

COMPSCI 2XB3:Computer Science Practice and Experience: Binding Theory to Practice
Project Proposal

Project Title:	JobSeeker
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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.

Abstract

The proposal explains the motivation of the design, showing us why the design is useful and meaningful: It is designed for a certain group of people based on some specific social problems. The proposal also includes prior work, which shows the necessity of the design and gives us hints of how to improve our design based on existing designs. Another highlight of the proposal is the input/output of the design part. In this part, we talk about the data set and why we use this data set, and the inputs and outputs are decided in this part, which provides us a starting point of the implementation. We also have a discussion about algorithms in the proposal. We discuss the algorithms that might appear in the design and how they help to achieve our goals.

1. Objective

JobSeeker is designed for potential immigrants, people new to Canada that are looking for a job and Canadian job seeker. It will provide the user positions of jobs they are interested in and show the employment trends.

2. Motivation

As co-op students, we always keep an eye on the job market: In which province can we find jobs related to our program easier? What is the fastest growing career? What is the outlook of jobs we are applying for? We build this product to solve these problems and give advice for job seekers. Many people don't even know the distribution of jobs they are applying for in Canada and many people are planning to move to Canada and get hired here, but they don't know where to find most potential employers near them. Our product is designed for those who seek jobs. The users can choose different kinds of jobs they want, and our product is expected to show the distribution of these jobs and show the outlook of these jobs for their reference.

3. Prior Work

Job bank: <https://www.jobbank.gc.ca/>

Job bank is Canada's national employment service website for job search, career planning and trend analysis.

Similarity:

COMPSCI 2XB3:Computer Science Practice and Experience: Binding Theory to Practice Project Proposal

JobSeeker and Job bank have similar output with job titles, a map showing employment conditions, and outlook reports shown for each province.

Difference:

The data of employment tendency over recent years was not given on the trend analysis tool of Job bank.

Improvement:

we can put more work on displaying the Employment Tendency.

Indeed: <https://indeed.com/>

Indeed is a search engine for job listings. The result includes job title, description and information of the company / employer.

Similarity:

Both services are search engines for jobs implemented as websites.

Difference :

Indeed.com focuses more one posting and hiring of particular jobs, with detailed information needed for job applicants. Our tool focuses more on the overall potential of a job title.

4. Input/output and proposed solutions

1. Dataset:

3-Year Employment Outlooks: The datasets are csv files containing the employment conditions in each area from 2015 to 2020, including job titles, job potential and employment tendency.

Reason:

- i. Dependable resource. The database is from the Government of Canada, which makes the datasets more reliable.
- ii. Huge amount of data. The datasets contain over 200k rows of data in csv, which will contribute to our software implementation and development.

<https://open.canada.ca/data/en/dataset/b0e112e9-cf53-4e79-8838-23cd98debe5b>

2. The product will be presented as a website. The outputs will be:

- a. Job Title. The user will input the types of jobs they want then the related job titles will be outputted.
- b. Employment Tendency. For each job title, there will be an output line graph showing the trend of the employment of this job title over the recent years.
- c. Employment Map. For each job title, there will be a map showing the employment conditions in each area.

3. If a user wants to find a job or considers changing to another job, he will go to the website of our product. He can search for a job in either the categories, geographical area, or good employment tendency in recent years. Then the list of job titles will be shown on

COMPSCI 2XB3:Computer Science Practice and Experience: Binding Theory to Practice Project Proposal

the webpage. When he goes into a particular job title, there will be brief description of the job, job potential ranked by the government of Canada, the employment tendency in recent years and a map of the employment condition of this job in each area of Canada.

5. Algorithmic challenges:

In order to display job titles in certain order, sorting algorithms are required to process the database in advance.

Counting sort is suitable to effectively sort the job titles according to their potential rating, because there are only four possible values (0-3) for a potential rating and there is a large amount of repetition within a small range.

String operations are also fundamental for a search engine. Regular expressions can be utilized to process the dataset and classify job titles into different categories according to their names or locations.(chapter 5, Algorithms)

String searching algorithms are required when the user types in the search bar. The challenge is to find the suitable algorithm for a big dataset.

Graph application is included in the design to determine the shortest distance from user's house to the workplace using Google Map API.

6. Project plan

Milestones	Deliverable	Expected Due Date
Project Proposal	Project Proposal according to the template	Feb 7
Proposal Presentation	Presentation to the class	Feb 10
Requirement specification	Team project Requirements Specification documents	Mar 7
Project Prototype	First prototype demonstration	Mar 31
Final Presentation	Presentation to the class	Apr 6
Final Project Implementation	The Eclipse project of the implementation	Apr 12

COMPSCI 2XB3:Computer Science Practice and Experience: Binding Theory to Practice
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References

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Techie Delight. *Implementation of Counting Sort Algorithm in C and Java*. Retrieved from <https://www.techiedelight.com/counting-sort-algorithm-implementation/>

Charras, C & Lecroq, T (1997, Jan 14). *EXACT STRING MATCHING ALGORITHMS*. Retrieved from <http://www-igm.univ-mlv.fr/~lecroq/string/>

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