Fresh Start Employment Services

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By virtue of submitting this document I electronically sign and date that the work being submitted is my own individual work.

1 Abstract

Unemployment is a reality that many Canadians must confront. Whether they are fresh out of school, ready to gain experience, or experienced and qualified, these Canadians face a problem with a deep impact on their livelihoods. For some, it is easy to find employment in a career they wish to be in, but for others it is not so simple. These Canadians can be limited by the job prospects of their area, preventing them from pursuing the career they wish to have. Fresh Start Employment Services seeks to solve this problem. Using data provided by the government of Canada, this web service provides details on the areas of Canada with the strongest labour forces of a given field, ranking them by crime statistics and offering estimates on the cost of renting an apartment in these areas. This service is unique as it gathers information on multiple criteria that many consider when relocating.

2 Objectives and Scope

Every year millions of young Canadians graduate from high school, college, and university, ready to enter the workforce. Though some find employment easily and locally, others are not so lucky. Additionally, the total unemployment rate in Canada is 6.9% [3] as of December 2016, this number being much higher for those who do not pursue post-secondary education. An option for many job seekers is to relocate to an area of Canada with greater job prospects, and when considering relocation, key factors such as the safety of the area and the ability to find affordable housing are very influential. Unfortunately, researching and finding a place that fits all of the criteria can be a difficult and time consuming task.

The goal of this project is to implement a web service that eases the process of relocation in search of employment. Using open datasets [1] [2] and statistics [6] provided by the Canadian government, this web service will provide to users recommendations of locations that fit all of their consideration factors. The

service will first ask the user to choose which field they wish to work in, and will search for the areas with the strongest labour force for that particular field. Of these results, the top ten will be selected and ranked by the crime activity of the area. This top ten list will be displayed to the user, with the average rental price of the area listed next to each entry. This service will greatly simplify the lives of those wishing to enter or reenter the workforce, but have had no luck in finding employment in their current location.

The struggle to find employment post-graduation is one shared by all young Canadians fresh out of school, and the decision to leave their hometowns in search of job prospects can be a difficult one. Easing this transition is vital to ensuring that these Canadians find the opportunities that they seek, especially for those without friends and family to support them in their new destination. This project takes a unique approach to helping these Canadians with their job search. The only similar aides are articles on websites such as Buzzfeed that offer recommendations on Canadian cities to live in, based on superficial factors. With the implementation of this service, thousands of unemployed Canadians will be given the opportunity to connect with careers they wouldn't have otherwise had access to, while living in a safe environment with housing that they can afford.

3 Input and Output

The implementation of this project will be using two data sets from the government of Canada as well as statistics from the Canada Mortgage and Housing Corporation (CMHC). The first data set used in this project is the labour force survey estimates. The user will input one of the fields of labour included in the survey that they are interested in, and the service will search for the locations that correspond to the top ten locations with the highest labour force. The second data set used in this project is incident-based crime statistics. The locations from the top ten list will be searched for and the locations will be ranked by the number of violent crimes they correspond to.The statistics used

from CMHC are rental averages, based on location. Each of the locations from the top ten list will be searched for in the statistics and a rental price will be assigned to it. The list of locations, ranked by number of violent crimes and paired with rental averages will be displayed to the user.

4 Algorithmic Challenges

The implementation of this project will require the use of different algorithms and data structures. Before running the actual searches, the labour force data set should be sorted by field of labour, and each field should be sorted by the size of the labour force. To do this, quicksort will be implemented, as in most cases it runs faster than most O(N log(N)) algorithms and it does not require a lot of disk space. In this order, they will be placed into an SQL database table. Similarly, the crime statistics data set should be sorted by location, and each location should be sorted by type of crime. The entries that correspond to violent crimes should be placed into an SQL database table. The entries for the rental estimates should also be placed in an SQL database table in the order they appear (as they are already sorted by location).

Using this data structure will make retrieving the data for the user's searches much more accessible. To retrieve the data, simple SQL queries will be used. An issue that may arise with this implementation is that the cities in each data set may not be exactly the same. To account for this issue, if a city from the labour force data set is searched for in the crime data set and can't be found, the average number of violent crimes for the province will be assigned to that city and a notice will be displayed to the user. The same applies to the average rental statistics.

5 Project Timetable

Milestone	Deliverable	Date
Requirements specification	Requirements document	March 10, 2017
Progress checkpoint	Demonstration of prototype	March 14, 2017
Project presentation slides	PDF of presentation slides	April 2, 2017
Project presentation	Presentation to class	Week of April 3, 2017
Final project code	Project implementation files	April 9, 2017
Design specifications	Design document	April 9, 2017
Team peer evaluation	Evaluation of team members	April 9, 2017

6 References

[1]"Incident-based crime statistics, by detailed violations - Open Government Portal", Open.canada.ca, 2017. [Online]. Available: http://open.canada.ca/data/en/dataset/be3880f2-0d04-4583-8265-611b231ebce8. [Accessed: 05- Feb- 2017].

[2]"Labour force survey estimates (LFS), employment by economic region based on 2011 Census boundaries and North American Industry Classification System (NAICS), 3-month moving average, unadjusted for seasonality - Open Government Portal", Open.canada.ca, 2017. [Online]. Available: http://open.canada.ca/data/en/dataset/fe12bef6-3588-40d5-83ca-8f81d551ce91. [Accessed: 05- Feb- 2017].

[3]"Canada Unemployment Rate — 1966-2017 — Data — Chart — Calendar — Forecast", Tradingeconomics.com, 2017. [Online]. Available: http://www.tradingeconomics.com/canada/unemployment-rate. [Accessed: 05- Feb- 2017].

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http://www.the10and3.com/the-vast-disparity-in-canadas-high-school-graduation-rates-00016/. [Accessed: 05- Feb- 2017].

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[6]"Rental Market — CMHC", CMHC, 2017. [Online]. Available: https://www.cmhc-schl.gc.ca/en/hoficlincl/homain/stda/data/data$_0$04.cfm.[$Accessed : 05 - Feb -$ 2017].