

Personal Portfolio

Web Development Fundamentals

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1) Introduction

The aim of this project was to create an individual website. Therefore this project represents a personal portfolio.

Many industries and artists across various fields, including the technology sector, use personal portfolios as a tool to showcase their experience, skills, and accomplishments in order to advance their careers. These portfolios typically consist of several crucial elements that work together to form the foundation of a successful website.

The front-end primarily consists of the site's graphics and user interaction, while the back-end is responsible for the essential systems that occur behind-the-scenes. These systems are not visible to users but play a significant role in the website's functionality and efficient operation. The back-end can further be divided into smaller sections, such as the database and server, which are responsible for storing website data, managing user requests, and ensuring page security.

2) Method

2.1) Architecture

Web application architecture refers to the arrangement in which different components of a web application, such as databases, middleware systems, servers, and user interfaces, interact with each other.

A website is mainly divided into front-end and back-end. Front-end development focuses on the user-facing side of a website. Front-end development involves using programming languages such as JavaScript, HyperText Markup Language (HTML), and Cascading Style Sheets (CSS) to design, build and maintain websites. HTML is used to structure the content of the website, CSS to design and format its appearance, and JavaScript for dynamic functionality and interactivity. On the other hand, back-end focuses on the server side of the website. The back-end of a website typically consists of an application, a server, and a database. These components remain invisible for the client. Node.js is used to build back-end web applications and is used to handle incoming HTTP requests and manage communication between various systems. It is based on JavaScript and offers a range of tools and libraries that make it easy to build scalable and efficient web applications (Liz Simmons, 2023).

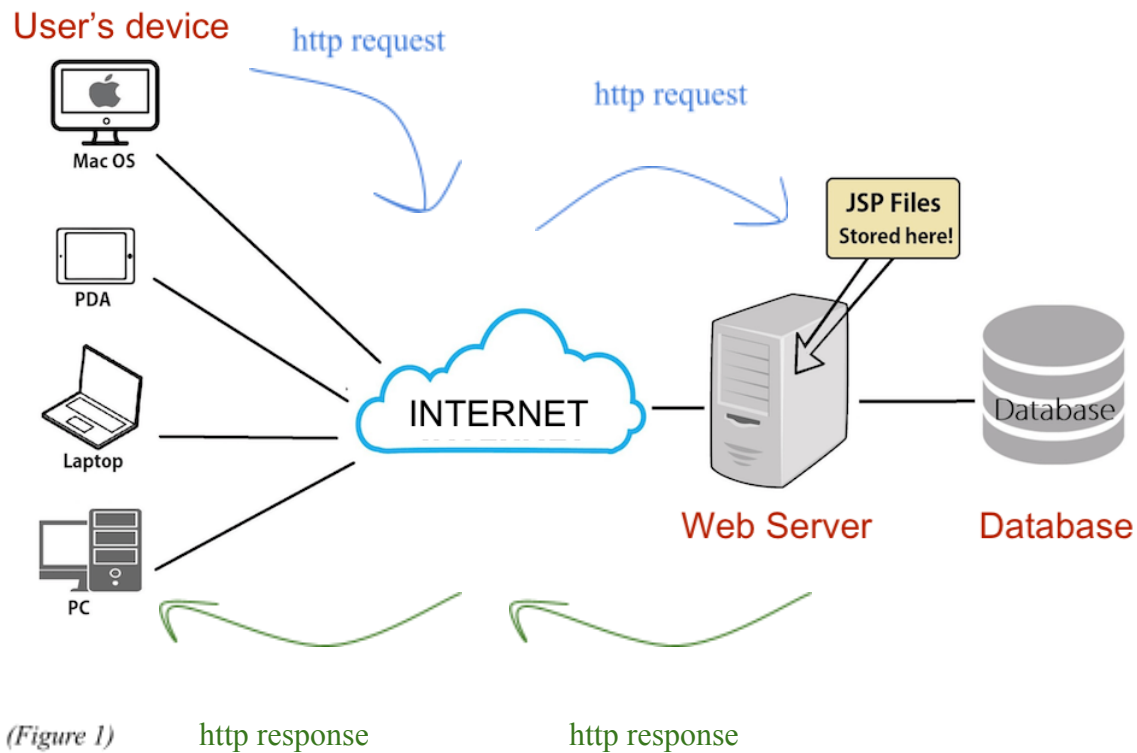


Image: [What Is the Most Popular Web Server Application? - Designveloper](#)

2.2) Database

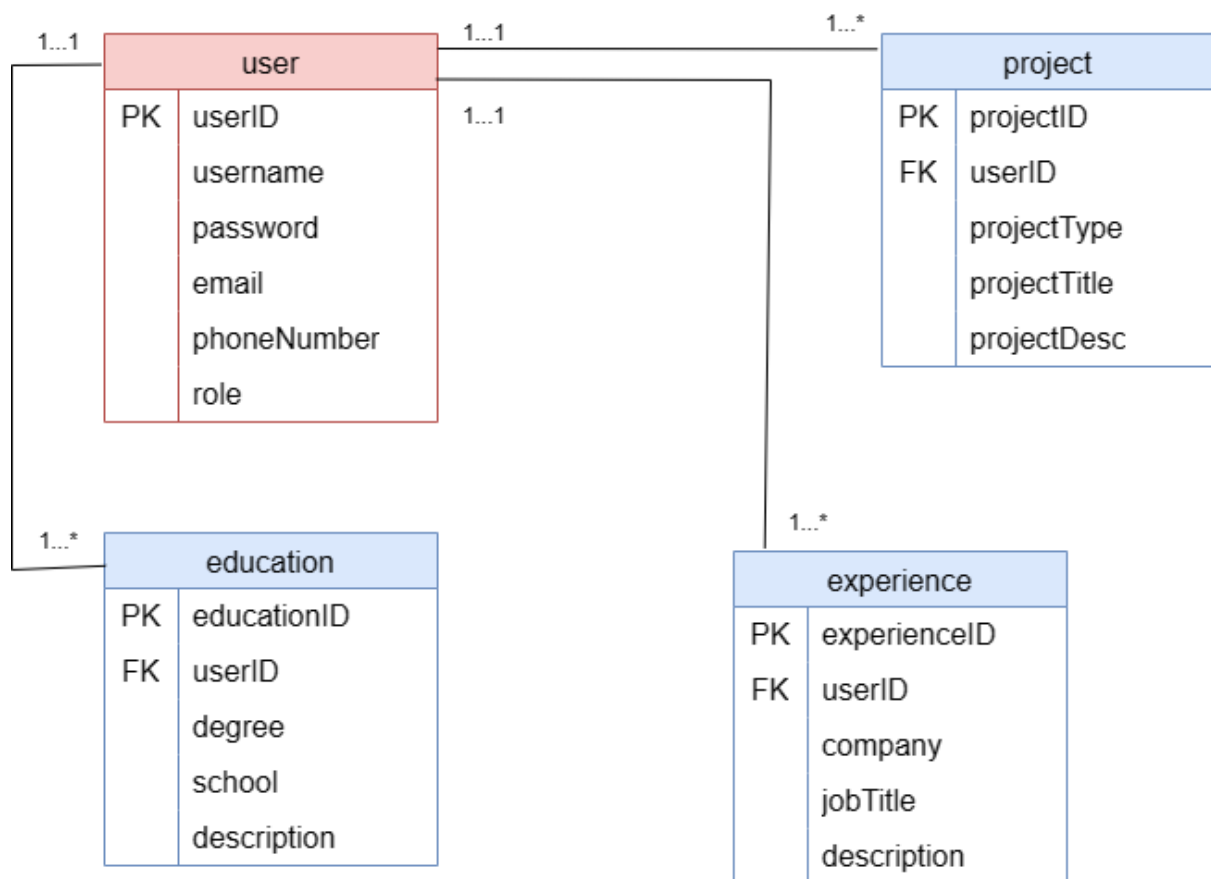
The website's information is kept in the database, which aims to ensure accurate storage and retrieval of data. A database is saved in the form of a file or a group of files. These files contain data that is divided into records consisting of one or more fields. Fields represent the fundamental way of storing data and usually contain information related to a particular feature or quality of the entity presented in the database. The database also arranges records into tables that contain information about the connections between different fields. (Oracle)

The tables are designed to work together to store all the data for the website. Each table has a special ID to make sure that every record is separate and distinct. This uniqueness is crucial to avoid having the same data repeated in multiple places, which can cause errors and other problems like anomalies or using up too much space and costing more money. (Britannica 2023).

This website consists of four tables which are user, education, experience and project. The table 'user' is directly connected with project, education and experience. UserID is thus a foreign key to these tables. A foreign key is a column or several columns in a table in a database that creates a connection to a column in another table.

One user can have one or many educations as well as one or many experiences and projects. Therefore the cardinality to these are 1 to many (1...*). On the other hand an education, experience, or project can only be connected to one user which is why the cardinality is 1 to 1 (1...1) for these. The userID is a foreign key in the other tables

A user can have one of two roles. They can either be an admin or a viewer. The admin is authorized to make changes on the website.



(Figure 2)

2.3) Graphical User Interface

A graphical user interface is a collection of interactive visual elements and components that enable users to interact with computer software.

This website has a navigation bar at the top of the page to make it easy to navigate. (*Figure 1*)



(*Figure 3*)

A login form with a light blue background. At the top, it says "Welcome!" in a large, bold, dark blue serif font. Below that, it says "Please Login" in a slightly smaller, bold, dark blue serif font. The form contains two input fields: "Username:" and "Password:", both with light blue borders. Below the password field is a "Login" button with a light blue background and dark blue text.

(*Figure 4*)

On the login page a user can login using their username and password (*Figure 2*). If the user is an admin, they will be able to make changes on the website such as create a new project, but also delete a project and update a project.

A user can browse the projects listed on the website on the 'Projects' section. However, if the user is an admin, additional tabs will be available to modify the projects. (*Figure 3*) (*Figure 4*).

All the information on the website is structured in white boxes created with CSS. Moreover a hover effect is implemented on clicking any of the tabs on the project side to enhance user engagement

A form for submitting a new project with a light blue background. It has three input fields: "Title:", "Info:", and "Description:", each with a light blue border. Below the "Description:" field is a "Submit New Project" button with a light blue background and dark blue text.

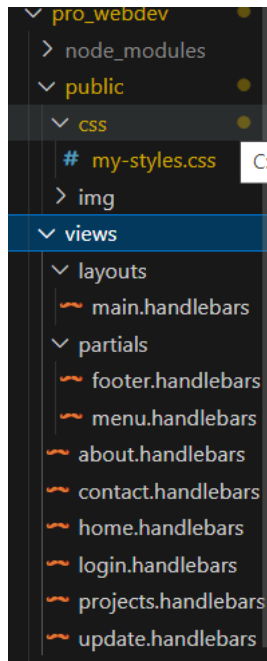
(*Figure 5*)

A set of three buttons with a light blue background. The top button is "Read More" in a bold, dark blue serif font. Below it are two buttons: "Update" and "Delete", both in a bold, dark blue serif font.

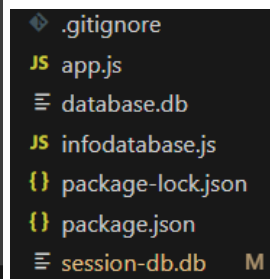
(*Figure 6*)

2.4) Web Application

Several programming languages were utilized to construct the website. To create a dynamic structure and additional styling, CSS, HTML, and Handlebars were used. Figure 7 and figure 8 shows th content of the folder



(Figure 7)



(Figure 8)

Security is very important when it comes to web applications as it stores data like passwords. Passwords should never be stored as text. Storing vital information in plain text exposes it to the risk of cyber attacks. A secure way to store data involves hashing, a method that transforms input data into a string of characters, which makes it unable to translate.

Admin: The username for the admin is maria11 and the password is malls11.

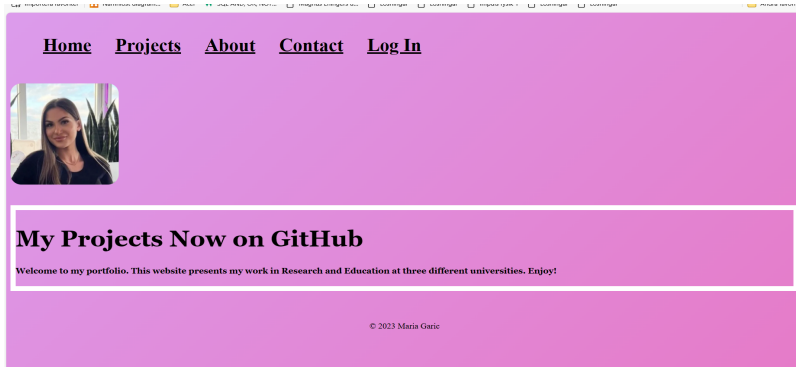
Non-admin: The username for a non-admin is user222 and the password is password222.

Localhost: localhost:8080

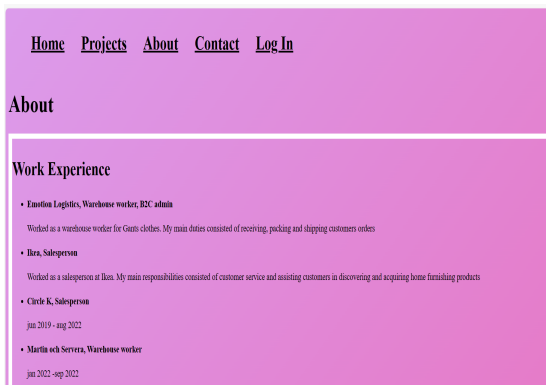
GitHub repository: [mariagaric/pro_webdev](https://github.com/mariagaric/pro_webdev)

3) Results

The following figures illustrate the final results of the project.



(Figure 9) (Home Page)



(Figure 10) (About Page)



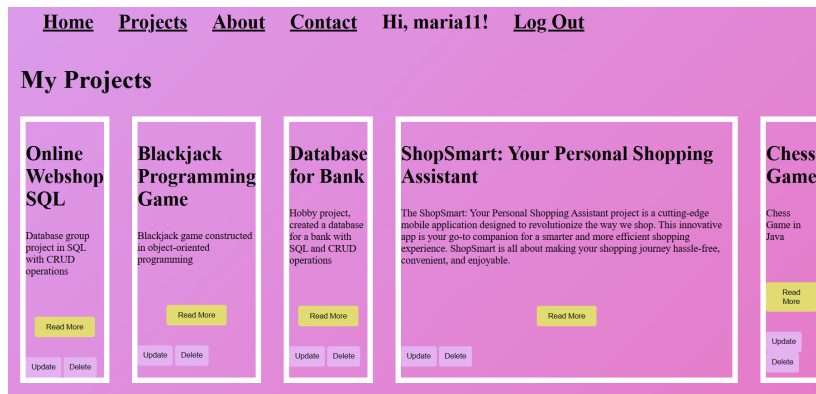
(Figure 11) (About Page)



(Figure 12) (Contact Page)



(Figure 13) (Login Page)



(Figure 14) (Projects Page)

4) Discussion

As a result of this project, this website project has been a valuable learning experience in terms of project organization and utilizing new technology.

A range of tools and frameworks were implemented, including HTML, CSS, Node.js, Handlebars, JavaScript and SQLite3. Another useful tool was Github which is a collaborative coding platform that allows developers to host their code repositories and work with other developers on shared projects.

5) References

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[What Is the Most Popular Web Server Application? - Designveloper](#)