Technical Specifications

Project Name: Tresearch
Application Type: Web Application

Trial By Fire
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Introduction

Tresearch is an interactive mapping tool in which a user can document their learning journeys. Users of this application will be able to create their own knowledge tree(s) that are composed of nodes where a node consists of a title, summary/description, and an optional tag. Tresearch will be a multi-page web application supported on the latest version of Chrome. To remain on target with intended customers, the IP range will be limited to the United States.

Documentation Technologies

a. Diagrams.net - Chrome Web Application
    i. Used to collaborate and create diagrams such as Site Map and diagrams used in High Level Design.
b. Draw.Chat - Chrome Web Application
    i. Used to collaborate and create the visuals pertaining to Decision Trees.
c. Google Docs - Chrome Web Application
    i. Used for the collaboration and shared viewing of various work items that are primarily text based.
d. Google Sheets - Chrome Web Application
    i. Utilized for contributions and reporting aspects relevant to the team and individual's burn up chart. Such aspects are the Sprint information, Stories Points, and Stories Completed. Data recorded is used to provide the graphic of the respective burn up chart.
e. Jira - Chrome Web Application
    i. Project management tool used for planning development cycles such as the various milestone dates and sprint cycles.
f. Github - Chrome Web Application
    i. Provides a collaborative version control and source code management system for any documents/files pertaining to the project as a whole. The commit history feature also allows for monitoring the contributions/accountability of team members on work items.

Communication Technologies

a. Discord - Stable 97662 (924f611)
    i. Provides a method of group communication as well as the sharing of various files/attachments. Is also used for uploading the written Daily Scrum updates of each team member, the voice chat functionality provides a platform to host meetings for the Daily Scrum or any other meeting that may arise. Various announcements are uploaded here as well.
b. Microsoft Outlook v.16.53
    i. Emailing service authorized by CSULB. Provides the group a means of communication outside of the classroom with the instructor to discuss matters such scheduling office hours or requesting feedback on work items.

    c. Zoom v.5.8.0
        i. Video and audio conferencing platform in which lectures of the class are hosted on. Instructor goes over matters pertaining and relevant to the project, software development cycle, etc.

Development Technologies

Programming Languages
    a. C# v.9.0+
        i. Language that will be used to develop the back-end logic of the product
    b. ECMAScript v.11+ Language that will be used to develop the front-end logic of the product
    c. SQL
        i. Will be used by the web application for data storage and to query the database to retrieve information necessary for processing/displaying
    d. CSS3 - DAR Report Pending
        i. Will be used to improve user experience by styling the visual structure and aesthetics of the webpage
    e. HTML **-** DAR Report Pending
        i. Used to improve the front end of the web application through styling the structure and aesthetics of the webpage

Frameworks
    a. React v.17+ - DAR Report Pending
        i. Open-source Javascript library used for building user interfaces as well as user interface components
    b. Dapper [DAR approved]
        i. Object-relational mapping tool to map between domain models and relational database

Integrated Development Environments
    a. VS Code v.1.6+
        i. Will be used for the programming languages CSS3 and EMCAScript to write code for the project. The Github Integration feature will also be utilized to update code in the repository.
    b. Visual Studio 2022 Community Edition
        i. Will be used for the writing and development of C# and SQL code necessary for the business logic of the product. The Github integration feature will also be utilized to update code in the repository.

Software Development Framework
    a. .NET v.5.0+
        i. Will provide the framework for the back-end development through the libraries of templates it provides for application development
    b. ASP.NET Core v.5.0+

      i.   Open-source web development framework built into .NET that is used for the development of web applications

Servers
   a. IIS v.10 Express
      i.   Will be used for the testing environment for the web server providing service to the client and enabling communication between the two.
   b. SQL Server 2019 Developer Edition
      i.   Will be used to host the database server providing a location to store and manage data pertaining to the web application

Database Client
   a. SQL Server Management Studio v.18.9
      i.   Provides an integrated development to configure and manage the SQL server databases of the product

Supported Browser
   a. Google Chrome v.94.0.4606.71+
      i.   The latest version of the web browser/hosting platform for web applications. Users must maintain the latest version to access Tresearch. Development will keep up to date with upcoming versions to test and ensure compatibility of our product.

Operating System
   a. Windows 10 Home 64-bit
      i.   The operating system of the devices used for the development of the project. The 64-bit version is required as the increased amount of RAM is necessary for handling larger file sizes as well as better performance for the database.
   b. Windows 10 Pro 64-bit
      i.   The operating system maintained for the system handling the testing and production environments. Windows 10 Pro is necessary for the production environment of IIS v.10.

Testing Tools

Testing Tools
   a. xUnit [DAR Approved]
      i.   Provides a unit testing tool that allows us to control our tests.

Development System Requirements

All systems used in the development environments of the product have at least 8 gigabytes of ram, 256 gigabytes of storage space, a multi-core processor containing at least two physical cores, and will remain using Windows 10 Home 64-bit throughout the production. A stable internet connection is required, may be wireless or wired. Users must maintain the latest version of Chrome. To find the system requirements for Chrome refer to the link https://support.google.com/chrome/a/answer/7100626?hl=en.

System hardware of the device maintaining the testing and production environments for the IIS and SQL server are as follows:
- Processor - Intel(R) Core™ i7-8750H CPU @ 2.20 GHz
- Ram - 16 GB DDR4-2667Mhz Dual Channel
- Storage - Samsung 970 EVO Plus 1TB NVMe SSD (Read 3,500 MB/s, Write 3,300 MB/s)