Proposer Details

Group Number	20
Registration Number of Group Members	2020-CS-23 Muhammad Rizwan 2020-CS-10 Asad Mehmood

Proposal Details

Project	Description
Proposed Project Title	TripAdvisor Scrapped
Executive Summary	TripAdvisor is a well-known platform for travelling advisory. They offer online hotel reservations and bookings for transportations, lodging, travel experiences and restaurants. The website has been in limelight for quite some time and has gained very much fame over the recent years. They operate worldwide and contain data of thousands of restaurants and hotels. The data provided at the website is so diverse that the users sometimes feel non-confidant on what to choose. The data is so scattered that it will be difficult for the user to get the expected information easily. So, we will try to make their lives easy by providing them as simple information as possible. For this purpose, we will scrap the data into seven attributes. Each attribute will be providing data according to the necessity of the user. Multiple sorting algorithms will be provided so that the user can sort items in ascending or descending order. It will make it easy for user to get expected data. For example, the user can find the cheapest or most luxurious hotel in a matter of seconds. He can sort any column by using any of the given algorithms that will help him to get information from the required field. When data is sorted, it is still so immense that it will take time to see the expected result. To compensate this problem, searching algorithms will also be provided so that the user can use any of the algorithms to search expected item from columns. We will provide multiple searching algorithms so that the maximum efficiency can be achieved. We will also provide an interface for stating, stopping and pausing the scrapping.

Business Case	
Outline the business need for the project	The need for this project is that we will be helping people to find their desired hotel in the best way possible. They will be able to search their hotel according to their city and within their desired price range. The clients of the website won't have to hustle through different pages searching for the right hotel. Instead, they will be able to jump to their result in a matter of seconds.
End user of the product	The end user of this project will be travellers all around the globe as it will be helpful for them to find their desired hotel according to their needs.
Motivation for Project	The motivation of this project is to make lives of people easy. Many travellers find it difficult to search appropriate hotels in a new city or country. To make their lives simpler, we will provide them a complete list of hotels as per their requirement. This purpose will be achieved through multiple sorting and searching algorithms.
State the level of impact expected should the project proceed and implications of not proceeding	At operational level, this implementation will be helpful in saving time. The availability of multiple sorting algorithms will ensure the efficiency of the project.
Technical Details	
Name of Entity	Hotels
Attributes of Entity (Minimum seven attributes/rows can be increased)	(see table below)

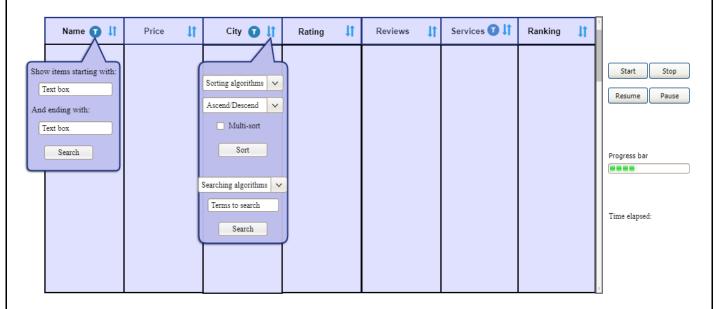| Name	Data Type	Description
Name	String	This attribute will show the name of hotel.
Price	Int	This attribute will show the price of stay at hotel.
Rating	Int	This attribute will show the rating of hotel.
Review	Int	This attribute will show number of hotels' reviews.
City	String	This attribute will

		show in which city the hotel is located.
Services	String	This attribute will show which extra services will be provided at the hotel.
Ranking	Int	This attribute will show the city-wise ranking of the hotel.

Sample of Scrapping Source	

GitHub Repository Link	https://github.com/Rizwanabid-23/CS261F21PID20.git
Sorting Algorithms	

Algorithm Name	Description
Bubble Sort	It is a type of sorting in which we repeatedly compare adjacent elements and swap them if they are in wrong order. The process is repeated until array is sorted.
Insertion Sort	In this type of sorting, the first element in array is taken as sorted and second element is taken as 'key' and it is compared with every element in array to place them in their correct position.
Selection Sort	In this type of sorting, we repeatedly search for smallest element in array and locate it in the beginning of array.
Merge Sort	This type of sorting is based on divide and conquer rule. In this sorting, array is divided again and again until it remains with single element then it is sorted and combined recursively.
Bucket Sort	This type of sorting distributes every element in buckets. Then every bucket is sorted by using insertion sort algorithm.
Counting Sort	This sorting works by iterating through elements, counting the occurrence of every element present in array and use these counts to compute an element index in the final sorted array
Radix Sort	Radix sort is an integer sorting algorithm that sorts data with integer keys by grouping the keys by individual digits that share the same significant position and value. Radix sort uses counting sort as a subroutine to sort an array of numbers.
Quick Sort	Quick sort is just like Merge sort as it also uses divide and conquer rule. In this algorithm, we first select pivot and on the basis of pivot, we divide smaller and larger elements to their correct side.
Shell Sort	It is type of sorting which first sorts elements that are far apart from each other and successively reduces the interval between the elements to be sorted. The interval between the elements is reduced based on the sequence used.
Cycle Sort	Cycle sort is a comparison-based sorting algorithm which forces array to be factored into the number of cycles where each of them can be rotated to produce a sorted array.

Tim Sort	Tim sort first analyses the list it is trying to sort and then chooses an approach based on the analysis of the list. Tim sort actually makes use of Insertion sort and Merge sort.

Searching Algorithms	Linear search	A linear search is the simplest method of searching a data set. We start at the beginning of the data set and examine each item of data until a match is made.
	Binary search	Binary search is used to search items in a list of sorted array. It keeps dividing array into half until the desired result is found.
	Jump search	With Jump Search, the sorted array of data is split into subsets of elements called blocks. We find the search key (input value) by comparing the search candidate in each block. As the array is sorted, the search candidate is the highest value of a block.

Searching Filters for each data type	The searching filters will be as follows: • Terms starting with • Terms ending with • Terms containing these: ____ • Terms excluding these: ____
Multi-Level Sorting	Multiple level sorting is meant to sort multiple columns at same time. This purpose can be achieved thorough Object-Oriented-Programming. The attributes of an entity can be arranged simultaneously through classes.

Interfaces for your project

TripAdvisor

Name 🔵 ⏸	Price ⏸	City 🔵 ⏸	Rating ⏸	Reviews ⏸	Services 🔵 ⏸	Ranking ⏸

Show items starting with:

Text box

And ending with:

Text box

Search

Sorting algorithms ⌄

Ascend/Descend ⌄

☐ Multi-sort

Sort

Searching algorithms ⌄

Terms to search

Search

Start   Stop

Resume   Pause

Progress bar

Time elapsed:

UI Component Name	Type of UI component	Purpose of UI Component/Other details
Name	Column	Show the names of hotels
Price	Column	Shows the prices offered by hotels
City	Column	Shows the city in which the hotel is located
Ratings	Column	Shows the ratings of the hotel
Reviews	Column	Shows the number of reviews gained by the hotel
Rankings	Column	Shows city wise ranking of the hotel
Start	Button	A button to start the scrapping
Stop	Button	A button to stop the scrapping
Pause	Button	A button to pause the scrapping
Resume	Button	A button to resume the scrapping
Progress bar	Bar	Shows the progress of the scrapping process
Time elapsed	Label	Shows the time elapsed during the sorting
Sorting algorithms	Drop-box	Shows the list of available sorting

		algorithms
Searching algorithms	Drop-box	Shows the list of available searching algorithms
Sort	Button	Sorts the selected column according to selected algorithm
Search	Button	Searches the entire column with selected algorithm
Ascend/descend	Button	Select the order of sorting.
Terms to search	Textbox	Receives the information for the words to be searched
Multi-sort	Checkbox	If selected, the column will be sorted according to the corresponding columns.