Helping Hands
Lab 1 Individual Contribution Draft

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1. **Introduction**

   According to the Urban Institute, approximately 59 million people rely on assistance from federal “Safety Net” programs in America. With poverty rates on the rise in recent years (US Census Bureau), this number is only expected to increase accordingly. Although there are many resources available to at-risk individuals in our nation, finding them has consistently proven to be a major barrier between those needing services and those providing them.

   Many individuals who could greatly benefit from federal or local assistance programs and services are left without access to these resources due to a number of factors, including being unaware of the resources available to them, becoming overwhelmed by irrelevant material out there, and/or being deterred by inaccurate information. This issue also extends to individuals who would like to provide services, as well. Volunteers must sift through the same convoluted webpages, facing obstacles such as inaccurate and outdated information. While organizations themselves rely solely on their own antiquated systems in order to spread the word on services they provide and populations they cater to.

   With all these issues in mind, the Helping Hands web application will aim to connect people in need of services, people looking to help and volunteer, and organizations offering resources by creating a one-stop-shop, easy to use platform that guides the user based on their answers to a few simple questionnaires. The site will be community oriented in order to ensure information accuracy and accountability. It will also provide secure data storage and retrieval tools that will track user preferences and usage trends in order to better serve the community and enhance the development of the platform.

   Each organization will be provided with a templated profile that will gather only the most crucial information and share it with users that match certain criteria based on their questionnaire answers.
2. **Helping Hands Product Description**

   Helping Hands will aim to simplify the process of connecting at-risk individuals, as well as volunteers, to appropriate resources and organizations in their area. This is achieved by discovering the user’s specific needs or qualifications in an easy-to-use, guided platform, taking them step by step through a simple questionnaire and obtaining relevant keywords along the way which the Helping Hands algorithm will then match to criteria provided by organizations in the system. These organizations will include those such as homeless shelters, soup kitchens, unemployment offices, free clinics, and more - each of which will have templated pages available on the Helping Hands site that will provide relevant, straightforward, and easily-understood information to the user.

2.1 **Key Product Features and Capabilities**

   The Helping Hands platform will be unique in its ability to provide separate Graphical User Interfaces depending on the user. For at-risk individuals, the questionnaire will focus on their needs and circumstances and the algorithm will use their answers to match them to organizations in their area that cater to their specific needs. For volunteers, the questionnaire will uncover their qualifications and interests so that the algorithm can appropriately match them to similar organizations in need of assistance. And lastly for organizations, the platform will provide a simple, templated page for them to quickly and efficiently fill in information such as hours of operation, location, contact information, services and acceptance criteria. If an organization is not able to manually provide information, this data will instead be scraped from the web in order to provide as many resources as possible to the at-risk individual or volunteer using the platform. The purpose of these separate interfaces is to provide the simplest means of navigating the platform for the individual user, while ensuring all relevant information is addressed and accounted for.
Helping Hands will also be unique in its user-feedback capabilities, which will allow users to upvote/downvote on relevant organizational status updates on cleanliness, safety, information accuracy, etc. There will also be a forum section on each organizational page that will allow users to post brief messages relevant to the organization or location. These feedback capabilities will aid in ensuring information accuracy, as well as providing a means for real-time updates when space/resources are limited at a particular location.

The platform will be implemented with a cloud-based database server that will allow for secure and efficient data storage. It is likely that many at-risk individuals, or even volunteers just wishing to browse the site, will not wish to provide contact information or log-in in any way, therefore the database will instead use session information for a particular user in order to store their questionnaire responses, preferences and usage statistics. Organizational page information will be able to be securely stored and linked to the account of an authenticated representative so that necessary page updates can be maintained. And finally forum based feedback or page rankings will also need to be held in a secure fashion to ensure accuracy and avoid misuse. All of these components will be managed by site administrators who have the ability to remove users, content, and feedback as necessary to maintain a safe and secure environment.
2.2 Major Components (Hardware/Software)

Figure 1: Major Functional Components Diagram

The Helping Hands platform will require the implementation of both the front-end graphical user interface design, as well as the back-end servers and application development that will provide information to the users. These components can further be divided into specific hardware and software requirements.

The hardware required to effectively run this platform will include a cloud based file/web server, a cloud-based database server, and a user device capable of running a supported web browser.

The required software will include operating systems capable of running a supported web browser, Github for collaborative development and software version control, HTML/CSS/JS website building protocols, GoogleAPI for location services, SQL using Amazon Web Services for database management, and additional documentation tools such as Electron to house and manage technical information.
3. **Identification of Case Study**

   The Helping Hands platform will cater to the needs of at-risk individuals, volunteers and organizations in an effort to connect them to one another in a simple and effective manner. Rather than browsing through a search engine, visiting site after site in search of a resource that is buried within a convoluted webpage, Helping Hands provides guided assistance towards solutions that are catered to the needs of the user. It takes the most crucial information provided by organizations, charities, and social programs and presents it in a clean and simple atmosphere that encourages connections to be successfully made. Aside from these listed users, the Helping Hands platform could also benefit Government Social Services, donors, organizations that track social problems, and “good samaritans” hoping to aid an at-risk individual.

4. **Helping Hands Product Prototype Description**

   a. Proof of concept

   i. Users

      1. Customer

         a. A customer can be a person in need, a volunteer, or an organization

            i. Person in need

               1. Post what you need help with
               2. Post where you are located
               3. Send outreach to my location
               4. Search nearby organizations

            ii. Volunteer

               1. Post skills you can offer to volunteer
               2. Post where you are located
               3. Search nearby organizations
iii. Organization

1. Post what type of services your organization offers
2. Post where you are located
3. Post if you are seeking volunteers
4. Post what type of volunteers you are looking for

2. Admins

b. Risk Mitigation

i. Helping Hands Terms of Service Agreement to mitigate liability on all sides

ii. Reviews, Ratings, and Appeals system to make sure all disputes are handled fairly

c. Customer Feedback

i. Those in Need (At-Risk Individuals)

ii. Volunteers

iii. Organizations

4.1 Prototype Architecture (Hardware/Software)

a. Hardware Utilized

i. Laptop or desktop computer

ii. Internet Access

b. Software Utilized

i. Database

1. PostgreSQL on AWS

ii. Web Server

1. Apache
iii. HTML/CSS
iv. JavaScript
v. Docker

4.2 Prototype Features and Capabilities

a. Demonstrate ability to create a standard user profile, achieving basic profiles to represent customers such as those in need, volunteers, and representatives of organizations

i. Fill out basic information
   1. Username
   2. Password
   3. Email
   4. Phone Number
   5. Location

b. Demonstrate ability to fill out organization details on profile

i. Fill out basic information
   1. Summary of organization
   2. Available services
   3. Location
   4. Capacity
   5. Open/Close Times

ii. Other details
   1. Special outreach events
   2. Unforeseen Circumstances (Pandemic, Bad Weather, etc)

c. Demonstrate ability to be prompted various questions to identify specific needs of the customer

i. “I need help!”
1. Ping person in need’s location to all nearby organizations
2. Ping person in need’s location to all nearby volunteers
3. Ping the person in need’s location to all nearby other persons in need
4. When a ping is made, create an exigency event for all parties involved. All parties need to check the exigency event as resolved before making another ping

ii. “I want to volunteer!”
   1. The app automatically asks on a regular basis if you have obtained new skills that you would want to volunteer for
   2. The app automatically asks on a regular basis if you have moved or have different preferences on where you would like to volunteer for

iii. “I want to represent my organization!”
   1. The app automatically reaches out to organizations via email in order to encourage them to fill out their scrapped webpage with accurate information
   2. When those in need and volunteers show interest in an organization, the app reaches out to that organization to show them that there is great interest in them

d. Be able to display locations of organizations/help
   i. Display locations of organizations nearby based on a zip code/address so that users can still find help even when uncomfortable sharing their own location
ii. Display locations of organizations based on those in need and/or volunteer's preference for when that person wants to volunteer in a different location other than where they are currently at

4.3 Prototype Development Challenges

a. Missing Knowledge
   i. Mobile app development
   ii. Database integration
   iii. Third party API integration

b. Distributed development team
   i. All team members are collaborating remotely

c. Efficient algorithms
   i. Matching those in need to volunteers and organizations
   ii. Authentication
5. Glossary

a. 501c3 Organization - An organization or group that is tax exempt, often due to providing charitable services through non-profit or not-for-profit methods.

b. At-risk Individual - A person with ongoing risks to health or safety.

c. API/Google API - Application programming interface is a connection between computers or between computer programs. Programmatic interfaces to Google Cloud Platform services.

d. Crowd-Source - Obtain (information or input into a particular task or project) by enlisting the services of a large number of people, either paid or unpaid, typically via the internet.

e. Google Maps - A free-to-use service on the World-Wide Web that provides map display, locations and localization.

f. GUI (Graphical User Interface) - A human-computer interface that uses windows, icons, and menus that can be manipulated by a mouse (and often to a limited extent by a keyboard as well).

g. Major Functional Component Diagram - Used in modeling the physical aspects of object-oriented systems that are used for visualizing, specifying, and documenting component-based systems.

h. Stakeholder - Person with an interest or concern in something, especially a business.

i. Web Server - Software and hardware that uses HTTP and other protocols to respond to client requests made over the World Wide Web.

j. Web Scraping - Automatic method to obtain large amounts of data from websites.
6. References


d. Five things you may not know about the US Social Safety Net. (n.d.). Retrieved April 4, 2022, from https://www.urban.org/sites/default/files/publication/99674/five_things_you_may_not_know_about_the_us_social_safety_net_1.pdf


g. No digital divide? technology use among homeless adults. (n.d.). Retrieved April 4, 2022, from

