CS5224: Cloud Computing

Assignment 2

Preliminary Report

CentsTrip:
Beautiful Singapore, Satisfactory Cost

By Group 5

Yu Yingchen (A0159338U)
Ding Wenjia (A0105515R)
Lu Yifan (A0159305E)
Zhu Longwei (A0148601L)
Huang Mengying (A0159188M)

1. Selected Theme

CentsTrip is an intelligent assistant that helps to recommend the most suitable BNB (Bed and Breakfast) and tourist attractions for users within their travel budget, basing on their travel preferences. The target users are people who wish to have a wonderful trip to Singapore with minimal cost.

2. Business Model

Using public available data of government and service provider, CentsTrip provides the recommendations about travel plan with minimal expenditure for users based on their preference and budget. As a web-based service, CentsTrip attracts potential users by providing a good quality recommendation service. Subsequently, with the website traffic generated by users, customized advertisement such as accommodation discounts or ticket sales of attractions could be exhibited on CentsTrip. Generally, the profit model of CentsTrip targets to attract users and charge the advertisement fee.

The existing service providers for traveling recommendation focus more on integrating and exhibiting information, such as discounts and other tourists' review. In this case, they do not offer customized recommendation for target users. Unlike the existing ones, CentsTrip analyses the cost performance of accommodations and attractions, and recommends the traveling plan for users based on their preference and budget.

As a SaaS service, CentsTrip has much less costs compared with other on-premise services. Firstly, the service is implemented on cloud platform such as Amazon Web Service or IBM Bluemix, which means no hardware cost or setup is required. Secondly, due to the elasticity of cloud computing, our SaaS service can rapidly respond to the business cycle, which will significantly reduce the up-front cost without limiting the capacity. Last but not the least, our SaaS service has the flexibility on server or hosts as the SaaS service is hardware independent.

Above all, the business model of CentsTrip aims to use the minimal cost to provide users with recommendation service and benefit from website traffic and advertisements.

3. SaaS services to be developed

Two web-based SaaS services will be designed in this project. The first one focus on analyzing the cost performance of Airbnb, the distance between Airbnb and attractions and information of attractions. It is important to find a BNB in good quality with rational price for users. Besides, the total distance between BNB and tourist attractions is also crucial. Afterwards, it will provide information analysis of attractions and list them for users. The second service is a recommendation system based on the user-specificated budgets and user-selected preference, as well as the critical factors analyzed in the first service. Users need to input their number of visitors, the duration and budgets of their tourist and their attractions preference.

Airbnb recommendatios will be provided after the attractions preference is submitted. After users selecting the BNB, attractions recommendation and the information detail will be listed to provide a more intuitional and comprehensive view for users. The expected cost will also be calculated for users.

4. Preliminary design

Our web-based application will be hosted on IBM Bluemix and designed in an interactive way. Our system will be divided into two layers, namely presentation layer and data access layer. The former layer will offer services to user in terms of displaying input choices, suggesting rational plans and presenting final results. The Graphical User Interface (GUI) will be further specified during the development process. Depending on the user's input choice, we collect the information and query the constraints from the database, which will be handled in data access layer. Then, a list of accommodations will be shown on the GUI based on their cost performance. When the user finalizes the accommodation choice, we query the database again and display the recommended list of travel plan. The plan contains various attractions with description and nearby food centres. We plan to store the data in a relational database so as to make the data retrieval and analysis faster. We will also utilize some modern techniques such as Material Design for our application.

5. Implementation plan

Our primary idea comes from two dataset from the website https://data.gov.sg/, they contain the basic information of tourist attractions and hawker centers in Singapore, including the name, location, operating hours, short descriptions and etc. And other dataset will be combined for the implementation for CentsTrip. For example, we will crawl the information in Airbnb to analyze the cost performance and connect it with the previous two for our second application. We will use multiple datasets to develop and improve our CentsTrip program.

Before implementation, a preprocessing for converting these various sourced data into applicable data will be done. Depending on the various functions that IBM Bluemix Platform can provide, the prepared data will be imported and analyzed in Bluemix. A series of useful information will be mined and given to the next step. In the second phase, a recommendation system will be established based on the data we have got. We tentatively plan to use BootStrap framework to construct the web program. HTML, CSS and JavaScript programming languages will be applied for the further implementation.

Finally, on the website, users can submit their preferences to get the recommended BNBs and their corresponding links. Clicking any one of them, users can get more detailed information about that BNB. After that, users can submit the selection to get the further recommended attractions and food. Such user-based design will be beneficial for CentsTrip to attract more users and do further business promotion.