Lab 1 - Helping Hands Product Description

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1. Introduction

In today’s society, we have many people in need looking for resources to assist their needs. On a single night in 2020, nearly four in ten (39 percent or 226,080 people) were in unsheltered locations such as on the street, in abandoned buildings, or in other places not suitable for human habitation (HUD, 2021). A numerous amount of people that are in need of aid are not aware of the resources that are available to them because of lack of advertisement and exposure to them. On the other hand, although some individuals have access to the internet, information may be very overwhelming with irrelevant information and may even guide them in the wrong direction. Information found about services and organizations may be inaccurate or out of date. Collaboration between communities, cities, states, and government organizations is nowhere to be found, creating another challenge to provide services to those in need.

With the current circumstances, those in need deserve an efficient method of connecting people with the services they need to find various resources such as where to find food, shelter, medical help, mental help, and government services. A solution is creating a platform that allows those in need to search and receive information from relevant providers, provide results for those that want to help and volunteer, and provide a platform for organizations to post their information. Organizations that want to increase exposure of their services can post content of their services and have a platform for community feedback.
2. Helping Hands Product Description

The main goals of Helping Hands are to connect those in need to charitable organizations, connect volunteers to charitable organizations seeking helpers, and connect charitable organizations to those in need and volunteers.

Helping Hands platform will aim to simplify the process of connecting those in need with the appropriate resources by determining the user’s specific circumstances and tailoring a unique solution for their dilemma. Helping Hands will be in the form of a community-oriented web application that provides people in need with relevant resources to their dilemmas. User accounts and web scraping will be implemented along with secure data retrieval and storage of the website’s content. The website will not require accounts to access the site but is required for organizations to provide information and represent themselves. With no requirement of an account to access the website, Helping Hands will use cookies and sessions to make it easier for users to maintain any information imputed into the website. Users will be able to provide their own feedback on forums about various services and institutions. Feedback sections ensure safety and accountability with commenting, upvoting, and real-time status capabilities provided by users within the community. Service provider profiles will be in a templated format to provide reliable and relevant information for those in need. Google Map APIs will be used to determine locations of various institutions and the current location of the user. For those in urgent need, a HelpMe button is connected to available providers in near-real-time messaging of users and their location to get assistance wherever they are (not intended to replace 911 emergency services). With the various features provided, Helping Hands will be a strong and effective solution to aid those in need.
2.1 Key Product Features and Capabilities

A key feature of Helping Hands is in the client architecture which will consist of separate GUIs for at-risk individuals, volunteers, and organizations. Each GUI interface will have search criteria based on their specific input and will narrow the results of their needs. Interface for organizations will populate fields for their specific organizational page. In conditions where organizations have not created an account, there will be placeholder pages with web-scraped information about the organization. Another key feature is the user feedback section on each page for upvotes or downvotes on relevant statuses. Along with the feedback section is a forum section for users to post brief messages relevant to the organization or location.

With the utilization of a database, session information for at-risk individuals or volunteers will be maintained through cookies and sessions. All personal information for at-risk individuals, volunteers, and organizations (name, address, email, etc.) and information about locations and programs will also be stored in a database. The database will also hold forum information such as submissions of feedback and organization's posts.

The administrative interface will have add/remove/modify functionality to help keep the website clean and up-to-date. Administrators will be able to have this functionality in areas such as templated pages and unvetted users. There will also be options to manually update specific page information and change specific user account information as needed such as resetting a user's password. There will also be the option to manually add/remove or automatically add/remove at-risk and volunteer information.
2.2 Major Components (Hardware/Software)

Helping Hands will be available on any operating system capable of running supported web browsers such as Chrome, Firefox, or Microsoft Edge. Figure 1 is the current version of our major functional component diagram which describes the interfaces and various components used in Helping Hands.

For software, Github will be used for collaborative development and software version control. The website will be made with HTML/CSS/JavaScript while the web server code will be done in Python. Google API will be used to determine the current location of users and the locations of organizations.

As for hardware, a cloud based file/web server and cloud based database server will be required for Helping Hands. The database will handle user information such as
login credentials and profile info must be stored, as well as the organizations inputted information. The database will be PostgreSQL on Amazon Web Services (AWS). This will be used to store information from basic account information to forum posts and ratings.

3. Identification of Case Study

Helping Hands is aimed to help at-risk individuals (homeless, victims, etc.), volunteers, and organizations (charities, social programs). It will be used to connect at-risk individuals to volunteers and charitable organizations as well as connect organizations to at-risk individuals and volunteers. At-risk individuals include those that are in poverty, homeless, struggling financially, or have medical or mental challenges. Volunteers can include any individual or organization that is seeking to help an organization for those in need. Organizations include charitable entities that assist those in need. Additional persons include Government Social Services, organizations that track social problems, donors seeking nearby services, and good samaritans.

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

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

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

c. 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).

d. 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.

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

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

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