Master of Applied Computer Science

Modern Internet Technologies

Winter Term 19/20

Project Report

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31.01.2020

Progressive Web Application

A progressive web application (PWA) is a type of application software's delivered through the web, built using common web technologies including HTML, CSS and JavaScript. It is intended to work on any platform that uses a standards-compliant browsers . Functionality includes working offline, push notifications, and device hardware access, enabling creating user experiences similar to native applications on desktop and mobile devices. Since a progressive web app is a type of webpage or websites known as a web applications, there is no requirement for developers or users to install the web apps via digital distribution systems like apple store or google play

HTML

HTML stands for Hypertext Markup Language. It allows the user to create and structure sections, paragraphs, headings, links, and blockquotes for web pages and applications.

HTML is not a programming language, meaning it doesn't have the ability to create dynamic functionality. Instead, it makes it possible to organize and format documents, similarly to Microsoft Word.

When working with HTML, we use simple code structures (tags and attributes) to mark up a website page. For example, we can create a paragraph by placing the enclosed text within a starting **<p>** and closing **</p>** tag.

CSS

CSS stands for Cascading Style Sheets with an emphasis placed on "Style." While HTML is used to structure a web document (defining things like headlines and paragraphs, and allowing you to embed images, video, and other media), CSS comes through and specifies

your document's style—page layouts, colors, and fonts are all determined with CSS. Think of HTML as the foundation (every house has one), and CSS as the aesthetic choices

JavaScript

Javascript (JS) is a scripting languages, primarily used on the Web. It is used to enhance HTML pages and is commonly found embedded in HTML code. JavaScript is an interpreted language. Thus, it doesn't need to be compiled. JavaScript renders web pages in an interactive and dynamic fashion. This allowing the pages to react to events, exhibit special effects, accept variable text, validate data, create cookies, detect a user's browser, etc.

Tools/IDE

An integrated development environment (**IDE**) is a software application that provides comprehensive facilities to computer programmers for software development. An **IDE** normally consists of at least a source code editor, build automation tools and a debugger

- **Visual Studio Code**

Visual Studio Code is a source-code editor developed by Microsoft for Windows, Linux and macOS. It includes embedded Git and support for debugging, syntax highlighting, intelligent code completion, snippets, and code refactoring

GitLab

GitLab is a system for managing Git repositories. It's written in Ruby, and allows you to deploy meaningful version control for your code easily. It was first published on GitHub in October 2011, and has grown into a powerful tool since then. GitLab is published under the MIT license, but it is mandatory to keep a mention of the author when redistributing the code.

Features

- **Web interfaces**

The web interface resembles the one of GitHub in many cases, which has proven very functional to many developers.It is very consistent and plain, in spite of the quantity of functions it contains. It's possible to open merge requests for branches, view diffs, or even edit files right in the web interface, and then stage the changes to a commit

- **Managing permissions**

Who has the permission to do what, and how easy is it to add and change team members? These are the key questions you should ask yourself when dealing with administering users on any platform.GitLab has some very well-designed roles, and allows you to apply these. From guest to master, you have diverse possibilities to limit and grant access to functions such as pushing to repositories or which branches a developer can push to, so that you can control which code ends up in your product or project

- **Documenting your project**

Documenting projects can be a difficult thing to track, because it is often not described as an important task from the start; but, with GitLab you have great tools for making it more meaningful and faster to create. Through built-in issue tracking and wikis, you can cross reference files, commits, and of course other wiki pages. These are great tools that can enable your team to keep everybody on the same page and prevent projects, no matter how complex, from growing into something that is hard to understand

Vue.js

Vue.js is a progressive open-source Model–View–ViewModel (MVVM) framework for JavaScript used to create web interfaces and single-page apps. It was developed back in 2014 by Evan You, who, together with other collaborators, continue its maintenance.

Besides website interfaces, developers use Vue.js for app development, either for desktop or mobile. Also, Vue.js has since become a preferred front-end tool for many due to the HTML extension and the JS base. Among the notable brands using this framework are 9 Gag, Grammarly, Buzzfeed, Nintendo, Alibaba, Gitlab, and Xiaomi.

Advantages of vue.js

- Small size
- Understandable and Usable
- Easy Integration
- Comprehensive Documentation
- Flexibility

Node.js

Node.js is an open source, cross-platform runtime environment for developing server-side and networking applications. Node.js applications are written in JavaScript, and can be run within the Node.js runtime on OS X, Microsoft Windows, and Linux.

Why Node.js?

A common task for a web server can be to open a file on the server and return the content to the client.

Here is how PHP or ASP handles a file request:

1) Sends the task to the computer's file system.
2) Waits while the file system opens and reads the file.
3) Returns the content to the client.
4) Ready to handle the next request.

Here is how Node.js handles a file request:

1) Sends the task to the computer's file system
2) Ready to handle the next request.
3) When the file system has opened and read the file, the server returns the content to the client.

Node.js eliminates the waiting, and simply continues with the next request. It runs single-threaded, non-blocking, asynchronously programming, which is very memory efficient.

Mongo DB

- MongoDB stores data in flexible, JSON-like documents, meaning fields can vary from document to document and data structure can be changed over time
- The document model maps to the objects in your application code, making data easy to work with
- Ad hoc queries, indexing, and real time aggregation provide powerful ways to access and analyze your data.
- MongoDB is a distributed database at its core, so high availability, horizontal scaling, and geographic distribution are built in and easy to use
- The data model available within MongoDB allows you to represent hierarchical relationships, to store arrays, and other more complex structures more easily.

- MongoDB uses the concept of sharding to scale horizontally by splitting data across multiple MongoDB instances.
- MongoDB can run over multiple servers, balancing the load and/or duplicating data to keep the system up and running in case of hardware failure.

Express

Express is a minimal and flexible Node.js web application framework that provides a robust set of features to develop web and mobile applications. It facilitates the rapid development of Node based Web applications. Following are some of the core features of Express framework

- Allows to set up middlewares to respond to HTTP Requests.
- Defines a routing table which is used to perform different actions based on HTTP Method and URL.
- Allows to dynamically render HTML Pages based on passing arguments to templates.

Socket.IO

Socket.IO is a JavaScript library for realtime web applications. It enables realtime, bi-directional communication between web clients and servers. It has two parts: a client-side library that runs in the browser, and a server-side library for Node.js. Both components have a nearly identical API.

Vue-i18n

To provide internationalization you have to tell Vue to use the vue-i18n plugin and provide it a messages object. The messages object will have the translations for every language your application supports.

App architecture

- Registered Area
- Unregistered Area

Unregistered Area.

Main Page: Defaultly it displays the logo of Libherr company and other options such as Products, About, Login, Register, Contact in navigation bar and it dsiplays the product page automatically but user can access products, about, register and contacts.

Products: It displays all the products with images of the parts and also with its description.

About: It displays information about the company timelines
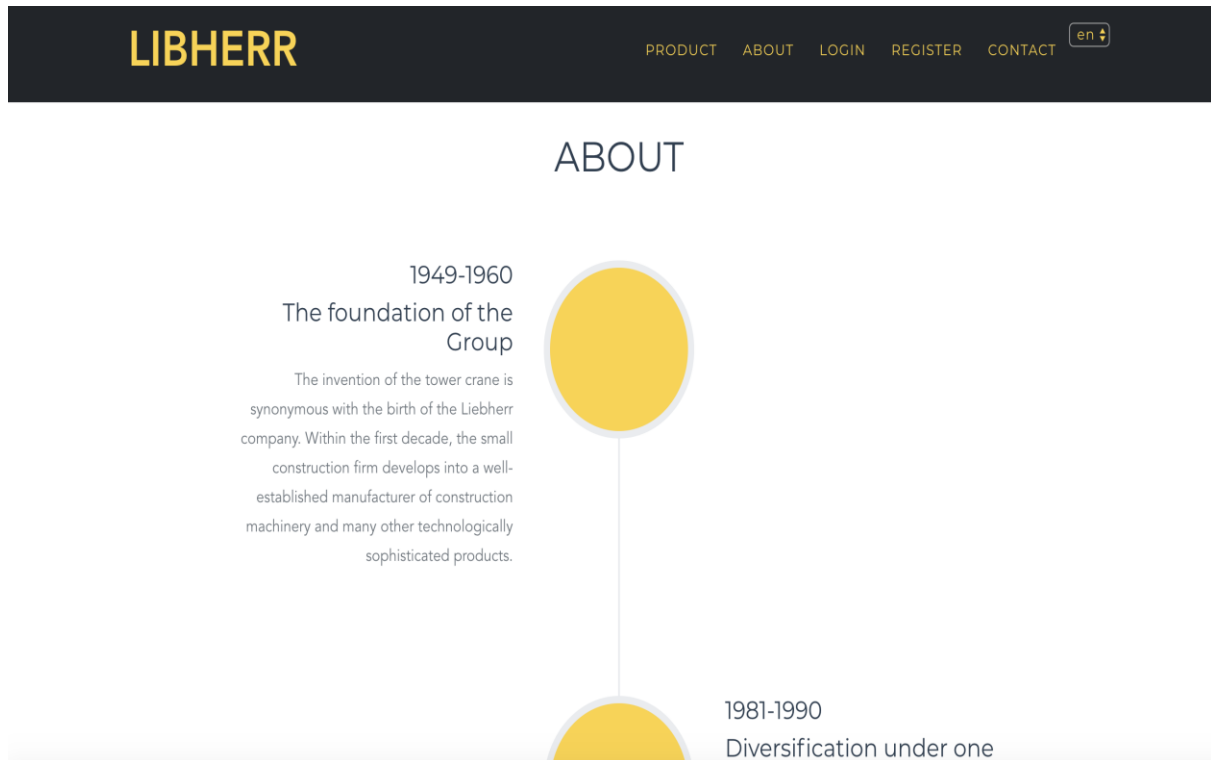
Login/Register: Login page will display the login form but to log in user have to create an account to for registration user can allow redirect to register page by clicking on Not Registered? Button.

LOGIN

Email *

Password *

login

Not Registered?

Register: User can add name, email, password for registration and click on the button sign up it will redirect the user to login page automatically
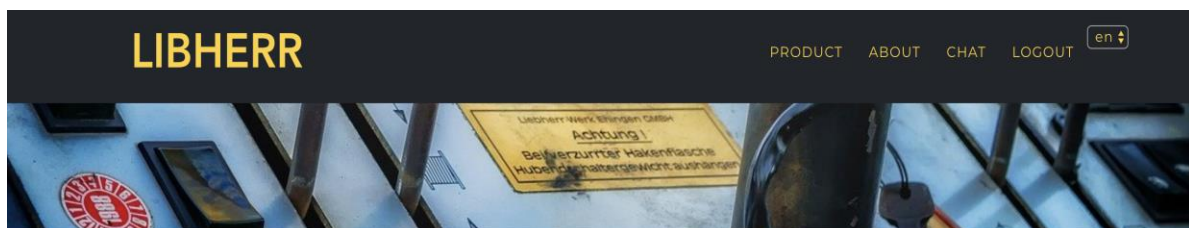
SIGN UP

Name *

Email *

Password *

Sign up

Registered Area

After successful login navigation bar will display two other options chat and logout and user will be automatically redirect to About page.

**Chat:** On chat page user will be able to chat with another user who is already logged in and it will show how many people are currently online. For testing purpose open another browser tab and enter same url and click on logout it will be redirected to main page now login using different account now two different users can chat from two different accounts.

User 1: e.g. User (iva) send a message "hi"
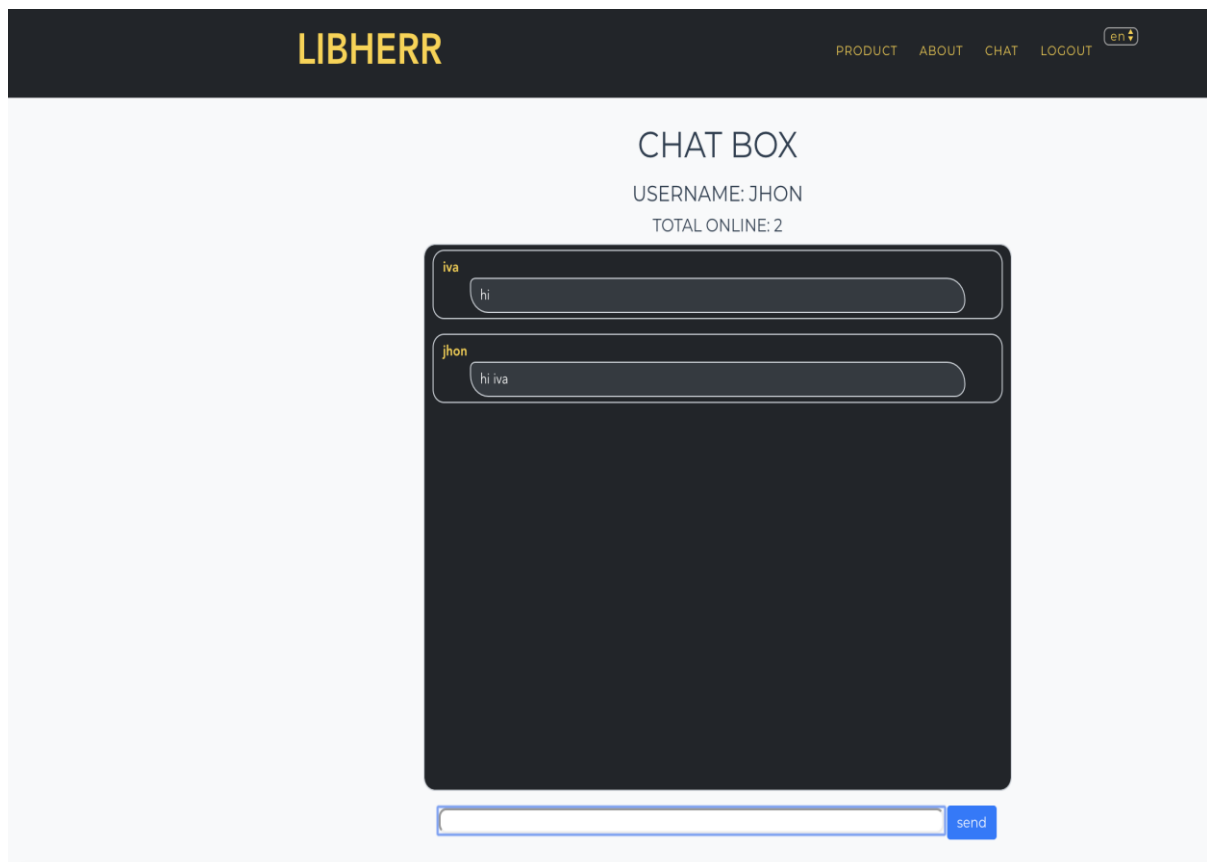
User 2:e.g. User (jhon) sucessfully receive the message.