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| TRƯỜNG ĐẠI HỌC GIAO THÔNG VẬN TẢI  **KHOA CÔNG NGHỆ THÔNG TIN**    **FINAL DESIGN PROJECT ASSIGNMENT**  Project  **IT Job Search Website Management**   |  |  | | --- | --- | | The Supervisor | : TS. Nguyễn Hiếu Cường | | Student | : Trần Minh Hiển | | Class | : Vietnam-English IT K61 | | Student ID | : 181202325 |   **Hà Nội – 2024** |

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| UNIVERSITY OF TRANSPORT  AND COMMUNICATIONS  **FACULTY OF INTERNATIONAL EDUCATION** | SOCIALIST REPUBLIC OF VIETNAM  **Independence –Freedom – Happiness** |

*Hanoi, February 22, 2024*

**FINAL DESIGN PROJECT ASSIGNMENT**

**Student's Full Name: Trần Minh Hiển**

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Specialized : Information Technology Program: Regular

**The Supervisor**: ***Assoc.Prof.***.Nguyễn Hiếu Cường

Workplace : Department of Software Technology

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**Project name**: IT Job Search Website Management

1. **Content and Scope of the Project**
2. Content:

* Information management:
* Manage IT candidate profiles: register, update, search, delete.
* Manage IT job postings: post, approve, modify, delete.

- Manage categories of requirements, positions, locations.

* Application processing:
* Receive and manage job applications.
* Classify and evaluate candidates.
* Send notifications to candidates.

- Schedule interviews.

* Data analysis:
* Monitor the number of candidates, job postings.
* Analyze labor market trends.

- Evaluate recruitment effectiveness.

* Marketing:
* Promote the website to candidates and employers.
* Optimize SEO for the website.

- Increase website traffic and usage.

* Customer support:
* Answer inquiries for candidates and employers.
* Provide technical support to website users.
* Support live chat with customers

1. Scope:

* Website Classification:
* General Recruitment Website: Allows for all IT fields, positions, and locations.
* Specialized Recruitment Website: Focuses on one or a few specific industries.

- Regional Recruitment Website: Focuses on a specific geographic area.

* Type:
* Free: Allows candidates and employers to use for free.
* Paid: Provides premium features to employers for a fee.
* Scale:
* Small Website: A few thousand users.

1. **Technologies, Tools, and Programming Languages**
2. ***Introduction to C#***

* C# is a modern, powerful, object-oriented programming language developed by Microsoft. It is used to build a variety of applications, including:
* Web applications: Websites, portals, enterprise web applications.
* Mobile applications: Hybrid apps, progressive web apps (PWAs).
* Desktop applications: Windows Forms, WPF.
* Game: Unity, Unreal Engine.
* Databases: Microsoft SQL Server.
* Features of C#:
* Easy to learn: Simple syntax, easy to understand, easy to access for beginners.
* High performance: Optimized for performance and usability.
* Flexible: Can be used for a variety of applications.
* Large community: Many support resources and a strong development community.
* Support for many libraries: Can be integrated with many popular JavaScript libraries.
* Features:
* Object-oriented programming (OOP): C# supports object-oriented programming, allowing programmers to use concepts such as classes, objects, inheritance, encapsulation, and abstraction.
* Multithreading: C# supports multithreading, allowing programmers to create and manage threads to perform tasks concurrently and maximize system potential.
* Generics: C# supports generics, allowing programmers to create generic data structures and algorithms without knowing the specific data type in advance.
* LINQ (Language Integrated Query): C# provides LINQ, a flexible syntax for manipulating data in data structures such as arrays, lists, and databases.
* Async/await feature: C# supports async/await, allowing programmers to write asynchronous code easily and efficiently, improving application performance.
* Delegate and Event features: C# supports Delegate and Event, allowing programmers to handle events and interact between application components flexibly.
* Exception Handling: C# provides an exception handling mechanism to manage and handle exceptions during program execution.

1. ***Introduction to Blazor:***

* Blazor is a new web framework developed by Microsoft that allows you to build interactive, single-page (SPA) web applications using C# and Razor.
* Key features of Blazor:
* Uses C#: Blazor allows developers to use C# - a language familiar to the .NET community - to build web UIs.
* High performance: Blazor is compiled to WebAssembly (WASM) - a bytecode format that can run directly on the web browser, providing high performance comparable to JavaScript.
* Cross-platform support: Blazor can run on modern web browsers, including Chrome, Firefox, Safari, and Edge.
* Easy to learn: Blazor uses Razor - a syntax that combines HTML and C# - making it easy and intuitive to build web UIs.
* Can use .NET libraries: Blazor allows you to use existing .NET libraries in web applications.
* Blazor has two programming models:
* Blazor Server: Handles user requests on the server and sends UI update results to the client.
* Blazor WebAssembly: Compiles C# code to WASM and runs directly on the web browser, providing higher performance but requiring JavaScript code to interact with the DOM.
* Blazor is becoming increasingly popular in the .NET developer community due to its advantages such as:
* Helps .NET developers build web applications without learning JavaScript.
* Delivers high performance for web applications.
* Supports cross-platform and is easy to learn.
* Comparison of Blazor with JavaScript, React, and Angular:

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| **Technology** | Blazor | JavaScript | React | Angular |
| **Programming Language** | C# | JavaScript | JavaScript | TypeScript |
| **Performance** | High | Average | Hign | Average |
| **Cross-platform Support** | Yes | Yes | Yes | Yes |
| **Ease of Learning** | Easy (for .NET developers) | Difficult | Easy | Difficult |
| **Libraries** | Many .NET libraries | Many JavaScript libraries | Many JavaScript libraries | Many Angular libraries |
| **DOM Interoperability** | Limited | Good | Good | Good |

1. ***Introduction to ASP.NET***

* ASP.NET: A free, open-source web development platform developed by Microsoft.
* Features:
* Supports multiple programming languages: C#, F#, Visual Basic.
* Supports multiple programming models: Web Forms, MVC, Razor Pages.
* Provides a variety of libraries and frameworks: ASP.NET Core, Entity Framework, SignalR.
* Easy to learn and use: Simple syntax, with plenty of documentation.
* High performance: Optimized for web applications.
* Good scalability: Supports large and complex web applications.
* Applications:
* Building web applications: Websites, portals, enterprise web applications.
* Building web services: RESTful APIs, SOAP APIs.
* Building mobile web applications: Hybrid apps, progressive web apps (PWAs).
* Benefits:
* Free: Free to use and modify the source code.
* Open source: Large community and many support resources.
* High performance: Optimized for web applications.
* Good scalability: Supports large and complex web applications.
* Easy to learn and use: Simple syntax, with plenty of documentation.
* Reasons to use ASP.NET:
* Powerful and flexible web development platform.
* Supports multiple programming languages and programming models.
* Provides a variety of useful libraries and frameworks.
* Easy to learn and use, with a large community and many support resources.

1. ***Introduction to Vue.js***

* Vue.js: An open-source JavaScript framework used to build user interfaces (UIs) for web applications.
* Features:
* Easy to learn: Simple syntax, easy to understand, easy to access for beginners.
* Flexible: Can be used for various types of web applications.
* High performance: Optimized for performance and usability.
* Large community: Many resources and a strong development community.
* Support for many libraries: Can be integrated with many popular JavaScript libraries.
* Key features of Vue.js:
* Two-way data binding: Vue.js allows developers to bind data between application components and the DOM, automatically updating data when changes occur.
* Directives: Vue.js provides directives to add dynamic features to HTML elements, making it easy for developers to manipulate the DOM.
* Components: Vue.js supports building applications based on independent components, helping to separate logic and interface, easy to reuse and maintain.
* Lifecycle hooks: Vue.js provides lifecycle hooks for components, helping developers perform necessary actions at different times during the component lifecycle.
* Vue Router: Vue.js comes with Vue Router, a library that helps manage routes and navigation in an application with ease.
* Vuex: Vue.js provides Vuex, a library for managing application state, helping to manage and access data efficiently.
* Vue CLI: Vue.js provides Vue CLI, a tool that helps create and manage Vue.js projects quickly and easily.
* Applications:
* Building web applications: Websites, portals, enterprise web applications.
* Building mobile web applications: Hybrid apps, progressive web apps (PWAs).
* Building user interfaces: Single-page applications (SPAs), dashboards, widgets.
* Comparison of Vue.js with React, and Angular:

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| **Technology** | Vue.js | React | Angular |
| **Ease of learning** | Easy | Easy | Difficult |
| **Performance** | High | High | Medium |
| **Scalability** | Good | Good | Good |
| **Community** | Large | Large | Large |
| **Library support** | Large | Large | Large |
| **Syntax** | Template | JSX | TypeScript |
| **DOM manipulation** | Good | Good | Good |
| **Suitable for** | SPAs, websites, web applications | SPAs, websites, web applications | Enterprise, complex applications |

1. Introduction to SQL Server

* SQL Server: A relational database management system (RDBMS) developed by Microsoft.
* Features:
* T-SQL (Transact-SQL) Support: SQL Server uses T-SQL as its query and programming language, providing powerful features for manipulating databases.
* Security: SQL Server provides security features such as user authentication and authorization, data encryption, integrity checks, and activity auditing.
* High Availability: SQL Server supports high availability features such as Always On Availability Groups, Failover Clustering, and Database Mirroring to ensure database availability and reliability.
* Performance Optimization: SQL Server provides tools and features for performance optimization such as Execution Plans, Indexing, Query Optimizer, and In-Memory OLTP to improve query performance and accelerate data processing.
* Business Intelligence: SQL Server includes Business Intelligence features such as Reporting Services, Integration Services, and Analysis Services to support data analysis and reporting.
* Scalability: SQL Server supports scalability to expand the database as needed, including Partitioning, Data Compression, and Resource Governor.
* Cloud Integration: SQL Server provides integration with cloud services such as Azure SQL Database and Azure SQL Managed Instance, allowing you to deploy and manage databases on the cloud environment.
* SQL Query Language:
* Use SQL to query, manipulate, and manage data.
* SQL is the standard query language for RDBMS.
* Provides various commands to query data: SELECT, INSERT, UPDATE, DELETE, etc.
* Applications:
* Store data for web applications: Websites, portals, enterprise web applications.
* Store data for mobile applications: Hybrid apps, progressive web apps (PWAs).
* Store data for enterprise applications: ERP, CRM, SCM.

1. **Expected Key Results**

* Master the knowledge of C# Basic, Vuejs, Blazor, etc,…
* Build a database to manage data for the website.
* Analyse the system design for the website.
* Build a complete and professional job search website
* Improve the ability to self-search and research documentation
* Complete the work on schedule

1. **Main references**

* <https://learn.microsoft.com/en-us/dotnet/csharp/tour-of-csharp/tutorials/>
* <https://dotnet.microsoft.com/en-us/learn/aspnet/blazor-tutorial/create>
* <https://vuejs.org/guide/introduction.html>
* <https://www.w3schools.com/sql/sql_intro.asp>
* https://learn.microsoft.com/en-us/dotnet/core/introduction

1. **Project Implementation Plan**

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| **No.** | **Task** | **Estimated Time** | **Notes** |
| 1 | Determine the name and content of the project | 01/01/2024 - 20/02/2024 |  |
| 2 | Building a Project Outline | 01/02/2024 -10/03/2024 |  |
| 3 | Analyze and design the web system | 11/03/2024 – 31/03/2024 |  |
| 4 | Build the database | 01/04/2024 – 15/04/2024 |  |
| 5 | Build the website | 16/04/2024 – 01/05/2024 |  |
| 6 | Test and evaluate the system operation | 01/05/2024 – 15/05/2024 |  |
| 7 | Complete the report | 15/05/2024 – 20/05/2024 |  |

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| **Head of Department** *(Signature and full name)* | **Head of Division**  *(Signature and full name)* | **Supervisor**  *(Signature and full name)* | **Student**  *(Signature and full name)* |