantity, Expenses(RM), and a dropdown menu for filtering expenses. The dropdown menu is open, showing options: Below RM 500, RM 500 - 1000 (which is selected), RM 1001 - 2000, and Above RM 2000.

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	1000.00
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	250.00
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00

Figure 3.8.3.11 Filter option of 'RM500 - RM1000' is selected

Output: The transaction record of expenses from RM500 to RM1000 is filtered out.

The screenshot shows a table of transaction history with columns: Transaction ID, Received Date, Received Time, Item Code, Item Name, Supplier ID, Quantity (boxes), and Expenses(RM). A dropdown menu at the top is set to 'RM 500 - 1000'. The table displays one row of data: TR9152, received on 2025-03-17 at 23:00:00, item MS, quantity 50, and expense 500.00.

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00

Figure 3.8.3.12 Records from RM500 to RM1000 is displayed

Input: Users tend to filter the transaction history by expenses – RM1001 - RM2000.

The screenshot shows a user interface for searching transaction history. At the top, there are input fields for 'Search', 'From:', and 'To:' with date pickers. Below these are buttons for 'Sorted by' (with a dropdown arrow), 'Filtered by' (with a dropdown arrow), 'Reset', and 'Print'. A dropdown menu under 'Filtered by' is open, showing options: 'Quantity', 'Expenses', 'Below RM 500', 'RM 500 - 1000', 'RM 1001 - 2000' (which is highlighted in blue), and 'Above RM 2000'. The main table below lists transactions with columns: Transaction ID, Received Date, Received Time, Item Code, Item Name, Supplier ID, Quantity, and Expenses(RM). The data includes various items like Head Cover, Face Shield, Mask, Gloves, Gown, Shoe Covers, and multiple entries for Head Cover and SP2029.

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	1250.00
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	0.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00

Figure 3.8.3.13 Filter option of 'RM1001 - RM2000' is selected

Output: The transaction record of expenses from RM1001 to RM2000 is filtered out.

This screenshot shows the same search interface as Figure 3.8.3.13, but with a different filter applied. The 'Filtered by' dropdown now shows 'RM 1001 - 20...', indicating the user has selected this range. The main table displays the same set of transactions, but only the rows for items costing 2000.00, 1250.00, 1800.00, 1750.00, 1400.00, and 1020.00 are visible, while the others are hidden by a gray overlay.

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	1250.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00

Figure 3.8.3.14 Records from RM1001 to RM2000 is displayed

Input: Users tend to filter the transaction history by expenses – Above RM2000.

The screenshot shows a user interface for searching transaction history. At the top, there are input fields for 'Search', 'From:', and 'To:' with date pickers. Below these are buttons for 'Sorted by' (with a dropdown arrow), 'Filtered by' (with a dropdown arrow), 'Reset', and 'Print'. A dropdown menu under 'Filtered by' shows options: 'Quantity', 'Expenses', 'Below RM 500', 'RM 500 - 1000', 'RM 1001 - 2000', and 'Above RM 2000'. The 'Above RM 2000' option is highlighted with a blue background. The main table lists transactions with columns: Transaction ID, Received Date, Received Time, Item Code, Item Name, Supplier ID, Quantity, and Expenses(RM). The last two columns are merged. The data includes:

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	1800.00
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	250.00
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	200.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00

Figure 3.8.3.15 Filter option of 'Above RM2000' is selected

Output: The transaction record of expenses above RM2000 is filtered out.

The screenshot shows the same user interface as Figure 3.8.3.15, but with a different filter applied. The 'Sorted by' and 'Print' buttons are visible. A new button labeled 'Above RM 20...' has been added to the 'Filtered by' group, indicating the current filter setting. The main table now displays only two transactions that meet the criteria:

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR3051	2025-03-14	13:00:00	SG	Safety Goggles	SP7996	100	2520.00
TR9538	2025-03-15	12:00:00	GW	Gown	SP7463	100	3500.00

Figure 3.8.3.16 Records above RM2000 is displayed

3.8.4 Search Transaction

Input: Users search a transaction record using transaction ID.

The screenshot shows a search interface for transaction records. At the top, there is a search bar containing "TR9276". Below it are fields for "From:" and "To:", each with a small calendar icon. To the right of these are four buttons: "Sorted by" with a dropdown arrow, "Filtered by", "Reset", and "Print". Below these controls is a table with the following data:

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00
TR4448	2025-03-18	23:00:00	FS	Face Shield	SP7463	50	1250.00
TR9152	2025-03-17	23:00:00	MS	Mask	SP7996	50	500.00
TR5261	2025-03-18	00:00:00	GL	Gloves	SP2029	100	1800.00
TR8775	2025-03-17	14:30:00	GW	Gown	SP7463	50	1750.00
TR9516	2025-03-16	14:30:00	SC	Shoe Covers	SP7996	10	200.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR9126	2025-03-18	14:55:33	MS	Mask	SP2029	102	1020.00

Figure 3.8.4.1 Search transaction of transaction ID TR9276

Output: The search result is displayed in the table.

The screenshot shows a search interface for transaction records. At the top, there is a search bar containing "TR9276". Below it are fields for "From:" and "To:", each with a small calendar icon. To the right of these are four buttons: "Sorted by" with a dropdown arrow, "Filtered by", "Reset", and "Print". Below these controls is a table with the following data:

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00

Figure 3.8.4.2 Result of TR9276 is shown

3.8.5 View Transaction According to Date

Input/output: Select the start date and end date to view the transaction records.

The screenshot shows a user interface for viewing transaction records. At the top, there is a search bar and date selection fields for 'From' (12 Mar 2025) and 'To' (14 Mar 2025). Below these are buttons for 'Sorted by', 'Filtered by', 'Reset', and 'Print'. A table displays the following transaction data:

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR3051	2025-03-14	13:00:00	SG	Safety Goggles	SP7996	100	2520.00

Figure 3.8.5.1 Transaction record within the selected date

Input/output: Users enter end date that is smaller than start date. A warning message dialog is displayed to prompt users to reselect a valid end date.

PPE Distributed To Hospitals

The screenshot shows a user interface for viewing transaction records. At the top, there is a search bar and date selection fields for 'From' (14 Mar 2025) and 'To' (11 Mar 2025). Below these are buttons for 'Sorted by', 'Filtered by', 'Reset', and 'Print'. A table displays the following transaction data. A warning dialog box is overlaid on the screen, stating 'Start date must not exceed the end date!' with an OK button.

Transaction ID	Distributed Date	Distributed Time	Hospital ID	Quantity (boxes)	Income(RM)		
TR2240	2025-03-18	00:00:00	P6580	100	2000.00		
TR7881	2025-03-14	12:00:00	P4138	50	1250.00		
TR1641	2025-03-18	12:00:00	P4138	100	1000.00		
TR4987	2025-03-14	05:23:00	P5772	50	900.00		
TR7344	2025-03-14	22:34:00	P4138	10	350.00		
TR4748	2025-03-19	13:47:00	MS	Mask	HP6580	50	500.00
TR8803	2025-03-10	06:23:00	GW	Gown	HP6580	120	4200.00

Figure 3.8.5.2 A warning message to alert users to select valid end date

3.8.6 Print Transaction In PDF

Input: The print button is clicked to generate a PDF copy of the table. A message dialog is shown to notify users that the file is successfully created.

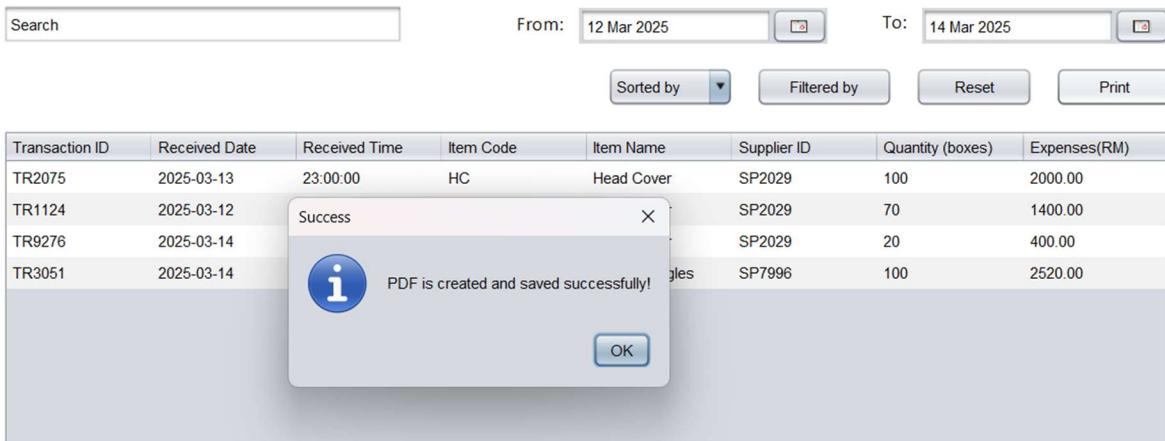


Figure 3.8.6.1 Message dialog about the PDF file is created

Output: Users can find the PDF file created in the file explorer their computers.

The screenshot shows a PDF document titled "Transaction Received.pdf" open in a PDF viewer. The title bar includes standard window controls and a file path: "File | C:/Users/user/Downloads/kkkkk...". The main content of the PDF is a table titled "Transaction (Received) Report" with the following data:

Transaction ID	Received Date	Received Time	Item Code	Item Name	Supplier ID	Quantity (boxes)	Expenses(RM)
TR2075	2025-03-13	23:00:00	HC	Head Cover	SP2029	100	2000.00
TR1124	2025-03-12	23:11:00	HC	Head Cover	SP2029	70	1400.00
TR9276	2025-03-14	12:00:00	HC	Head Cover	SP2029	20	400.00
TR3051	2025-03-14	13:00:00	SG	Safety Goggles	SP7996	100	2520.00

Figure 3.8.6.2 PDF file of receive-type transaction that has been filtered

The screenshot shows a PDF document titled "Transaction_Distributed.pdf" open in a browser-like interface. The title bar includes standard icons for file operations and a search bar. Below the title bar, the URL "C:/Users/user/Downloads/kkkkk..." is visible. The main content of the PDF is a table titled "Transaction (Distributed) Report". The table has columns for Transaction ID, Distributed Date, Distributed Time, Item Code, Item Name, Hospital ID, Quantity (boxes), and Income(RM). The data is as follows:

Transaction ID	Distributed Date	Distributed Time	Item Code	Item Name	Hospital ID	Quantity (boxes)	Income(RM)
TR2240	2025-03-18	00:00:00	HC	Head Cover	HP6580	100	2000.00
TR7881	2025-03-14	12:00:00	FS	Face Shield	HP4138	50	1250.00
TR1641	2025-03-18	12:00:00	MS	Mask	HP4138	100	1000.00
TR4987	2025-03-14	05:23:00	GL	Gloves	HP5772	50	900.00
TR7344	2025-03-14	22:34:00	GW	Gown	HP4138	10	350.00
TR4748	2025-03-19	13:47:00	MS	Mask	HP6580	50	500.00
TR8803	2025-03-10	06:23:00	GW	Gown	HP6580	120	4200.00

Figure 3.8.6.3 PDF file of distribute-type transaction

4.0 Conclusion

The development of the PPE Management System has provided valuable insights into both software development and object-oriented programming (OOP) concepts using Java. By building this system, the tracking, distribution and monitoring of personal protective equipment are streamlined and more efficient. Additionally, we have gained a deeper understanding of OOP concepts, file handling and exceptions handling through hands-on experience, as well as event-driven programming using Java Swing for the system's graphical user interface (GUI). The future improvements could be implementing a cloud-based database for better scalability. Overall, the project not only resulted in a functional PPE Management System but also deepened the understanding of Java programming.

5.0 References

5.1 Referenced API download link

JCalendar: <https://www.toedter.com/download/jcalendar-1.4.zip>

JFreeChart: <https://repo1.maven.org/maven2/org/jfree/jfreechart/1.5.3/jfreechart-1.5.3.jar>

iText PDF: <https://repo1.maven.org/maven2/com/itextpdf/itextpdf/5.5.13/itextpdf-5.5.13.jar>

5.2 Online resources

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