Industrial Attachment (Sessional)

Course: CSE-402


# Industrial Attachment at Selise Digital Platforms

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# 1 Introduction

SELISE is a Swiss-owned software firm that specializes in consumer-centric cloud and mobile solutions for various industries. With a global presence in multiple locations, including Dhaka, they stand out for their innovative approach, flexible work culture, and commitment to talent development. SELISE is a leader in delivering technological solutions and fostering a dynamic work environment.

## 1.1 Guiding Philosophy and Core Values

At SELISE, a profound philosophy underpins their approach, rooted in empowerment and the relentless pursuit of enhancing their customers' competitive edge. Positioned as more than just a tech providers, SELISE emerges as a steadfast partner in understanding intricate business needs. Their methodology revolves around active listening, insightful questioning, thorough analysis, and collaborative co-creation, ensuring the delivery of precisely tailored business solutions.

With a rich tapestry of experience spanning over a decade, SELISE builds enduring partnerships with clients and their teams. This collaborative spirit, coupled with a commitment to go the extra mile, forms the foundation of relationships that endure a lifetime. Throughout their journey, SELISE unwaveringly upholds the impeccable standards of Swiss quality, ensuring every endeavour echoes the essence of precision and excellence.

SELISE's core values serve as guiding principles, shaping their every endeavor:

- **Embracing Swissness:** SELISE embodies the essence of Swiss precision and reliability, ensuring their work reflects the highest standards of quality and accuracy.
- **Adopting a Customer-Centric Approach:** SELISE places their customers at the heart of their operations, tailoring solutions that align perfectly with the unique requirements of each client.
- **Creating Value:** SELISE is dedicated to creating tangible value for their

clients, transforming challenges into opportunities and fostering sustainable growth.

- **Embracing Diversity:** SELISE celebrates diversity, recognizing the strength that different perspectives bring to innovation and problem-solving.
- **Continuously Moving Forward:** SELISE is perpetually in motion, embracing change and evolution. Their forward-thinking approach ensures they remain at the forefront of technological advancements, offering cutting-edge solutions to their clients.

In essence, SELISE's philosophy and values epitomize a commitment to excellence, collaboration, and unwavering dedication to their client's success, making them trusted partner in the ever-changing landscape of technology and business.

## 1.2 Strategic Organizational Framework: Balancing Startup Agility with Corporate Structure

In its initial phase, SELISE operated as a singular entity. Over time, the company experienced significant growth, expanding its workforce to over 500 employees spread across six diverse nations - Switzerland, Germany, UAE, Bangladesh, Bhutan, and Kosovo. Despite this expansion, SELISE has successfully maintained the agility and intimacy typically associated with startups while operating within the framework of a large corporation.

This achievement can be attributed to the company's innovative structure, comprising 13 distinct departments, each functioning as an independent entity. One notable department, the "Product Lab," focuses on developing internal technology and products. These innovations are then leveraged by other departments to enhance their operational effectiveness and efficiency.

SELISE's operational model is characterized by flexibility and collaboration. The company boasts an open workspace concept complemented by designated meeting rooms. These spaces are allocated based on the specific needs of each department, fostering a dynamic and adaptable work environment.
Furthermore, the company has implemented a unique resource-sharing system:

in cases where a department has surplus manpower, it can lend its resources to other departments, ensuring optimal utilization of human capital across the organization.

To maintain harmony and resolve any issues that arise, SELISE has established a dedicated HR team. This team plays a pivotal role in problem-solving, and handling various challenges that may arise within the organization. Additionally, they are responsible for intricate tasks such as the calculation of financial metrics related to departmental activities.

In essence, SELISE has successfully blended the spirit of a startup with the infrastructure of a large corporation by fostering a culture of independence, collaboration, and adaptability. Through its innovative approach to departmental autonomy and resource management, the company continues to thrive while preserving the close-knit dynamics of its early days.

## 1.3 Services provided by Selise Digital Platform

SELISE offers a comprehensive suite of services to empower businesses with cutting-edge solutions:

**Strategy Consulting**: Tailored strategies that leverage both digital and business perspectives to drive resilience and sustainable growth.

**Process Engineering**: Analysis, adaptation, and design of business processes, with a focus on automation and digitization for enhanced efficiency.

**Platform Development**: Customized software solutions designed to optimize business processes using the latest technology and global talent.

**Application Management**: Round-the-clock support and maintenance to ensure a seamless end-to-end software experience.

## 1.4 Technology used by SELISE Digital Platform

SELISE is highly skilled and knowledgeable in all key technologies, including FinTech, IoT, telecom, etc. With more than 11 years of experience in the IT industry, they are qualified to assist their clients with all of their technological requirements.

The following domains encapsulate SELISE's versatile technological competencies:

- **Ecommerce:** SELISE excels in creating seamless online shopping experiences, ensuring businesses thrive in the digital marketplace.
- **Internet of Things (IoT):** SELISE leverages IoT technology, connecting devices and systems to enhance efficiency, convenience, and data-driven decision-making.
- **EGovernment:** SELISE contributes to the evolution of public services, employing technology to enhance accessibility, transparency, and citizen engagement within government initiatives.
- **Telecom:** SELISE navigates the complex landscape of telecommunications, providing innovative solutions that facilitate seamless communication and connectivity.
- **FinTech:** SELISE pioneers advancements in financial technology, offering cutting-edge solutions that revolutionize banking, payments, and financial services.
- **Healthcare:** SELISE utilizes technology to improve healthcare delivery, ensuring better patient outcomes, streamlined processes, and data security.
- **Logistics:** SELISE optimizes supply chain management through technology, enhancing logistics operations, inventory control, and overall efficiency.
- **Web Design:** SELISE excels in creating visually appealing and user-friendly websites, enhancing brand presence and customer engagement in the digital realm.
- **Auditing:** SELISE utilizes advanced tools and methodologies for auditing, ensuring accuracy, compliance, and transparency in financial reporting.

SELISE's profound expertise in these domains underscores their ability to provide tailored, innovative solutions to their clients, solidifying their position as a trusted technological partner in the ever-evolving digital landscape.

## 1.5 SELISE Development Methodology

To make the work process quicker and easier, Selise has adapted the agile development approach and contemporary technologies to the clients' business. They adhere to the Agile Software Methodology in order to offer our clients the best service. It ensures that the client's needs and expectations are met and increases their engagement in every stage of the project.

### 1.5.1 Agile Software Methodology

Agile is an iterative approach to software development and project management that enables teams to deliver value to their clients more quickly and with fewer headaches.

An agile team produces work in small, digestible increments as opposed to placing all of their eggs in one massive "big bang" launch. Teams have a built-in system for adjusting swiftly to change since requirements, plans, and results are regularly assessed. Agile's adaptability and focus on continuous improvement make it a powerful methodology for delivering high-quality software that meets evolving client needs.

- Excellent quality product.
- Continuous improvement.
- More transparency and predictable results.

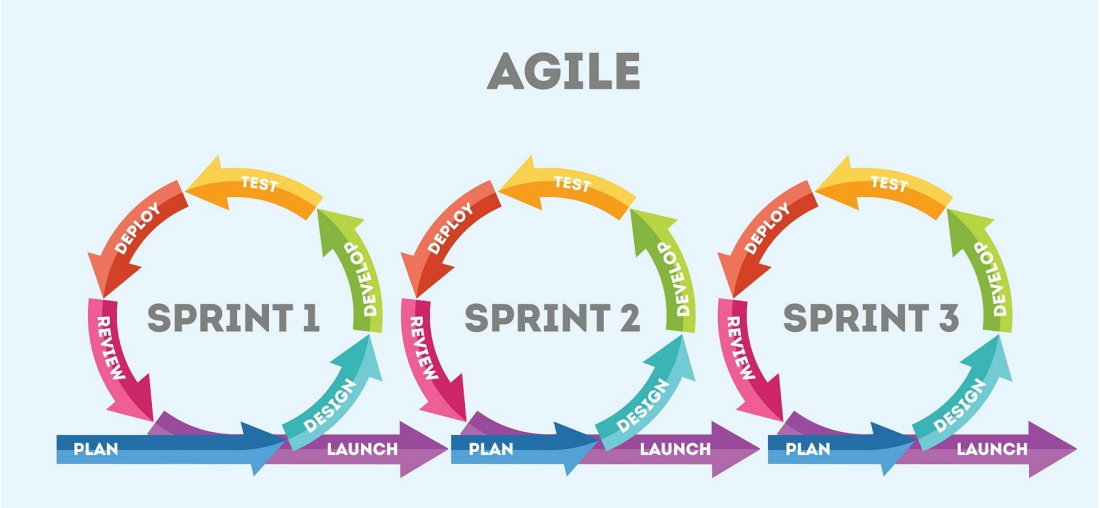


Figure 1.1: Agile Software Methodology

### 1.5.2 Scrum

Scrum, an agile development technique, focuses on iterative and incremental processes, allowing for swift adjustments to meet customer needs. It emphasizes open communication, shared ownership, and continuous improvement to deliver value throughout the project. The process starts with defining product qualities and prioritizing them (product backlog). Selise employs Slack and Jira for Scrum management.

## 1.6 Products Launched by Selise

Selise provides customized software development services that easily meet project requirements and client needs.

### 1.6.1 Samsung Kiosk.

Reduce lines for self-service and allow consumers to place orders by using a networked self-service ecosystem. The touch-based approach is adaptable. Numerous industries and use cases can fit it. In order to free up personnel, reduce wait times, expedite transactions, and cut transaction times. It is designed with brand identification, hardware compatibility, language choices, and accessibility in mind.


Figure 1.2: Samsung Kiosk

### 1.6.2 Selise E-Signature

An electronic signature can be any sound, symbol, or process that expresses a person's intention to agree to anything electronically. It might be a scanned image of your handwritten signature, a stamp, your fingerprint, or a recorded verbal affirmation. With a focus on interoperability, SELISE Signature can connect to any system and provide workflow solutions for practically every e-signature requirement.

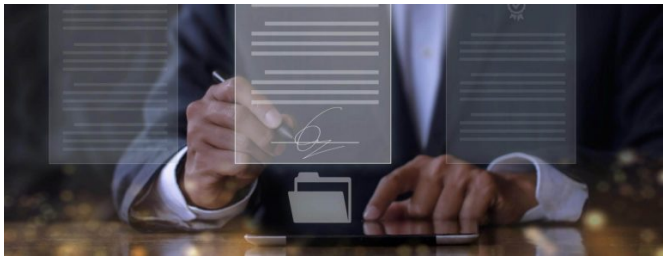

Figure 1.3: E-Signature

### 1.6.3 Data Collection and auditing tool for a German railway organization

Through tablet-based software, this technology empowers engineers and field inspectors to collect data along rail tracks offline. It offers web-based planning and assignment for inspections, featuring data synchronization for comprehensive analysis through tables and charts. It supports report creation and provides offline assistance.


Figure 1.4: Auditing tool

### 1.6.4 Page Builder

Convert ideas into Selise page builder. With the help of SELISE Page Builder, it's simple to publish content online, expand your audience, and quickly update your content as your company grows. Along with attractive design templates, Page Builder provides top-notch customer service and a team of qualified designers who will implement your ideal design for a fraction of the price of a design agency.

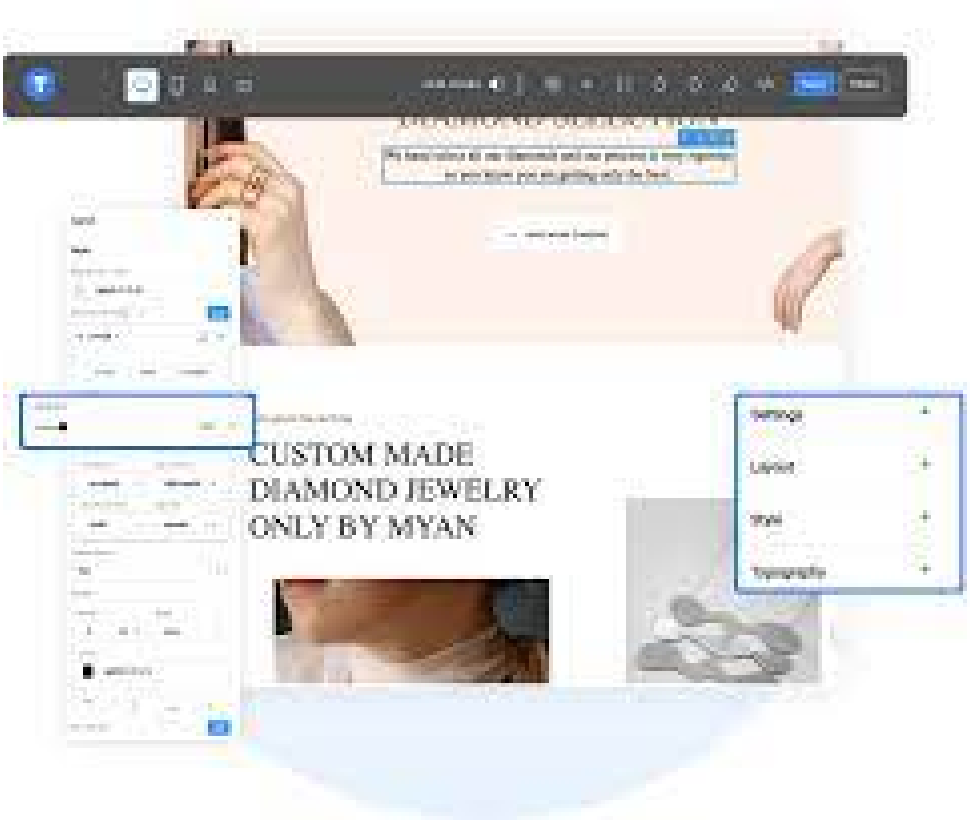


Figure 1.5: Page Builder

# 2 Learned Technologies

At Selise, we have dedicated two weeks to attending a total of nine informative sessions covering a wide range of web technologies and tools. These sessions encompassed topics such as the fundamental workings of websites and browsers, providing a high-level overview of the internet, exploring client and server-side development, discussing frontend and backend frameworks, as well as delving into version control systems, among others.

## 2.1 Git and GitHub

Git is a distributed version control system that is free and open source and is intended to manage any project, no matter how big or small, quickly and effectively. It may clone a project to work on a local copy, and manage projects with repositories, Staging and Committing allow you to manage and monitor changes. Pull the most recent project version to a local copy, branch and merge projects to allow for work on various project components and versions, Local updates are pushed to the main project.

Microsoft has purchased GitHub, the largest source code host in the world, since 2018. GitHub must-haves include Branches, Repositories, Commits, A development project can be kept in a GitHub repository. Any form of file, including HTML, CSS, JavaScript, documents, data, and images, can be contained within folders. Additionally, a license file and a README document explaining the project should be included in a GitHub repository. Ideas and other resources that you want to share can be stored in a GitHub repository. When working with many versions of a repository at once, a GitHub branch is used.

A repository by default has a master branch (also known as a production branch). The master branch (as it existed at a certain point in time) is a copy of all other branches. Changes are referred to as commits on GitHub. A description that explains the rationale for a change is included with each commit. The centre of GitHub collaboration is pull requests. You can ask for your changes to be integrated (pulled in) with the master by submitting a pull request.

## 2.2 HTML, CSS, JavaScript

HTML (Hypertext Markup Language): HTML is the standard markup language for creating and structuring content on the World Wide Web. It uses a system of tags and elements to define the structure and elements of a web page, such as headings, paragraphs, images, links, and forms. HTML is essential for content presentation and acts as the backbone of web pages.

CSS (Cascading Style Sheets): CSS is a technology used in web development to control the presentation and layout of web pages. It enables web designers and

developers to define the visual aspects of a webpage, such as colors, fonts, spacing, and positioning. By separating content (HTML) from presentation (CSS), it allows for more attractive and consistent web designs.

JavaScript: JavaScript is a versatile and widely used programming language for web development. It makes web pages interactive and dynamic, allowing developers to add functionality, respond to user actions, and create real-time updates without reloading the entire page. JavaScript is executed in the user's web browser, enabling it to create engaging and responsive web experiences and is a fundamental component of modern web development.

## 2.3 TypeScript

TypeScript is a programming language developed by Microsoft that extends the capabilities of JavaScript. It adds static typing to JavaScript, which means that developers can define the types of variables, and function parameters, and return values in their code. This helps catch errors and improve code quality during development.

TypeScript is known for its strong support for tooling and IDEs, making it easier to work on large and complex projects. It compiles to regular JavaScript, allowing it to be executed in any browser or runtime that supports JavaScript. TypeScript is especially popular in the development of large-scale applications and is used in many web and server-side development frameworks and tools.

## 2.4 Angular

As part of our internship at Selise Company, our team has been diligently learning Angular, a comprehensive front-end web development framework. We've collectively gained a good grasp of the core concepts and capabilities that Angular offers. Angular's component-based architecture has proven to be a useful tool for building modular web applications that are both efficient to develop and maintain. We've used modules to organize our code effectively and have found services to be a practical means of data management and code sharing.
Data binding and observables have allowed us to create responsive user interfaces,

and Angular's routing system has enabled the development of single-page applications. We're excited about the potential that Angular brings to our projects and look forward to applying our knowledge to create functional and efficient web applications

## 2.5 Express JS

Express.js has proven to be a valuable tool for backend development, offering a streamlined and efficient way to build web applications and APIs. We've delved into the middleware concept, which enables us to handle various tasks in our application flow, such as authentication and request processing, with ease. This has allowed us to create more organized and modular code, making our projects more manageable.

Additionally, we've explored routing, which simplifies the handling of different HTTP requests and parameters, giving us better control over our application's behaviour. We are excited to continue our exploration of Express.js and its capabilities, as it promises to be a fundamental asset.

## 2.6 Postman

Postman is a powerful API development and testing tool that streamlines the process of creating, testing, and documenting APIs. It simplifies the design and execution of API requests, offers advanced scripting for automation, and allows developers to organize their work into collections for efficient collaboration and documentation. Postman's capabilities make it a go-to choice for developers and teams looking to enhance their API development workflow.

## 2.7 MongoDB

MongoDB is a NoSQL database system that employs a flexible document-oriented data model. Unlike traditional relational databases, MongoDB stores data in documents, which can have varying structures, accommodating unstructured and semi-structured data efficiently. This feature is analogous to organizing data in digital folders, allowing for adaptability to changing data requirements.

MongoDB is particularly valued for its capability to manage large data volumes effectively. Its horizontal scalability makes it a prime choice for contemporary applications requiring rapid data processing. Due to its speed and performance in data management, MongoDB is extensively utilized across diverse applications, from content management systems to real-time analytics. This makes it a versatile and reliable option for businesses seeking a robust database solution to meet their evolving data needs.

# 3 Project Description

## 3.1 Project 1: Basic Calculator

### 3.1.1 Project Description:

The task involved developing a basic calculator using HTML, CSS, and JavaScript. It required creating a user interface for arithmetic operations, enabling users to perform calculations with a clear and interactive design.

### 3.1.2 Purpose:

The purpose of this project was to gauge the proficiency of the participants in web development technologies, with a focus on HTML, CSS, and JavaScript. It aimed to assess our ability to create a functional user interface tailored for a specific application, efficiently handle user interactions, and implement basic mathematical operations. Through this project, we have to showcase our skills in front-end web development and our capability to craft a straightforward yet functional web application.

### 3.1.3 Implementation Details:

To implement this basic calculator, we designed an HTML structure to create the calculator's interface. JavaScript functions were defined to facilitate user input management, handle calculations, clear the display, and enable users to remove the last character. CSS styles were applied to give the calculator a visually appealing and user-friendly design.

The calculator's functionality empowered users to perform fundamental arithmetic operations, rendering it a valuable tool for conducting calculations while maintaining an engaging and practical user experience.

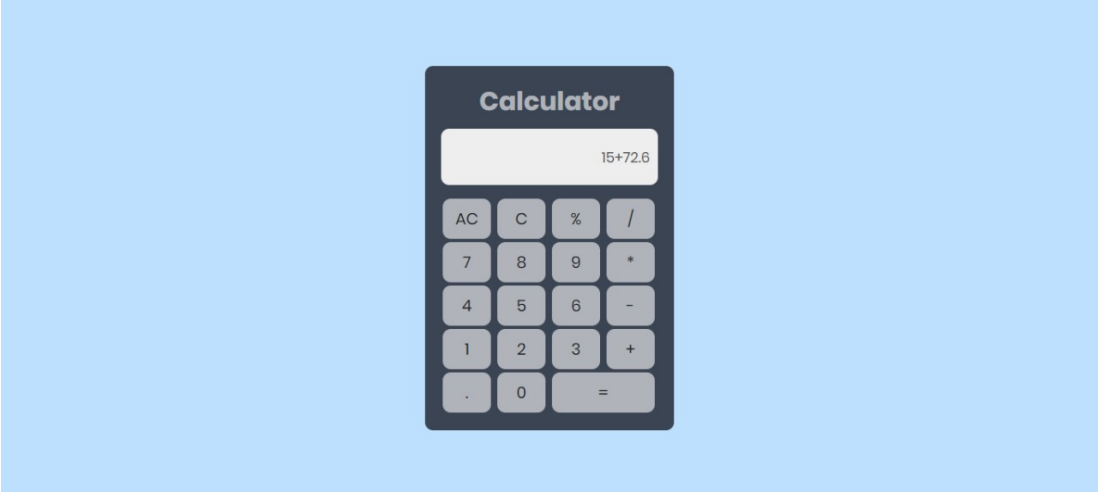


Figure 3.6: Basic calculator app

## 3.2 Project 2: Dynamic Form

### 3.2.1 Project Description:

The project at hand involved the creation of a dynamic form using Angular, a popular front-end framework.

### 3.2.2 Purpose:

The core objective of this endeavour was to gain practical experience in building and utilizing forms with Angular. The project required the utilization of ngModel for data capture and the implementation of a dynamic form to enhance the user experience.

### 3.2.3 Implementation:

To achieve this goal, the project began with the development of a dedicated component responsible for form creation. The dynamic form was designed to collect three key pieces of information: First Name, Last Name, and an "Add Skill" option, which allowed users to dynamically add their skills as needed.

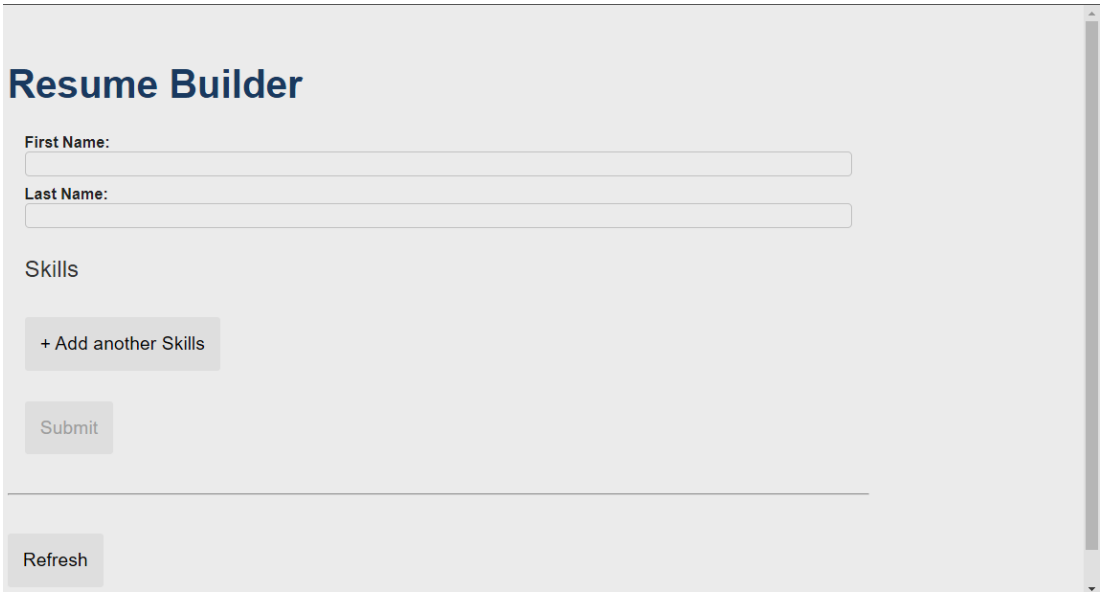


Figure 3.7: Resume builder homepage

The data entered into the form was then relayed to the Resume component through a service. In the Resume component, this data was further processed and organized to display names and associated skills in a structured and user-friendly format.

This project exemplified a seamless flow of information within the Angular framework and showcased an efficient means of data handling and presentation. It provided a practical demonstration of how Angular can be used to create dynamic and interactive forms for data collection and representation.

Furthermore, this project served as an insightful illustration of Angular's versatility in simplifying the development of responsive and user-centric web applications.

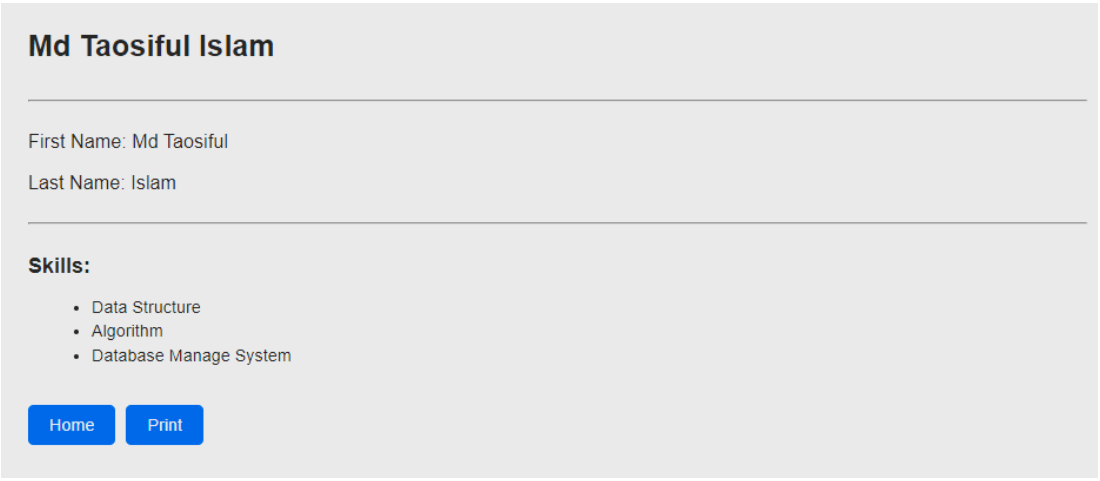


Figure 3.8: Resume generation

## 3.3 Project 3: Display API Data

### 3.3.1 Project Description:

The project's objective is to create a web application using Angular, which interfaces with a public API to retrieve and display quotes. The application should have a visually engaging design, with a medieval theme, and showcase random quotes from the Game of Thrones series in the frontend. An essential feature is the "Refresh" button, allowing users to request and display five new random quotes. This task serves as a practical exercise to evaluate the ability to connect to APIs from the frontend and effectively present the data using Angular.

### 3.3.2 Purpose:

The primary purpose of this project is to assess the ability to work with external data sources through APIs, a fundamental skill in contemporary web development. By constructing a medieval-themed Game of Thrones quote viewer, the project aims to evaluate the capacity to design a visually appealing user interface while incorporating user interaction. This exercise aims to test the integration of technical proficiency with creative web design and responsive user experiences, crucial for modern web development projects.

### 3.3.3 Implementation:

The implementation of this project involves the creation of an Angular application with a themed user interface inspired by the medieval era. To achieve this, custom styles, including fonts and images reminiscent of Game of Thrones, will be incorporated. The application will utilize Angular's built-in HTTP client to make API calls to the designated Game of Thrones quote API. The retrieved quotes will then be presented in a visually appealing manner on the front end, organized using Angular's component architecture.

The "Refresh" button will trigger a new API request, updating the displayed quotes dynamically. Angular's event handling and data binding features will be employed to ensure a seamless and responsive user experience. Additionally, error-handling mechanisms will be in place to manage potential API call issues

gracefully. The project's success will depend on the effective combination of front-end development skills, creative design, and interactivity, exemplifying the practical application of web development principles.

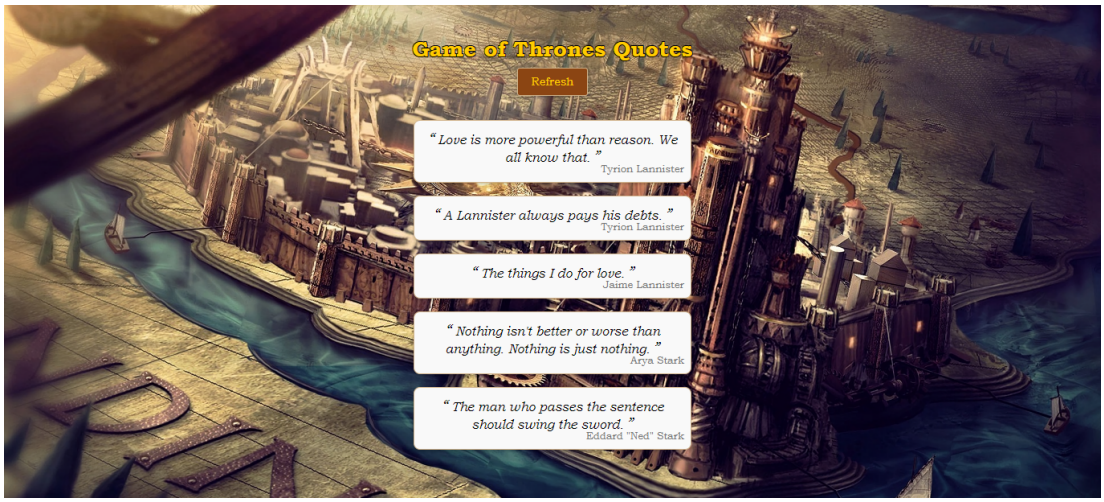


Figure 3.9: Showing API data to frontend

## 3.4 Project 4: Restful API creation

### 3.4.1 Project Description:

The task involved creating an API endpoint with the Express.js framework and seamlessly integrating it with the front end, followed by a comprehensive testing phase using the Postman tool.

### 3.4.2 Purpose:

The primary objective of this project was to develop a custom RESTful API within the Express.js framework, with seamless integration into a NoSQL database, specifically MongoDB. The project's key focus included the systematic implementation of various HTTP methods through routing and rigorous testing using Postman.

### 3.4.3 Implementation Details:

In the course of this project, a custom REST API was crafted using the Express backend framework, in conjunction with the MongoDB NoSQL database.

Initially, we meticulously implemented a range of HTTP methods via routing and rigorously verified their functionality using Postman, ensuring their reliability and accuracy. Subsequently, the backend was successfully connected to the

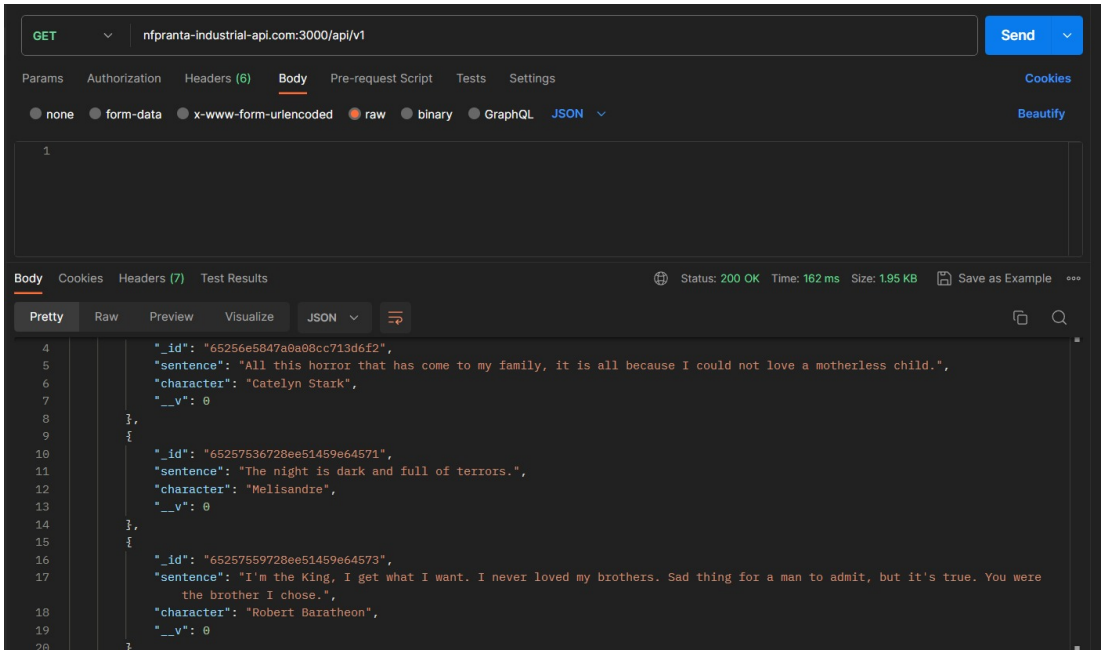


Figure 3.10: GET Method extracting all quotes

database. We then proceeded to design a structured schema for posting and validating new data entries in our newly established database. This schema facilitated the insertion of data through the POST method. Finally, data entries were retrieved from the database through the GET method, thus completing the implementation process.

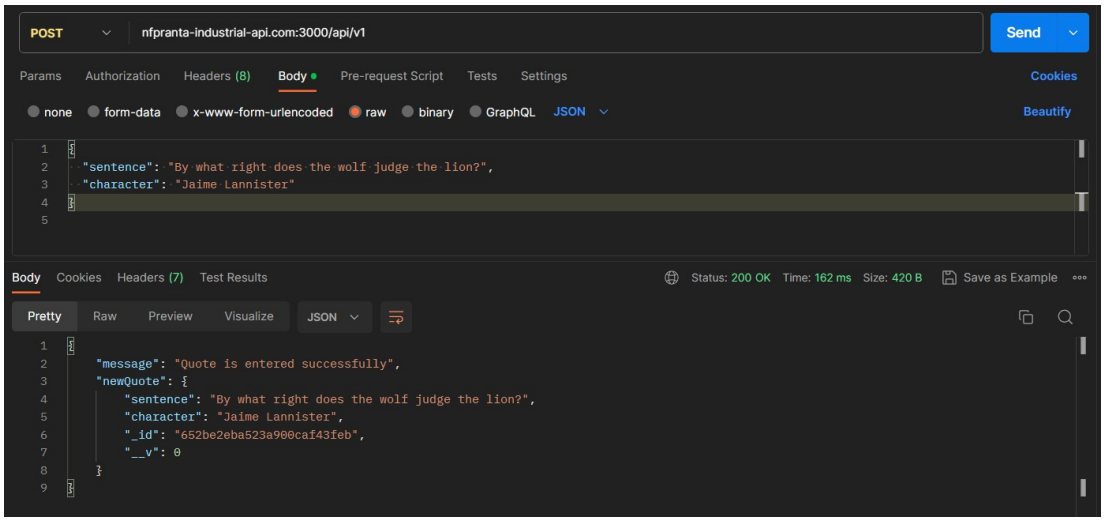


Figure 3.11: POST Method to insert new quotes

# 4 Conclusion

In conclusion, Selise has given us a clear idea about the competitive industries and technology trends. Moreover, we gained knowledge about requirement understanding, management hierarchy, and software life cycle by analyzing the company's products. Along with this, we are given hands-on training on git and GitHub, JavaScript, Typescript, Angular, Node JS, Express JS, MongoDB, RESTful API, and Postman. Finally, we are given four projects on the knowledge gathered through our journey. The knowledge and experience from this attachment will help us in our upcoming journey.