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CSE403 Assignment 1

When a family or company decides to relocate it is important to them to make an informed decision. Unfortunately most means to do this are flawed: word of mouth, biased advertisements, and hard to decipher data.

The current online methods of insight into the cities of America questionnaires. One frustrating characteristic of these online tools is their rigidity of entry. The input for such tools is check boxes ranging from disagree to agree on many declarative statements. Because of this the user loses control over the interpretation of the underlying data when they should not have to.

To the rescue comes Highrise! Using an appealing and concise categorical layout, users would create their city preference settings using gradient sliders for categories including, but not limited to, politics, population and weather, and select the degree of influence each setting will have in overall algorithm.

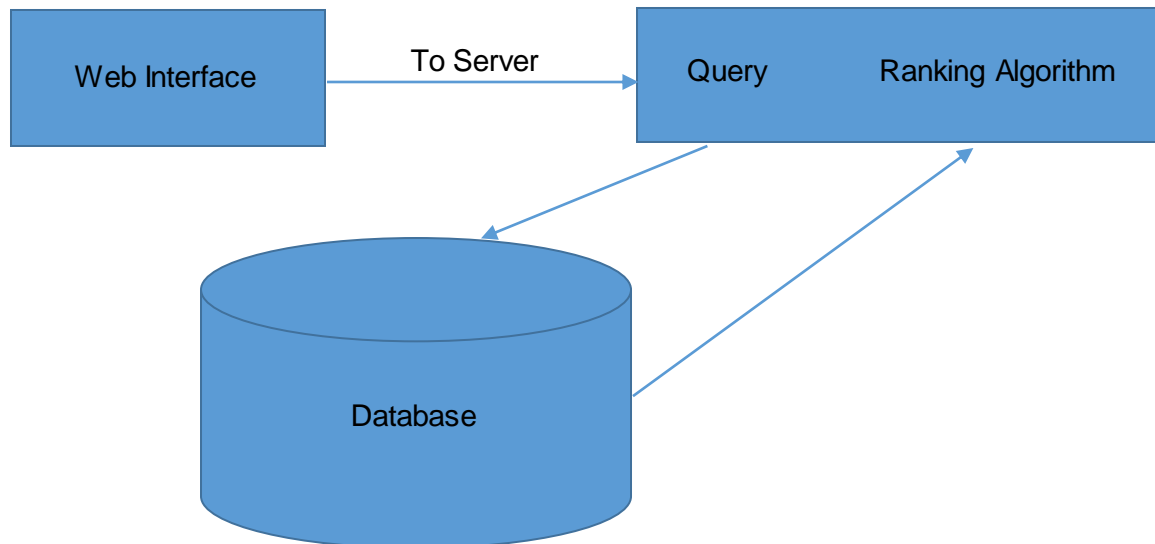
With this system the user input would be richer, not just taking ratios, desired ranges, etc. into consideration but also allowing the user to take more control by weighting the different variables according to their importance.

The subsequent synthesis of user input and data provides scores for each city. These scores can be understood and explained via a key, icons and/or a scripted (think hover-over effects etc.) results page. The result would be a more personalized city-finder than is currently available. Explanations of how calculations are made will contribute to the ease of product use (fine tuning of inputs as the user explores the influence of their different preferences). Results of competitors describe the picked cities in hope the user can rediscover why it was chosen for him/her. Highrise will explain why the top cities match with each user on an individual basis, using a user preferences settings and analogous data.

Our system would make it easy to isolate a few or even just one variable for city ranking, which is either impossible or extremely tedious using a quiz format. Highrise would have a professional interface to facilitate use (far beyond bubble boxes). It would avoid subtle, confusing, and at times even annoying questions. Sited, large, and reliable data sources make trustworthy results, and the personal conclusive analysis completes an engaging user experience.

Time investments would be comparable for users of both the questionnaires and Highrise. Combine that with Highrise's wealth of features and you have a definite improvement to the city searching infrastructure.

The software tools, technical details, and well-designed architecture form an engaging project. A diagram of the high level architecture is below.



Tools used include SQL for querying the Database, HTML and CSS for building the web interface, php/javascript and perhaps Java for running the queries, ranking the results, and formatting the responses to the user. There are many technical details. The back end requires a way to create the proper queries based on dynamic user input to ensure fast response time. An algorithm to maximize the match between user and city has to be written, which would output rankings for each city. These results must be sorted, and efficiently presented to the user.

Many challenges exist. Sufficient data has to be found to use in the database. To minimize the risk that data is not available, analyze census data, weather data, and political data to see if it can be parsed into a database. Also, a caching system may be necessary, as reading from a database for each user query may be slow and cause much disk traffic.

To test features, implementation could begin with a small subset of the census data, with pre-configured user input matching to expected results. As the interface can grow independently of the database, allowing scaling and testing on two different levels to pin down bugs more accurately.

The existing tools, technical challenges, flexibility of features, and independence of tasks provides a strong basis for the beginning of a software engineering project.