

Palestine Technical University (PTU)

Software Engineering Requirements Document
Deniz Restaurant



By:

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Project submitted in Software Engineering Course Requirement for the Bachelor Degree

Tulkarm, Palestine2024

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CHAPTER 1:

Introduction:

Overview of the problem is described in this chapter, with highlighting the importance of the problem. In the next sub section, the motivation is outlined. Then the objectives of the project, list of deliverables and scope of the project are explained in the next sub sections respectively. Finally, the chapter outline is summarized.

1.1 Project Overview & Background:

"Deniz" is a restaurant located in a hotel close to the sea. They handle the food ordering process and daily routine of their restaurant manually. Customers cannot order food online at this hotel. For take-away food or dining in, customers need to visit or call to place their orders. Table reservations follow the same process. This project aims to automate the mentioned processes. In the past, all delivery orders were placed over phone calls, but this system poses several disadvantages. These include the inconvenience of customers needing a physical menu copy, the lack of visual order confirmation, and the need for an employee to handle phone orders.

Hotel businesses today encounter the challenge of attracting new customers while retaining existing ones. Acquiring new customers is more expensive than retaining current ones, leading to the argument that existing customers hold more value. Customer experience plays a significant role in whether a customer will return to a restaurant in the future. Excellent customer service and tasty food increase the likelihood of a return visit. However, long wait times or order mistakes can deter customers from coming back. Therefore, the necessity for an intelligent and innovative system to enhance communication between restaurants and customers is increasingly vital...

1.2 Problem:

In today's food service industry, many establishments struggle with outdated manual processes, particularly concerning order placement and table reservations. The absence of online ordering systems forces customers to physically visit restaurants, leading to inefficiencies and frustratingly long wait times. This issue is further compounded by the lack of visual confirmation and customization options for orders, making it challenging for both customers and staff to ensure accuracy and satisfaction. Moreover, manual processes hinder staff from managing orders efficiently and the kitchen from prioritizing tasks effectively, resulting in delays and confusion. Inadequate record-keeping also complicates the task of summarizing daily orders, making it difficult for restaurants to analyze trends and optimize inventory. To address these challenges, the implementation of an online ordering system with interactive menus, customizable features, and real-time tracking capabilities is crucial. Such a system not only streamlines operations but also enhances customer satisfaction by providing a seamless and convenient ordering experience. Furthermore, the absence of online table reservation capabilities exacerbates challenges during peak hours, leading to long queues and frustrated patrons. Handwritten orders and verbal communication between the restaurant and kitchen often result in errors and delays, further impacting efficiency. Additionally, the lack of proper stock management and limited statistical output impede the restaurant's ability to optimize inventory and track popular items effectively, potentially leading to waste and missed opportunities. By embracing technology and digitizing processes, restaurants can modernize operations, enhance customer experiences, and stay competitive in today's dynamic market. Implementing an online system not only addresses operational inefficiencies but also provides avenues for better customer engagement and feedback collection, ultimately contributing to the success and sustainability of the business.

Project Domain:

The inception of this project is rooted in the observation of customer challenges during peak times. The fast-food ordering experience often falls short of expectations due to: Time Constraints: Customers frequently have limited time and are preoccupied with various aspects of their lives. The current system requires customers to: Waiting in long queues to place orders. Having their orders manually recorded by staff. Furthermore, Remaining near the counter while awaiting order readiness. accuracy :manual operations impede workflow efficiency and compromise data accuracy during the order placement process

1.4 Project Objective:

The primary goal of this project is to enhance the profitability and efficiency of the restaurant industry while maintaining customer satisfaction. This will be achieved through the development of a web-based restaurant management system designed to automate and streamline various operational processes common to restaurants. To accomplish this overarching objective, the following specific goals must be achieved:

** Enhance customer relationship management: Implement features to visually confirm orders for customers, reducing errors and enhancing satisfaction.

Provide real-time updates on order status to both customers and staff, minimizing miscommunication and wait times.

- ** Reduce long queue Streamline restaurant operations by digitizing processes, eliminating paperwork, and increasing accuracy. Utilize the web-based solution to improve service speed, increase sales volume, and enhance overall customer satisfaction.
- ** Implement bulk processing: Simplify order retrieval for kitchen staff, allowing for simultaneous processing of multiple orders of the same type.
- ** Facilitate customer feedback: Enable customers to provide valuable feedback for continuous restaurant improvement.
- ** Improve stock control: Utilize the system to efficiently manage inventory levels of kitchen ingredients.
- **Enhance menu item management: Enable restaurants to update menu items and indicate availability in real-time.
- **Offer discounts and promotions: Provide special discounts and promotions, such as daily specials, and reward loyal customers through the system. By achieving these objectives, the project aims to increase overall operational efficiency, customer satisfaction, and loyalty across the restaurant industry

1.5 Project Scope:

Scope of the project Proposed system is valuable for both customer and the restaurant because it is simplifying the order processing process. Customers have to create an account with valid phone number or email and can log-in to the system. The web page has up-to-date and interactive menu with all the available food items. When customer made a selection, items added to their order. Customer can review order at any time and change the selection before the payment. Online payment and cash on the collecting counter is possible. Confirmation is prompt to the customer. If it is required, customers can check the table availability and make a table reservation if necessary.

1.6 Chapter Summary:

This chapter has explored the challenges associated with conventional restaurant food ordering systems. Furthermore, it has identified the key stakeholders affected by the current system and outlined the advantages they stand to gain from the proposed solution. The objectives and scope of the project have also been clearly defined and examined. The discussion will continue with an analysis of the current restaurant management system concepts.

Chapter 2:REQUIREMENTS GATHERING APPROACH

At the beginning, we were lost and confused about how food ordering and food delivery management systems work! So we went to the internet and visited some locally popular food ordering websites to state for example:

https://preview.themeforest.net/item/oyster-seafood-restaurant-cafe-elementor-template-kit/full_screen_preview/44447365

We have gathered some ideas and then started the phase of requirements discovery. The main approach which we followed in gathering user and system requirements was surfing the web. Also we have consulted our instructor, Dr. Nael Salman to give us some advice in how to discover requirements.

<u>In addition</u>, I should mention that we conducted a survey and published it on our websites, who gave us statistics on the number of people who support this project Guidance on how to collect requirements, identify their problems and develop and from them.

https://docs.google.com/forms/d/e/1FAIpQLSczemYSZ8rXqDtwL76SZA2rnjXz4sTL7bY yAAVoNIX4vz6J_A/viewform?usp=pp_url

CHAPTER 3: USER REQUIREMENTS DEFINITION

The system will be designed to be user friendly. The user friendly and interactive interfaces design helps to achieve this by enabling customers to easily browse through the menus, place orders with just a few clicks, and also allows restaurant employees to quickly go through the orders as they are placed and produce the necessary items with minimal delay and confusion. The system will be simple to use.

3.1 Functional User Requirements:

Functional requirements define the capabilities and functions that a system must be able to perform successfully. The functional requirements of this online ordering system include:

1. ADMIN:

Managing users: the admin shall have a full access on the users database:

- Add user.
- Delete user.
- Edit a user record.
- View user info.

Managing restaurants: the admin shall have a full access on the restaurants database:

- Add a restaurant.
- Delete a restaurant.
- Edit a restaurant record.
- View all restaurants info.

2. CUSTOMER:

- [No need to have an account]: The system shall enable the customer to:
 - Browse the restaurants. Each restaurant should show its name, its owner's name, and its location.
 - When the customer clicks on a specific restaurant, show the restaurant's menu which contains all available dishes and products along with their prices and ingredients.
- **O** [Need for an account]: The system shall enable the customer to:
 - Register to the system (create their own account)
 - Login to the system after creating the account.
 - Place an order.
 - Specify whether they want the order to be delivered or picked up by the customer themself
 - The system shall prompt customer to confirm the ordered meal.
 - The system shall provide visual confirmation of the order placement

3. MANAGER (Restaurant's ADMIN):

Each restaurant's manager shall be able to:

- Create the restaurant's menu.
- Create new food items and add them to the restaurant's menu.
- Edit or update the details of any food item, such as: dish name, price, ingredients,...
- Delete any food item they want.
- Generate sales reports for their restaurant (weekly, monthly, yearly reports).

4. KITCHEN STAFF (Restaurant's Chefs):

Each chef shall be able to:

- View pending orders (orders that need to be prepared)
- Update orders' status
- Verify the order to let them know that the order is ready to be taken or delivered.

5. Menu Management Function

Provides functionality for the Admin User only. It will not be available to any other users of the system like Restaurant Employees or Customers

- Add/update/delete food category to/from the menu.
- Add /update/delete food item to/from the menu.
- Update price for a given food item.
- Update additional information (description, photo, etc.) for a given food item.

6. Order Retrieval Function:

Designed to be used by Admin and cashiers This function provides the following functions:

- New order retrieval from the database
- . Display the orders in an easily readable, graphical manner
- . Cashiers can view/Edit/Remove and make orders from visiting customers

3.2 NON- Functional User Requirements:

Non-functional requirements define the quality attributes and constraints that the system must meet. Non-functional user requirements for the online ordering system may include:

1. Performance:

The system should be responsive and able to handle a large number of concurrent users without significant delays.

2. Security:

Ensure that user data is encrypted, transactions are secure, and user privacy is maintained.

3. Reliability:

The system should be available and reliable, with minimal downtime for maintenance or updates.

4. Scalability:

The system should be able to scale easily to accommodate a growing number of users and products.

5. Usability:

The interface should be intuitive and user-friendly, providing a seamless shopping experience.

6. Compatibility:

The system should be compatible with a variety of devices and web browsers to ensure accessibility for all users.

7. Compliance:

The system should adhere to relevant regulations and standards, such as data protection laws and payment card industry standards.

CHAPTER 4: SYSTEM ARCHITECTURE:

When ordering food from a fish restaurant online, the system architecture can be as follows:

- 1. User interface: Allows users to browse the menu, choose meals, and add them to the cart.
- 2. Application Server: Manages major processing operations such as updating the database, processing orders, and preparing orders for delivery .
- 3. Database: stores information about the menu, customer information, and order status.
- 4. Secure payment system: It is able to process payments in safe ways and secure customer data.
- 5. Order tracking system: Allows customers to follow the status of their orders from order confirmation until delivery.
- 6. Driver management system: It allows the restaurant to assign and track drivers responsible for delivering orders .
- 7. Mobile application: Provides an enhanced user experience on smartphones so customers can order food easily.

These are some of the components that can be included in the architecture of an online food ordering system.

CHAPTER 5: SYSTEM REQUIREMENTS SPECIFICATION:

Now I will try to describe some **functional** and **nonfunctional** requirements that were stated in chapter 3, but **in more detail**.

5.1 FUNCTIONAL SYSTEM REQUIREMENTS:

User Login:

The user login use case permits users to access the system by providing their username and password. The system validates this information against the user database to grant access, ending the process upon successful login. Preconditions include having an existing account, ensuring a secure connection to the database. Post-conditions involve successful login where user data is matched with the user account.

Restaurant's Manager:

This functional requirement enables the restaurant's manager to create and manage the restaurant's menu. After logging in, the manager can create a menu, add dishes with details, edit existing items, delete items, and generate reports. Access is restricted to the manager/owner for security. The system recommends backing up the menu after changes for the manager's use. Success is achieved when the manager creates the menu and adds food items, maintaining secure database connections.

Customer:

This feature allows customers to view, browse, and place orders from restaurant menus. Guests can view restaurant details and menus, while logged-in customers can add items to the cart, place orders, and receive email notifications. Security measures include secure database connections and email notifications for order verification. Post-order, customers are prompted to rate their experience. Success is achieved when customers receive their desired orders accurately.

5.2 NON- FUNCTIONAL SYSTEM REQUIREMENTS:

Non-functional system requirements typically refer to characteristics that describe how a system operates, rather than specific behaviors or functions. Here are some examples of non-functional system requirements:

1. Performance:

Define the system's response times, throughput, and resource utilization under various conditions.

2. Scalability:

Specify how the system can handle increasing loads by adding resources or scaling components.

3. Reliability:

Describe the system's ability to operate consistently and reliably over time without failures.

4. Security: Outline measures to protect the system from unauthorized access, data breaches, and ensure data integrity. The system has a login and sign-up pages. To register, the user need to enter email and password which must be at least 7 characters, and must include at least: I lowercase letter, I uppercase letter, numbers, and one of the following characters (#, \$, *,!) The system will protect this information by using Identity in Asp.net that is made by .net which have Also the user cannot complete the registration without entering a code that the system send to him via email.

5. Usability:

Detail aspects related to user interface design, accessibility, and overall user experience.

6. Availability:

Specify the system's uptime requirements and how quickly it should recover from failures.

7. Maintainability:

Define how easily the system can be updated, extended, or modified without disrupting operations.

8. Compatibility:

Address the system's ability to work with different hardware, software, and network environments.

9. Compliance:

Ensure that the system meets legal, regulatory, and industry standards relevant to its operation.

CHAPTER 6: SYSTEM MODELS:

6.1: Use-case Diagrams:

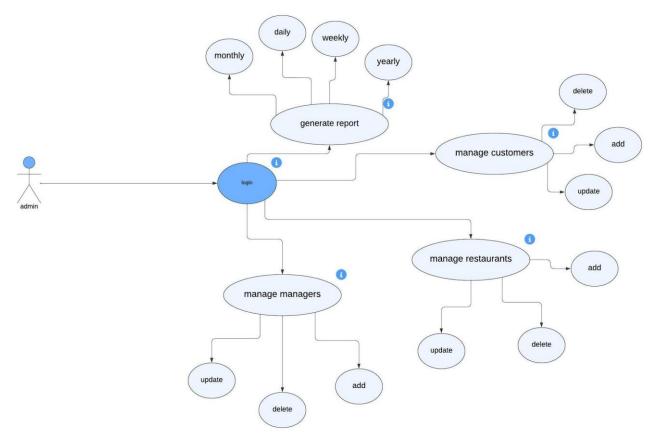


Figure 1: Admin's Use-case Diagram

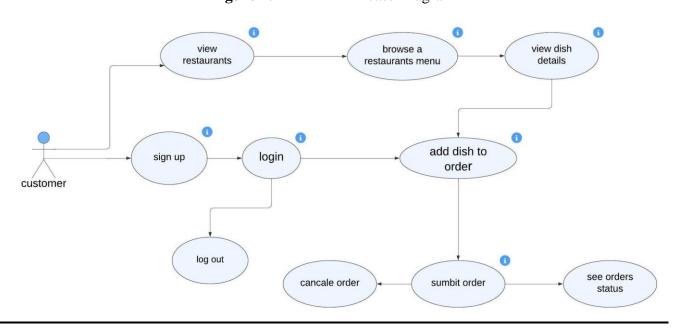


Figure 2: Customer's Use-case Diagram

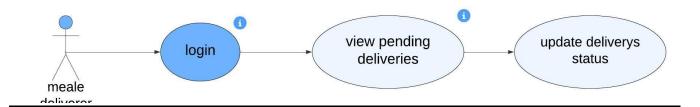


Figure 3: Meal Deliverer Use-case Diagram

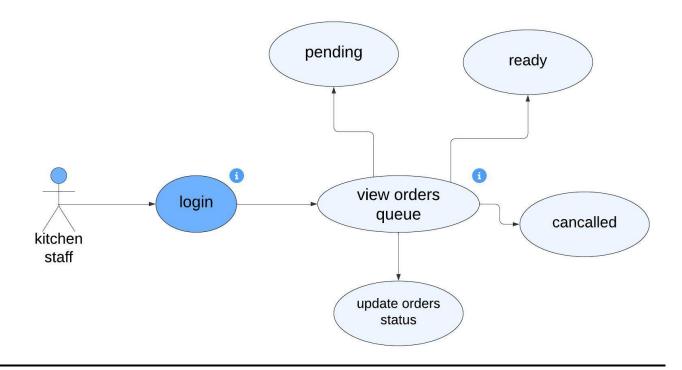


Figure 4: Kitchen Staff Use-case Diagram

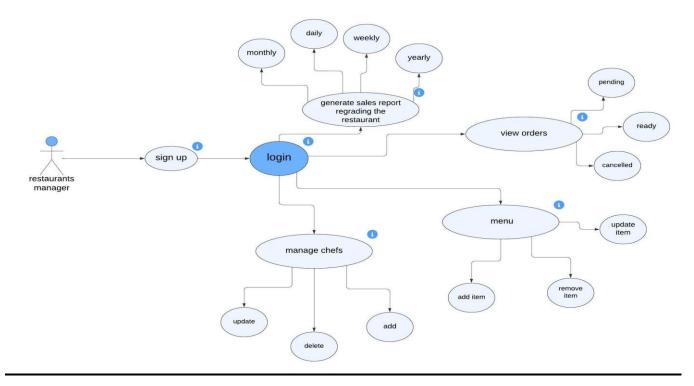


Figure 5: Restaurant's manager use case diagram

6.2: Class Diagram:

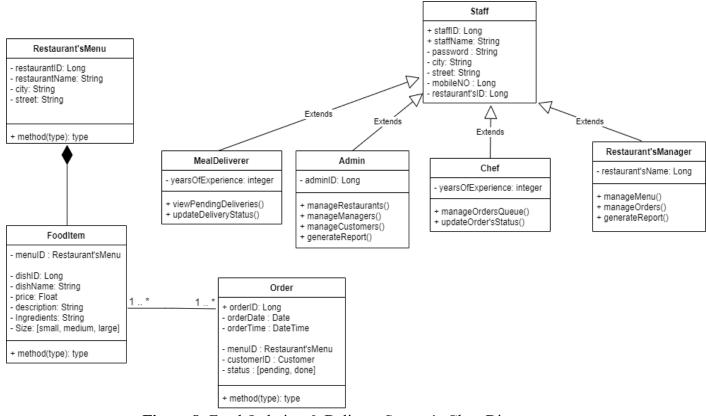


Figure 8: Food Ordering & Delivery System's Class Diagram

6.3: Activity Diagram:

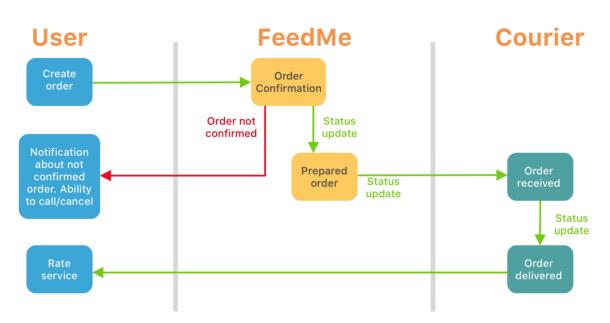


Figure 9: Activity Model Showing the Flow of Events between a Customer (user) and a Courier (meal deliverer)

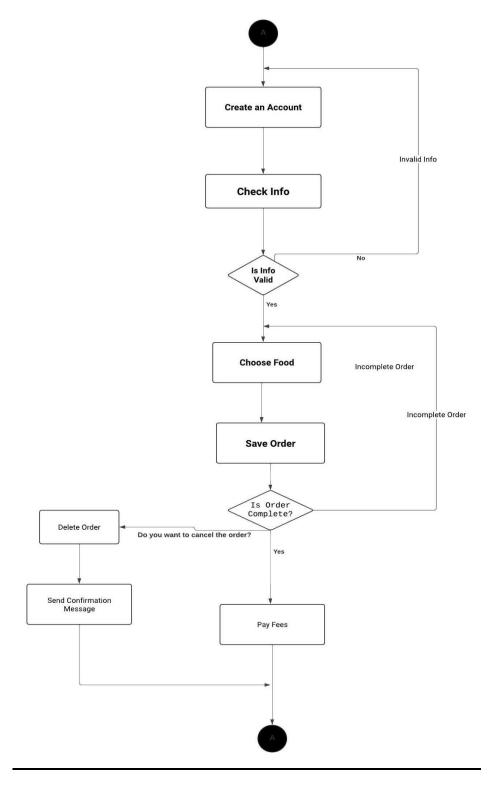


Figure 9: General Activity Diagram of a Customer while Ordering Food Item from a Menu for The First Time.

6.4: Sequence Diagram:

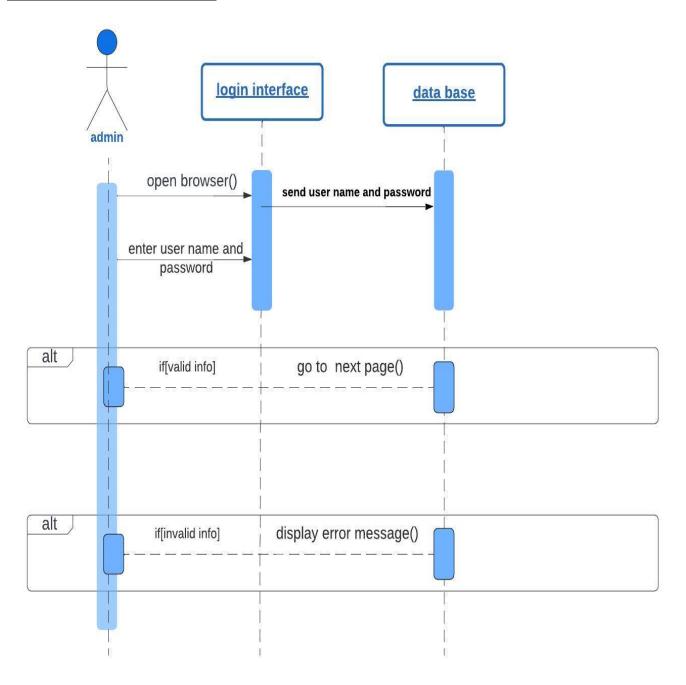


Figure 10: Admin login Sequence Diagram

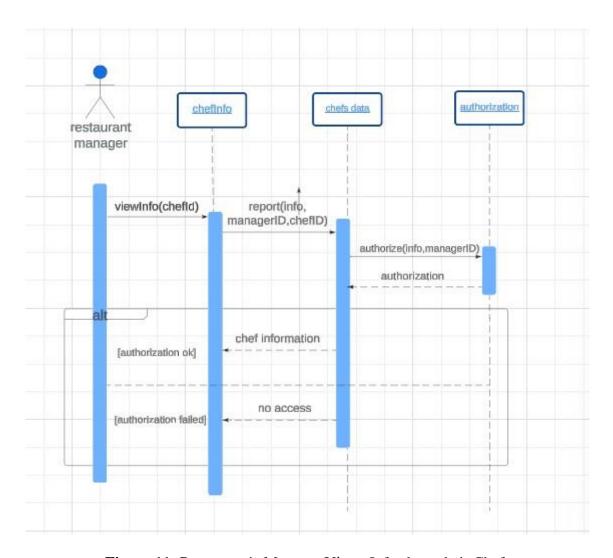


Figure 11: Restaurant's Manager Views Info about their Chefs

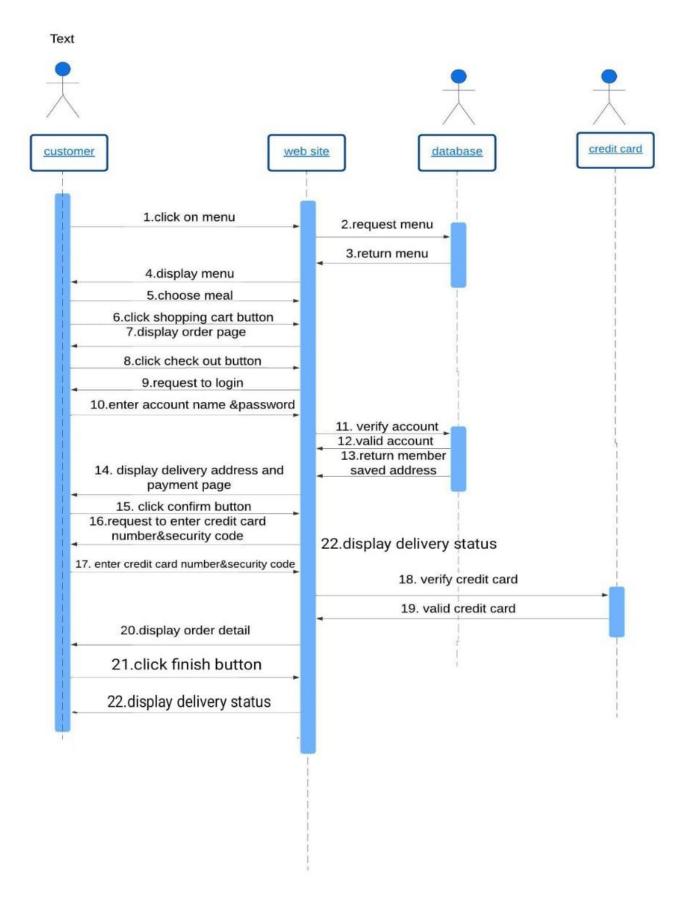


Figure 14: Comprehensive Sequence Diagram Showing almost all Relationships between Customer and System's objects.

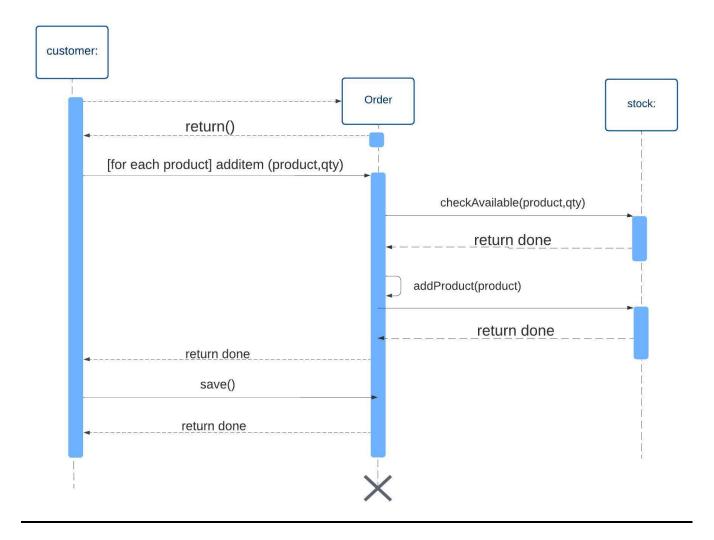


Figure 15: Customer while Ordering (Process of Placing an Order)

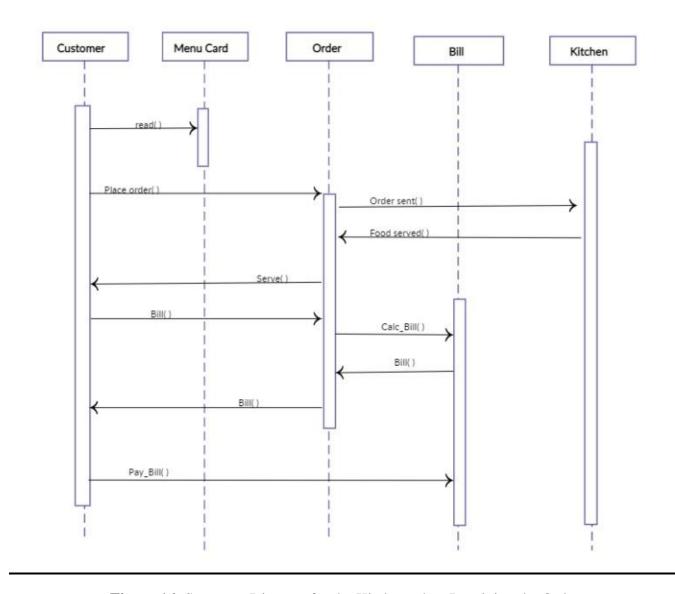


Figure 16: Sequence Diagram for the Kitchen when Receiving the Order

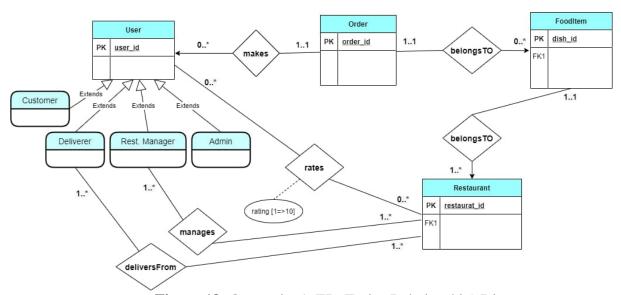


Figure 18: Our project's ER (Entity-Relationship) Diagram

CHAPTER 7: SYSTEM EVOLUTION:

SYSTEM LIMITATION:

Despite the comprehensive development process, online food ordering systems can face several limitations:

- **Handling a large number of simultaneous users can lead to performance bottlenecks Scaling the system to accommodate peak times (e.g., lunch hours, special promotions) requires robust infrastructure.
- **Integrating our system with a payment system such as Visa Card is still not available, due to our lack of knowledge in API. So for now, we will implement the system assuming that the customer will pay in cash only.
- ** Protecting user data (personal details, payment information) from breaches, Ensuring secure transactions and compliance with regulations (e.g., GDPR, PCI-DSS).
- ** Maintaining a consistent and intuitive UI/UX across various devices.

SYSTEM ENHANCEMENT:

To address limitations and improve the online food ordering system, consider the following enhancements:

**In future, we are looking forward to developing a mobile application for our food ordering system using android platform.

The mobile application system can implement a feature which is real time notification from the mobile phone application to the service desk. This feature enables customer to request customer service through using the mobile application

**We shall provide the ability for each registered customer to rate a restaurant only after ordering from it.

** Improved Security:

Use advanced encryption techniques for data protection.

Implement multi-factor authentication (MFA) for user accounts.

Conduct regular security audits and vulnerability assessments.

** Operational Efficiency:

Implement robust order management systems to handle high volumes and reduce errors.

Optimize delivery routes using geographic information systems (GIS) and real-time traffic data.

Offer loyalty programs and personalized promotions to enhance customer retention

CHAPTER 8: PLAN FOR REST OF WORK:

After writing the requirements, we made sure that we are going in the right way in the plan set for the implementation of the system, as we previously divided work on the system in weekly stages and during each period there will be something ready and known the extent of progress in the system and during the period that was previously agreed upon, which is two weeks for Preparing the requirements, as this document has been prepared for that and therefore we are on the right path unless there are any changes (which we tried very hard to avoid so as not to waste time to do it by preparing the requirements in a ready manner) and we are closer to the Plan-driven approach.

Here is an explanation of the division of work to prepare the requirements document on team members during the two-week period:

Fatima Rajab: implantation of web page &design system ui/ux

Raneen Jubahi: organization file of project/ SYSTEM REQUIREMENTS SPECIFICATION /USER REQUIREMENTS DEFINITION/ch2+4

Zahraa Abu Farha :: SYSTEM MODELS / CONCLUSION

Chapter 1/ /chapter 7/9 reference: Team Effort

CHAPTER 9: CONCLUSION:

The work on this project was very useful. At the beginning, we had some difficulty in coming up with the idea of the project, and then in gathering the user and system requirements.

I think our project is not as simple as it looks. It requires much work to be tackled. We all consider ourselves as juniors or beginners in the web development field. We are not very experienced with web technologies. This will be the first big project we will face. So we are planning to work cooperatively and benefit of each other.

REFERENCES:

**Lucid Chart & Draw.io Tools for Drawing UML Diagrams.

**General questionnaire/survey:

** https://forms.gle/oYDcNHFJgxYRDCUT6

*https://www.youtube.com/watch?v=6 V5mg59o I

*https://preview.themeforest.net/item/oyster-seafood-restaurant-cafe-elementor-template-

kit/full screen preview/44447365?fbclid=IwZXh0bgNhZW0C MTAAAR2HqZS3N9R84sceGBGR mSkZmQyx-

5KGvO8wVuq34zQ5jrfzmVE9W70ssk aem AQyU70CDtCD6n

Pk8w2uCZMxKN8fnR jmAQzxZKqru4l97bm85Y-

W94SncMnY6jN5o6pNPIFtpUYlrGhi6nhikeav

Deniz Restaurant

Deniz restaurant online
* تشير إلى أنّ السؤال مطلوب
ما هو عمرك؟ *
أقل من 18
18-24
25-34
35-44
45-54
55 نما فوق
ما هو جنسيتك؟ *
نکر 🔾
التي

كم مرة تطلب الطعام عبر الهاتف في الأسبوع؟ *
نومياً
O مرة في الأسبوع
عدة مرات في الشهر
نادراً
ما هي المشاكل التي تواجهها عند طلب الطعام عبر الهاتف؟ (يمكنك اختيار أكثر من خيار) *
الله عملية الطلب
الخطاء في الطلبات
صعوبة في التواصل مع الموظف
عدم وجود خيارات متنوعة
كيف تقيّم مستوى الخدمة عند طلب الطعام عبر الهاتف؟ *
○ ممتازة
مقبولة
نسيئة 🔾 سيئة

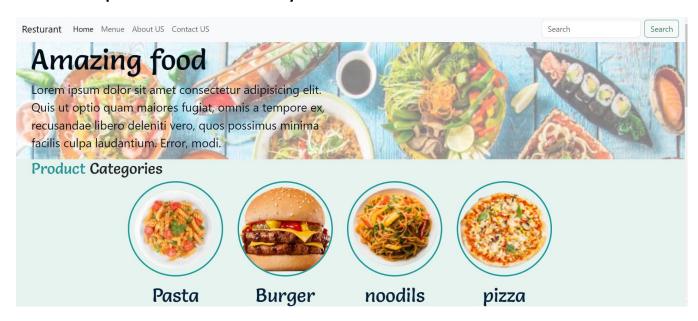
توقعات التحول إلى النظام الإلكتروني *	ما هي التحديث التي تعقد أنك قد تواجهها عند الانتقال إلى النظام الإلكتروني؟ (بمكنك اختيار أكثر من خيار) *
هل تفضل استخدام نظام الكتروني تطلب الطعام بدلاً من الهاتف؟	📗 عدم الثقة في الدفع الإلكتروني
	📗 صموية في استخدام الثقنية
نم 🔾 نم	🗍 مشاكل الائصدال بالإنترنت
у О	📗 تفضيل التحدث مع شخص حقيقياً
	📗 أخرى:
ك غير متأكد	
	ملاحظات و تصبينات *
إذا كانت الإجابة نعم، ما هي الأسباب؟ (يمكنك اختيار أكثر من خيار) *	ما هي التحسينات التي تقترحها لتسهيل عملية الانتقال إلى النظام الإكثروني؟
	هل تحكُّه أن تحويل طلب الطعام إلى نظام إلكتروني سيحسن من تجربتك العامة؟
الله الطلب الطالب المنافقة	نم نم
 تاليل الأخطاء	A O
	لبي 🔾
توفير الوقت	O أخرى:
ت عروش وخصومات خاصة	
	هل لديك أي القرادات إضافية حول كيفية تحسين تجربة طلب الطعام عبر الإشترنت؟ *
ا أخرى:	411
	र्थान्
ما هي العيزات التي تود رؤيتها في النظام الإلكتروني لطلب الطعام؟ (يمكنك اختيار أكثر من خيار)	
المثلب في الوك الحقيقي	
عروض وخصومات	
مراجعات وتقييمات من المملاء	
عدارات دفع متحدة	
دعم متحدد اللغات	
اخرى:	
تقييم تجربة المستخدم للنظام الإلكتروني	
ما هي العوامل التي قد تجعل النظام الإلكتروني أكثر جاذبية بالنسبة لك؟ (يمكنك اختيار أكثر من خيار)	
تصميم بسيط وسهل الاستخدامي	
المرعة التصفح والاستجابة	
دعم العملاء الفوري	
توفر تطبيق للهواتف الذكية	
ا أمان وسرية البيانات	
📗 آخری:	

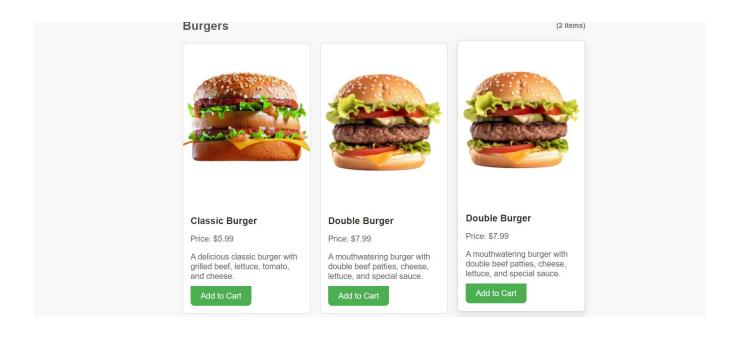
Frontend web for Deniz restaurant:

Link of our web page:

https://6654e79f1cb83a34908dc423--merry-basbousa-1cb766.netlify.app/?fbclid=IwZXh0bgNhZW0CMTAAAR0L4qY Hyq7BJHhIBcEqDGpJbcWYe-

PgTgBO1HBE5IGU3CYpcahOKb6x1oM_aem_AQw2kSbJSlkPMAs7aVHSJBooQzGY6ReducOpJS4JKlYTHE6P_fbdrAV5kqt5MfKO1PJJiFqWhrllwE4YxLONylSU





Burger Process

Selecting Ground Beef

Choose ground beef with a good balance of lean meat and fat, typically 80% lean and 20% fat for juicy burgers.

Seasoning the Patties

Sprinkle each patty with salt and pepper on both sides to enhance flavor. You can also add additional seasonings according

Patty Formation

Divide the ground beef into equal portions and shape them into uniform patties, ensuring they are not too thick for even.



Cooking the Patties

Cook the patties for 3-4 minutes per side for a medium-rare doneness, adjusting the time based on your desired level of

Toasting the Buns

Cut the burger buns in half and toast them on the grill or in a toaster until they achieve a golden brown color for added

Choosing Toppings

Prepare a variety of toppings such as lettuce, tomato, onion, cheese, pickles, and any other preferred ingredients.

TOP SELLER



Burger

Price: \$5.9

Delicious burger with grilled beef and fresh vegetables

Add to Cart



Veggie Burger

rice: \$4.99

Delicious burger for vegetarians with fresh veggies and tomato sauce

Add to Cart

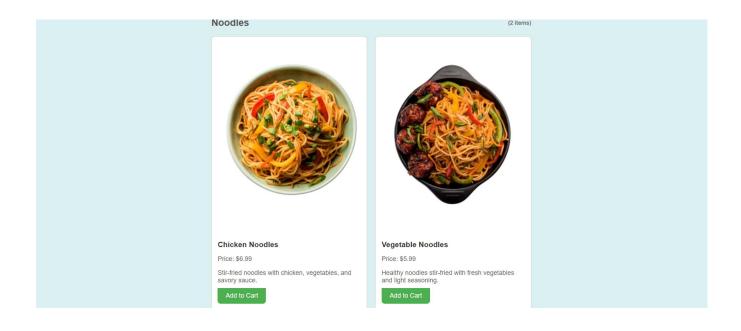


Chicken Burger

rice: \$6.99

Delicious burger with grilled chicken breasts and fresh veggies

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"Savoring Life," where every dish tells a story, and every bite is a journey through the flavors of the world. Our passion for food goes beyond mere sustenance; it's a celebration of culture, tradition, and innovation. Join us as we embark on a gastronomic adventure, exploring the diverse landscapes of cuisines from around the globe.





At "Savoring Life," we believe that food is more than just fuel for the body; it's a



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