City Crime Livability Analyzer

CCLA

Project Objective

Motivation

People need a way to determine the best place to live in unfamiliar cities

Objective

To create a tool that simplifies determining safe neighbourhoods in a city based on personal preference

Scope

The tool should be scalable to any city provided a relevant dataset of crimes

Dataset Used

The program makes use of the Chicago dataset “Crimes - 2001 to Present”

It provided a useful breakdown of crime in Chicago, including:

- Location
- Time
- Offense

The database is updated daily, and is provided by the city of Chicago’s police department

https://data.cityofchicago.org/Public-Safety/Crimes-2001-to-present/ijzp-q8t2

Requirements

Functional:

The program should:

- Take an input of a crime database csv, and organize, sort, and rank the crimes based on a given crime severity rating
- Take different inputs of crime severity ratings based on user preferences
- Output a display of relative crime ratings of districts as a percentage of total crimes in the city, along with a “crime score”

Nonfunctional:

- The program should execute in <30 seconds
- The data presented should be intuitive for the users to interpret and provide meaningful information about crime within different areas of the city
- The program should return consistent results when using the same dataset

Design Specification

ADTs

Three ADTs were made, City, Districts, and Beats that stored relevant data

Data Parser

A program that would read in the dataset and need data in instances of our ADTS

Neighbourhood Scoring

Assigns a score to a neighbourhood based off of the crimes committed in the area. Weighted to consider how recent or sever the crime was

Graph Analysis

Allows the user to view adjacent districts and how the livability in those areas compares to that of a district chosen by the program or the user

Algorithmic Challenges

Identifying the rank of a crime crime in a beat/district:

Binary Search

Beat Adjacency :

Graphical representation of districts

(Able to view adjacent districts' scores/stats)

Verification and Validation

- Using tools made in python we are able to confirm the total number of assigned beats and districts in the file to that of our program

- Another self written tool lets us grab a small list of crimes in a given beat that we can cross reference by hand with the output of our program

- When possible we would feed our program some self made data or sample sets from the given dataset to verify if certain methods were working as intended

Demo

```
while(!beeping)
{
        go.Boop();
}
if (isFailing)
        dont();
```

THE END!

- Clap now
- Or don’t
- I'm a slideshow not a police officer