

Tech Spec

Student Multi-Tool

12.15.2021

Team Marvel

Albert Toscano

Audrey Brio

Bradley Nickle

Joseph Cutri

Michael Kriesel (Team Leader)

Overview

Our application aims to be the one stop shop to help students with common college life problems. We will be developing this application as a web application using Google Chrome. Our product is being built as a Model-View-Viewmodel or MVVM. MVVM enforces separation of concerns which is beneficial for us since we have multiple features that don't rely on other features. The more accurate our information is and more information we can provide to users the better off their college experience can and will be.

Assumptions

- Users are able to read and understand American English
- Users are able to make required time adjustments to the Pacific Time Zone if located outside the time zone themselves.
- We will be supporting the Chrome Browser using the latest version available in January 2022. We plan on supporting each version until the latest version of Chrome available in April 2022.

Out of Scope

- Offline use
 - An Internet connection will be required at all times whilst using this application in order to send and receive information from server and database.

Software and Hardware

- Collaboration Tools
 - Discord (latest desktop or mobile client, or in-browser)
 - Needed for text and voice communication
 - Daily stand up meetings are performed over discord
 - Google Docs
 - Needed for planning and artifact generation
 - Easy access for team members to edit information on same document together
 - Can see live updates
 - Google Sheets
 - Needed for SCRUM
 - Backlogs, sprint planning, burndown charts, retrospectives, are recorded here

- Allows team members access to edit document as need be
 - Can see live updates
- Diagrams.net
 - Flowchart maker and online diagram designer
 - Needed to make flowcharts and diagrams
 - Site map, current and proposed processes, and HL Design were created here
 - Allows all team members access to edit as please
 - Can see live updates
- Google Drive:
 - File sharing for Google Docs, Google Sheets, and Draw.io
 - Organized way to keep control over documents needed for each milestone
- Communication with Client
 - Outlook
 - Deliverables and questions are to be emailed to the client
 - Zoom (latest version)
 - Meetings with client regarding feedback about deliverables are done through zoom
 - Retrospectives are also performed over zoom
 - Slack
 - Backup communication provided by client in case of emergency and no other way to communicate
- Operating Systems
 - Windows 10
 - 64-bit
 - Desktop operating system needed for development and testing
 - MacOS
 - Version 11.2.2 and 10.15.5
 - Desktop operating system needed for development and testing
 - Linux
 - Ubuntu 20.04 LTS
 - Desktop operating system needed for development and testing
- Hardware Requirements
 - Storage: 250 GB minimum, 500 GB recommended
 - Memory: 4 GB minimum, 8 GB recommended
- Version control

- Git (latest version) and GitHub:
 - Maintain and control versions of project
 - Organized way to keep track of different versions, code, and documents for other people to see
 - Need to publish deliverables by requirement of client
- Project Development Software
 - IDE
 - Linux and Mac: Visual Studio Code 1.59+
 - Code editor able to build and compile code in multiple languages
 - Need for development operations and coding purposes
 - Windows: Visual Studio 2019 Community Edition
 - Code editor able to build and compile code in multiple languages
 - Need for development operations and coding purposes
- Programming Languages
 - Frontend
 - ECMAScript 11+^[1]
 - Need for client side logic
 - Need for defining behavior of the UI
 - HTML 5 (pending approval)
 - Markup language used by web browsers to render information on the world wide web.
 - Needed to create and display web pages on browser, internet navigation, responsive images on web page, client side storage
 - Browser side views
 - CSS 2.1 (pending approval)
 - Language for describing presentation of web pages
 - Needed for formatting alongside HTML, defining styles
 - Browser side views
 - Backend Framework
 - .NET 5+, and .NET 6+ (releasing in November 2021)^[1]
 - Software framework to help run web applications
 - Needed for framework for development of website, for both frontend and backend development
 - Testing Framework
 - xUnit 2.4.1

- Needed for unit testing C#/.NET components
 - C# 9.0^[1]
 - General purpose, multi platform language used in .NET
 - Need for development operations and .NET
 - Data Store
 - Windows: Sql Server 2019 Developer/Express Edition (Database - Engine)^[1]
 - Needed for development and production
 - Mac and Linux: MariaDB 10.6+^[1]
 - Needed for development and production
 - Amazon RDS
 - Web Server
 - Windows: IIS 10+^[1]
 - Needed to accept http request and display requested information
 - Mac and Linux:
 - Apache HTTP Server 2.4+^[1]
 - Nginx 1.20+^[1]
 - Needed to accept http request and display requested information
 - Amazon EC2 Web server
 - Infrastructure as a service
 - Amazon EBS Web server
 - Infrastructure as a service
- Database
 - MySQL 8.0.26 (latest release)^[1]
 - Relational database management system based on SQL
 - Needed because we are using a relational database
 - SQL Server Management Studio (Database Client) Web Server
 - Amazon RDS
 - Infrastructure as a service
- APIs
 - Google Maps JavaScript API (pending approval)
 - Needed for a feature, which provides directions to users and uses a map to showcase different available establishments
 - Angular (tentative, pending approval)
 - Needed for MVVM implementation

- Reactjs (tentative, pending approval)
 - Needed for MVVM implementation
- Vue.js (tentative, pending approval)
 - Needed for MVVM implementation
- USAJOBS (tentative, pending approval)
 - Needed for Student Career Opportunities feature, which provides employment opportunities.

References

1. Vatanak Vong, CECS491A Section 05 Lecture, 30 Aug. 2021