T.C.
YEDITEPE UNIVERSITY
FACULTY OF ENGINEERING

ISE 402 – CSE 344 SPRING 2023 TERM PROJECT

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1. INTRODUCTION

This report reviews developing a restaurant recommendation website. This website will propose restaurants based on price, taste, service, and speed to help users make decisions. The evaluation of existing similar applications revealed that such applications were not sufficient and could be further improved. This report includes the rationale and objectives for developing a restaurant recommendation website project. It also consists of determining deficiencies by analyzing the current situation of similar applications. It also includes eliminating these deficiencies and determining the features and design of the newly created website.

1.1 Purpose

Restaurant selection is one of the most challenging problems people face in their daily lives. The price, taste, service and speed quality of the restaurants are the most influential factors in customers' restaurant preferences. Therefore, the new website development project to be created aims to help customers choose a restaurant by considering the most influential factors in their restaurant preferences. This project aims to create a platform where Yeditepe University students can easily learn about cafes close to the university and offer suggestions based on students' preferences such as price, taste and popularity.

1.2 Background

The project aims to simplify the process of finding a suitable restaurant by creating a website that offers recommendations based on Yeditepe University students' preferences. The project is based on the idea that restaurant selection is a significant issue for people with limited budgets and people who want to try new places, especially for the students.This will help students find cafes and restaurants in the university's neighborhood that match their preferences. The website will consider factors such as price, taste, service, and popularity for the algorithm when recommending restaurants to users.

The website will be developed using different technologies and tools, including web development frameworks, database management systems, and machine learning algorithms. The project team will work to ensure that the website is user-friendly, visually pleasing, and offers appropriate recommendations based on user preferences.

Overall, the restaurant recommendation website development project aims to create an alternative platform for Yeditepe University students. This website provides students with a comprehensive and reliable guide to food/drink options and restaurants near campus. By doing this, the project aims to improve students' dining experience.

1.3 Motivation

1.3.1 Analysis of the Current Situation

There are some shortcomings to existing restaurant recommendation websites when they are examined. Current apps filter restaurants based on a few factors. They are insufficient when users want more specific searches. Furthermore, it has been identified that current applications do not provide enough information about restaurants and do not provide the features users are most interested in.

1.3.2 Features of the New Website Application

The website to be created will allow users to filter restaurants by price, taste, quality of service and speed. This will eliminate the shortcomings of similar existing websites. Moreover, it allows users to filter restaurants by location, cuisine type, or other specific factors, providing more specific searches. In addition, the website provides more detailed information about restaurants and presents the features that users are interested in, in order of priority. Also, the website allows users to rate and share comments about restaurants and foods/drinks. This provides more objective restaurant recommendations based on shared reviews.

1.4 Structure of the document

This document comprises two main parts: the first outlines the website idea and features to be added based on analyses; the second specifies functional requirements, system functionalities, and users. It includes use case diagram, priority list, and specifications tables, as well as non-functional requirements using the Volere template. The system models section features a class diagram and UI navigational paths, and includes mockups of website's all panels. At the end of the document, important keywords for the project and their definitions are explained. Finally, the glossary part expresses what websites are going to be used while doing this project.

2. FUNCTIONAL REQUIREMENTS

2.1 Description of the system functionalities

Restaurant selection is one of the problems people face in their daily lives. This project, which aims to create a platform where Yeditepe University students can easily learn about cafes close to the university, depends on their preferences such as price, taste and popularity. Users will be able to filter cafes according to criteria such as price, taste, popularity. The system will also provide detailed information about each cafe, including menu items, prices, opening hours and customer reviews. Users will be able to help other users have an opinion by making comments and ratings about restaurants and meals. Overall, the system will provide a comprehensive tool for Yeditepe University students to find and select cafes that meet their specific preferences and needs. It will allow users to make appropriate decisions.

2.2 Description of the system users

Those who search for restaurant recommendations on the website are the first type of website user. These users can access the website without registering and search for cafes/restaurants based on their preferences. However, to use some features of the website, such as leaving comments or rating a restaurant, visitors must register and create a profile.

The second type of user is cafe/restaurant owners (business). These users can register on the website and add/update their restaurant information. They can also view comments and reviews left by users.

The third type of user is developer. Developer deals with both updates and technical problems. They can also create a panel for business and authorize the business in order to log in.

The final type of user is Maintenance staff. Maintenance staff can contact with the business(restaurants/cafes). They can also transfer the technical problems received from the business to the developer.

2.3 Specific Requirements

Functional Requirements

The system shall provide information on restaurants/cafes near Yeditepe University based on user preferences such as price, taste, and popularity.

The system shall allow businesses to add their menu and information through a business panel.

The system shall allow businesses to update their menu and information through a business panel.

The system shall allow user register.

The system shall allow the user log in.

The system shall allow users to create a personalized profile.

The system shall include a search engine.

The system shall include a filtering system.

The system shall provide personalized recommendations based on user preferences.

The system shall include a comparison tool to compare prices in restaurants/cafes.

The system shall display the most popular cafes based on the user's location without the need for a search query.

The system shall include a rating system.

The system shall include a feedback section where customers can submit their complaints and suggestions, and restaurant owners can view.

2.3.1. Use Case Diagram

- Users are students of Yeditepe University looking for a cafe. The user enters our website. The user can browse the website with or without registration but must register to use certain features of the website. After completing the registration process, the user must create a profile. The user enters the food or drink they desire in the search bar. The website shows suitable cafes/restaurants for the user.
- The user filters cafes by price and taste and clicks on the "Reviews" tab to read reviews of the selected cafe. The user can also view the ratings of the restaurants.
- The cafe/restaurant owner signs up for the system and can add and update their information through their panel.
- The user clicks on the cafe's page for more information. The page includes detailed information such as opening hours, menu, and features of the cafe.
- Registered users can leave a comment on the cafe's page to provide other users with their opinions and rate the restaurant.
- By using the features on our website, users can choose the most suitable cafe, saving time and money.

In this scenario, our system has helped users to choose the most suitable cafe. Additionally, businesses registering on the system and updating their menus through their panel ensure our system stays up-to-date and provides users with the most accurate inform.

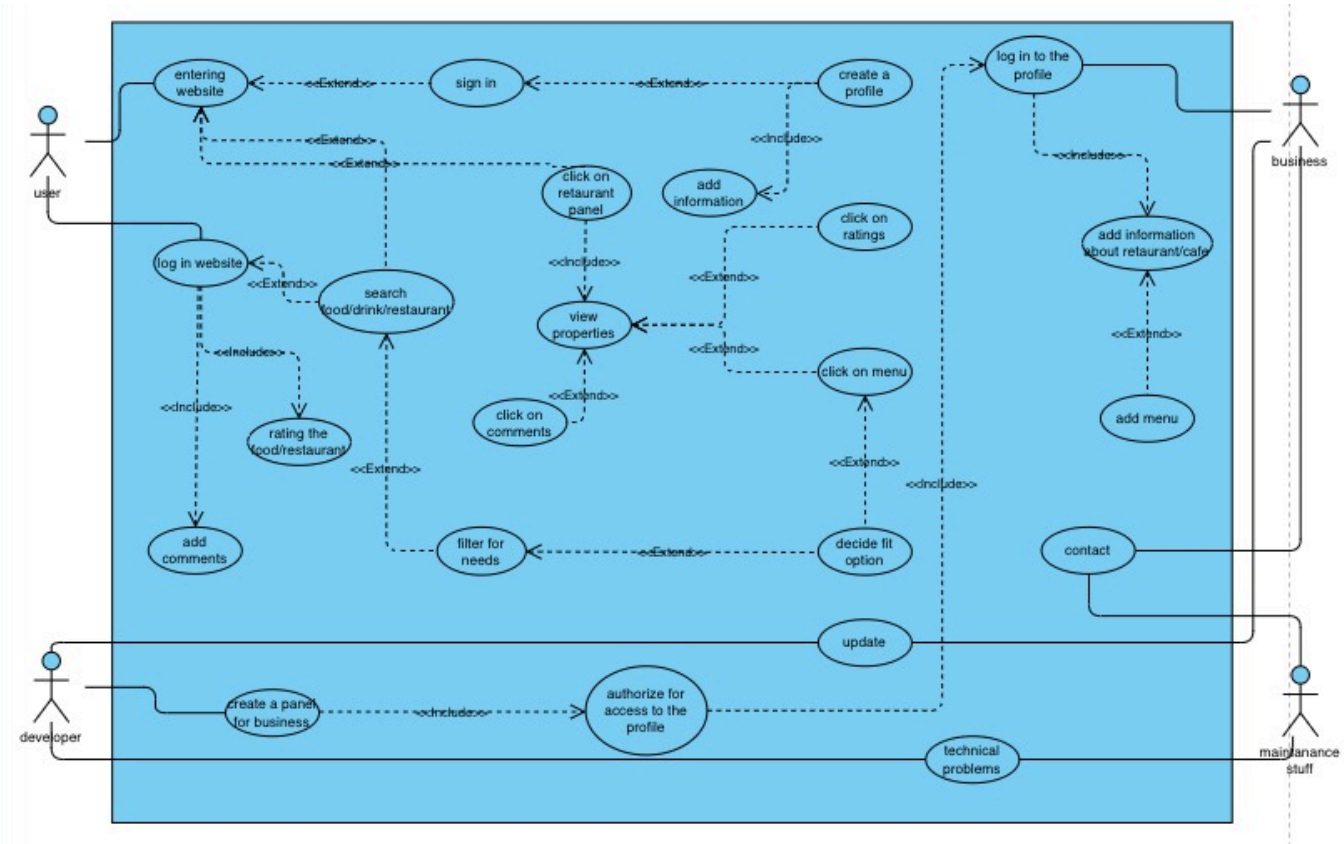


Figure 1 Use Case Diagram

2.3.2. Use Case Priority List

Priority Rank	Use Case	Description
High	Entering Website	No progress can be made without this step.
High	Update for business panel	Ensures that information is kept up to date.
High	Create a panel for business	Required to enter business properties.
High	Authorize for access to the Business profile	Important for business to log in.
High	Log in to the Business profile	It is a necessary step to be able to use the features of the system.
Medium	Log in/Sign in Website	Allows the use of the site's features.
Medium	Search for food/drink/restaurant	Reaching the specific food/drink/restaurant wants
Medium	Click on the Restaurant panel	Shows the restaurant you selected
Medium	Add information about restaurant/cafes	Entering the specific features of the restaurant/cafe
Medium	View properties	Viewing the specific features of the restaurant/cafe and getting an idea
Medium	Filter for needs	It provides the feature of selection according to the user's wishes.
Low	Add comments/ Rating food restaurant and food	Using optional evaluation features
Low	Click on comments/menu/ratings	Using optional features
Low	Add menu for restaurant panel	Entering the menu of the restaurant/cafe

2.3.3 Use Case Specifications

Use Case ID : UC1
Use Case Name: Search for Cafe
Actors: User
Related Use Case: Extend: Search food/drink/restaurant
Preconditions: User is on the website
Main Flow: User enters desired food or drink in the search bar. Website displays suitable cafes/restaurants based on the user's query.
Post Conditions: User is able to see the list of suitable cafes/restaurants.

Use Case ID: UC2
Use Case Name: Filter Cafe by Price and Taste
Actors: User
Related Use Case: Extend: Filter for needs
Preconditions: User has searched for cafes/restaurants.
Main Flow: User selects the "Filter" option. User selects the desired price range and taste preferences. Website displays the filtered cafes/restaurants based on the user's selections.
Post Conditions: User is able to see the filtered list of cafes/restaurants.

Use Case ID: UC3
Use Case Name: Read Comments and Ratings
Actors: User
Related Use Case: Extend: Click on comments Extend: Click on ratings.
Preconditions: User has selected a cafe/restaurant.
Main Flow: User clicks on the "Comments" tab. Website displays reviews and ratings of the selected cafe/restaurant.
Post Conditions: User is able to read reviews and view ratings of the selected cafe/restaurant.

Use Case ID: UC4
Use Case Name: Add and Update Cafe Information
Actors: Cafe/Restaurant Owner
Related Use Case: Extend: Add Menu
Preconditions: Cafe/Restaurant owner is registered and logged in.
Main Flow: Cafe/Restaurant owner clicks on their panel. Cafe/Restaurant owner adds or updates their information, such as menu, opening hours, and features.
Post Conditions: Cafe/Restaurant information is added or updated on the website.

Use Case ID: UC5
Use Case Name: Leave a Comment and Rate a Cafe
Actors: User (Registered)
Related Use Case: Include: Add comments Include: Rating the food/restaurant
Preconditions: User has selected a cafe/restaurant.
Main Flow: User clicks on the cafe/restaurant's page. User leaves a comment and rates the cafe/restaurant.
Post Conditions: User's comment and rating is displayed on the cafe/restaurant's page.

Use Case ID: UC6
Use Case Name: View Cafe Information
Actors: User
Related Use Case: Include: View Properties
Preconditions: User has selected a cafe/restaurant.
Main Flow: User clicks on the cafe/restaurant's page. Website displays detailed information about the cafe/restaurant, such as opening hours, menu, and features.
Post Conditions: User is able to view detailed information about the cafe/restaurant.

3. Non-functional requirements

The system shall be web application.

The system shall back up data.

The navigation system shall be accessible to all users.

The system shall have an interface.

The system shall ensure data privacy and security.

The system shall have 25 milliseconds loading speed.

The system shall be able to handle a high volume of traffic.

3.1 Volere Template

Requirement ID: 1	**Requirement Type:** Constraint (implementation)	**Event/Use Case:** #
Description: The system **shall** be web application.		
Rationale: The solution needs to be deployed online and accessible as a global service.		
Source: The initial statement of requirements		
Fit Criteria: Accessible as an online service.		
Customer Satisfaction: 5	**Customer Dissatisfaction:** 5	
Priority: Essential	**Conflicts:** None.	
Supporting Material: The initial statement of requirements		**Volere**
History: New requirement		

Requirement ID: 2	**Requirement Type:** NFR	**Event/Use Case:** #
Description: The system shall back up data		
Rationale: The solution needs to be storaged all necessary information into a database.		
Source: The initial statement of requirements		
Fit Criteria: Information can be accessible in a database.		
Customer Satisfaction: 5	**Customer Dissatisfaction:** 5	
Priority: Essential	**Conflicts:** None.	
Supporting Material: The initial statement of requirements		**Volere**
History: New requirement		

Requirement ID: 3	**Requirement Type:** Constraint (implementation)	**Event/Use Case:** #
Description: The navigation system shall be accessible to all users		
Rationale: The solution needs to provide easy navigation for users to access different parts of the system.		
Source: The initial statement of requirements		
Fit Criteria: Users can easily navigate between different parts of the system.		
Customer Satisfaction: 5	**Customer Dissatisfaction:** 3	
Priority: Essential	**Conflicts:** None.	
Supporting Material: The initial statement of requirements		Volere
History: New requirement		

Requirement ID: 4	**Requirement Type:** NFR	**Event/Use Case:** #
Description: The system shall have a interface.		
Rationale: The solution needs to have an intuitive and user-friendly interface for users to interact with.		
Source: The initial statement of requirements		
Fit Criteria: Users can easily interact with the system through the interface.		
Customer Satisfaction: 5	**Customer Dissatisfaction:** 1	
Priority: Essential	**Conflicts:** None.	
Supporting Material: The initial statement of requirements		Volere
History: New requirement		

Requirement ID: 5	**Requirement Type:** NFR	**Event/Use Case:** #
Description: The system shall ensure data privacy and security.		
Rationale: The solution needs to ensure that user data is kept private and secure.		
Source: The initial statement of requirements		
Fit Criteria: User data is encrypted and only accessible by authorized personnel.		
Customer Satisfaction: 5	**Customer Dissatisfaction:** 5	
Priority: Essential	**Conflicts:** None.	
Supporting Material: The initial statement of requirements		**Volere**
History: New requirement		

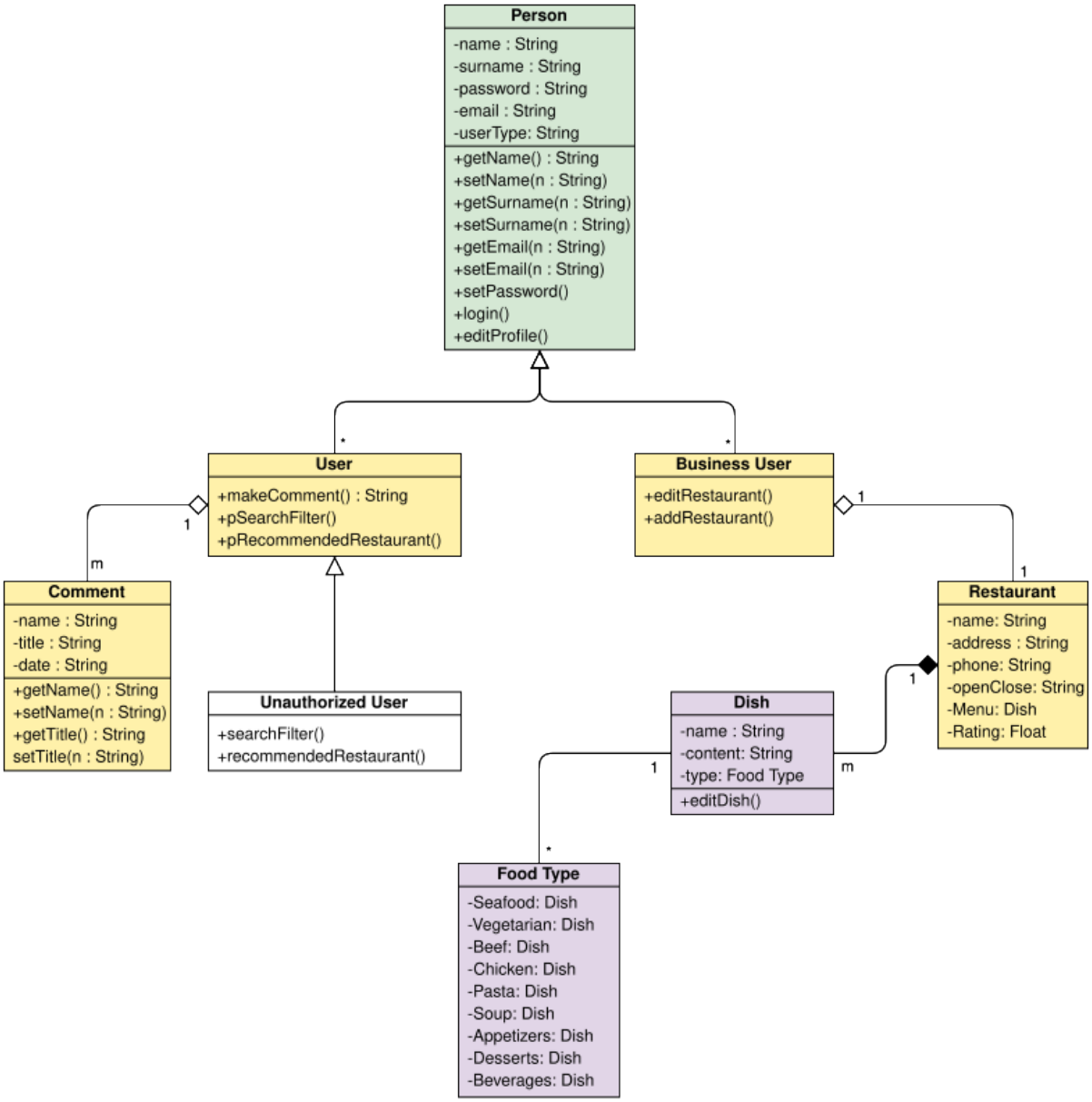
Requirement ID: 6	**Requirement Type:** NFR	**Event/Use Case:** #
Description: The system shall have 25 milliseconds loading speed.		
Rationale: The solution needs to have a fast-loading speed to provide a seamless user experience.		
Source: The initial statement of requirements		
Fit Criteria: Pages and data load quickly and efficiently.		
Customer Satisfaction: 5	**Customer Dissatisfaction:** 2	
Priority: Essential	**Conflicts:** None.	
Supporting Material: The initial statement of requirements		**Volere**
History: New requirement		

Requirement ID: 7	Requirement Type: NFR	Event/Use Case: #
Description: The system shall respond to user inputs.		
Rationale: The solution needs to be responsive to user inputs to provide a seamless user experience.		
Source: The initial statement of requirements		
Fit Criteria: The system responds to user inputs quickly and accurately.		
Customer Satisfaction: 5	**Customer Dissatisfaction:** 2	
Priority: Essential	**Conflicts:** None.	
Supporting Material: The initial statement of requirements		**Volere**
History: New requirement		

Requirement ID: 8	Requirement Type: NFR	Event/Use Case: #
Description: The system shall be able to handle a high volume of traffic.		
Rationale: The solution needs to be able to handle a high volume of traffic to ensure that users can access the system at any time.		
Source: The initial statement of requirements		
Fit Criteria: The system is able to handle a high volume of traffic without crashing or slowing down.		
Customer Satisfaction: 4	**Customer Dissatisfaction:** 3	
Priority: High	**Conflicts:** None.	
Supporting Material: The initial statement of requirements		**Volere**
History: New requirement		

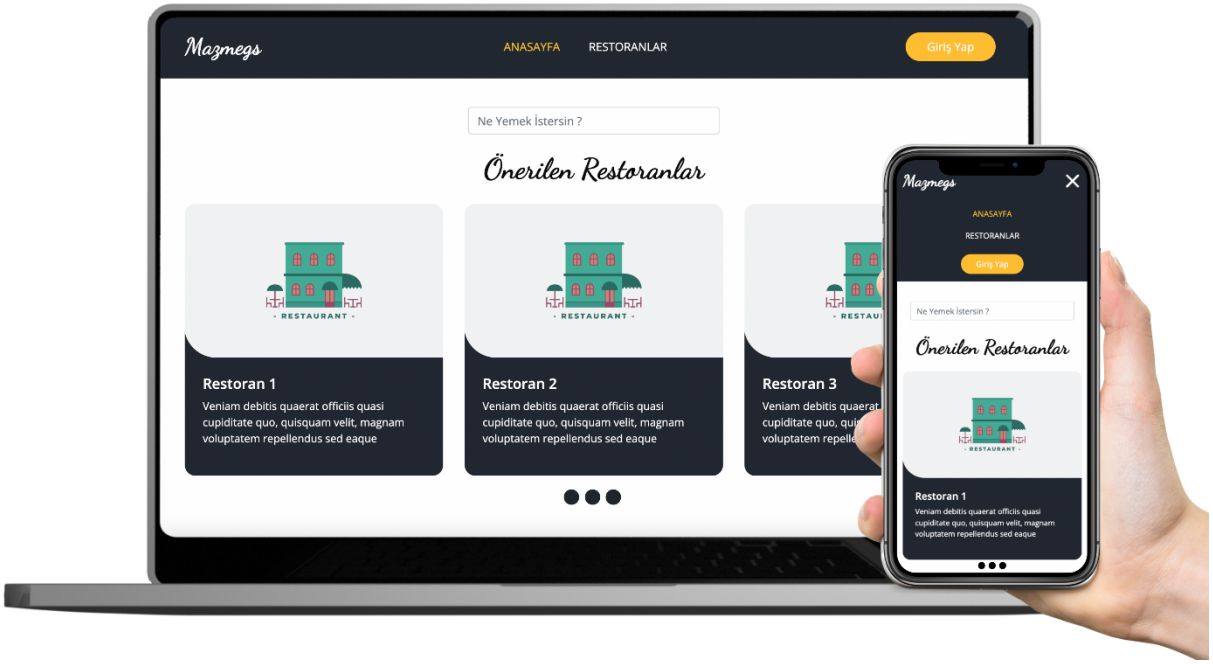
4. SYSTEM MODELS

4.1. Object and class model

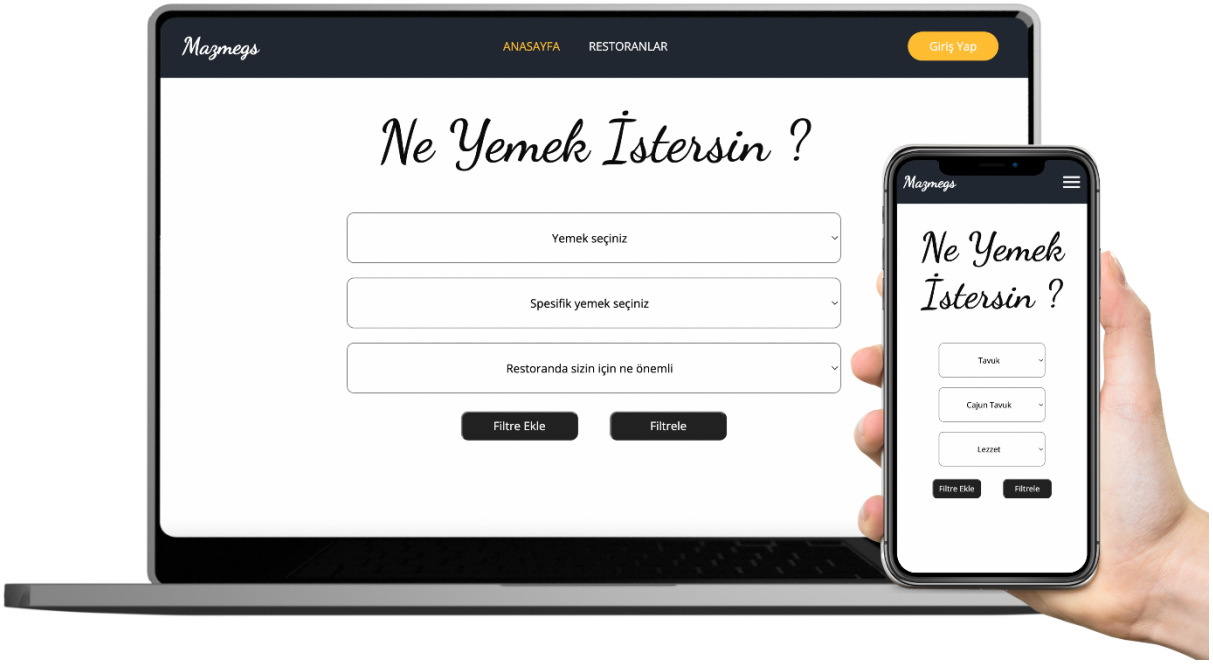


4.2. User interface - navigational paths and screen mock-ups

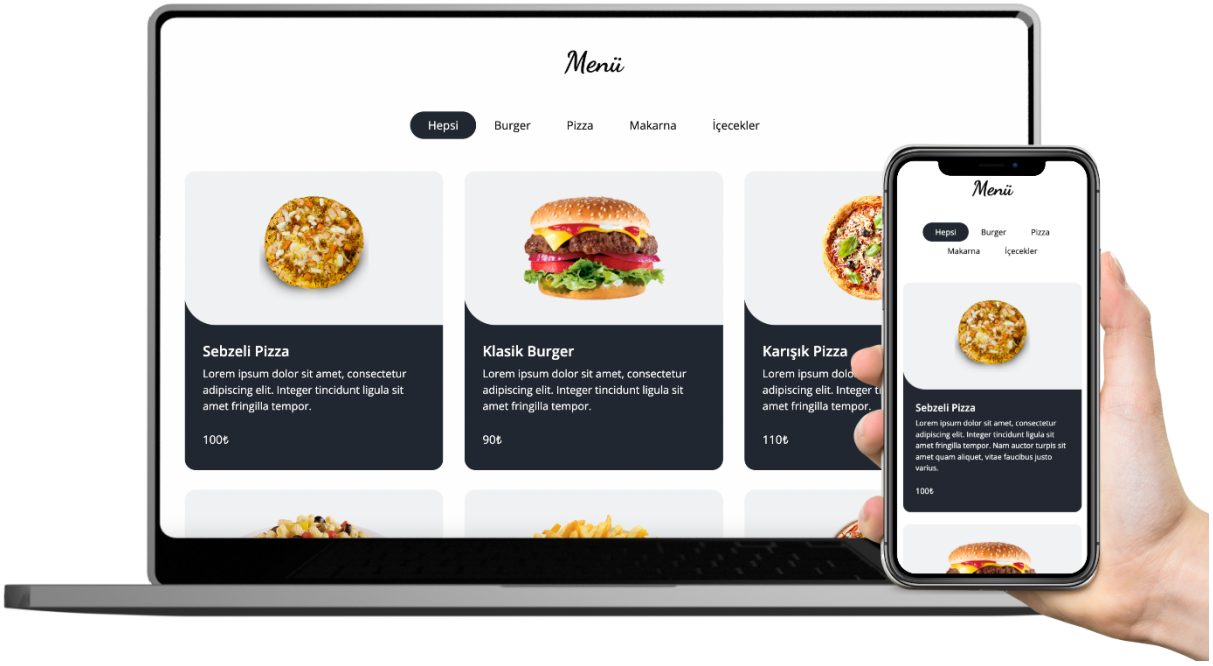
Homepage



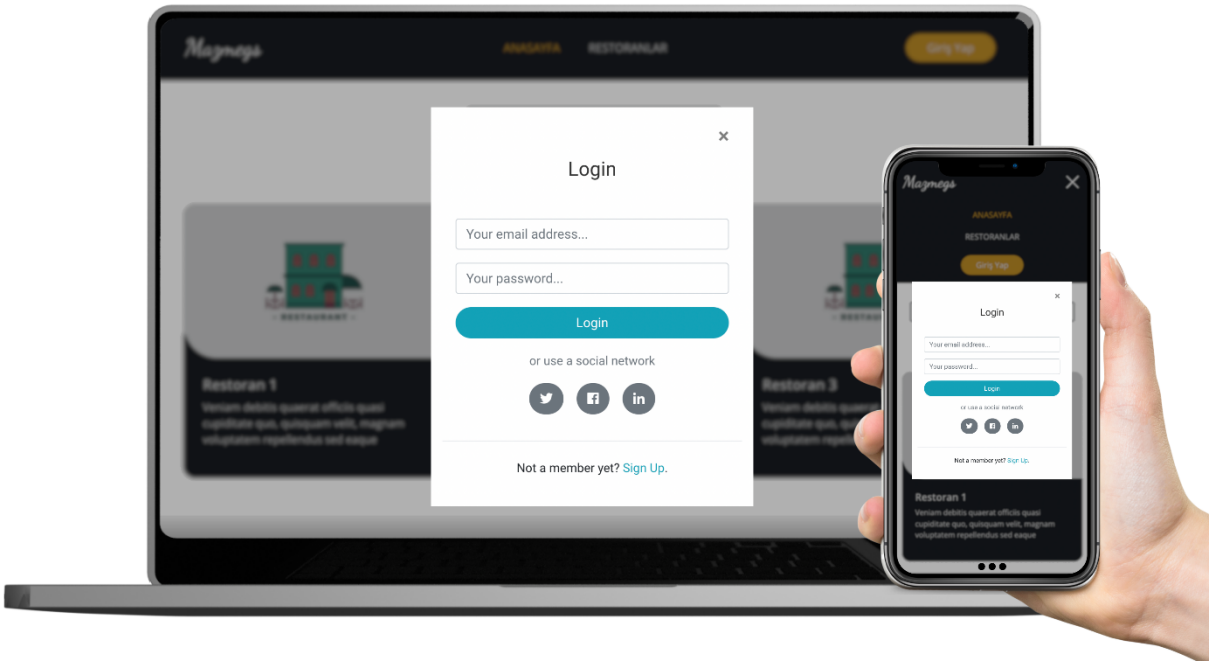
Search



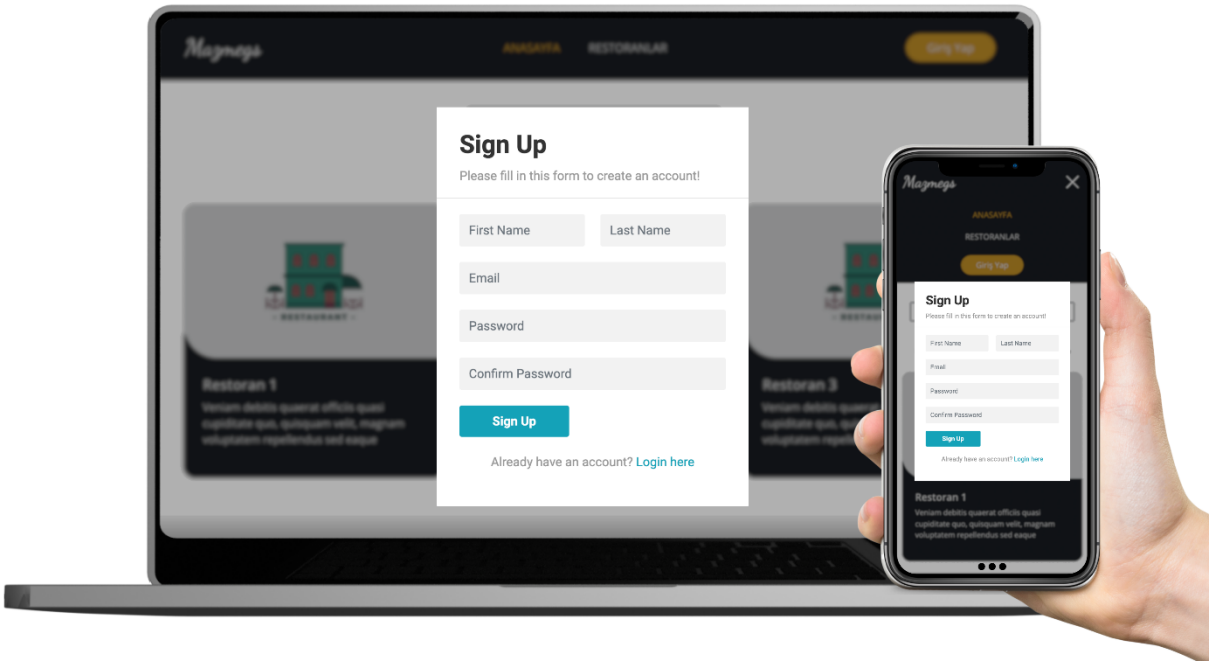
Filtered Menu



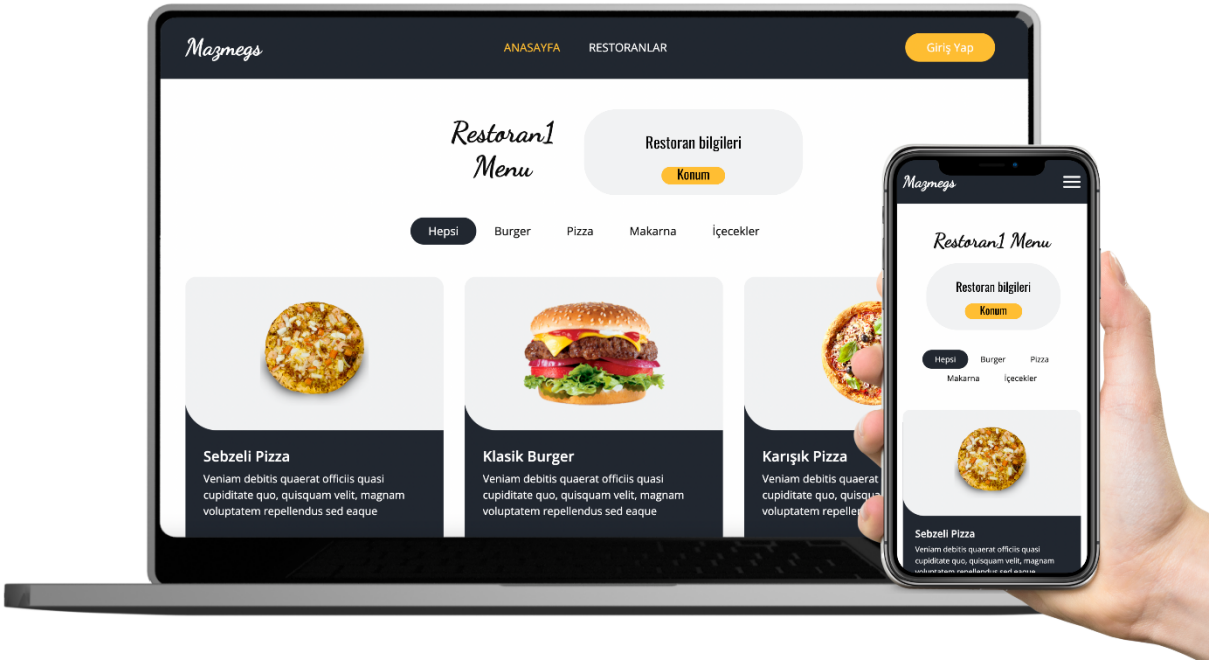
Sign in



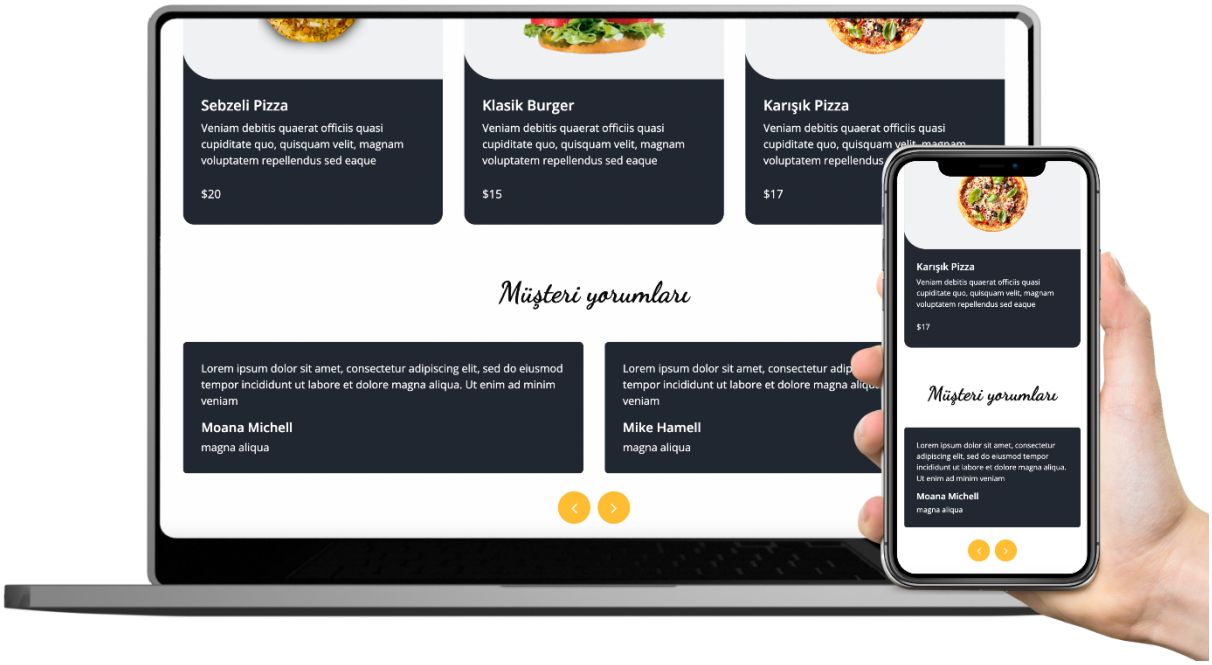
Sign up



Restaurant page

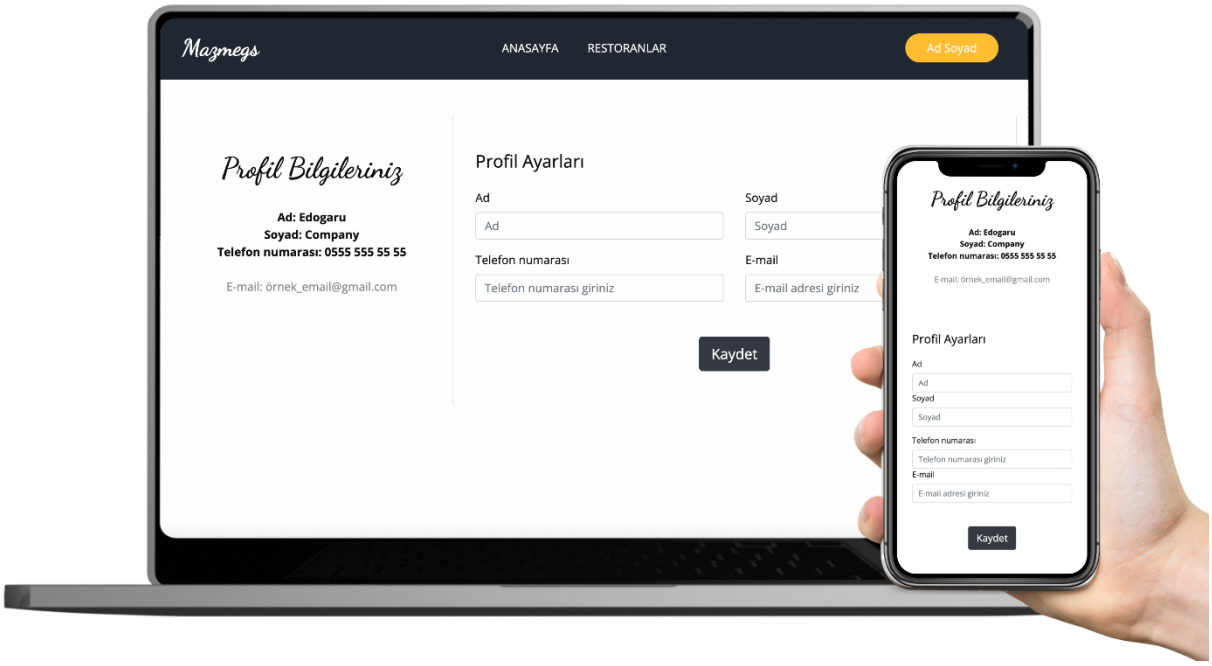


Restaurant page – comment side

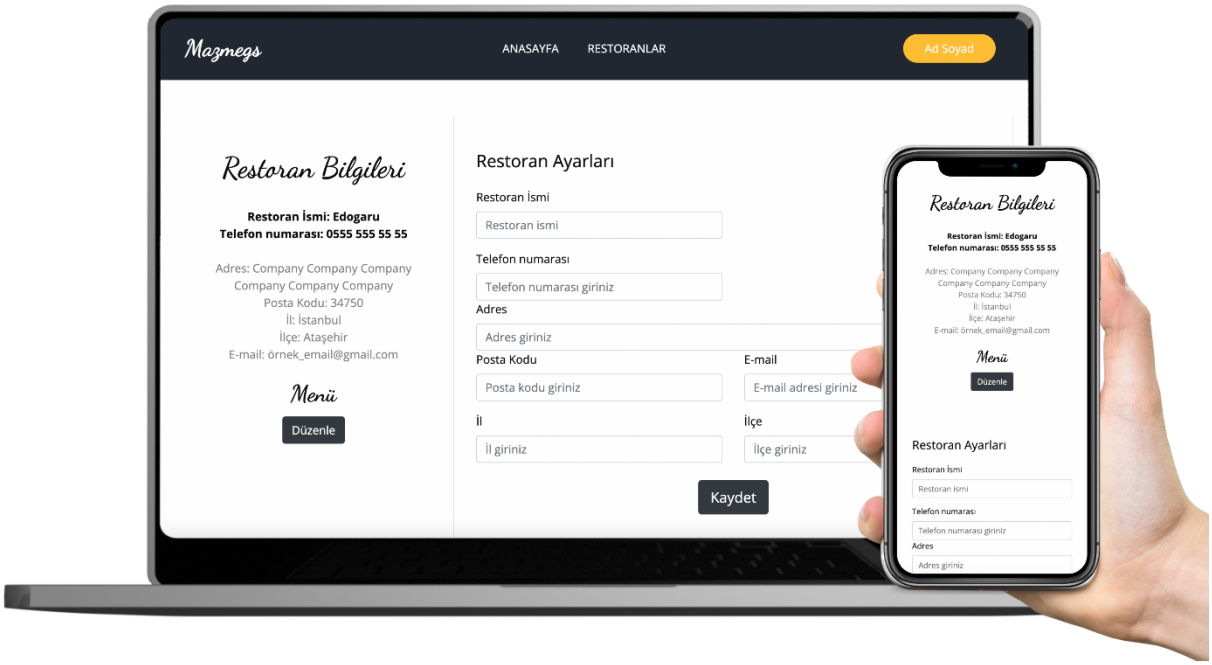


Restaurants

User panel



Restaurant Panel



5. Definitions, Acronyms and Abbreviations

Some abbreviations and definitions used in this project:

Website: An internet site accessible via web browsers.

Price: The monetary value of a product or service.

Taste: The flavor of food or drink.

Service: The quality of service provided to customers.

Speed: The speed of food or drink service.

Location: The place where the restaurant is located.

Rating: The process in which users evaluate restaurants and rate them on a scoring system.

Use Case Diagram: A description of how users will perform tasks on your website.

6. Glossary & references

Visual Paradigm International. (n.d.). Free Use Case Diagram Tool. Retrieved March 27, 2023, from /https://online.visual-paradigm.com/diagrams/solutions/free-use-case-diagram-tool/

Visual Paradigm International. (n.d.). Free Class Diagram Tool. Retrieved March 28, 2023, from /https://online.visual-paradigm.com/diagrams/solutions/free-class-diagram-tool/

Mozilla Developer MDN. Server Side and Web Framework usage document. Retrieved March 28, 2023, from / https://developer.mozilla.org/en-US/docs/Learn/Server-side/Express_Nodejs/Introduction/

Mozilla Developer MDN. Using a Database with Mongoose document. Retrieved March 28, 2023, from / https://developer.mozilla.org/en-US/docs/Learn/Server-side/Express_Nodejs/mongoose/