

Technical Specifications: Eden Fresh

Provided by Team Web Crawlers

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1. Product Development Software and Libraries

1.1. User Interface Languages

1.1.1. Hypertext Markup Language (pending approval)

Possible Choices: HTML5, HTML4, HAML, XHTML

A hypertext markup language will be used to develop documents to provide different views to the user.

1.1.2. Stylesheet Language (pending approval)

Possible Choices: CSS3, CSS, SASS

A stylesheet language will be used to develop stylesheets to apply to the hypertext documents to develop a fluent, visually appealing user interface.

1.2. Business Logic Languages

1.2.1. Front-End Logic

Typescript 4.4 will be used to handle logic required for the front-end. Applications include general system behaviors like input validation and error handling, as well as certain features such as the street directions feature.

1.2.2. Back-End Logic

C# 9.0 will be used to develop software for the back-end layers. Applications include general system behaviors (input validation, security, access control), the business logic used for our app's unique features, and for database information processing. C# web development is supported by ASP.NET, and has been pre-approved.

1.3. Software Frameworks and Libraries

1.3.1. Single Page Application Framework (pending approval)

Possible Choices: Angular 12.2.8, Vue.js 3.2.19, Vue.js 2.6.14, React 17.0.2

A single page application framework will be used to assist Single Page Application front-end development. It will provide JavaScript/TypeScript libraries for development of the user interface to make it compatible with the SPA architecture.

1.3.2. Back-End Framework

.NET Core 5.0.10 (pending change to *.NET Core 6* upon release) provides a framework for web app development in the form of ASP.NET. It provides libraries for building web pages, microservices, and other architecture components.

1.3.3. Hashing Algorithm Package (pending approval)

Possible Choices: Konscious.Security.Cryptography.Argon2 1.2.1, BCrypt-Official 0.1.109, SimpleCrypto 0.3.30.26

A hashing algorithm package will provide a hashing algorithm to be used for security applications such as user password hashing.

1.4. Back-end Web Server Technology

1.4.1. Web Host (pending approval)

Possible Choices: HostGator, Hostwinds, Negox, SmarterASP.NET

A web server host is necessary to host and execute the back-end and web server software, and perform the communication between the front-end and back-end. The possible choices were chosen based on their support for ASP.NET and SQL Server 2019, though the hosting plans considered provide low storage space for the file system (1-5 GB), are limited to one SQL Server database only, and have metered internet connections.

1.4.2. Web Server Operating System (pending approval)

Possible Options: Windows Server 2019/2016, CentOS 7

The operating system of the web server we will use depends on which web host option is chosen. The host server's operating system will affect the software installed into the server, as well as server set-up methods.

1.4.3. Web Host Control Panel (pending approval)

Possible Options: Plesk, cPanel & WebHost Manager

The web host control panel is a software application that allows users of a web hosting service to perform administrative tasks, such as file management, file transfer protocol server setup, and database administration. The control panel provided is dependent on which web host option is chosen.

1.4.3. Web Server Software

Internet Information Services (IIS) 10.0 will be used to develop software for the back-end layers. It will enable service of web page documents from the host server to end users, as well as additional information necessary to facilitate a single-page app. IIS is limited to the Windows operating system family. Therefore, if the approved web host provides a Linux-based server, possible alternatives for approval include *Apache 2.4*, *nginx 1.21.3*, and *lighttpd 1.4.60*.

1.5. Database Technology

1.5.1. Database Management System

SQL Server 2019 Express 15.0.2000.5 and later versions released until May 2022 will be used to store and manage back-end access to user data necessary for our app's features. SQL Server 2019 Express is licensed for use in production environments, but database files are limited to 10 GB at most.

1.5.2. Data Access (pending approval)

SQL will be used for database management. It will be used to build the back-end database to store user data and for data queries by business logic software.

1.6. Internet Protocols

1.6.1. Asynchronous Communication Protocol (pending approval)

Possible Choices: HTTP, HTTP/2, HTTPS

A version of the Hypertext Transfer Protocol will be used for communication between the server and end users.

1.6.2. Server Push Protocol (pending approval)

Possible Choices: HTTP, WebSocket, Server-sent Events

A server push communication protocol may be used for the live chat feature and other features that use constant communication between the front-end and back-end.

1.7. Third-Party Services

1.7.1. Street Map and Directions Service (pending approval)

Possible Choices: Google Maps, OpenStreetMap and OpenRouteService, Mapquest

A street map and directions service will provide information about street addresses, as well as geographical distance and street directions between two given locations. It will be used for input validation, the area search feature, and the street directions feature.

2. Project Development Tools and Equipment

2.1. Development Hardware

Development computers should be using the 64-bit builds of Windows 10 Home/Pro with feature update 2004+ or Windows 11 with feature update 21H2+, and at least 4 GB of RAM and 128 GB of storage installed, in order to install and run the project development tools.

2.2. Development Environment

2.2.1. Integrated Development Environment

Visual Studio Code 1.60.2+ will be used to write code for the product and upload the code to our online source code repository. Uploading to the source code repository upload is reliant on having Git installed and being signed in to a GitHub account, but does not require an additional plugin. Depending on the implementation technologies used, it may be necessary to obtain plugins for those languages or libraries.

2.2.2. Database Client

SQL Server Management Studio will be used for SQL Server database building, administration, and remote monitoring. It creates a remote connection to a SQL Server database, allowing users to send queries and view database contents.

2.2.3. File Transfer Protocol Client

FileZilla Client 3.55.1+ will be used for uploading web application files to the back-end server via file transfer protocol during deployment.

2.2.4. Package Manager

NuGet 5.11.0+ is a package manager included with .Net Core 5. It will be used to acquire software packages for use in development.

2.2.4. Supported Browser

Google Chrome for Windows 10 89 and later versions released before May 2022 must be installed to test our product compatibility with the web browser.

2.3. Project File Storage and Version Control

2.3.1. Git

Git 2.33.0+ will be used to facilitate product source code version control on GitHub through integration with Visual Studio Code. Git is distributed version control software that allows for local, offline testing and version branching, but requires additional setup compared to other version control software.

2.3.2. GitHub

GitHub will be used to maintain and control versions of the product source code as well as all project development artifacts. GitHub is an easily accessible online Git repository that requires an account. The repository will be made public to allow the client access to all documents.

2.3.3. Github Desktop

Github Desktop 2.9.4+ for Windows will be used for managing a local copy of the GitHub repository. This will allow offline access to up-to-date versions of the GitHub repository contents.

2.4. Artifact Drafting

2.4.1. Google Docs

Google Docs will be used for team collaboration on artifact drafting. Google Docs allows for live collaboration on text documents and storage on the cloud, but requires an internet connection for live collaboration and to save any changes made to the document.

2.4.2. Diagrams.net

Diagrams.net will be used for developing diagrams to be used in artifact drafting. It provides many types of diagram elements such as UML diagram elements, flowchart and sequence diagram elements, and basic shapes and arrows.

2.5. Agile Planning and Communication Tools

2.5.1 Trello

Trello will be used for Sprint planning, Sprint Backlog publication, and to hold other information necessary for team organization such as deadlines and class information. Trello is an online, flexible, card-based management board that supports Agile development practices. However, using the service requires an internet connection, and it does not record team performance metrics.

2.5.2. Discord

Discord (Windows 10 client 10.0.19041+) will be used for live team collaboration and discussion through text. Discord is a live chat service that allows for group messaging and file uploads.

2.5.3. Zoom

Zoom 5.7.7+ will be used for live team collaboration, daily standups, and communication with clients for feedback and demonstrations.