Voluntunities - Lab 2 V3

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1. Introduction

America as it exists today in 2017 is caught in between two mutual trends. On one side, there is the rate of volunteering steadily declining over the past two decades, and on the other hand exists the vastly improved awareness of issues amongst both the youth and elderly, thanks to the Internet. There seems to be an unanswered paradox here; if so many more people are aware of issues facing society today then why is the number of people volunteering so low? The Voluntunities team puts forth that this is not due to a lack of awareness of the issues, but the actual openings that their local organizations need. The project postulates that most of the people who want to volunteer are unable to, because they are simply not aware of how to do so (shown in Figure 1).

Figure 1. Current Process Flow
Volontunities aims to remedy this by raising the awareness of available roles in organizations in need by connecting the organizations directly to the people. Volontunities is developing a system in which organizations will be able to directly post their respective openings and needs, and individuals looking to volunteer will be able to search through it (shown in Figure 2).

**Figure 2. Proposed Process Flow**

By bringing all involved parties together into a central hub, the efficiency of both recruiting volunteers and having potential volunteers looking to make a positive impact finding a suitable project, can increase dramatically.
1. **Purpose**

Voluntunities started with the goal of increasing the number of volunteers in America today. As research continued, it became evident that the problem was neither the organizations seeking help, nor the people who are aware of the issues and the organizations, but rather the difficulty in navigating the systems they must transverse to make their desire a reality.

Voluntunities will be delivering a system which brings together organizations looking for volunteers for their causes, and individuals looking to contribute and participate in causes they believe in. Voluntunities will provide a web based portal for everyone, one in which organizations will be able to post available openings and needs, and individuals looking to volunteer will be able to sort through their desired criteria, and if met, assist the organizations in furthering their respective causes. The proposed system will remove all the hurdles that are presented in the traditional, frankly ancient way of seeking out opportunities.

It will do this through both a web portal and Android/iOS mobile apps for maximum reach. Organizations will be able to post their opportunities on the site, with specific requirement details as to filter out people who do not qualify. These include how many people are needed, how many of those posts are already full, what sort of skills are required, and how long each position is needed for. For volunteers, they will be able to search and sort through the opportunities, and pull up the specific information about them. Volunteers will also have the ability to link up with their friends, as well as view their profiles and volunteer history.

2. **Scope**

The Voluntunities prototype aims to provide all the promised capability described in the purpose section above. The prototype will first and foremost focus on the main Web portal, as it is will be the entry point for most users. The database and server will be built out to support the
basic functionality for saving and searching through data. The mobile apps will be the final
priority, and are included since they will reuse all of the server API code; presumably less time
will be spent here. The proposed flow is depicted in Figure 2.

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3. Definitions, Acronyms, and Abbreviations

- GUI: A graphical user interface (GUI) is a human-computer interface (i.e., a way for humans to interact with computers) that uses windows, icons and menus and which can be manipulated by a mouse.
- UX: Short for user experience.
- iOS: An operating system used for mobile devices manufactured by Apple Inc.
- Web Portal: A specially designed website that often serves as the single point of access for information.
- RESTful API: An application program interface (API) that uses HTTP requests to GET, PUT, POST and DELETE data.
- SQL: The standard language for relational database management systems.
- VueJS: Progressive JavaScript Framework.
- ORM: A programming technique for converting data between incompatible type systems using object-oriented programming languages.
- SPA: Web apps that load a single HTML page and dynamically update that page as the user interacts with the app.

4. References


5. Overview

This product specification provides the hardware and software configuration, external interfaces, capabilities and features of the Voluntunities prototype. The information provided in the remaining sections of this document includes a detailed description of the hardware, software, and external interface architecture of the Voluntunities prototype; the key features of the prototype; the parameters that will be used to control, manage, or establish that feature; and the performance characteristics of that feature in terms of outputs, displays, and user interaction.
2. General Description

These following sections describe the Voluntunities prototype. Section 2.1 describes the software architecture and how all the components interact with each other. Section 2.2 describes what the prototype will provide to its users.

2.1. Prototype Architecture Description

The prototype will be structured into three distinct components, with the mobile apps section being further split depending on time constraints. The server and database components will be built on top of ASP.NET for the RESTful web API and Microsoft SQL Server for the database SQL components. The server will provide authorization tokens for users who are logged in, and use privilege roles to figure out which sort of information can be passed back. The database will accept SQL commands through the Entity Framework ORM. Entity Framework is used as it provides extremely easy lambda based access to all the records. SQL Server spatial data will be used to store locations, providing fast radial lookups. The website will be created to mirror the mockup as described in Figure 3. That same general design will persist throughout the pages for a unified look. It will link to the RESTful server to provide stateless authentication and content. It will be done in an SPA style, to maximize the user experience by minimizing refreshes and load times across the pages. To power this, a web framework called VueJS will be used, for its ease of use. The Android and iOS mobile applications will be made to replicate all the functionality of the website. They will allow logging in (The login information will be cached to disk). Each application will be written in their native languages, Kotlin/Java and Swift, respectively.
2.2. Prototype Functional Description

The prototype will provide all the required features for the proposed flow to work. Organizations and Users will be able to login and create their own profile pages. Organizations will be able to post new opportunities as well as edit or remove them. They will be required to provide some criteria of information, with others being optional. They will also be able to post multiple categories of opportunities under a post. Volunteers will be able to search and sort through the available by a variety of criteria such as distance, requirements, and tags.
2.3. External Interfaces

This section outlines the external aspects of the prototype. This details all external software and protocols needed for the prototype to work.

2.3.1. Software Interfaces

- IIS Express: Enables the management of the ASP.NET server, providing the abilities including but not limited to: Assigning domain names, restarting the server, providing backups, setting up clusters, clearing server cache, modifying folder and website permissions.

- SQL Server: Enables management of the database. Provides the ability to: Create tables, modify columns and add primary/foreign keys. Create specialized pre-cached views for extremely fast data loads (especially useful for our search feature)

2.3.2. User Interfaces

- Website: Will provide the main web portal, through which the user can perform all of the tasks in the prototype functional description. Will include all modern web browsers; therefore, it will not include IE or Edge.

- Mobile Applications: Will provide a customized mobile first experience of the website, offering the same functions listed above, possibly with the exception of creating new opportunities, as intended use is Volunteer focused.

2.3.3. Communications Protocols and Interfaces

- HTTP: For web communication and API Access

- TLS:
  - For secure communication between the API and the database.
  - Not for public API access, due to SSL certificate costs.