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**WEB APP FOR ORDERING CHEMICAL  
TESTS AND TRACKING RESULTS**

Project in Web Applications with C#

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## **Author's declaration of originality**

I hereby certify that I am the sole author of this thesis. All the used materials, references to the literature and the work of others have been referred to. This thesis has not been presented for examination anywhere else.

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## **Introduction**

In the realm of maritime operations, ensuring the quality and integrity of ship fuels is of paramount importance. The chemical composition of fuels directly impacts the performance and longevity of ship engines. However, the process of ordering and conducting chemical tests for ship fuels can be intricate, often lacking efficient digital solutions.

This project aims to address this gap by developing a comprehensive web application designed to streamline the ordering and tracking of chemical tests for ship fuels. The proposed web app will not only facilitate the request and management of tests but will also incorporate built-in calculators to assist users in performing necessary computations related to the test results.

The motivation for this project arises from the recognition of the need for a user-friendly and efficient platform tailored to the maritime industry. As of today, there is a dearth of specialized tools for managing chemical tests for ship fuels. By leveraging C# and web technologies, this project seeks to provide a robust solution that caters to the specific requirements of ship operators, ensuring the reliability and compliance of their fuel sources.

## Analysis

Managing and ensuring the quality of ship fuels involves a complex process of ordering chemical tests and tracking the results. The proposed web application aims to address the challenges associated with this task by offering a user-friendly and efficient platform. To delve into the project's analysis, we will examine the detailed formulation of the problem, analyze various solutions, methods, and tools, and provide insights into the functionality of the web app.

The complexity of ordering chemical tests for ship fuels lies in the multitude of tests available and the diverse packages they can be grouped into. Users will be able to place orders for specific packages, each associated with a distinct price. These packages may contain various types of tests, or a single type, providing flexibility for users with different testing requirements.

In addition to ordering tests, users can access a range of calculators embedded within the web app. These calculators cater to specific tanker volume formulas, offering users a convenient tool for making essential calculations related to their fuel testing needs. Notably, the calculators are not freely available; users must purchase a calculator package that specifies the type of calculator and the number of usages included.

The core functionalities of the web app include the ability for users to track their orders, monitor order statuses, and access the final results of the chemical tests. The results include real values, valid values, and an indication of whether the obtained results are considered valid. This tracking feature ensures transparency and accountability throughout the testing process.

Technologically, the project will utilize C# and its frameworks, leveraging ASP.NET Core for the REST backend. The choice of Azure, AWS, or other cloud services for deployment underscores the project's scalability and accessibility. Entity Framework (EF) Core will facilitate efficient data modeling and interaction with the database, ensuring a robust and maintainable backend structure.

In conclusion, this web application project seeks to revolutionize the process of ordering and tracking chemical tests for ship fuels. The analysis reveals the intricate nature of the problem, the variety of solutions provided, and the tools employed to ensure a seamless user experience. By adopting C# and its associated frameworks, the project aims to deliver a robust and scalable solution that meets the specific needs of the maritime industry.

# Entity relationship diagram

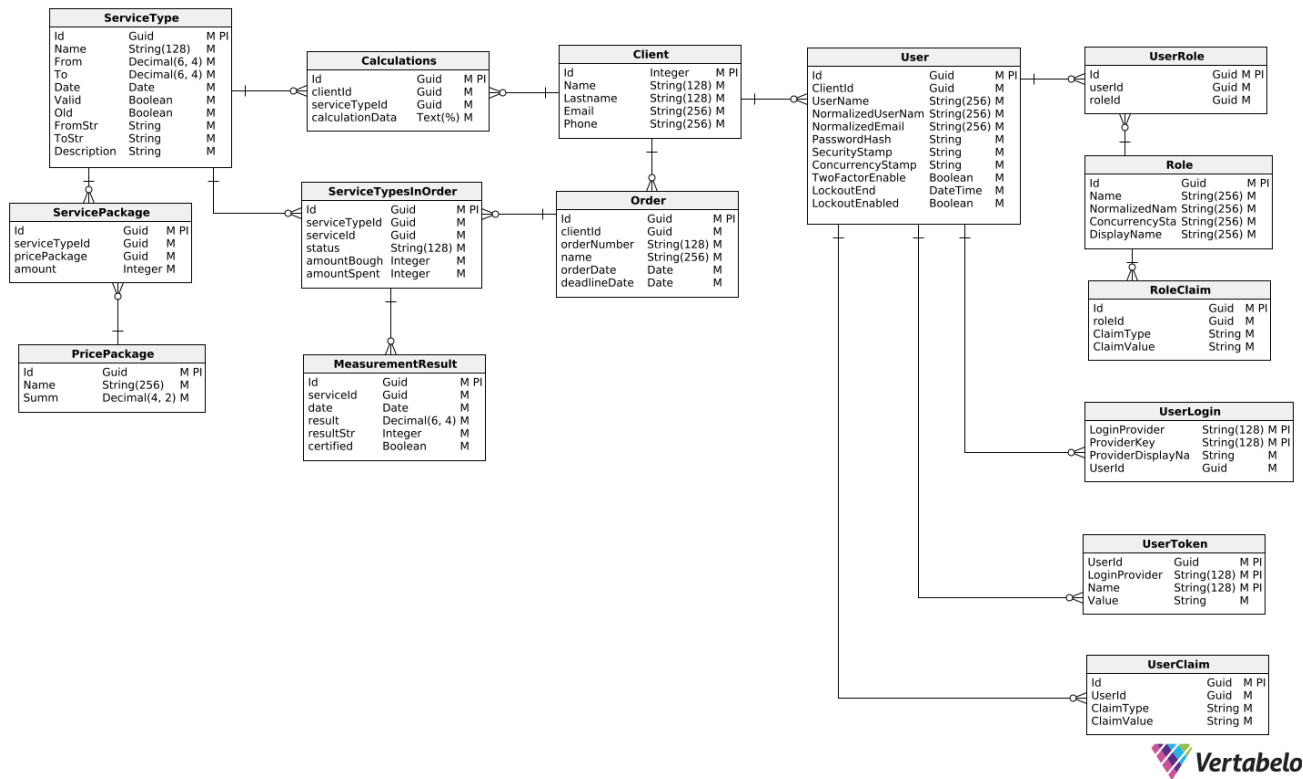


Figure 1. Entity relationship diagram.

# POSITIVE UI

## Welcome

e-mail

name

lastname

phone number

password

Sign up

Figure 2. Sign up page.



## Welcome

e-mail

password

Log in

Sign up

Figure 3. Log in page.

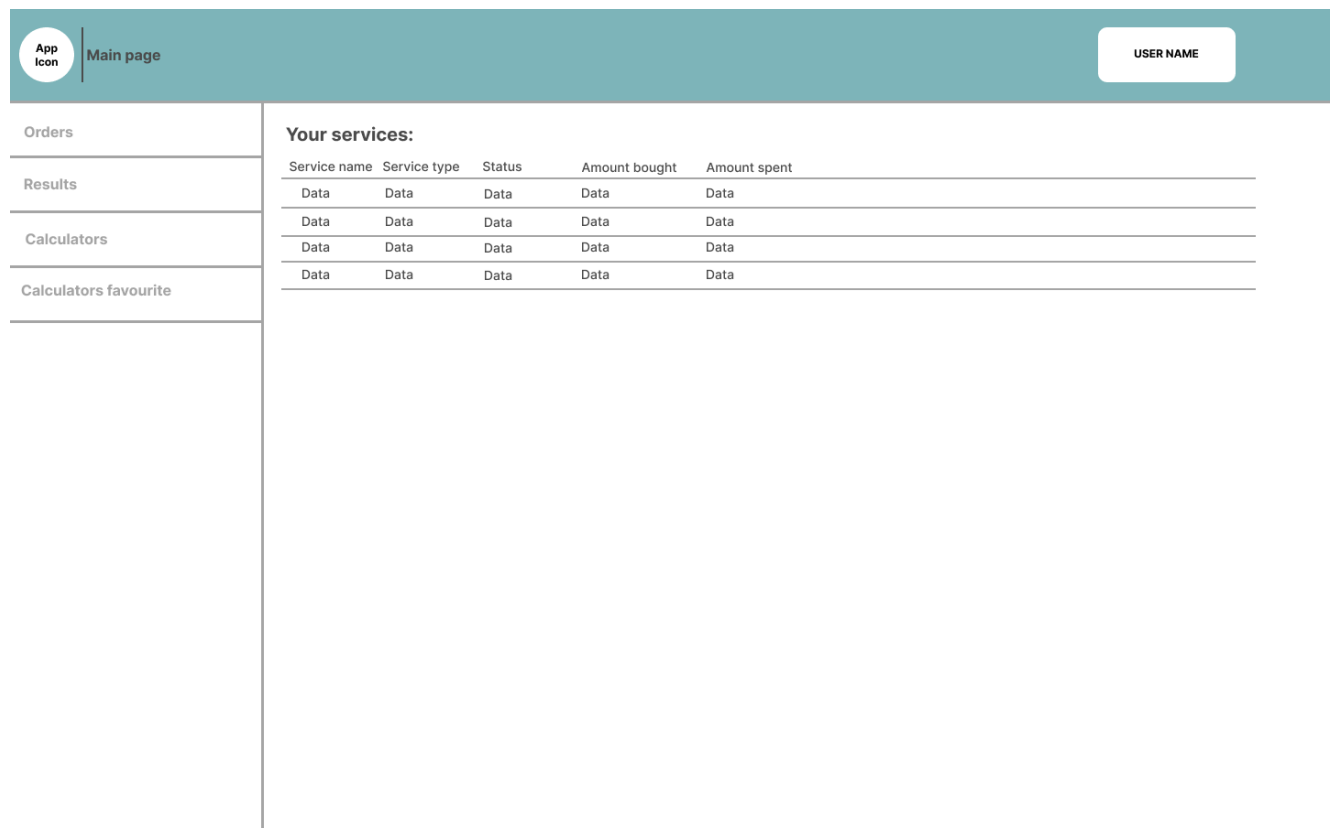


Figure 4. Main page.

App Icon

Main page

USER NAME

Orders

Results

Calculators

Calculators favourite

Orders

Add order

Order name

Date range

Order name

Order date

Data

Data

More

| Service name | Status | Service type | Amount bought | Amount spent |              |
|--------------|--------|--------------|---------------|--------------|--------------|
| Data         | Data   | Data         | Data          | Data         | Go to result |
| Data         | Data   | Data         | Data          | Data         | Go to result |
| Data         | Data   | Data         | Data          | Data         | Go to result |

Data

Data

More

Figure 5. Orders page.

App Icon

Main page

USER NAME

Orders

Results

Calculators

Calculators favourite

Place new order

Available Packages:

| Name ¢ | Price ¢ | Add to order                             |
|--------|---------|--|
| Data   | Data    | <input type="checkbox"/> <div>More</div> |

| Name ¢ | Amount ¢ | Description |
|--------|----------|-------------|
| Data   | Data     | Data        |
| Data   | Data     | Data        |
| Data   | Data     | Data        |

|      |      |  |
|------|------|--|
| Data | Data | <input type="checkbox"/> <div>More</div> |
| Data | Data | <input type="checkbox"/> <div>More</div> |

Place Order

Figure 6. New order form.

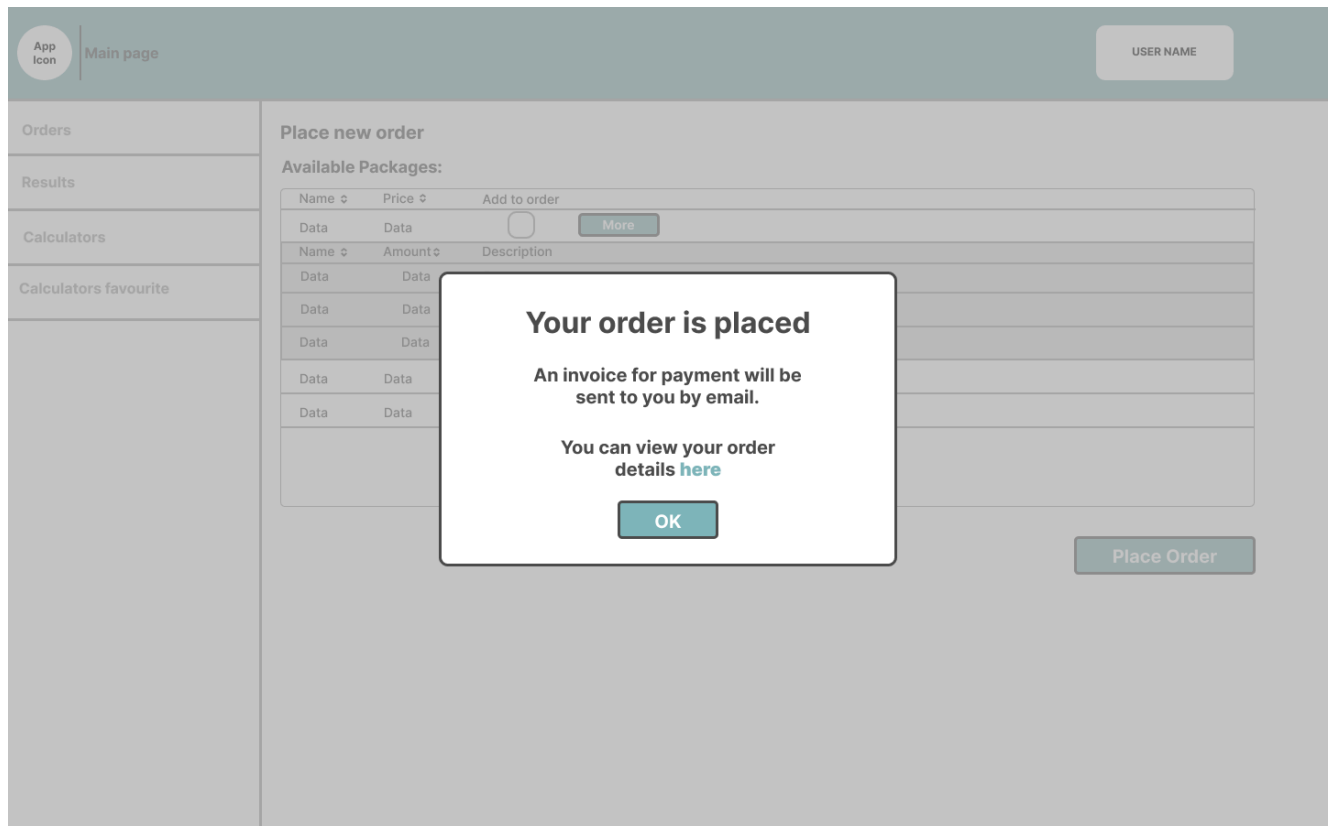


Figure 7. Successfully placed order page.

App Icon

Main page

USER NAME

Orders

Results

Calculators

Calculators favourite

Results

Date range

from: to:

Certified ☐

Service type

Result type

Number

| Result ↕ | Date ↕ | Certified ↕ | Service type ↕ |
|----------|--------|-------------|----------------|
| Data     | Data   | Data        | Data           |
| Data     | Data   | Data        | Data           |

Figure 8. Results page.

App Icon

Main page

USER NAME

Orders

Results

Calculators

Calculators favourite

Type 1 | Type 2 | Type 3

Calculator type name

Favourite

Value name

Result:

Calculation result

+

Calculate

Figure 9. Calculators page.

App Icon

Main page

USER NAME

Orders

Results

Calculators

Calculators favourite

Calculations

Calculation typeResult typeDate range

from:to:

| Calculation type | Result ↕ | Result type ↕ | Date ↕ |           |
|------------------|----------|---------------|--------|-----------|
| Data             | Data     | Data          | Data   | Implement |
| Data             | Data     | Data          | Data   | Implement |

Figure 10. Calculations history page.