Code Reading

Fall 2016 Reading #15 – Spinellis Binary Search

Dr. Gurka Worksheet

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Specifications: read the final project specifications on Moodle before doing traces.

Classmate names will be filled in in class Monday.

Who you explained your traces to:







Who explained their traces to you:







Actual traces to be placed on the next pages.

Trace data #1:

key: 8002

list: 4, 8, 15, 20, 38, 52, 80, 1000, 5000, 6001, 8002

Actual trace:

Nmemb = 11

Lim: 11

P: 52

Cmp: >0

Base: 80

Lim: 10

Lim: 5

P: 5000

Cmp: >0

Base: 6001

Lim: 4

Lim: 2

P: 8002

Cmp: == 0

Return ((void \*)p)

|  |  |  |  |
| --- | --- | --- | --- |
| lim | p | cmp | base |
| ~~11~~ | ~~52~~ | ~~8002-52 >0~~ | ~~80~~ |
| ~~10~~ |  |  |  |
|  |  |  |  |
| ~~5~~ | ~~5000~~ | ~~8002-5000 >0~~ | 6001 |
| ~~4~~ |  |  |  |
|  |  |  |  |
| 2 | 8002 | 8002-8002 == 0 |  |
|  |  |  |  |
|  | Return((void\*) p) = 8002 |  |  |

Characteristics of data:

* no duplicates
* range of numbers from 4 to 8002 inclusive
* list is odd length
* key is last element

I picked this data to see how the range between the small and large numbers would affect the tracing for the key value.

Trace data #2:

key: 905

list: 9, 9, 9, 9, 15, 15, 15, 82, 82, 82, 82, 82, 500, 500, 500, 801, 801, 801, 905, 1006, 1006, 1006, 1006, 1006

Actual trace:

Nmemb: 23

Lim: 23

P: 82

Cmp: >0

Base: 500

Lim: 22

Lim: 11

P: 801

Cmp: >0

Base: 905

Lim: 10

Lim: 5

P: 1006

Cmp: <0

Lim: 2

P: 1006

Cmp: <0

Lim: 1

P: 905

Cmp: == 0

Return ((void \*)p)

|  |  |  |  |
| --- | --- | --- | --- |
| lim | P | cmp | base |
| ~~23~~ | ~~82~~ | ~~905- 82 >0~~ | ~~500~~ |
| ~~22~~ |  |  |  |
|  |  |  |  |
| ~~11~~ | ~~801~~ | ~~905-801 >0~~ | 905 |
| ~~10~~ |  |  |  |
|  |  |  |  |
| ~~5~~ | ~~1006~~ | ~~905-1006 <0~~ |  |
|  |  |  |  |
| ~~2~~ | ~~1006~~ | ~~905-1006 <0~~ |  |
|  |  |  |  |
| 1 | 905 | 905-905 ==0 |  |
|  |  |  |  |
|  | Return((void\*)p) = 905 |  |  |
|  |  |  |  |

Characteristics of data:

* all numbers other than key have duplicates
* range of numbers from 9 to 1006 inclusive
* list is odd length
* key is the only value that has no duplicates
* key is 19th element in the data

I picked this data to see how the range between the size of the numbers would affect the trace and if the duplicates will allow the process to find the key value.