

Preetis Farsan Food Ordering System

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Abstract: This paper describes the development of a food ordering system for Preetis Farsan Enterprise. This system is tailored to the enterprise's specific requirements for smooth and efficient operations. Preetis Farsan Enterprise may also provide sales and profit-making reports on a weekly and monthly basis. This system is being developed using a waterfall-based methodology. The PHP programming language was used to create the system. After the project is completed, the administrator and customer burdens will be decreased as a result of this project. The solution will have a dashboard with its own independent sections that will make it easier for both parties to order meals and review other data. There will be an additional degree of security against, fraud, and theft because the new system will contain a register and login module. Furthermore, any human error will be removed with a simple click of a button

Keywords: Food Ordering System, Waterfall model

1. Introduction

Restaurants, cafeterias, cafés, fast-food outlets, pubs, catering businesses, and other enterprises make up the food and beverage sector. Preparing, packing, transporting, and serving food or beverages are all jobs in this business. The food and beverage business are vital because it allows people to eat on time at any location. For instance, Figure 1 shows the Tea Kadai in Penang, which serves beverages together with traditional Indian delicacies. They prepare meals and drinks, serve them at their café, or deliver them within a 10-kilometer radius via Foodpanda. The way people purchase food and beverages is drastically altering throughout the world. Food and beverages industry quality meal delivery was still primarily restricted to meals such as franchise firms little under two decades ago. Food delivery has evolved into a worldwide industry. During the COVID-19 pandemic, the market has more than doubled. Social Media has changed the way we do business online [2]. Because of the development of Facebook, Twitter, Instagram, WhatsApp, and a slew of other social networking sites, the nature of online business is fast changing. As a result, creating a business's online presence is getting easier and cheaper.

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Figure 1: TEA KADAI CAFE

The case study has been conducted at Preetis Farsan Enterprise in this project. The company have been in this business for a year, to get people the taste of the Authentic Vegetarian North culinary delights on the island of Penang by selling Gujarati's, Marathi's and Punjabi's snacks and sweets. They are well known for selling unique types of pani puris in Penang such as durian puri, chocolate puri and more. They also provide delivery services for those who want it.

This is a full-time business for Vishaal and his mother Preeti. They take orders via WhatsApp, Instagram, and Facebook, where they also communicate with followers and customers and provide product updates. They prepare and deliver it by themselves, or customers may pick up their orders. Preeti's Farsan Penang used the traditional method of order tracking. They use a Microsoft Excel Spreadsheet file to keep track of their orders and other information.

Human error is a possibility while receiving orders, which is the source of worry here. There are numerous ways for mistakes to arise when orders are manually logged. If they are overwhelmed with orders, it is conceivable that they will miss the orders. There are several possibilities that data will be lost as a result of manually taking orders and entering data into excel. This might have a negative impact on the business.

As a result, a food ordering system is proposed to address the issues that occur while also providing an option to increase the efficiency of the current ordering procedure. All orders, customer information, total amount, and the number of orders will be grouped in the system. In addition, the system will feature two distinct login and registration modules for administrators and customers. This allows the administrator to enter new food and receive orders. Following that, the system will have a better user interface that will allow orders to be logged with only a few clicks.

The remaining of this paper proceeds as follows. Section 2 presents the related works. Section 3 explains the research methodology; Section 4 presents and discusses the results of system analysis and finally Section 5 concludes the study.

2. Related Work

The rapid rise of networks and technology in recent decades has had a profound influence on how people connect with one another remotely. It's no surprise that customers will be able to obtain information at a rapid rate and at their fingertips, since technology has always had a significant influence on marketing [3]. At the same time, technology is forcing certain businesses to change their entire management structure. Most shoppers are adopting new technology in their purchasing, and many of them, being liberal thinkers, seek fast and efficient shopping while also taking into account other factors [4].

Malaysian cuisine is the outcome of a colorful fusion of numerous civilizations, resulting in a diverse range of cuisines. Full-service restaurants, fast-food cafés/bars, street stalls/kiosks, and self-service cafeterias are all examples of F&B venues. Malay, Chinese, and Indian cuisines are the most popular, although there are also cross-cultural adaptations and blended cultures such as Mamak (Indian-Muslim cuisine) and Nyonya cuisine (the Malay Chinese mix). Malaysia's food and beverage business are likewise quite diversified, including selections from the United States, Italy, Japan, Korea, the Middle East, and Thailand. The food and beverage industry also are one of the many in the market that incorporates these technologies into their business processes to make them more convenient and efficient.

Food from a restaurant can be ordered from the comfort and convenience of one's own home. Catering companies and customers have embraced food delivery apps (FDAs) as a growing online-offline-to-mobile technology [5]. Food delivery services are based on the concept that you phone or order food from a restaurant or a fast-food restaurant, and the restaurant will make your order and send a driver or a rider to your specified address to deliver your food.

2.1 Technology Used: Web-Based System

The commercial usage of the Internet and the Web has exploded in recent years. As Web applications have progressed, so have the expectations placed on Web-based systems, as well as the complexity of planning, building, maintaining, and administering these systems. As the popularity of the Internet and the Web has risen, so has the quantity, kind, and quality of software required to run websites. Although the Web's purpose and structure have evolved dramatically, most software engineering academics, educators, and practitioners are still unaware of how these changes impact engineering concepts and methods.

Web-based systems have grown in popularity in recent years because of their numerous benefits. As a result, the web-based system is crucial in this case study. A web-based system is notable for giving users access to real-time data. For example, the current method in recording orders is done manually using spreadsheet, thus web-based system that offers online reports and digital dashboards can replace spreadsheet reports, which might take days to compile. This has the potential to increase the quality and speed of decision-making.

2.2 Comparison with the Existing Systems

Thorough observation was performed on comparable systems, and several differences and similarities were discovered. Table 1 clearly compares similar systems and systems that will be built.

Table 1: Comparison analysis among similar systems

System	Hardee's UAE-Order fast food online for Delivery!	Grubhub: Local Food Delivery & Restaurant Takeout	Quicksent	Preetis Farsan Food Ordering Systems
Features				
Login and Registration Module	Yes	Yes	Yes	Yes

Menu Module	Yes	Yes	Yes	Yes
Report generator	No	No	No	Yes
Internet Requirement	Yes	Yes	Yes	Yes
Platform	Web-based & Android application	Android application	Web-based & Android application	Web-based

According to Table 1, all of the software has different characteristics, but the majority of them share the same feature, which is the login and registration module. The menu can be displayed by the entire system. Meanwhile, Preetis Farsan Food Ordering System is the only system that can create reports, whilst the others cannot. Furthermore, in order for the system to function, it must be connected to the internet. Finally, Grubhub Local Food Delivery & Restaurant Takeout is a mobile app, whereas Preetis Farsan Food Ordering System is a web-based system. Hardee's UAE-Order fast food online for delivery and Quicksent is available on the web as well as through an Android app.

3. Methodology

Winston W. Royce developed the Waterfall method in 1970 [6]. It is really easy to comprehend and utilise. The Waterfall Model is the most seasoned and the most notable SDLC model [7]. Each phase must be finished before the next can begin in a Waterfall model, and the stages must not overlap. The waterfall model is the most basic SDLC technique for software development. It follows a single-direction, sequential procedure that flows like a waterfall [8] through the phases of planning, analysis, design, implementation, testing, and maintenance. Figure 2 shows the waterfall model.

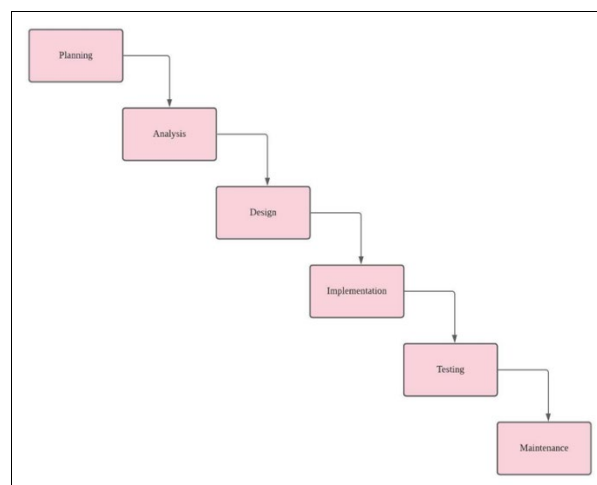


Figure 2: Waterfall model

3.1 Planning Phase

In this initial stage, the owner of Preetis Farsan Enterprise was interviewed over WhatsApp to describe the module, functionalities, and other requirements that are required in the system, as well as the

challenges that are produced by the current technique. This is done to guarantee that a high-quality system is developed. While the technique for gathering this information is through a questionnaire sent over WhatsApp. This is the most critical step since any misunderstanding or ambiguity may elevate the product being manufactured. The project timetable is also covered.

3.2 Analysis Phase

The project's analysis phase is when the system requirements that were examined for this project's successful completion are broken down. The highlights of this stage will be choosing the PHP language for development and choosing the eight modules—My Restaurant, Add Food Items, Edit Food Items, Delete Food Items, View Food Items, Payment, View, Order Details, and Report—that will be necessary to create the system. The development of the system will be eased by this analysis phase.

3.3 Design Phase

During this phase, the system's design was created. Database structure and data dictionaries also was created. Throughout the design phase, the system's user interface was swiftly drawn. Furthermore, the system's database also designed.

3.4 Implementation Phase

In this phase, the development of a system will begin. The system's code will be written in the PHP programming language. The database will be set up and connected to the system's user interface. The prototype for the system will be created based on the information acquired throughout the planning and system design phases. The modules are designed for various users, including administrator and customers. The sub activity entails creating a prototype system based on the preceding phases.

3.5 Testing Phase

A continuous software check is performed in the testing environment to verify whether there are any mistakes or problems in the design or code. Testing is carried out with the administrator and with several customers to verify that the software stays stable and functional throughout its development, ensuring that the client is not inconvenienced by any issues or flaws. As a consequence, the complete system is thoroughly tested for any defects or malfunctions after installation.

3.6 Maintenance Phase

In this final phase, if there are any future issues in the client environment maintenance phase will take place. To remedy these flaws, updates have been released. Newer versions of the product have been published in order to enhance it. Maintenance is performed in order to effect these changes in the customer's environment.

4. Results and Discussion

This section presents data and analysis of the study. This includes the Use Case Diagram, System Architecture, Flowcharts, and Class Diagrams.

Use Case Diagram

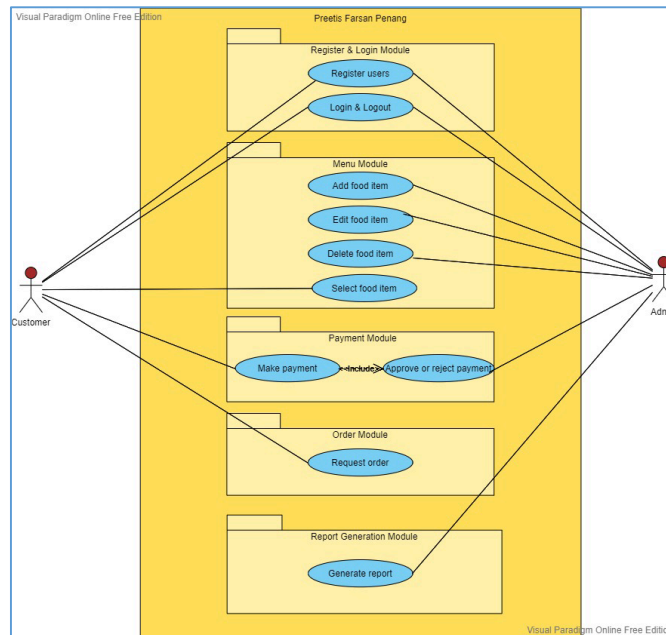


Figure 3: Use Case Diagram of the system

Figure 3 depicts the relationship between the users of the system, customer and administrator and system modules. The administrator has access to all system modules; however, the customer only has access to select module operations and cannot access to the Report Generating Module.

System architecture

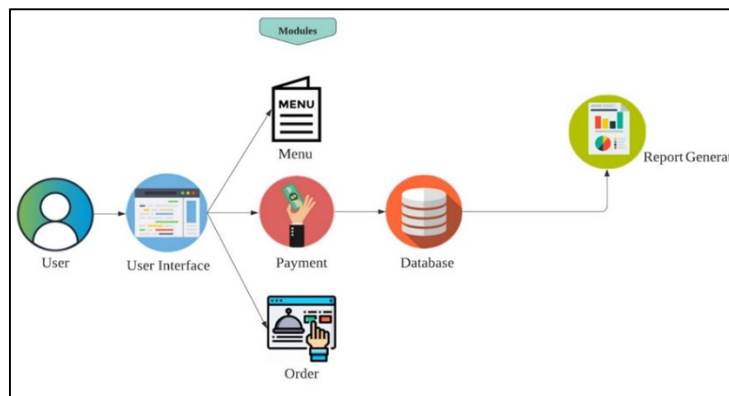


Figure 4: System architecture

Flowchart

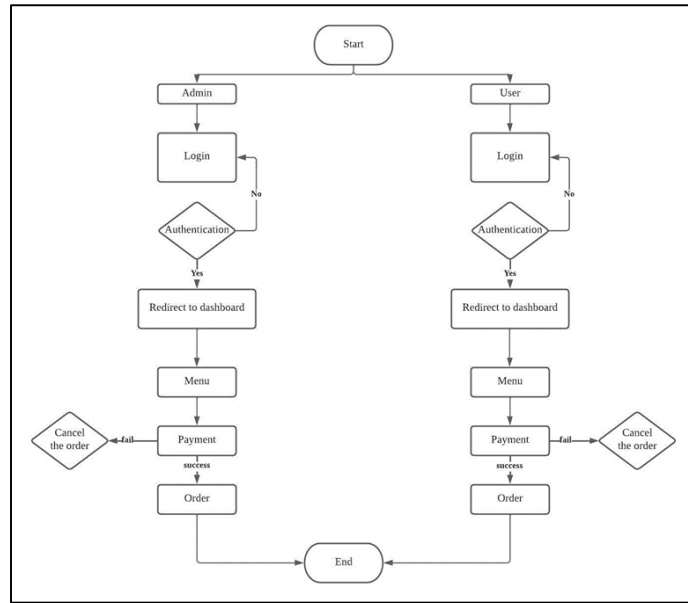


Figure 5: Flowchart of the system

Based on Figure 5, Once a user has a valid login account, they can proceed to login into the system; if authentication is successful, the user will be redirected to the dashboard; if authentication is unsuccessful, the user will receive an error message and must repeat the process. The user will then choose a menu where they can select the meal they want and whether they want it delivered or picked up. Then proceed to the checkout page to make a payment. To confirm the order, the buyer must pay half or full payment. After payment is made, the user must provide the payment receipt as evidence. The payment will then be verified by the administrator. If the payment is successful, the order will be approved; if it is not, the order will be canceled. After approving the order, the meal will be beginning to pack. For admins, once they have a valid login account, they may enter into the system, and if authentication is successful, they will be led to the dashboard; otherwise, they will receive an error notice and must repeat the procedure. The admin may then add new food items, change existing ones, and delete existing items in the menu module. Admins can either accept or reject orders in the order module. The dish will be packed if approval is granted. If the admin rejects the order, the user will receive an order cancellation message.

Class Diagram

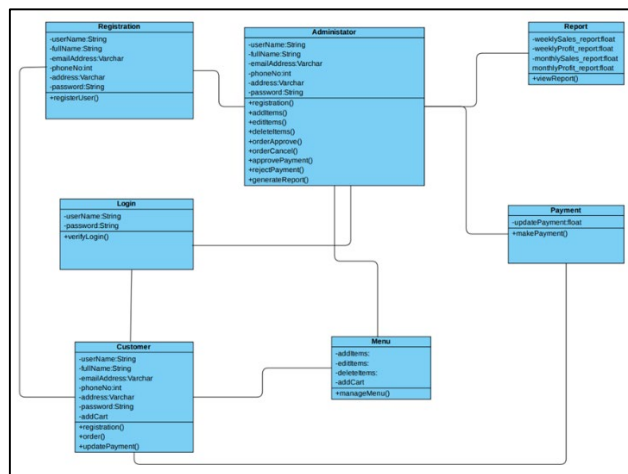


Figure 6: Class Diagram of the system

Figure 6 depicts the system's class diagram, which exhibits a total of seven classes, each with their own set of attributes and operations.

5. Implementation and Testing

5.1 Test Cases

Table 2: List of test cases

No.	Test Cases	Description
TEST_100		
1.	TEST_100_001	Login to the system by entering correct username and password.
2.	TEST_100_002	Login to the system with wrong username.
3.	TEST_100_003	Login to the system with wrong password.
TEST_200		
1.	TEST_200_001	After login successfully system redirect to menu page for customer.
2.	TEST_200_002	After login successfully system redirect to my restaurant page for admin.
TEST_300		
1.	TEST_300_001	Admin can add food items
2.	TEST_300_002	Admin edit add food items
3.	TEST_300_003	Admin can delete food items
4.	TEST_300_004	Admin can view food items
5.	TEST_300_005	Admin can view order details
6.	TEST_300_006	Customer can view food item
7.	TEST_300_007	Customer can add food to the cart
TEST_400		
1.	TEST_400_001	After add food to the cart customer can view the list of food.
2.	TEST_400_002	After add food to the cart customer can remove the food items from the cart.
3.	TEST_400_003	After add food to the cart customer can empty the cart.
4.	TEST_400_004	After add food to the cart customer can back to menu page.
TEST_500		

1.	TEST_500_001	After check out customer can go back to cart
2.	TEST_500_002	Customer can pay online or cash on delivery

Table 2 shows the testing that was performed on the designed system.

5.2 User Acceptance Testing for Admin

The prototype is improved and developed into a complete system, with admin comments analyzed and made available for usage. In this segment, user acceptability testing is performed with a project administrator to test the system for admin modules. The system is utilized by admin, the owner of Preetis Farsan Enterprise, and feedback is gathered using the provided Google Form. The input of administrators is evaluated based on their experience with the system. Based on their input, the administrators appear to like the system. The statistics below illustrate the outcome of the admin input.

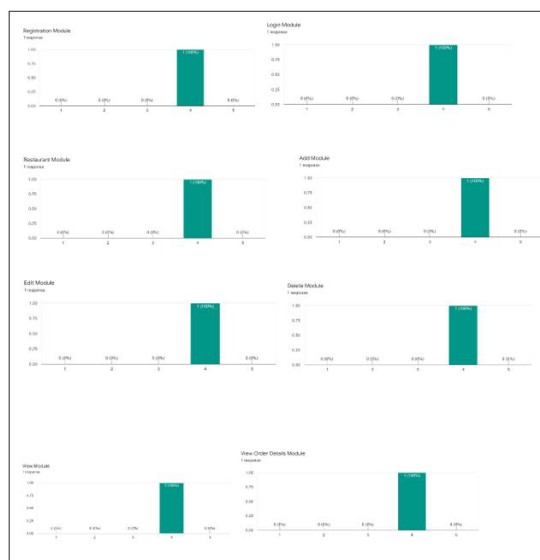


Figure 7: Results of the functional requirements

Based on administrator option, Figure 7 depicted the outcomes of the functional requirement on acceptability testing. The findings indicate that the administrator was satisfied.

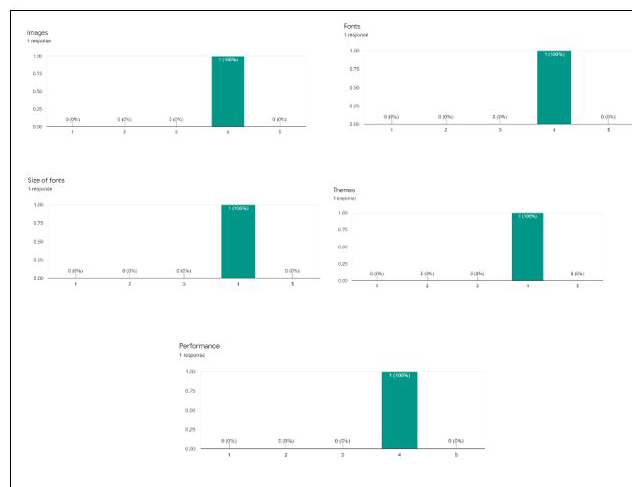


Figure 8: Results of the non-functional requirements

Figure 8 depicted the results of the non-functional requirement on acceptability testing based on administrator option. The findings show that the administrator was satisfied.



Figure 9: Feedbacks from admin for the system

Figure 9 depicted the suggestions on upgrading the system in relation to the present system.

5.3 User Acceptance Testing for Customer

The prototype is updated and developed as a complete system, with all customer feedback analyzed and made available for usage. This segment conducts user acceptability testing with eight persons involved in this project to test the system. The system is utilized by Preetis Farsan Enterprise customers, and feedback is collected using the Google Form provided. The system's experience is used to analyze end-user feedback. According to their comments, the majority of end-users appear to like the system. The data below show the results of the customer input.

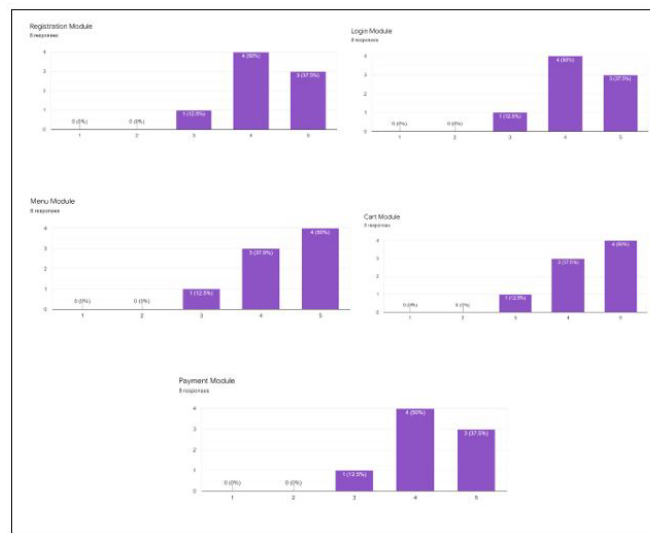


Figure 10: Results of the functional requirements

Figure 10 depicted the results of the functional requirement on acceptability testing based on the customer' opinions.

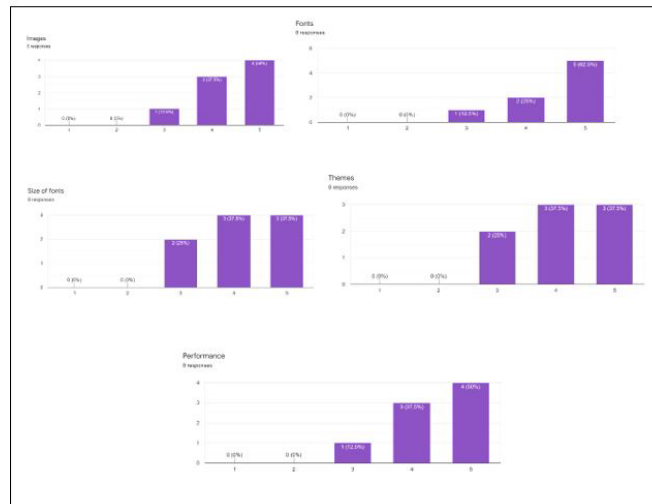


Figure 11: Results of the non-functional requirements

Figure 11 depicted the results of the non-functional requirement on acceptability testing based on the customer' opinions.



Figure 12: Feedbacks from user for the system

Figure 12 depicted customer feedback on the designed system that customers tested.

6. Conclusion

As a consequence of this project, the Food Ordering System was created to overcome the issues that now plague the manual technique in use. The difficulties that this manual approach presents will be aided in eliminating and, in some circumstances, reduced by this system. Additionally, this system is created with the specific needs of the company in mind, allowing for efficient and seamless functioning. No orders will be missed once the system is in place. The user doesn't require any special training to utilize this system. This alone demonstrates that it is user-friendly. The above-described food ordering system can result in an error-free, secure, dependable, and quick system. It can let the user focus on their other tasks rather than on paying attention to what they are being told to do. Furthermore, the objectives of designing a food ordering system using a waterfall methodology, developing a web-based food ordering system, and testing the produced system were also met (2). In the future, the system may include a mobile app to make things easier for customers. Furthermore, the system can give notification capabilities to inform the customer of the meal preparation information. The system can also contain

Google Maps so that the person in charge can simply recognise the whereabouts of customers. This suggestion may help to improve the system.

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