Lab 1 – Helping Hands Product Description

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Table of Contents

1. Introduction ............................................................................................................................................... 3

2. Helping Hands Product Description .................................................................................................. 5

   2.1 Key Product Features and Capabilities ......................................................................................... 5

   2.2 Major Components (Hardware/Software) ..................................................................................... 7

3. Identification of Case Study .............................................................................................................. 8

4. Helping Hands Product Prototype Description ................................................................................. 9

   4.1 Prototype Architecture (Hardware/Software) ............................................................................... 10

   4.2 Prototype Features and Capabilities ............................................................................................. 11

   4.3 Prototype Development Challenges ............................................................................................. 13

5. Glossary .................................................................................................................................................. 14

6. References ............................................................................................................................................. 14

List of Figures

Figure 1: Helping Hands Major Functional Component Diagram ......................................................... 7
1. Introduction

In America alone, there are approximately 40 million individuals and families deep in poverty (National Coalition for the Homeless, 2022). Over 500 thousand of those in poverty are considered to be chronically homeless, meaning those who are currently homeless and have been homeless for six or more months within the past year. In considering this population of people in, and those on the edge of, poverty, it is known that in any given month, approximately 59 million people rely on assistance from Federally run safety net programs for their daily needs (Minton, S. and Giannarelli, L., 2019). Unfortunately, according to a report done by the U.S. Government Accountability Office (GAO), it is nearly impossible to get accurate national data about the true extent to which families and individuals in poverty receive assistance from mainstream services (Office of Policy Development and Research, 2022). While the sheer existence of these helpful services is wonderful and backed by good intentions, many people may be unaware that a service exists because they are overwhelmed by copious amounts of irrelevant information. Much of the information found online, through word of mouth, on bulletins, or in newspapers about different services or organizations is inaccurate, incomplete, unreliable, or out of date. Collaboration between communities, cities, counties, states, and federal organizations is essentially non-existent, creating yet another barrier in the challenge to provide effective services to those in need.

Given the circumstances at hand, a solution is required in order to connect people with the services that they urgently need. A solution to this problem would include capabilities to allow those in need to search for relevant providers, provide search results for those who wish to help, and provide a platform for organizations to list their relevant information. People in need are not always in need of the same things. Those struggling might need assistance with various resources to include food, shelter, medical help, mental health, or government services. An adequate solution would have a means to search and see content on relevant providers of these
different services. The main reason that helpful services exist is due to people who want to
volunteer to help others. Unfortunately, within the chaos, it can be hard for volunteers to locate
organizations who need or want help. A solution to the problem at hand would allow people
who want to help and volunteer to have a means to search and see content about providers
seeking volunteers. Finally, the organizations providing help to those in need already have a
huge task at hand in order to help the masses. A viable solution would allow organizations who
want to increase awareness of their service to post content relevant to their services and have a
platform for the community to provide feedback.

In order to fulfill these needs, we present our solution: Helping Hands. Our solution is a
community-oriented web application that links people in need with resources that can help. It
offers security, community feedback sections, interactive reviews, up to date information, and
easy to read resource pages. Helping hands boasts secure data retrieval and storage for
organizations, volunteers, and users alike. Community feedback sections allow users to leave
input on different events or organizations in order to ensure safety and accountability. This
feature also includes commenting and ranking (upvote/downvote) capabilities. Real-time status
updates can be provided by users within the community. Service provider profiles follow a
templated format to ensure containment of relevant information and a simplified look to allow
easy access to and location of information. Finally, for those in urgent or critical need, there is a
HelpMe button connected to available providers for near-real-time messaging of users and their
locations to get outreach and assistance where they are (with caveats that it is not intended to
replace 911 emergency services). By providing all of these features, Helping Hands will be a
strong solution to aid those in need.
2. Helping Hands Product Description

In summary, The Helping Hands platform will aim to simplify the process of connecting those in need with the appropriate resources by discovering the user’s specific circumstances and tailoring a unique solution for their dilemma. Our goals and objectives include connecting those in need to charitable organizations, connecting volunteers to charitable organizations that are in need of assistance, and connecting charitable organizations to both those in need of help and those who wish to help.

2.1 Key Product Features and Capabilities

The server/client architecture of Helping hands includes separate GUIs, specific search options, placeholders for information, interactive feedback sections, and integration with Google’s location services. Helping Hands contains several separate Graphical User Interfaces (GUI’s) for those at-risk, those wishing to volunteer, and organizations offering helpful services. Another interface is present for organizations to populate fields for the specific organizational page. Additionally, for organizations that have not become active within the application yet, there will exist organizational placeholder pages with scraped information. This information will come from internet searches and other users or organizations. There are sections available for interactions from users in order to maintain accountability and reliability of different organizations. The user feedback section on each organization or event’s page allows for ratings, comments, and up/down votes on relevant matters such as safety, cleanliness, and timeliness. In addition to votes, users can also supply a short commentary or review in order to inform other users, or to provide feedback for the organization itself. While locations of organizations and users, if allowed, will be handled by Google’s location services, users are also encouraged to leave feedback or notes regarding directions or locations in order to assist others in the future.
The database of Helping Hands features session information, account information, individual page information, ranking statistics, and forum information. Session information will be available for users, to include both at-risk individuals and volunteers, in order to track preferences and usage. Account information for organizational representatives will be included for relevant personal or organizational details depending on the entity. For example, this may include address, email, or pages owned. For each location, organization, or program, there will be individual page information. This includes relevant fields of informational text, data, or keywords. Ranking statistics will be linked to keywords for specified locations, programs, organizations, or entities. Additionally, usage statistics will be monitored and forum information will be linked between submitting users and the organizations about which they post.

From an Administrative Interface standpoint, features will include adding or modifying fields, controlling content from unvetted users, manual updates of specific pages or instances, and the ability to add or remove certain information. From the administrative interface, one will be able to add and/or modify fields available on templated organizational pages. One can allow or ban content from users that have not yet been vetted, to include feedback from those in need or input from unknown organizations. Manual updates can be made to specific page information as needed. Additionally, manual changes will be allowable to specific user account information on a case by case basis, to include password resets. From the administrative interface, we will be able to manually or automatically add or remove at-risk user information, as well as for volunteers.
2.2 Major Components (Hardware/Software)

Helping Hands is structured through two separate sections, to include the front-end user interfaces and the back-end processing and storage components. Below, in Figure 1, the major functional component diagram describes the interfaces and the processing and storage components within Helping Hands and how these platforms all interact.

**Figure 1**

*Helping Hands Major Functional Component Diagram*

In considering hardware, Helping Hands uses a Cloud based server and any device capable of connecting to the internet. Helping Hands uses a Cloud based file/web server and Cloud based database server. The user interface is available from any user device capable of running a supported web browser, to include smartphones and laptops.

Software for Helping Hands revolves around any operating system capable of running a supported web browser and Github for collaborative development and software version control. The website for Helping Hands uses a combination of HTML, CSS, and JavaScript. The web server is coded in Python while the APIs are from Google. Our build manager is Gradle and...
documentation is done through Electron. Trello is used to organize our workflow as a team. The database is PostgreSQL on Amazon Web Services (AWS).

3. Identification of Case Study

The main users of Helping Hands are at-risk individuals, volunteers, and organizations. The purpose of Helping Hands is to connect at-risk individuals with volunteers or charitable organizations willing to help. At-risk individuals may include those that are in poverty, homeless, have recently experienced job loss, are financially struggling, or have medical or mental challenges. The list can include any individual or family seeking help from any given organization. Volunteers include any individual or group seeking to help an organization or even for those in need. Organizations include charitable entities that have a goal of helping those in need.

Normally, organizations hold the burden to make themselves known to individuals in need through newspapers, bulletins, and their own websites. Helping Hands seeks to alleviate that burden by providing a platform where all information for organizations can be consolidated in one place. Additionally, the burden to find help is typically placed on those in need to search manually through the internet or public forums. Helping Hands allows those in need to search for all resources of help in one place.

While the primary users of Helping Hands are those in need, volunteers, and charitable organizations, there are several other entities that will benefit from this application. Government social services and other organizations that track societal and social problems can use data from the application in order to conduct research and paint a bigger picture. Similar to those wishing to volunteer, donors looking for a charitable cause are able to use Helping Hands to find nearby
services to which they can donate. Additionally, good Samaritans seeking to help those in need can utilize Helping Hands as a resource to guide others in the right direction for help.

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

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

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

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

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

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.

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

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).

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.

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

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

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

6. References

https://www.edelman.com/trust/2020-trust-barometer


*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


*Nonprofit Legal Pitfalls: A complete guide to avoid disaster*. The Charity CFO. (2020, August 5). Retrieved April 4, 2022, from https://thecharitycfo.com/nonprofit-legal-pitfalls-a-complete-
guide-to-avoid-disaster
