Applied Information Technology And Computer Science Vol. 3 No. 1 (2022) 849-867

AITCS

Homepage: http://publisher.uthm.edu.my/periodicals/index.php/aitcs
e-ISSN :2773-5141

Sales and Inventory System for Maperow Store

Amir Idlan Azmi[1], **Norhanim Selamat**[1]*

[1]Fakulti Sains Komputer dan Teknologi Maklumat,
Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat, 86400, MALAYSIA

*Corresponding Author Designation

DOI: https://doi.org/10.30880/aitcs.2022.03.01.057
Received 30 July 2021; Accepted 10 May 2022; Available online 31 May 2022

Abstract: Sales and Inventory System for Maperow Store is a system to facilitate the storage of inventory of goods and sales. Nowadays, sellers have problems in storing and managing their sales data because previously, sales results were recorded manually using traditional methods by writing on paper. As a result, sales data is insecure and easily corrupted or lost. This is because most businesses do not have a system that manages such sales data. Seeing the weakness in the problem then the sales and inventory system in Maperow store was developed. Through this system the seller will be able to get information about the stock of goods clearly and easily. Other than that, for this project scope is the users of this system are customers and for the administrator is the seller and the case study to be investigated in this project is sales and inventory system in Maperow Store. The methodology used in developing this system is the waterfall model where this model is easier to understand when to develop this system. The programming languages used are Hypertext Preprocessor (PHP) and Hypertext Mark-up Language (HTML) and this system is also developed using MySQL database. This system provides online concept that can be used anywhere by users. This will bring a lot of facilities to shopkeepers as they conduct business dealings with customers as well improve the buying experience to customers. It will quickly increase productivity store because it shortens and simplifies the whole process ordering and booking the items. This system is expected to make it easier for sellers to manage the updating of goods, record sales and manage the sale of goods in a more organized and faster. For the last, having this system will help the management of the store to gain maximum profit with minimum cost. It is hoped that the proposed system improvements can improve the system to produce a better function to be developed by developers in the future.

Keywords: Sales System, Inventory System, Web Based System, Maperow Store Customer, Structured

Corresponding author: norhanim@edu.uthm.my

1. Introduction

There are several methods used by sellers to market their sales products. Among them is through the manual ordering system, that is, the customer will contact the seller to ask the status of the goods. The status of the goods will be checked by the seller, if the goods you want to buy still have stock of the goods will be able to order. Through this method the interaction between buyer and seller plays a very important role. In addition, sellers also still use the recording system manually. The problem that led to the creation of this system was customers who had a busy work schedule and caused them not to have enough time to buy necessities. Customers need to make a long queue before ordering especially during peak hours and then the order staff will record customer orders. After ordering, customers must wait near the counter until their order is ready to be picked up. The implication is, customers may give up waiting for their turns. The time taken for a customer to make a purchase causes delays in the purchase of other customers. Meanwhile, the owners will suffer losses because the gain will get a few potential customers who buy their goods.

Based on the current system usage situation, a sales and inventory management system for Maperow Store was developed. The objective of this project is to design a sales and inventory system based on a structured approach, and to develop its system online. System users are customers and store managers (administrators). This system was developed to make the sales process and inventory system more efficient for customers as well as for sellers. This will make this system easier for customers to order goods and ensure the performance of sellers also improve. This report contains four main sections. Part 1 describes the background of the project, while Part 2 provides the results of the literature review. Part 3 shows the research methodology and Part 4 explains the findings from the analysis and design of the system.

2. Literature Review

2.1 Goods Inventory Management Process in stores.

The inventory of goods must be made and updated periodically by all stores regardless of the size of the business. Inventory management is a system that will monitor the level of inventory and the status of items used. Previously, inventory management was a system that only used paperwork to record all item statuses [1]. The in-store inventory management process is a system that will help the seller manage the stock of goods in the store. Through this process, the seller no longer has to record every sale and stock of new goods manually as it will continue to be displayed into the system automatically.

2.2 Web Based Information System

A web-based information system is a system that will use internet technology to disseminate and channel information and services to users. Thus, web-based information systems are data, interfaces, and geographies collected to support or enhance operations in a business, as well as meet the information and problem solving needs of business managers [2]. Web-based information systems are very important to ensure the relationship between sellers and buyers. This web-based information system is a system that will convey the information of our goods to the buyer and through this website also the buyer evaluation of the goods to be sold. In web-based information, the system will store all inventory information of sales items, stocks, and even storage or organization information.

2.3 Comparable Existing System

The three existing systems are studied and compared to the features of the proposed system. This includes the modules contained in the sales and inventory system. The comparison results are shown in Table 2.1.

Table 1: System's Comparison

Features/System	Shoppe	McDelivery	Foodpanda	Sales And Inventory System For Maperow
System type	Web based	Web based	Web based	Web based
Registration and login module	Available	Available	Available	Available
Order module	Available	Available	Available	Available
Product management module	Available	Available	Available	Available
Inventory module	Available	Available	Not Available	Available
Booking management module	Not Available	Available	Available	Available
Report module	Available	Not Available	Not Available	Available
Administration of inventory	Seller (customers)	Administrator	Seller (customers)	Administrator

3. Methodology

For this system, the waterfall model is used as the project methodology. This model will work effectively when project quality control becomes a major concern due to intensive documentation and planning [3]. Phases are processed with a specified deadline and must be completed one by one. Therefore, it is easy to rearrange the tasks, and the system manufacturing process will be well documented. This waterfall model has five main phases namely requirements phase, design phase, implementation phase, testing phase, and maintenance phase. Table 2 show system development task and deliverables.

Phase	Activity	Output
Requirements	• Determine the scope of the project. • Identify system problems and needs.	• Proposal. • Gantt chart. • DFD • ERD • User interface design.
Design	• Generate flow chart. • Design system interface and database.	• Database schema and data dictionary. • Flow chart of system
Implementation	• Identify problems and errors found in the system. • Coding proses	• Functional outcome
Testing	• Perform all the activities of the system	• Test case.

	to make sure that system followed the requirements.	
Maintenance	• Check error	• Improvements of the system.

Table 2: System Development Workflow

4. Analysis and Design

The analysis of needs would identify functional and non-functional needs, the user needs and hardware specifications, as well as software for Sales and Inventory System for Maperow Store. Table 3 and 4 show functional and non-functional requirements.

Table 3: Functional requirement analysis.

No.	Module	Description
1	Registration and login modules	• The system should allow the user to register id and password before login. • The system should allow the user login the system using id and password. • The system should alert the user for invalid input. • The system should redirect user to dashboard when successful login.
2	Order module	• The system should allow users to view groceries and food prepared • The system should display groceries and food prepared. • The system should display error message if the order unsuccessful. • The system should display available stock product.
3	Product management module	• The system should allow the registration of the product sold for inclusion in the system. • The system should allow to update description of the product. • The system should allow to add the images product. • The system should allow to update the product name.
4	Inventory module	• The system should assist allows to store. • The system should allow to edit the number of stocks. • The system should allow to track information and pictures for each part. • The system should allow to assembly number of stocks in inventory.
5	Booking management module	• The system should allow for the booking administration accepted in the system. • The system should display product that have booking. • The system should display error message if the booking unsuccessful.
6	Report module	• The system should generate sales statistics reports product sales. • The system should display sales statistics.

Table 4: Non-functional requirement analysis.

No.	Requirements	Description
1	Performance	• The system should be able to use anytime. • The system should be able to use in any web browser
2	Operational	• The system should be user friendly. • The system should be easily maintained and update.
3	Security	• The system only can be access by user when have valid password and id. • The system only can generate the report when used administrator id.

A system context diagram is a diagram that will be used at the beginning of a project to obtain agreement on the scope under investigation. This diagram is to make sure everyone can understand the flow of the system that will be developed. The context diagram of the system is shown in Figure 1.

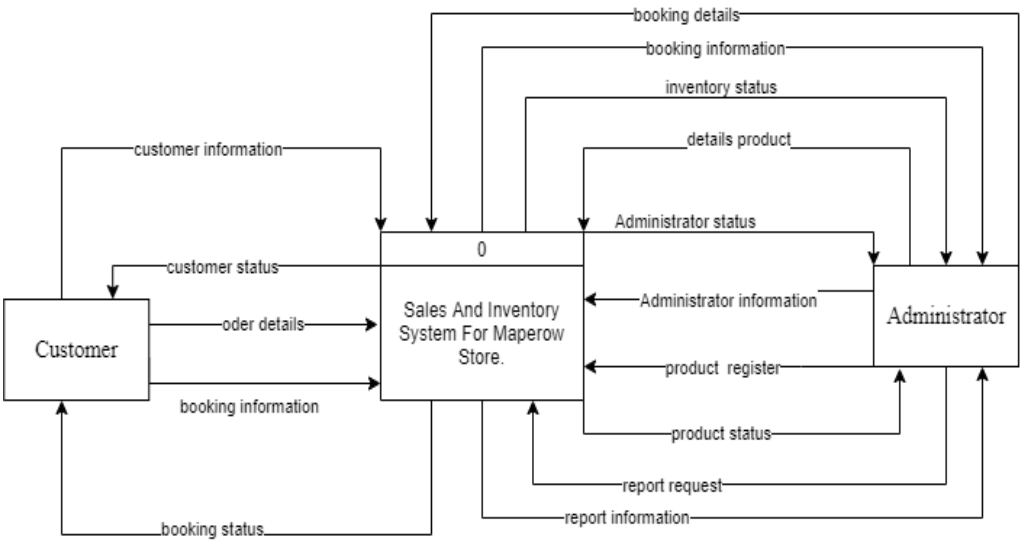


Figure 1: Context Diagram

Figure 2 shows Data Flow Diagram (DFD). DFD is a graphical visualization of data movement through information systems. With a data flow diagram, it shows the processes that will take place in the system.

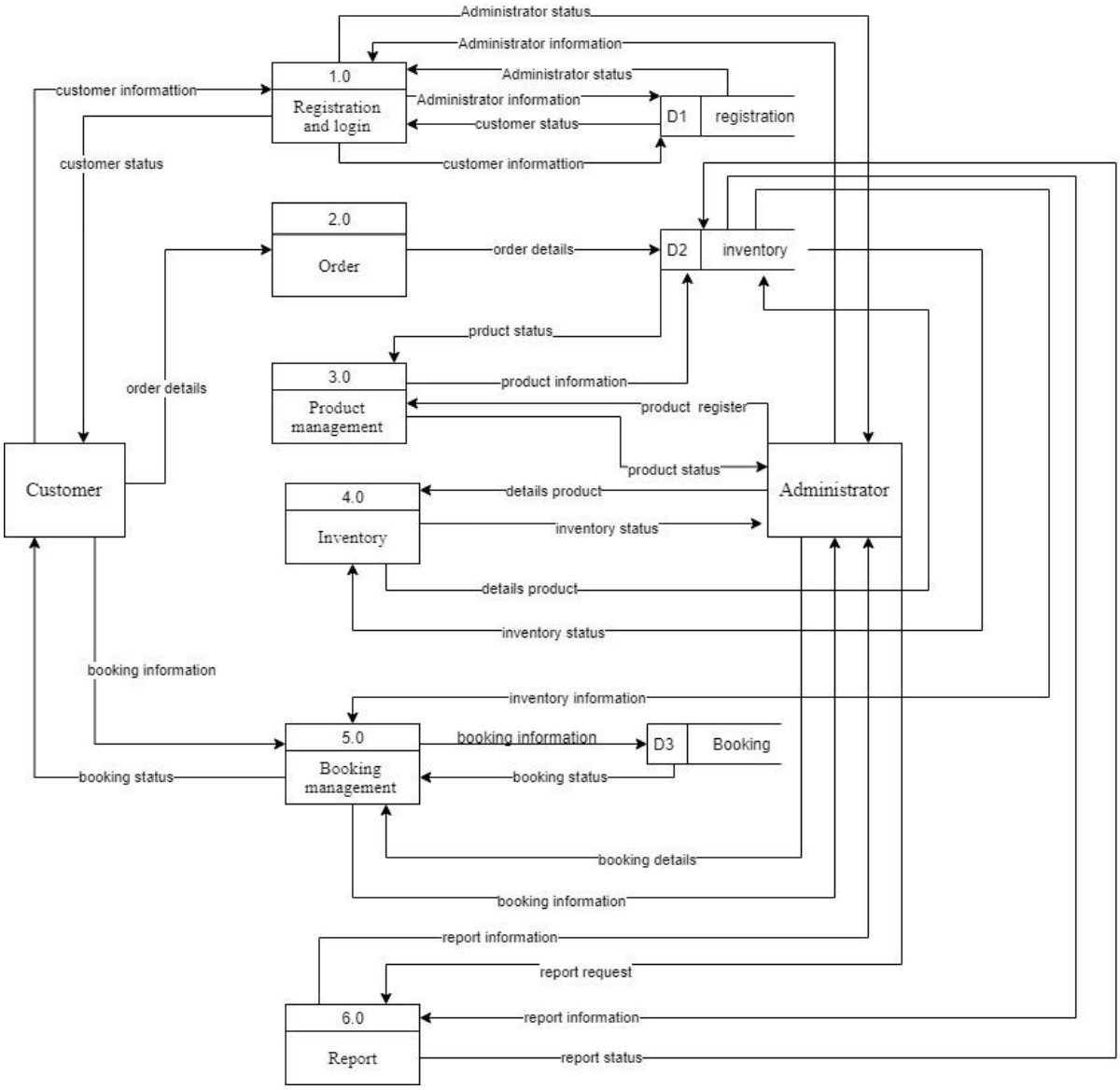


Figure 2: Context Diagram Level 0

Figure 3 shows entity relationship diagram (ERD). ERD is a diagram that shows the relationship of entity sets in a database. This diagram is also used to sketch out the database design. ERD is an independent representation of problem domain implementation and this facilitates communication between end users and analysts

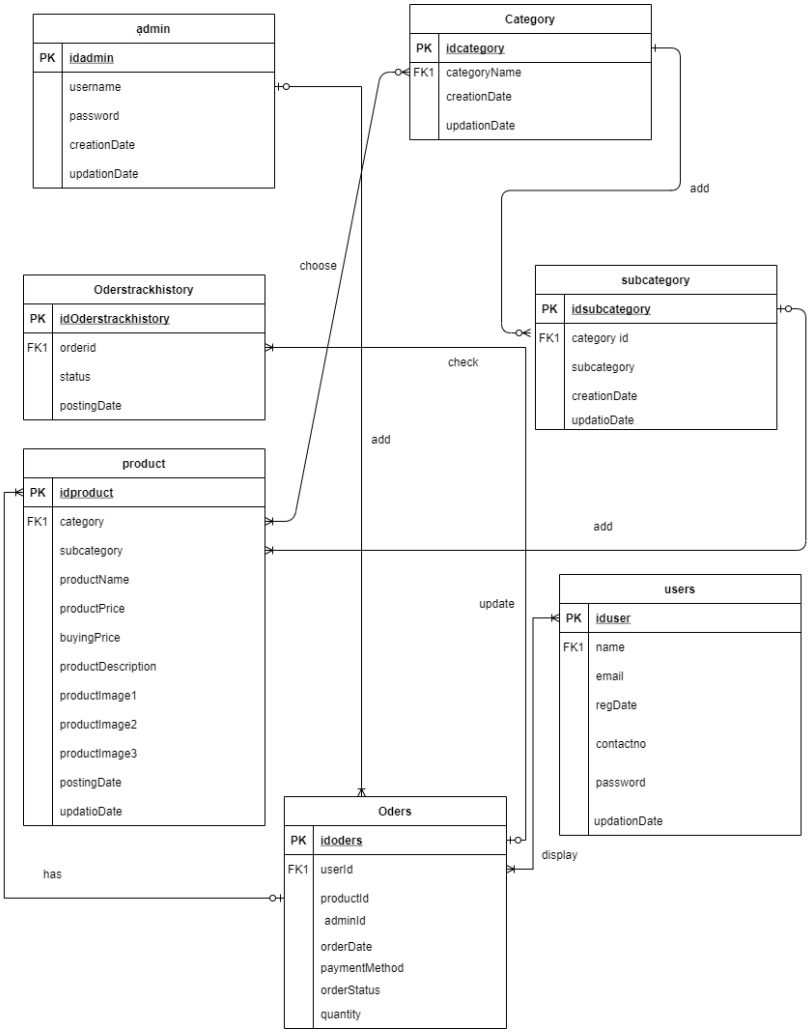


Figure 3: Entity Relationship Diagram

5. Implementation and Testing

The implementation phase is represented the work project that have been done by the team developer to meet the requirement of the scope of work and fulfill the charter. For the testing phase's, their objective is to establish whether the system, application software, or IT solution generated or obtained during the development phase and preliminary tested is ready for implementation

5.1 Implementation

The modules that had been used in this system will be discussed in the following section. The modules that will be discussed in this chapter is registration and login, order, product management, inventory, product management and report. Partial code of the program for each module will be explained in the different section respectively.

5.1.1 Registration and login – Customer and Administrator

Registration process require customer to enter their information for example Username, contact number password and confirmation password. This system will check the information that has been stored inside the database. Figure 5.1 is the interface of the registration function while Figure 5.2 shown the partial code for registration function.

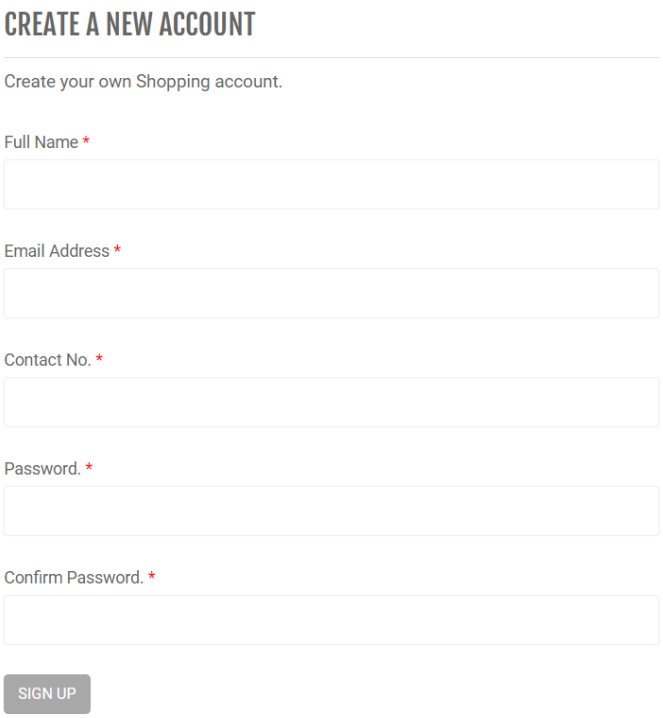


Figure 4: The interface of the registration and login function

```
<div class="col-md-6 col-sm-6 create-new-account">
  <h4 class="checkout-subtitle">create a new account</h4>
  <p class="text title-tag-line">Create your own Shopping account.</p>
  <form class="register-form outer-top-xs" role="form" method="post" name="register" onSubmit="return valid();">
<div class="form-group">
        <label class="info-title" for="fullname">Full Name <span>*</span></label>
        <input type="text" class="form-control unicase-form-control text-input" id="fullname" name="fullname" required="required">
      </div>


    <div class="form-group">
        <label class="info-title" for="exampleInputEmail2">Email Address <span>*</span></label>
        <input type="email" class="form-control unicase-form-control text-input" id="email" onBlur="userAvailability()" name="emailid" required >
              <span id="user-availability-status1" style="font-size:12px;"></span>
      </div>

<div class="form-group">
        <label class="info-title" for="contactno">Contact No. <span>*</span></label>
        <input type="text" class="form-control unicase-form-control text-input" id="contactno" name="contactno" maxlength="10" required >
      </div>

<div class="form-group">
        <label class="info-title" for="password">Password. <span>*</span></label>
        <input type="password" class="form-control unicase-form-control text-input" id="password" name="password"  required >
      </div>

<div class="form-group">
        <label class="info-title" for="confirmpassword">Confirm Password. <span>*</span></label>
        <input type="password" class="form-control unicase-form-control text-input" id="confirmpassword" name="confirmpassword" required >
      </div>


      <button type="submit" name="submit" class="btn-upper btn btn-primary checkout-page-button" id="submit">Sign Up</button>
  </form>
```

Figure 5: Partial code for registration function

5.1.2 Order – Customer

Order is a function where customer can view all the item that be sold by the store. The system should display item that they sold.

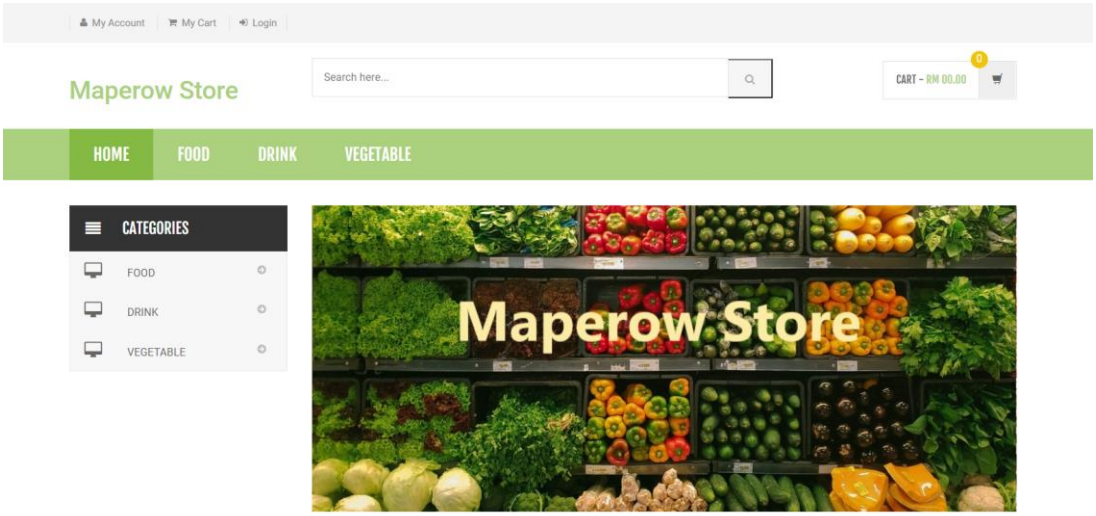


Figure 6: The interface of the order function.

```
<div class="body-content outer-top-xs">
  <div class="container">
    <div class="row inner-bottom-sm">
      <div class="shopping-cart">
        <div class="col-md-12 col-sm-12 shopping-cart-table ">
  <div class="table-responsive">
<form name="cart" method="post">

    <table class="table table-bordered">
      <thead>
        <tr>
          <th class="cart-romove item">#</th>
          <th class="cart-description item">Image</th>
          <th class="cart-product-name item">Product Name</th>

          <th class="cart-qty item">Quantity</th>
          <th class="cart-sub-total item">Price Per unit</th>
          <th class="cart-total item">Grandtotal</th>
          <th class="cart-total item">Payment Method</th>
          <th class="cart-description item">Order Date</th>
          <th class="cart-total last-item">Action</th>
        </tr>
      </thead><!-- /thead -->

      <tbody>
```

Figure 7: Partial code for the order function.

5.1.3 Product management – Administrator

Product management will allow the registration of the product sold for inclusion in the system. This also can view what product that store have. Figure 5.3 indicate the interface of the food menu selection module for the customer while Figure 5.4 is the partial code for this module.

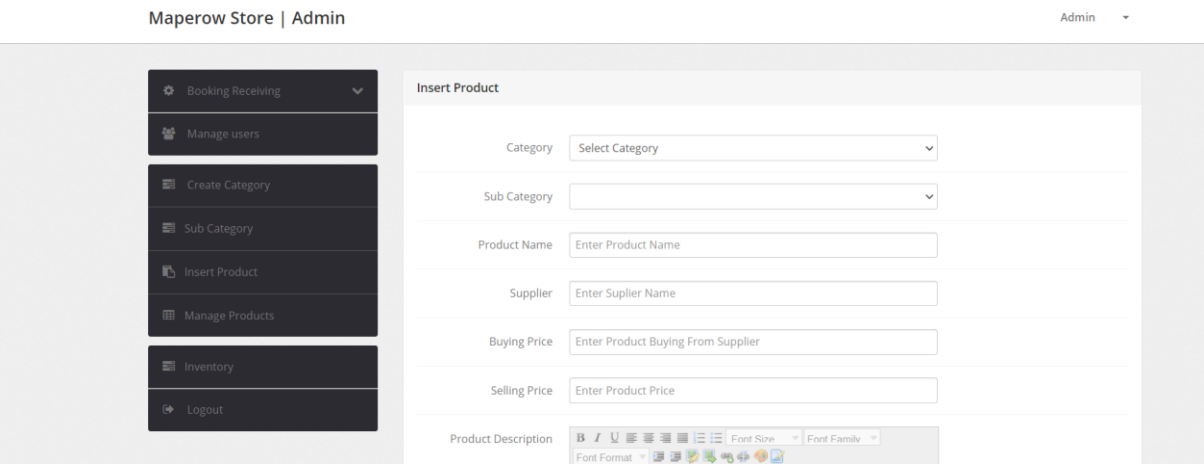


Figure 8: The interface for registration product.

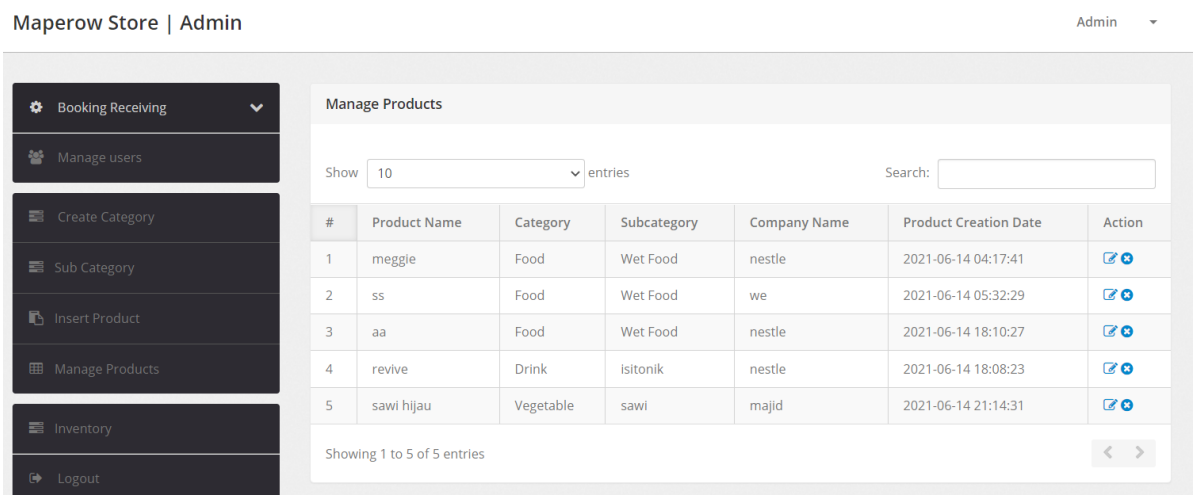
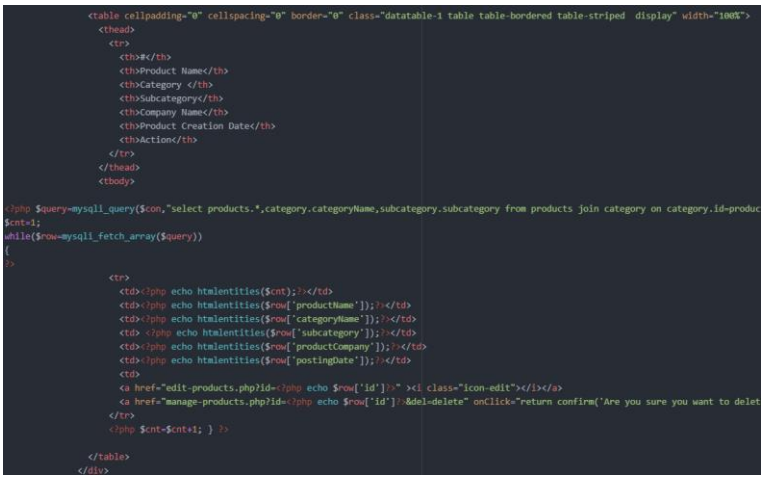


Figure 9: The interface for product management.



```
<table cellpadding="0" cellspacing="0" border="0" class="datatable-1 table table-bordered table-striped  display" width="100%">
  <thead>
    <tr>
      <th>#</th>
      <th>Product Name</th>
      <th>Category </th>
      <th>Subcategory</th>
      <th>Company Name</th>
      <th>Product Creation Date</th>
      <th>Action</th>
    </tr>
  </thead>
  <tbody>

<?php $query=mysqli_query($con,"select products.*,category.categoryName,subcategory.subcategory from products join category on category.id=produc
$cnt=1;
while($row=mysqli_fetch_array($query))
{
?>

    <tr>
      <td><?php echo htmlentities($cnt);?></td>
      <td><?php echo htmlentities($row['productName']);?></td>
      <td><?php echo htmlentities($row['categoryName']);?></td>
      <td> <?php echo htmlentities($row['subcategory']);?></td>
      <td><?php echo htmlentities($row['productCompany']);?></td>
      <td><?php echo htmlentities($row['postingDate']);?></td>
      <td>
      <a href="edit-products.php?id=<?php echo $row['id']?>" ><i class="icon-edit"></i></a>
      <a href="manage-products.php?id=<?php echo $row['id']?>&del=delete" onClick="return confirm('Are you sure you want to delet
    </tr>
    <?php $cnt=$cnt+1; } ?>

  </table>
</div>
```

Figure 10: Partial code of product management.

5.1.4 Inventory – Administrator

For this module, the system will display all inventory information like product name, stock in, stock out, and stock available. This module also can display all information based on ascending value or descending based on they needed. Figure 5.6 shows the interface of inventory while Figure 5.7 indicate the partial code for inventory.

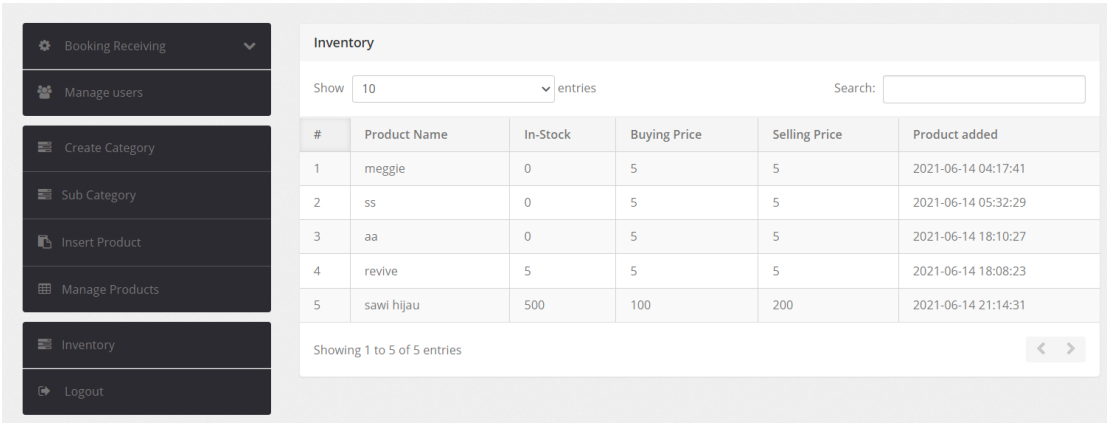


Figure 11: The interface for food inventory process

```
<div class="module">
            <div class="module-head">
              <h3>Inventory</h3>
            </div>
            <div class="module-body table">


              <table cellpadding="0" cellspacing="0" border="0" class="datatable-1 table table-bordered table-striped  display" width="100%">
                <thead>
                  <tr>
                    <th>#</th>
                    <th> Product Name</th>
                    <th>In-Stock</th>
                    <th>Buying Price</th>
                    <th>Selling Price</th>
                    <th>Product added</th>

                  </tr>
                </thead>
                <tbody>

php $query=mysqli_query($con,"select products.*,category.categoryName,subcategory.subcategory from products join category on category.id=products.
nt=1;
ile($row=mysqli_fetch_array($query))


                  <tr>
                    <td><?php echo htmlentities($cnt);?></td>
                    <td><?php echo htmlentities($row['productName']);?></td>
                    <td><?php echo htmlentities($row['shippingCharge']);?></td>
                    <td> <?php echo htmlentities($row['productPriceBeforeDiscount']);?></td>
                    <td><?php echo htmlentities($row['productPrice']); ?></td>
                  <td><?php echo htmlentities($row['postingDate']);

                   ?></td>
```

Figure 12: Partial code of inventory for administrator.

5.1.5 Booking management – Customer and Administrator

This module is where administrators can view all the booking from the customer after they have procced to place order. Once the customer placed their order, the database will be updated and the administrator able to view. This module also can edit and record the booking from supplier. Hence, Figure 5.8 shows the interface for the administrator to see the booking stock will arrive from supplier and Figure 5.9 indicates the partial code for this module.

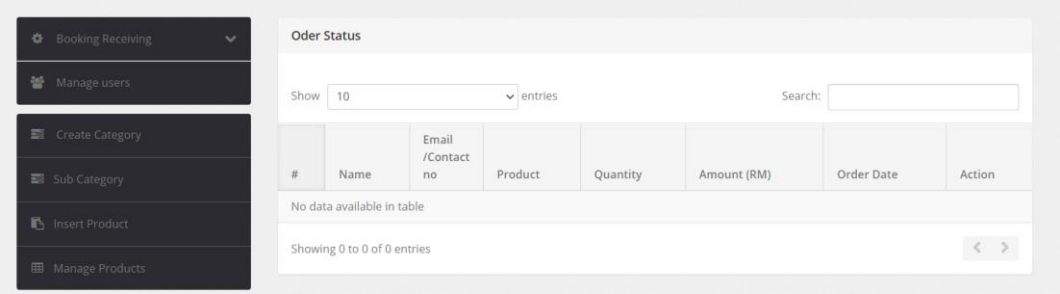


Figure 13: The interface of manage order menu for administrator

```
ody>
hp
1="00:00:00";
om=date('Y-m-d')." ".$f1;
="23:59:59";
=date('Y-m-d')." ".$t1;
ery=mysqli_query($con,"select users.name as username,users.email as useremail,users.contactno as usercontact,users.shippingAddress as shippingaddress,users.shipp
ers.userId=users.id join products on products.id=orders.productId where orders.orderDate Between '$from' and '$to'");
t=1;
le($row=mysqli_fetch_array($query))


                <tr>
                  <td><?php echo htmlentities($cnt);?></td>
                  <td><?php echo htmlentities($row['username']);?></td>
                  <td><?php echo htmlentities($row['useremail']);?>/<?php echo htmlentities($row['usercontact']);?></td>
                  <td><?php echo htmlentities($row['productname']);?></td>
                  <td><?php echo htmlentities($row['quantity']);?></td>
                  <td><?php echo htmlentities($row['quantity']*$row['productprice']);?></td>
                  <td><?php echo htmlentities($row['orderdate']);?></td>
                  <td>    <a href="updateorder.php?oid=<?php echo htmlentities($row['id']);?>" title="Update order" target="_blank"><i class="icon-edit"></i></a
                  </td>
                  </tr>

                 <?php $cnt=$cnt+1; } ?>
                </tbody>
              </table>
            </div>
          </div>
```

Figure 14: Partial code of manage order menu for administrator

5.1.6 Report module – Administrator

The system should generate sales notification for product sales. They are also able to be display all information about stock and sales of product that have. The interface of the report module for administrator is in Figure 5.10.

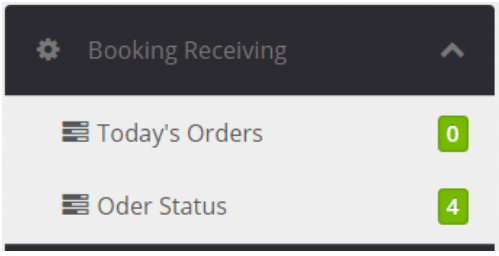


Figure 15: The interface of report for administrates

```php
<?php
session_start();
include('include/config.php');
if(strlen($_SESSION['alogin'])==0)
  {
header('location:index.php');
}
else{

date_default_timezone_set('Asia/Kuala Lumpur');// change according timezone
$currentTime = date( 'd-m-Y h:i:s A', time () );


?>
<!DOCTYPE html>
<html lang="en">
<head>
  <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Admin| Pending Orders</title>
  <link type="text/css" href="bootstrap/css/bootstrap.min.css" rel="stylesheet">
  <link type="text/css" href="bootstrap/css/bootstrap-responsive.min.css" rel="stylesheet">
  <link type="text/css" href="css/theme.css" rel="stylesheet">
  <link type="text/css" href="images/icons/css/font-awesome.css" rel="stylesheet">
  <link type="text/css" href='http://fonts.googleapis.com/css?family=Open+Sans:400italic,600italic,400,600' rel='stylesheet'>
  <script language="javascript" type="text/javascript">
var popUpWin=0;
function popUpWindow(URLStr, left, top, width, height)
```

Figure 16: Partial code of report for administrator

5.2 Testing

During testing phase, the developer will attempt to determine whether their code and programming meet the needs of the customer. It is impossible to solve all of the errors that may be discovered during the testing phase, but the results of this phase can be used to reduce the number of errors in the software. Testing phase is necessary to ensure that the system produces the desired result. It is made up of three parts: the test case, the predicted outcome, and the actual output.

5.2.1 Test Plan for Registration and login modules

Table 5.1 shows the test plan for registration and login modules. The purpose of this test plan is to test the new customer and their capabilities to insert username, phone number and password to complete the registration process. For login purpose of this test plan is to test the customer and administrator login function based on their inputs during registration process. Table 5.2 shows the test plan for login function.

Table 5: Test Plan for Registration Function.

No.	Test Case	Expected Outcome	Actual Output

1.	Fill in the valid information in the registration form.	Successfully registered and the users to the login page.	Same as expected outcome.
2.	Fill in the invalid information in the registration form.	Shows error message and require users to input the details again.	Same as expected outcome.

Table 6: Test Plan for Login Function.

No.	Test Case	Expected Outcome	Actual Output
1.	Fill in valid username and password.	User will to home page and redirect administrator to administrator home page.	Same as expected outcome.
2.	Fill in invalid username and password.	Show error message and require user to login again.	Same as expected outcome.

5.2.2 Test Plan for Oder Function

The purpose of this test plan is to test the customer able to view all the menu from the system. Table 5.3 shows the test plan for order for customer.

Table 7: Test Plan for order.

No.	Test Case	Expected Output	Actual Outcomes
1.	Customer click on the product to get more details on the product.	Allow customer to get more details on the product before proced to checkout.	Same as expected output.

5.2.3 Test Plan for Product Management

Table 5.4 shows the test plan for product management. The purposed of this test plan is to check either administrator able to view and add all the product from the system.

Table 8: Test Plan for Product Management.

No.	Test Case	Expected Output	Actual Outcomes
1.	Administrator click on the product management button to get extra details and edit the product.	Allow administrator to get more details about stock of product	Same as expected output.

5.2.4 Test Plan for Inventory

Table 5.4 shows the test plan for inventory. The purposed of this test is to make sure administrator can view and restock all the stock and item details that thay have from the system.

Table 9: Test Plan Inventory.

No.	Test Case	Expected Output	Actual Outcomes
1.	Administrator can view and restock all the stock and item details	All the product like stock in, stock out and stock available can be display.	Same as expected output.

5.2.5 Test Plan for Booking management

Table 5.5 shows the test plan for Booking management. The purposed of this test is to make sure that allow for the booking administration can be display in the system. The system should allow the administrator to view all the menu that order by the customer

Table 10: Test Plan for Manage Order Menu

No.	Test Plan	Expected Output	Actual Outcomes
1.	The system should allow the administrator to view all the menu that order by the customer	Administrator able to view the food order by the customer after they place the order	Same as expected output.

5.2.6 Test Plan for Report

Table 5.6 shows the Report that will generate in the system. The purposed of this test is to make sure that the generate sales statistics reports product sales.

Table 11: Test Plan for Report

No.	Test Plan	Expected Output	Actual Outcomes
1.	The system should allow the administrator generate sales statistics reports product sales.	Administrator able to add, edit, delete the statistic report.	Same as expected output.

6. Conclusion

In conclusion, this sales and inventory system is system that will give many advantages for customer and sellers. It is because this system provides online concept that can be used anywhere by users. This will bring a lot of facilities to shopkeepers as they conduct business dealings with customers as well improve the buying experience to customers. It will quickly increase productivity store because it shortens and simplifies the whole process ordering and booking the items. This system is expected to make it easier for sellers to manage the updating of goods, record sales and manage the sale of goods in a more organized and faster.

6.1 System Advantages

Sales and Inventory System for Maperow Store system is successfully developed in achieving its objectives. The purpose of this system is to make sure the customer can easily order their necessities from this store with using the best way and not waste their time to buy their necessities. Also, customer can be able to view and booking their necessities from this store from anywhere. Aside from that, this system focuses on administrators, who will benefit from this system's increased productivity. This because the workers just need to manage the booking and the sales data of the product into the online and the customer able to view all the product as soon as possible. Finally, from a business aspect, this company will gain maximum profit using minimum cost where they can cut some costs. For examples, that will not has problems in storage and managing their sales data because all the data of sales and management will be save in database of this system.

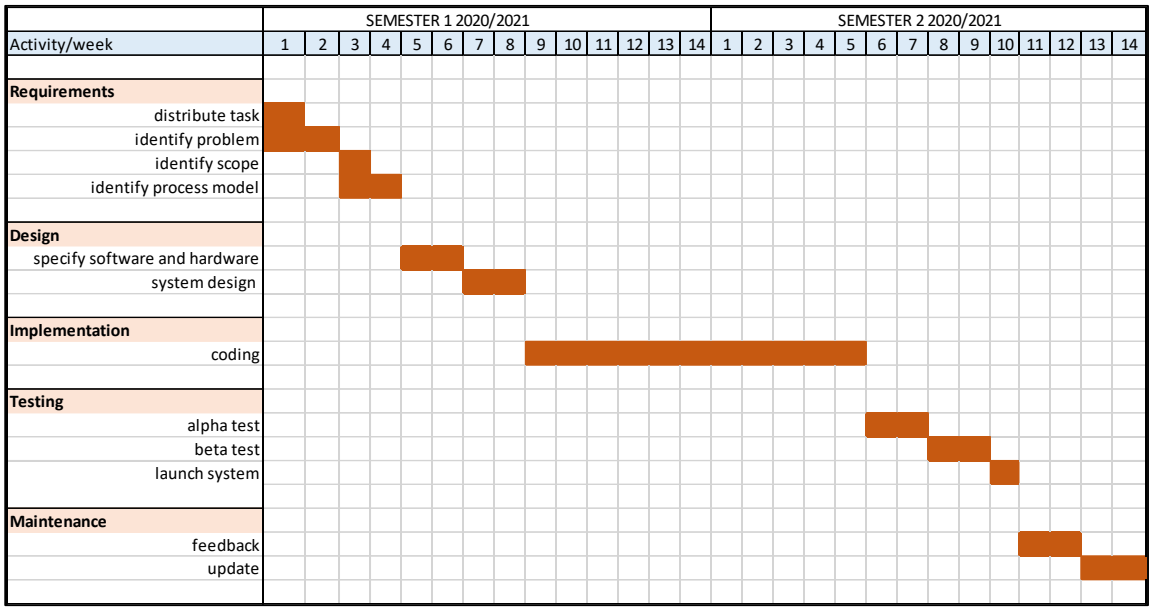
6.2 System Disadvantages

Although the developed system is meeting its objectives, it will still possess some limitations which can be used as the future references for the enhancements of the system. Currently, this system does not provide the function that online direct payment. Sometimes some of the customers prefer to auto direct to pay for the items they have purchased. Aside from that, it does not provide the capability of managing client information for administrators. This feature is crucial for system security since the administrator needs to know whether the individual is a real customer or a fake customer.

6.3 Recommendations

For the recommendation, the end user suggestions are extremely valuable for future application enhancements. This can help to get around some of the limits of this system. One of first recommendation obtained from the end users are to display product based on categories. For example, the categories of food, snacks, drink and essentials. This will help customers to be more comfortable and can help them make a better choice of items to buy. Other than that, this system may be more friendly for the workers that to manage the stock of goods. Through this, the workers no longer has to manually record every sale and stock of new items as it will continue to be displayed into the system automatically.

Appendix A



References

[1] Chris Barry (2000). Issues And Perspectives On Web-Based Information Systems Development. Third International Asia-Pacific Web Conference, 163-171

[2] Nabil Mohammed Ali Munassar and A. Govardhan, "A Comparison Between Five Models Of Software Engineering", IJCSI International Journal of Computer Science Issues, Vol. 7, Issue 5, pp. 94 – 101, September 2010.

[3] Ooi C. K. (2015). Development Of A Computerized Inventory Management System (IMS) For Industry Application (UMP).