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Secure Food Ordering Web System for D'Hartamas Restaurant

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Abstract: Food ordering system is an application which can help a restaurant to optimize and control their restaurant. The problem facing this restaurant is the restaurant uses an old method of taking orders which is not efficient and secure. This also cause the restaurant other problems such as not having efficient way to track the restaurant orders record, the system that can be used to maximize the usage of the data obtained and the security to ensure the data confidentiality, integrity, and availability. Using the system, reports can be generated easily, and the records of orders and employees can be recorded using this system. The security of data such as the finances record and staff records can be secure using the system. The objectives for this project are to design a system prototype for the restaurant, to develop a secure system for the restaurant and to test the system in terms of functionality and the security level given by the system. The development of the system is based on agile methodology. There are two different users who will use the system, the manager, and staff of the restaurant. The outcome of the proposed system is to test the functionality and security level of the system.

Keywords: Food Ordering System, Agile, Security

1. Introduction

D'Hartamas is a well-known restaurant at Taman Sunggala Hartamas. This restaurant operates from 9.30 a.m to 6.00 p.m and it has been operating for about a year. It is a focus restaurant for the residents of Taman Sunggala Hartamas, Port Dickson which has several restaurants in the area which provide the competition to the restaurant.

Even though it has been operating for about a year, this restaurant still uses the old method of saving their data such as finance records and staff records inside a book. The finance records and the staff records are currently handled by the manager daily. Until now, all the daily income for the restaurant was recorded in the book. The book that contains the finance records can easily be misplaced or stolen, which can cause problems for the manager to manage the restaurant. The situation also can be worse if the records are not copied from any other books. Therefore, this system will be developed for the

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restaurant to store their data safely. Indirectly, the development of this system can reduce the problem of losing important data and restaurant management can be carried out smoothly.

Currently, there are several problems that D'Hartamas restaurant is facing. The first problem that D'Hartamas restaurant is currently facing is that there is no web-based system used in the restaurant. This indicates that D'Hartamas restaurant currently is taking orders from their customers using pen and paper. Using pen and paper to take orders can be prone to human errors. One of the errors can occur is misunderstandings between staff. It can occur based on unreadable orders taken from the staff, causing problems for the other staff. The second problem is without a system, the are no log information when the staff is on duty. Log information can help in monitoring the staff activity and verify the staff integrity. For example, the integrity of a staff who takes an order will be recorded in the information log. The last problem is no report generation. Report generation is very important in the system to produce restaurant income reports whether it is a daily, weekly, or monthly income display.

The objective for this project is to design a system prototype for the restaurant. The next objective is to develop a secure system for the restaurant by implementing several security functions in the system such as hashing the important data in the database and create security log for the manager to observe the workers usage of the system. The last objective for this project is to test the system in terms of functionalities and security level.

The scope of this project is the system function that will be implemented in the restaurant's business system. The individuals that are included in this system are the manager and the staff of D'Hartamas restaurant. The manager will handle the data of the staff and the menu while the staff will be more related to the order data. This project will also be implemented using the agile model as project methodology.

This project is to make a secure system that can be used by the manager and staff. The system can speed up the process for the eatery such as data key-in, staff can handle orders and report generation. The data inside the database for the restaurant will ensure to be secured and accurate so the data can be used safely to generate reports when needed. Managers also can monitor any events that happen within the system using the log information feature. Apart from that, the staff and manager can use the system based on their capabilities. Based on these factors, role-based access controls are being implemented to increase its security as part of the computer system's security.

The rest of the paper is organized as follows: Section 2 discusses the literature review of the related work and existing applications. Next, the methodology used to develop the application including the analysis and design is described in Section 3. Section 4 will discuss the result and discussion of the project. Finally, the last section concludes the current work and highlights the future work to be performed in the next project.

2. Literature review

2.1 Background of case study

D'Hartamas is a restaurant that practices order using manual process as part of their business practice. The manual process in ordering involves the use of pen and paper in noting down the customer orders or in some cases just by remembering the customer's order and passing it to the kitchen. This practice is good for a short-term process but using this practice may lead to blunders made by human mistakes. This practice also makes it hard for the restaurant to track their orders record, which can help in improving their restaurant business.

2.2 Element of system security

This section describes the elements of system security that will be implemented in this project. The elements that will be included are cryptography which contains cryptography, advanced encryption standard, hashing and log security information. Cryptography is a term used to convert a real message into unreadable message. Advanced encryption standard is one of the methods in cryptography used to convert the real message into unreadable messages. Hashing is used when a message protects very sensitive information as the information will be converted to unreadable messages and cannot be converted back. Lastly log security information is used to monitor the activity of a system for security purposes. Cryptography will be discussed in section 2.2.1, advanced encryption standard will be discussed in section 2.2.1.1, hashing will be discussed in section 2.2.1.2 and security log information will be discussed in section 2.2.2. Each section will be discussing these security elements in more detail.

2.2.1 Cryptography

According to Dooley [1], Cryptography is the science of secret writing, and it is made from two parts which are creating secret writing and cryptanalysis which is used to break the secret. According to Fruhlinger [2], Cryptography is a technique used to ensure the communication is secure using codes and only enables the sender and the recipient to get the original content. Damico [3] also said that cryptography is a process where the message's contents are made to an unreadable group of figures to protect the message while it is being sent from one place to another place. It can be said that cryptography is a technique used to protect the message from an attacker by ensuring that the message cannot be read by anyone else other than the receiver.

2.2.1.1 Advanced Encryption Standard

Advanced Encryption Standard (AES) or originally known as Rijndael has been established by Joan Daemen and Vincent [4] and has been approved by Dworkin [5] as a cryptographic algorithm that can help in protecting electronic data. In AES there are several techniques used which are substitution, round-key functions, permutation, and transformation. Compared to other algorithms, AES is known to be faster and almost immune to successful attack [6]. Therefore, AES is one of the best options in using it as part of security implementation in encryption aspect.

2.2.1.2 MD5 Hash

Authentication is a method that is used to ensure or act as a proof that the data received is genuine, true, real and authentic [7]. One of the methods that is being used in cryptography to ensure the authentication of a data is by hashing. Hash functions accept the data, or any messages received by the sender in any length and change the message into a fixed length. This method is called message digest, and it acts as the integrity for the data. One of the methods in hashing is called md5.

To create md5, md, md2, md3 and md4 were developed before md5. Any length of data can be compressed into a 128-bit message digest, and this segment message digest frequently asserts to be a digital fingerprint of the contents. To perform the circular operation, this approach employs several non-linear algorithms, making it impossible for crackers to recover the original data. In the field of cryptography, it is claimed that an irreversible algorithm can successfully stop data leakage brought on by inverse operation. Because using the MD5 algorithm doesn't need paying any royalties and takes less time and money, it is frequently utilized in non-top-secret applications and has good security in both theory and practice. However, MD5 might be a great intermediate technology even in the most sensitive areas [8].

2.2.2 Security Log Information

A log management system is a system used to manage log security and provide a commercial solution for logs. Common functions for generic logs such as log generation, collection, transfer, storage, security and analysis for the management system [9]. Logging needs to use additional storage and processing as various important events need to be logged in to the system. The log then will be monitored by the administrator to observe any abnormalities in the log menu. Using the log system, any strange or abnormal activities that happen to the system can be observed from the log. The logging function helps in keeping and protecting audit information and it is called audit trails, audit data, logs or logging data [10].

2.3 Existing Food Ordering System

This section will discuss the food ordering system that has been used in some restaurants. It will include the strengths and weaknesses of each existing system.

2.3.1 Foodpanda

Foodpanda system that is being observed is the Foodpanda system that are being used by the customer. In the system, customers can make an order based on the restaurant they want. The order will later be sent to the Foodpanda driver who will later pick up the order from the restaurant to the customer. As the system is used only to make an order, the system does not contain security log information, but it contains the history of the user purchases. It also does not contain a financial report for the user. As the system usually used one time login to make it easier for the user to make an order using their own device, the system does not implement auto logout to make it easier for the user to use the system.

2.3.2 eHopper

The second existing system is eHopper. eHopper has been a point-of-sale provider that focuses on helping small businesses build their management solution. In eHopper the system is used by the manager and staff in their business. The system can be used by the staff to take orders from the customer, which can save time in the ordering process. eHopper also helps in generating reports to be used by the manager to overview their finances management. Even with these benefits eHopper also has some weaknesses. eHopper does not provide the manager with security log functionality which causes the manager to be unable to monitor their staff activity. The system also does not log out automatically which is not good as unattended systems can lead to unknown usage of the system by others.

2.3.1 Foodchow

Foodchow is a food ordering system developed for restaurant owners to create an online platform in their business. It helps in marketing and managing their business. By using Foodchow, restaurants owners can promote their restaurant online which can be viewed by the customer. Customer can use the system to create an order which later can be viewed by the restaurant. The sales and profits can also be viewed by the restaurant owner using this system. This system provides benefits to the users, but it also has it owns weakness. The system does not include security log functionality, which is dangerous for the owner as all the financial records are in the system. The system also has no auto logout function as the system can be used in the owner personal devices. Therefore, to make it easier to access there is no auto logout function. But this is dangerous as if the owner device is being stolen, the thief can use the device to access the owner online store by himself which can cause major damage to the restaurant owner.

2.4 Existing System and Proposed System Comparison

Table 1 shows the comparison of three existing systems together with the proposed system. It is to ensure that the previously mentioned features can be implemented or that the proposed system can be improved.

Table 1: Comparison between existing system and composed system

Features	Foodpanda	eHopper	Foodchow	Proposed System
Menu Ordering	✓	✓	✓	✓
Security Log	x	x	x	✓
Report Generation	x	✓	✓	✓
Auto logout	x	x	x	✓

Based on Table 1, menu ordering features are included in all existing systems and the proposed system for menu ordering is the main part for food ordering. For security logs, only the proposed system has this feature while others existing system do not. Report generation features exist in all existing systems except Foodpanda. The report generation will also be included in the proposed system. Auto logout features are not included in any of the existing systems. All features inside Table 1 will be included in the proposed system.

3. Methodology/Framework

The methodology used for this project is agile methodology. As the name Agile, the development for the project is fast, lightweight, free-moving and alert [11]. One of the advantages using Agile methodology is that Agile methodology is adaptable to changes that happen in the middle of the project. Agile methodology approaches people oriented and communication oriented. This methodology is more suitable for the development of small projects [12].

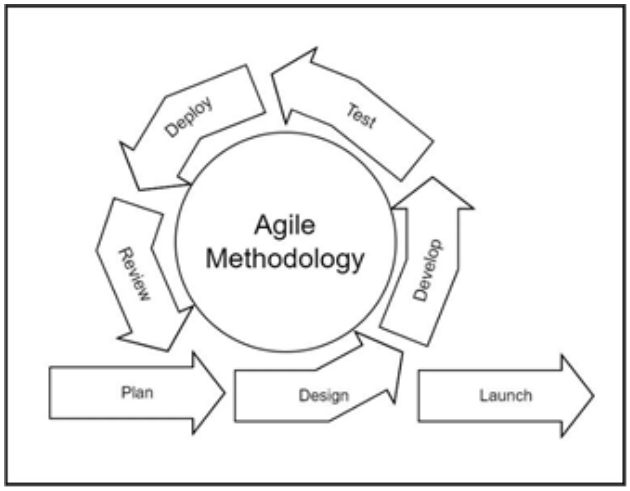

Figure 1: Project methodology framework

3.1 Planning Phase

In the planning phase, the introduction of the project and research on the project is conducted in chapter 1 and chapter 2. To start the project, the problem statements of the project have been discovered by interviewing the D'Hartamas restaurant owner. Discussions with the restaurant owner have also been conducted to define the type of system that will be made. From the problem statement the title, objectives and scopes for the project have been discussed and completed. Objectives of this system have been made to ensure the completion of the system. The scope for this project is based on the need of

the system to solve the problem. Gantt charts are also made available in this phase to act as a milestone for the project progression. Gantt chart will be in Appendix A.

3.2 Analysis and Design Phase

In this phase, several system modules for D'Hartamas restaurant are being designed as an overview for this project. The data gathered from interviewing and observing D'Hartamas restaurant are analyzed and used as part of the instruction during the creation of design. The designs will then be converted into frameworks which act as guidelines for the interface of the system. Also, during this phase, databases are being designed using ERD and DFD diagrams. These diagrams are used to detect the relationship and connection needed between each data for the system. This phase is conducted so it will be easier for the developer to develop the system by implementing all the items needed based on the design made in this phase.

3.2.1 System Design

System design acts as a structure during the development of the system. These designs also can help in avoiding careless mistakes during system development.

3.2.2 Data Diagram

As the web-based system will be developed based on structured method, the data diagram will consist of three main data diagrams. These diagrams are context diagram, data flow diagram and entity relationship diagram.

3.2.3 Context Diagram

In Figure 2, it shows context diagram for D'Hartamas food ordering system. In the context diagram, it shows that the system has two users which are manager and staff. For manager, manager will receive data from log, staff, menu and report. Manager can send any data related to staff and menu to the system. For the staff, the system will send the menu data to the staff to make orders for the customer. Then staff will send the order data to the food ordering system.

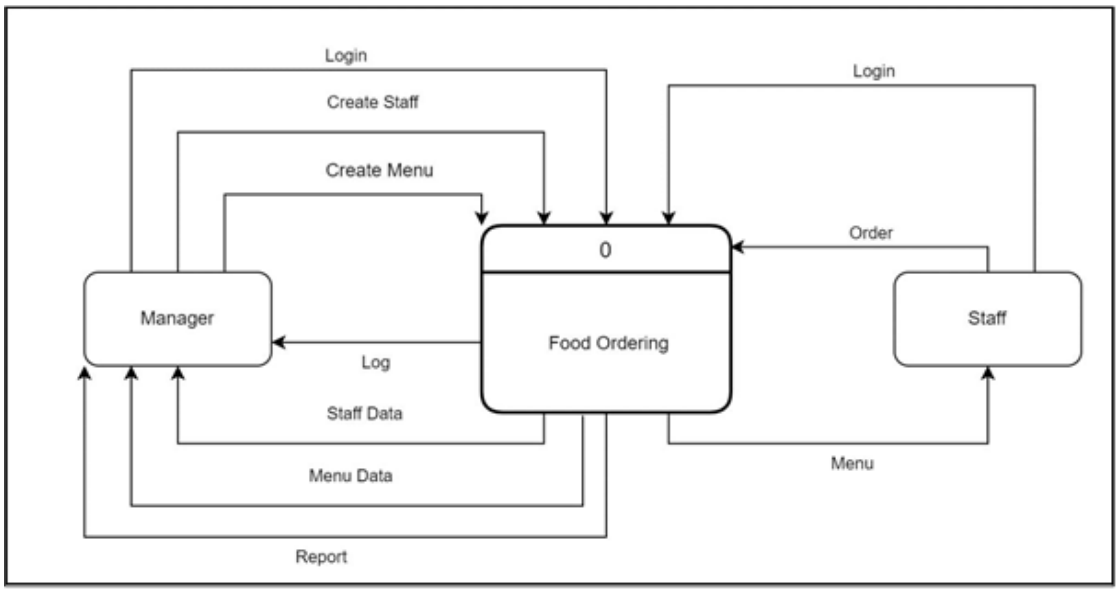

Figure 2: Context diagram

3.2.4 Data Flow Diagram (DFD)

A data flow diagram is a diagram that shows the flow of data between processes of a system. Since Ed Yourdon and Larry Constantine's [13] book Structured Design was published in the late 1970s, data flow diagrams have become increasingly common. They used the "data flow graph" computation models developed by Gerald Estrin and David Martin as their foundation.

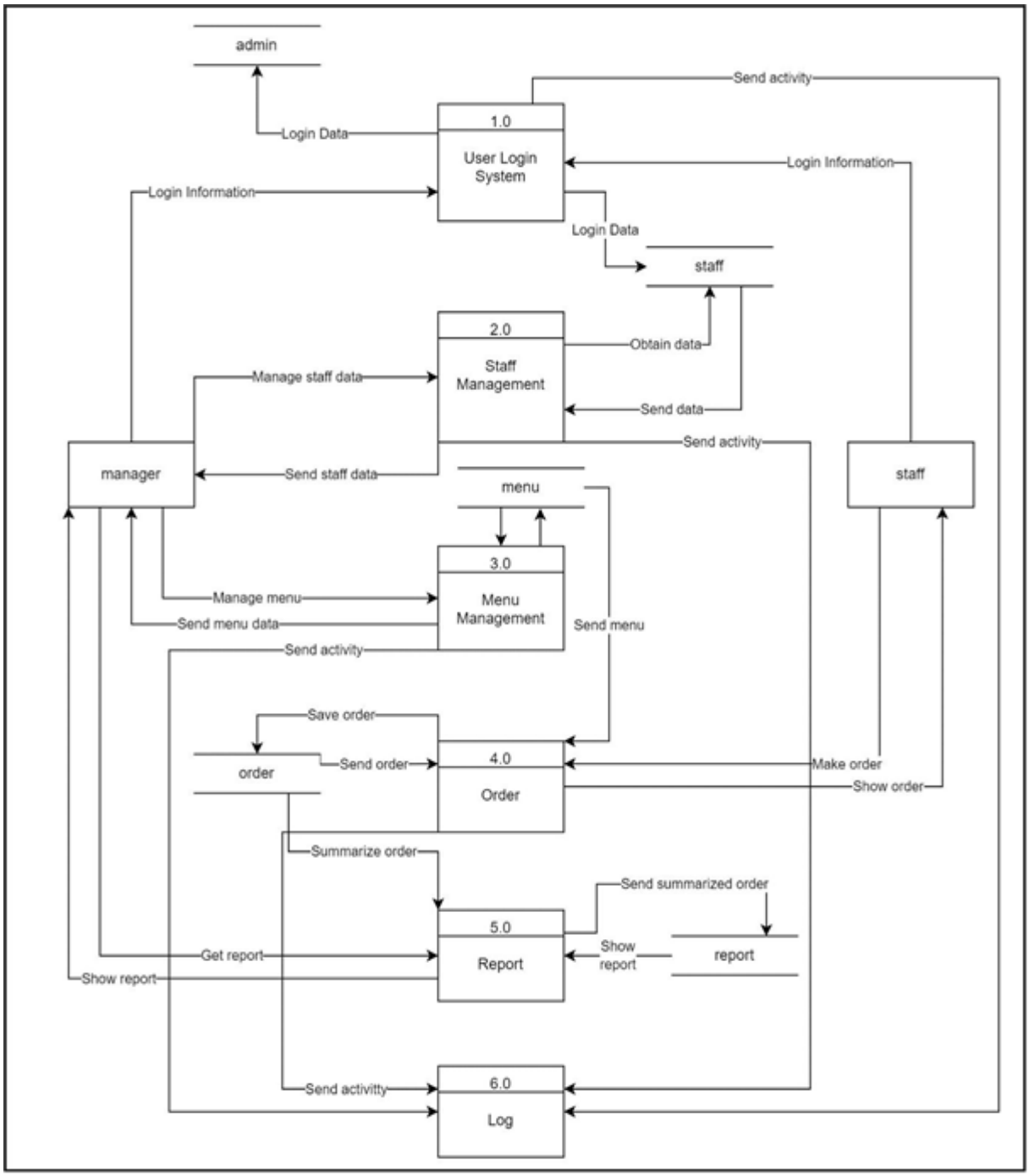

Figure 3: Data flow diagram

Figure 3 shows the DFD diagram level 0 for D'Haratamas food ordering system. DFD diagram level 0 gives more details than context diagram. In the diagram there are six processes included which are the user login system, staff management, menu management, order, report, and log.

3.2.5 System Architecture

This system uses two different types of users which are manager and staff. Both users need to enter their username and password for the verification process. In the verification process the input from the user will be compared with the data from the database. When the user has been verified, each user can access their own module such as manager can go to the staff management, menu management, log security and finances report. While the staff that has been verified will go to the order management to add, edit or delete order.

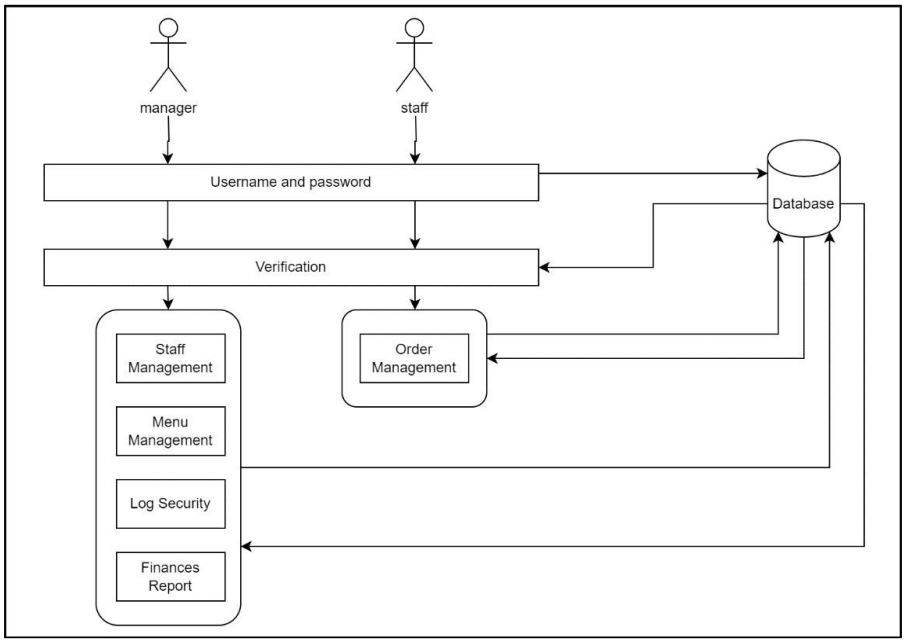

Figure 4: System architecture

3.2.6 Interface Design

Interface design or prototype design consists of interfaces that will be used by the viewer. Prototype design is important as the interface helps in visualizing the actual system to the customer and developer. Figure 5 shows the first interface when the user, who is manager or staff, uses the system. First, users will need to click the button based on their role which is either manager or staff of D'Hartamas restaurant or staff for the D'Hartamas restaurant.

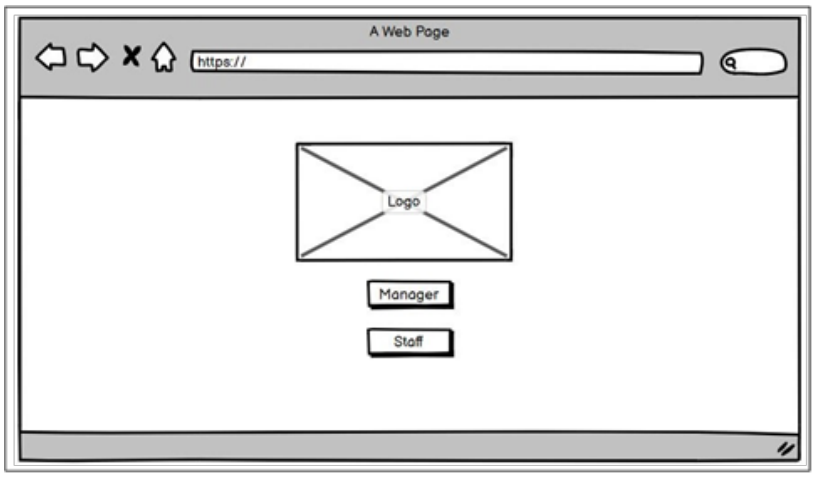

Figure 5: Login selection interface

Figure 6: Manager log in interface

Figure 6 is the login interface for the manager if the user chooses the manager role. Both users will have a slight design of interface which is the name of the label either manager or staff. The users will need to enter the username and password for the authentication and authorization of the user. The input from the login page will be compared in the database to see if the user exists based on the role chosen.

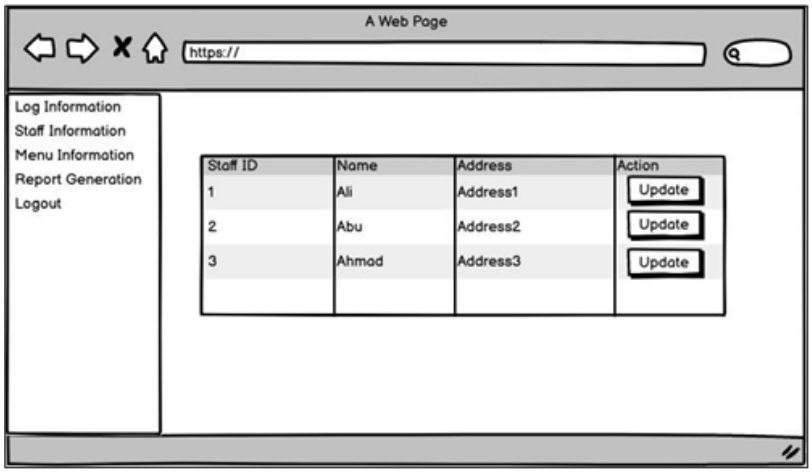

Figure 7: Staff management interface for manager

Next, Figure 7 is the figure used by the admin which shows the staff management interface. At the left section, will be the list of pages that the manager can go to by clicking the text. At the right section will be the interface section used by the manager to see the staff information. The menu management shares the same interface as the staff management. The difference in the interfaces for the system is the data that will be shown in the table interface.

3.2.7 Database Design

For the database design of the system, entity relationship diagram is used in this design. In entity relationship diagram (ERD), it is designed by using the relationship between each table in the database. The ERD in this project is shown in Figure 8.

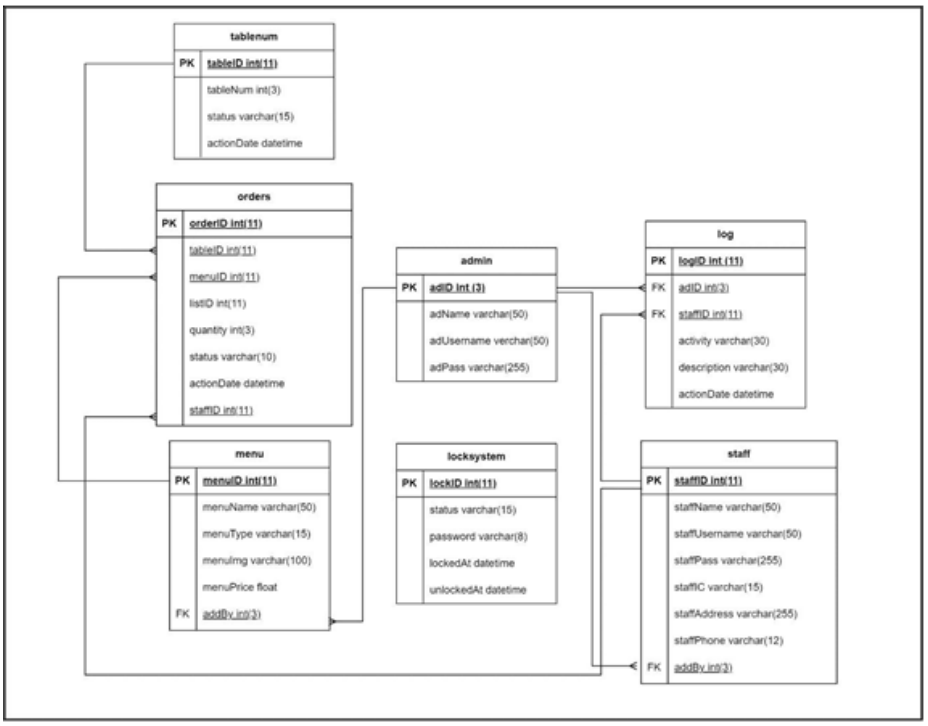

Figure 8: ERD for the proposed system

3.3 Develop Phase

This phase will be carried out by implementing the design from the analysis and design phase. In this phase D'Hartamas restaurant system will be developed based on the guideline created in the data flow diagram. The database is also created in this phase based on the entity relationship diagram that has been designed during design phase. In developing the system programming languages such as php, html, CSS and JavaScript are being used as the front-end and back-end of the system. The system that is being developed will be developed based on the requirement of its functionality. One of the functions in the system is login and insert data will be implemented by creating a form that can be used by the users. Databases are also created that can connect one table in the database to another table. The developing phase is a phase where the start of the system is made.

3.4 Testing Phase

In the testing phase, the system that has been developed will test its function. Each module will be tested based on its function such as a button that will go to another page, any animation in the module, the system interface work based on the design intended and any function in the form such as option button can be functional. Each module that is tested will be checked for its functionality and each function that is not functional will be fixed and tested again. The database connection with the system will also be tested. Each module that has connection with the database will be tested based on can the data be inserted into the database; can the data be deleted and can it be updated. Each testing for the system functionality and the database functionality will be repeated until the system can be fully operational.

3.5 Deploy Phase

Deploying phase occurs after the system has been finished. In the deploying phase, the completed product that has been tested will be deployed to the D'Hartamas restaurant owner to proceed to the next phase.

3.6 Review Phase

The final product that has been deployed to the D'Hartamas restaurant owner will be reviewed by its owner. The reviews will be conducted based on the security test plan and system functionality test plan. Inside both plans there will be included the test scenario, test case, expected result and the declaration of either the expected result pass or fail.

After the reviewing process has finished, the final confirmation will be based on the D'Hartamas restaurant owner. An additional function can be requested or a change in function can also be requested after the reviews. If any changes or additions happen in the system requirement, this will lead it to the designing phase and the phase will be continued until it meets the D'Hartamas owner satisfaction. After the system has met the full criteria, then it can proceed to the launch phase.

3.7 Launching Phase

The final phase is the launching phase. The launch phase is conducted when the customer, which is D'Hartamas restaurant owner, is satisfied with the final product. The final product then can be used by the D'Hartamas restaurant owner for the food ordering process.

4. Results and Discussion

The results for the module implementation are based on the security test plan checklist and system functionality test plan checklist.

4.1 Module Implementation

For this project, there are six modules involved which are login, staff management, menu management, order, report and log. Based on the security test plan and system functionality test plan, it can determine whether the modules are completed or not.

4.1.1 Role Selection Module

For this module, the user needs to select the role based on their own role. To select the role manager will need to click the "Admin" button while the staff will need to click the "Staff" button. Figure 9 shows the interface for this module.

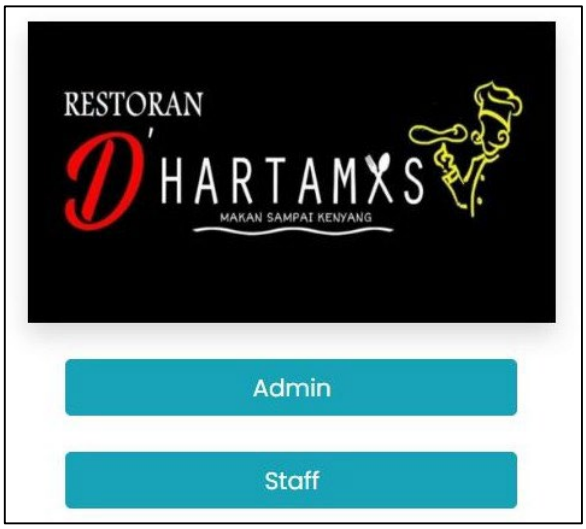

Figure 9: Role selection interface

```
<div>
  <img alt="Qries" src="assets/images/dhartamas.jpg" width="350" height="200" class="shadow">
</div>
<br>
<div div class="col-lg-4" style=" margin-left: auto;margin-right: auto;">
    <div>
      <button onclick="location.href = 'app/Controllers/welcome.php?sel_admin';" class="btn btn-md btn-info" style="
        width:300px;">Admin</button>
    </div>
    <br>
    <div>
      <button onclick="location.href = 'app/Controllers/welcome.php?sel_staff';" class="btn btn-md btn-info" style="
        width:300px;">Staff</button>
    </div>

</div>
```

Figure 10: HTML code to select the roles

Figure 10 shows the snippet of codes that create the interface for the role selection module. Using the onclick and location.href function inside the button tag, it will help to redirect the user to the log in function for each role.

4.1.2 Login Module

In this module, logins are made when the user enters the username and password in the login page. Figure 11 is the interface when the manager wants to log into the system.

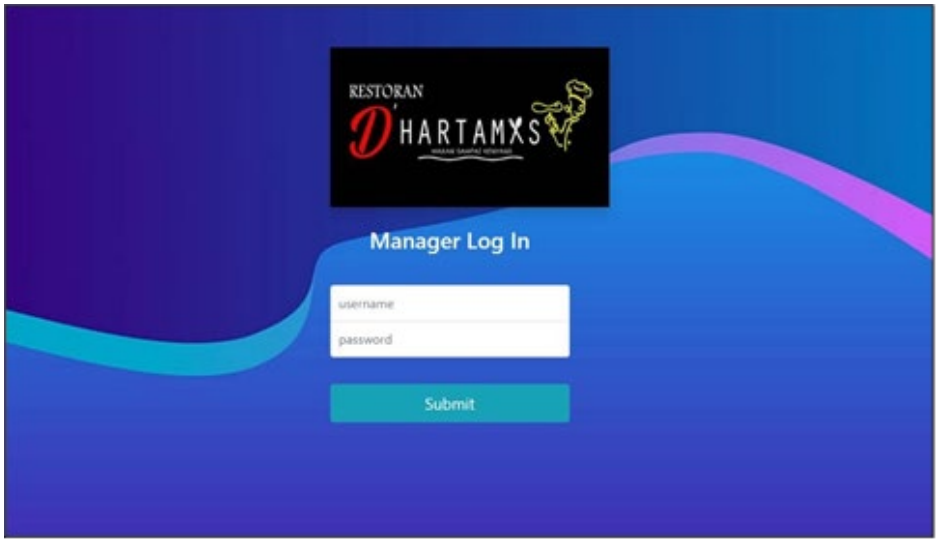

Figure 11: Login interface

Figure 12 shows the SQL that is used to compare the username entered by the user with the table based on the role selected. The function of mysqli_query() in this module will select any username that is on the database table that is catered based on role. If the username exists, the condition for mysqli_nums_row() will be true, else return value will be false and go to the else function. If the return value is true, the user input which is password will be compared with the password for user username. Function password_verify() will compare the password from database and user input password. Using password_verify(). It can help in comparing the password even if it has been hashed using md5. If the condition is true then, the user will be redirected to their respective main page based on their role.

```php
$sql = "SELECT * FROM admin WHERE adUsername = '$user'";
$result = mysqli_query($conn, $sql);

if (mysqli_num_rows($result) > 0) {

    while($row = mysqli_fetch_assoc($result)){

        if(password_verify($pass, $row['adPass'])){
            $_SESSION['login'] = "logAdmin";
            $_SESSION['adminID'] = $row['adID'];

            $adminID = $_SESSION['adminID'];
            $date = date("Y-m-d h:i:s");
            $desc = "login";

            $sql2 = "INSERT INTO log (adID, activity, actionDate) VALUES ('$adminID', '$desc', '$date');";
            $result2 = mysqli_query($conn, $sql2);

            $_SESSION['attempts'] = 0;

            header("Location: ../../page/manager/log.php");
        }else{
            $date = date("Y-m-d h:i:s");
            $act = "login attempt";
            $desc = "on admin";

            $sql4 = "INSERT INTO log (activity, description, actionDate) VALUES ('$act', '$desc', '$date');";
            $result4 = mysqli_query($conn, $sql4);

            $_SESSION['attempts'] = $_SESSION['attempts'] + 1;
            header("Location: ../../index.php?pesan=gagal");
        }
```

Figure 12: SQL and function during login

4.1.3 Menu Ordering

Figure 13 shows HTML is being used to divide each food category into their own section. Each section will contain their own SQL to get the data from the database based on the food category. Using row class also helps in dividing each section with others section.

```php
<h3>Roti Canai</h3>
<div class="row">
   <?php
      $sql2 = "SELECT * FROM menu WHERE menuType = 'Roti Canai'";
      $result2 = mysqli_query($conn, $sql2);

      while($row2 = mysqli_fetch_assoc($result2)){
   ?>
   <div class="col-sm-2">
      <div class="well">
         <a href="orderQuantity.php?form=<?php echo $row2['menuID']; ?>">

         <center><img src="../../assets/images/<?php echo $row2['menuImg']; ?>" style="width: 80 px; height: 80px;
         "></center>
         <h4><?php echo $row2['menuName']; ?></h4><br>
         <h5>RM <?php echo $row2['menuPrice']; ?></h5>

         </a>
      </div>
   </div>
   <?php
      }
   ?>
</div><br>
```

Figure 13: SQL and HTML to show the menu

Figure 14 shows the user interface for the staff when the staff want to create an order for the customer. The staff can choose the menu by clicking either the text of the menu or the picture of the menu itself. By clicking it, the staff will be asked to insert the quantity of the order and then the order will be saved in the system.

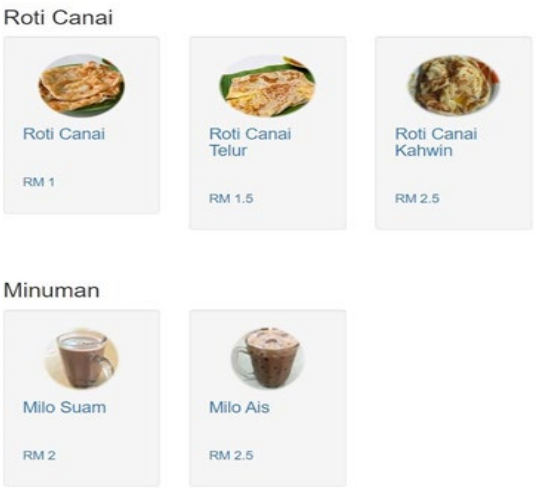

Figure 14: Interface for the ordering system

4.1.4 Security Log Information

Each activity of the user will be recorded inside the database. As shown in Figure 15, after each activity made by the user, data will be inserted into the log table. The data that will be inserted are the user ID, activity that is being done and the date and time of the activity are being done.

```
$adminID = $_SESSION['adminID'];
$date = date("Y-m-d h:i:s");
$menuID = $_SESSION['menuID'];
$act = "add menu";

$sql3 = "INSERT INTO log (adID, activity, description, actionDate) VALUES ('$adminID', '$act', '$menuID', '$date');";
$result3 = mysqli_query($conn, $sql3);
```

Figure 15: Log information SQL

Figure 16: Log information interface

Figure 16 is the interface when the manager has successfully logged into the system. The log entries will be sorted of 10 entries per page. This can be sorted to 25 to 100 per page. On the login page, it will show all the activities that were recorded by the system. Manager can monitor the activity of the user that uses the system through this log information. Specific search for activity, dates or user can be searched using the search function at the upper right corner of the system.

4.1.5 Report Generation

Figure 17 is the interface when the user clicks the "Daily" button and selects the date. For the daily function, the manager will be shown options and need to choose the date that the manager wants to view the report. The date selected will trigger the php function shown in Figure 18. In Figure 18, several SQL will be executed to get the condition needed based on daily report criteria.

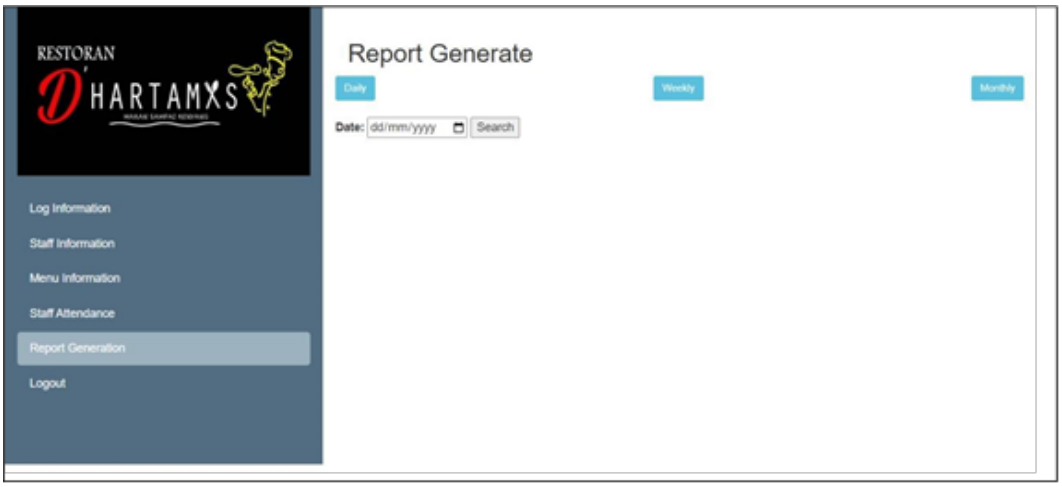

Figure 17: Interface for daily generation report

```
$day = $_POST['dayDate'];
$time = " 00:00:00";
$day = $day.$time;
$day2 = date('Y-m-d', strtotime($day. ' + 1 days'));
$day2 = $day2.$time;
$stat1 = "completed";
$stat2 = "canceled";

$sql = "SELECT COUNT(DISTINCT listID), COUNT(listID) FROM orders WHERE actionDate > '$day' AND
    actionDate < '$day2'";
$result = mysqli_query($conn, $sql);

$sql2 = "SELECT COUNT(listID) FROM orders WHERE actionDate > '$day' AND actionDate < '$day2' AND
    status = '$stat1'";
$result2 = mysqli_query($conn, $sql2);

$sql3 = "SELECT COUNT(listID) FROM orders WHERE actionDate > '$day' AND actionDate < '$day2' AND
    status = '$stat2'";
$result3 = mysqli_query($conn, $sql3);

$sql4 = "SELECT * FROM orders JOIN menu ON menu.menuID = orders.menuID WHERE actionDate > '$day'
    AND actionDate < '$day2'";
$result4 = mysqli_query($conn, $sql4);
```

Figure 18: SQL for daily generation report

4.2 Testing Result

Once the development of the system has been completed, the system is presented to the D'Hartamas manager. After the presentation, the testing plan is being carried out to get the overall results from the manager. The results are presented in the form of a security test plan and system functionality test plan. Table 2 and Table 3 are the security test plan result and system functionality test plan results.

Table 2: Security test plan result

Test Case ID	Test Scenario	Test Case	Expected Result	Pass/ Fail
Case_001	Login with valid credentials	Verify the login functionality of the system using valid credentials	The user should have access to the system	Pass
Case_002	Login with invalid credentials	Verify the login functionality of the system using invalid credentials	The system should detect the invalid credential	Pass
Case_003	Fail attempts for 5 in a row	Verify if any brute force attack happens to the system	The system will block the page from anyone can use the system	Pass
Case_004	System will be locked	Verify that system will be unlocked by manager	The system will send code to manager by email for unlocking the system	Pass
Case_005	Login by inserting URL	Verify the user that enter the system has log into the system	The system will show error at the main interface and ask user to log in first before using the system	Pass
Case_006	Idle for more than 5 minutes when using the system	Verify the user are still active during the system run	After 5 minutes of idle, the next action taken by user will automatically log out the user from the system	Pass
Case_007	Users use the system function	Verify the activity of the user	The system will store the user activity in log table which will be shown to the admin	Pass

Table 3: System functionality test plan result

Test Case ID	Test Scenario	Test Case	Expected Result	Pass/ Fail
Admin Role				
Case_008	add staff into the system	Verify if the database contains the data that has been insert	Admin can view the staff information on the staff list	Pass
Case_009	edit staff data	Verify if the selected staff data has been edited	Data in the database altered based on the admin action	Pass
Case_010	delete staff data	Verify if the selected staff data has been deleted	Staff data in the database has been deleted	Pass
Case_011	add menu into the system	Verify if the database contains the data that has been insert	Admin can view the menu information on the staff list	Pass
Case_012	edit menu data	Verify if the selected menu data has been edited	Data in the database altered based on the admin action	Pass
Case_013	delete menu data	Verify if the selected menu data has been deleted	Menu data in the database has been deleted	Pass
Case_014	view daily report	Verify if the report generate are based on daily	Report will show the data for the day at admin interface	Pass
Case_015	view weekly report	Verify if the report generate are based on weekly	Report will show the data for the week at admin interface	Pass
Case_016	view monthly report	Verify if the report generate are based on monthly	Report will show the data for the month at admin interface	Pass
Case_017	view the security log	Verify if the activity of user is being recorded	The log security will be shown in the admin interface for the admin monitor	Pass
Staff Role				
Case_018	view menu	Verify if all the menu data are being selected	An interface will show all the menu for the system	Pass
Case_019	make order	Verify if the database contains the data that has been insert	Staff create an order based on customer demand	Pass

Table 3: (cont.)

Test Case ID	Test Scenario	Test Case	Expected Result	Pass/ Fail
Case_020	view order	Verify if the order data from database are being selected	Staff can see the order that has been created	Pass
Case_021	edit order	Verify if the selected order data from database are edited	Order data from the order list can be edited by staff	Pass
Case_022	delete order	Verify if the selected order data from database are deleted	Order data in the database has been deleted	Pass

Table 4 is the user acceptance test result for the proposed system. The questions asked are based on the module and other functionality for the user. This result will determine how functional the system is for the manager and staff. The tests are run by the manager and the staff of the D'Hartamas restaurant staff.

Table 4: User acceptance test result

No	Test Case	Scale					Total
		1	2	3	4	5	
1	Login module				2	3	5
2	Staff Management				3	2	5
3	Menu Management				4	1	5
4	Order Function				3	2	5
5	Report Function				3	2	5
6	Log Information				3	2	5
7	System Security				1	4	5
8	System Design				3	2	5

Based on the results of Table 6, the acceptance for each module varies from one to another. For login module, most of them are very satisfied while one of the users is satisfied enough with the login module. For the staff management function, two of them are very satisfied while others are satisfied enough with the module. The reason is that the staff management need to add more staff details to the module. The menu management majority satisfied with the module. The complaints received are that the interface of the system needs to be more interactive and tidier to make it more satisfactory. The order and report function also have the same result as the same comment about the interface are given to both functions. The log information consists of 3 of them who are satisfied enough while the other 2 are very satisfied with the module. The reason given is the log information can be more detailed for the manager to monitor. The system security has the result of majority of the users tested very satisfied with the security while one is satisfied enough with the security implemented. For the system design, many improvements can be made as most of the users are only satisfied enough with the design of the system.

5. Conclusion

The project has completed all its objectives that are stated at the planning phase of this project. With the system, it saves time in making orders in terms of taking orders and price calculations. The sales report can also be easily generated in a short period of time. Also with the system, managers can add new staff or menu easily and the activity on the workflow of the restaurant can be monitored easily by manager.

Even though the system has already been finished developed, there are still weaknesses on the system such as the lock page code needs to use internet to send the code. A low connection of internet can slow down the system. Also, a more interactive interface can make it easier for the manager and staff to use the system.

There are also recommendations for this project for its future development. One of the recommendations is the system can interact with customers directly without the need for staff. Also, an order for take-away can be created and a payment method can be implemented in the system.

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