CMPSC 472 Final Project Report

By: Daksh Upadhyay

Akhil Jobi &

Syed

Goal of the project

The goal of this project is to provide readily available information regarding the locations of rehab centers across various cities in the United States to users free of cost, by providing their location details the project aims to direct the people in need for rehab or treatment, location to these treatment centers from their own location.

In times like these, people who are in need of medical attention or rehab might not have access to facilities like google maps or other geolocation abilities, this project aims to put those facilities in a website which is easily accessible from an cybercafe or a phone without geolocation capabilities to locate rehab and treatment centers for drug administrators.

Significance of the project

The significance of this project lies in its potential to provide crucial support and assistance to individuals seeking rehabilitation and treatment for various issues, particularly substance abuse. By offering readily available information on the locations of rehab centers across different cities in the United States, the project addresses a critical need for accessible resources for those in need of medical attention or rehabilitation services.

Overall, the significance of this project lies in its ability to provide essential support, resources, and information to individuals struggling with addiction, ultimately contributing to healthier, more resilient communities.

Installation and instructions to use.

The website is ideally hosted on a server for everyone to use but to run the website, an simple python command is enough, in the terminal, open the project and type

python3.11 server.py

And the server should start running and serve the website at <http://locahost:4444>

Structure of the code.

File structure:

Project/

index.tpl

location.tpl

server.py

treatment\_centers.csv

The server.py file contains the multithreaded webserver and geolocation API query code along with the locks and async primitives we need for the webserver. The treatment\_centers.csv file has data about various rehab and treatment centers across the United states, the location.tpl and index.tpl are webpage files which are the frontend and served to the browser

Below is the code structure for server.py

A diagram of a process

Description automatically generated

Functionalities and test results.

Main index page:A screenshot of a computer

Description automatically generated

Input validation:

A screenshot of a computer

Description automatically generated

Form submission and geolocation data retrieval

For ChicagoA screenshot of a computer

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A close-up of a document

Description automatically generated

Data retrieval for New York

Discussion and conclusions.

Limitations and issues and how to overcome them:

1. The location indexing is limited to how much csv data we have of the rehab centers and treatment centers, in the future ideally the data should be retrieved by an API which pulls in updated locations of these medical centers.
2. The geolocation API only factors in the City/State you are in and not your exact location, using the browser location API more accurate location can be provided in the same city.

Learnings:

1. How to use mutex lock with the geolocation API to not hog the location API and obtain results in an consistent manner
2. How to run an multithreaded webserver to serve an lot of requests to the users
3. How to connect a frontend to backend and expose the geolocation API and allow the user to query it