Experiment 6. Data Structs

I. Experiment purpose

For this lab, you will practice the quick sort, merge sort, sequential search and quick sort. Submit with all the step-by-step solutions.

II. Use instruments and materials

ProcessOn

III. Experiment content

Given the following list of string objects,

{"Jujube", "Orange", "Logan", "Pomegranate", "Raspberry", "Cantaloupe", "Carambola", "Date palm", "Coconut"}

- Sort the list by the quick sort algorithm. You may choose any element as the pivot.
 - Sort the list again by the merge sort algorithm.
 - In the sorted list, search "Logan" using the binary search algorithm.
 - In the sorted list, search "Apple" using the sequential search algorithm.

IV. Test steps and process records

Step1:The process of quick sort. (In next page)

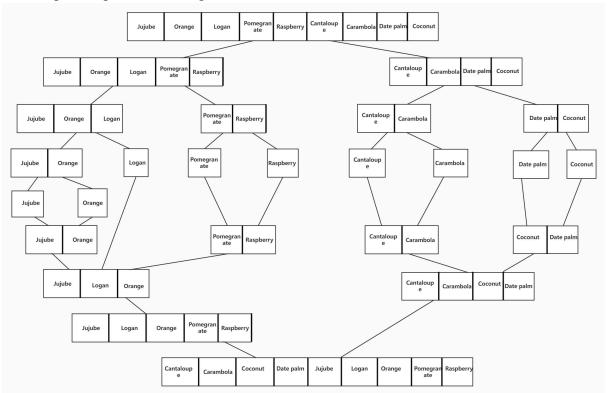
Pivot								
Jujube	Orange	Logan	Pomegran ate	Raspberry	Cantaloup e	Carambol a	Date palm	Coconut
Pivot	Set "I	Raspberry" a	as pivot	h	igh < low, sea	rch stops	hig	gh low
Raspberry	Orange	Logan	Pomegran ate	Jujube	Cantaloup e	Carambol a	Date palm	Coconut
Pivot		Swa	p "Raspberry	/" to "Coco	onut"		hig	h low
	-						9	
Coconut	Orange	Logan	Pomegran ate	Jujube	Cantaloup e	Carambol	Date palm	Raspberr

Pivot	low	Search	h again in lef	t, Set "Pom	negranate" a:	pivot	high
Pomegran ate	Orange	Logan	Coconut	Jujube	Cantaloup e	Carambol a	Date palm
Pivot		2				h	igh low
Pomegran ate	Orange	Logan	Coconut	Jujube	Cantaloup e	Carambol a	Date palm
Pivot	***	Swap "Po	omegranate"	to "Date	palm"	h	igh low
Date palm	Orange	Logan	Coconut	Jujube	Cantaloup e	Carambol a	Pomegran ate
Pivot	low	Search again	in left, Set "	Coconut" a	s pivot	high	
Coconut	Orange	Logan	Date palm	Jujube	Cantaloup e	Carambol a	
Pivot	low	Swap	"Carambola	" to "Orai	nge"	high	~
Coconut	Carambol a	Logan	Date palm	Jujube	Cantaloup e	Orange	
Pivot	of a	low Swap	"Cantaloup	e" to "Log	<mark>jan"</mark> high		*
Coconut	Carambol a	Cantaloup e	Date palm	Jujube	Logan	Orange	
					Swap "Coco	onut" to "Ca	antaloupe"
Pivot		high	low				

Finish sort										
Cantaloup e	Carambol a	Coconut	Date palm	Jujube	Logan	Orange	Pomegran ate	Raspberry		

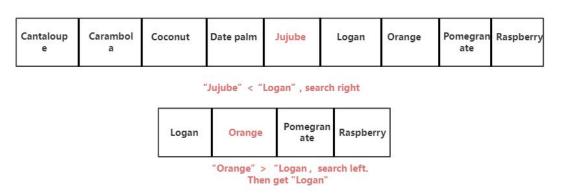
Graph 1 QuickSort Process

Step2:The process of merge sort.



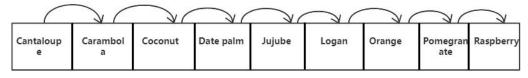
Graph 2 MergeSort Process

Step3: The process of binary search for "Logan"



Graph 3 BinarySearch Process

Step4: The process of sequential search for "Apple"



Graph 4 SequentialSearch Process

V. Experimental gains and experiences

1. Learn about the qucik sort, merge sort, quick search and sequential search.

- 2. Learn about the logic and internal implementation process of various sort and search algorithms.
 - 3. Learn about the pros and cons about each algorithm.