CST8130 – Data Structures

Lab 1 – Test Plan

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1. Display of Main Menu

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| --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | **Description of Test** | | |  | | --- | | **Input Values** | | |  | | --- | | **Output / Result** | | |  | | --- | | **Pass/Fail** | |
| 1. a. Valid input | |  | | --- | | 1,2,3,4 | | Resulting feature will be as described in the following tables | Pass |
| 1. b. Invalid input – digits | |  | | --- | | 0, 7, 100 | | Please choose the option 1 to 4. | Pass |
| 1. c. Invalid input – Alpha characters | |  | | --- | | A, a | | \*\*\*\*\*Input Mismatch Exception\*\*\*\*\* | pass |
| d. Invalid input – Symbol | |  | | --- | | @, | | | \*\*\*\*\*Input Mismatch Exception\*\*\*\*\* | pass |
| 1. e. Invalid input – Whitespace | |  | | --- | | Space, tab | | \*\*\*\*\*Input Mismatch Exception\*\*\*\*\* | pass |

2. Tests on Empty Data

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | **Description of Test** | | |  | | --- | | **Input Values** | | |  | | --- | | **Output / Result** | | |  | | --- | | **Pass/Fail** | |
| 1.Perform recursive binary and linear search. | |  | | --- | | 2 | | will return an error to the user will say “The array has yet to be initialized...Please initialize by clicking 1” and back to main menu | Pass |
| |  | | --- | | 1. 2.Perform iterative binary and linear search. | | |  | | --- | | 3 | | will return an error to the user will say “The array has yet to be initialized...Please initialize by clicking 1” and back to main menu | Pass |
| |  | | --- | | c. initializes the array the perform a recursive search on the number | | |  | | --- | | 1 then 2 |   Then 33 | It will preform the search for the user and will return the result if found or not found and the time it took in nano and millis | pass |
| d. . initializes the array the perform a linar search on the number | |  |  | | --- | --- | | |  | | --- | | 1 then 3 |   Then 33 | | It will preform the search for the user and will return the result if found or not found and the time it took in nano and millis | pass |

3. Adding values to the Array

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | **Description of Test** | | |  | | --- | | **Input Values** | | |  | | --- | | **Output / Result** | | |  | | --- | | **Pass/Fail** | |
| a. Add a whole number | 1 | It will run and print the array that resulted | pass |

4. Display recursive Binary and Linear search

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | **Description of Test** | | |  | | --- | | **Input Values** | | |  | | --- | | **Output / Result** | | |  | | --- | | **Pass/Fail** | |
| a. Perform recursive binary and linear search. On not found integer on array  12 17 22 25 25 27 36 36 37 38 38 38 40 40 43 48 54 59 62 63 63 64 71 71 72 76 84 87 93 93 | |  | | --- | | 1 then 2 |   Then 33 | It will result with :  Print remaining number of the array each time it loops  “33 was not found : recursive Binary SearchTime taken in nanoseconds:3117300  Time taken in milliseconds: 3  33 was not found : recursive Linear Search  Time taken in nanoseconds:143400  Time taken in milliseconds: 0”  And then will show the menu | pass |
| b. preform iterative binary and linear search. On not found integer | |  | | --- | | 1 then 3 |   Then 33 | It will result with :  Print remaining number of the array each time it loops “33 was not found : recursive Binary Search  Time taken in nanoseconds:2404800  Time taken in milliseconds: 2  33 was not found : recursive Linear Search  Time taken in nanoseconds:225900  Time taken in milliseconds: 0”  And then will show the menu | pass |
| c. Perform recursive binary and linear search. On a found integer on array | |  | | --- | | 1 then 2 |   Then 40 | It will result with :  Print remaining number of the array each time it loops “40 was found at index position 13: recursive Binary Search  Time taken in nanoseconds:2711400  Time taken in milliseconds: 2  40 was found at index position 13: recursive Linear Search  Time taken in nanoseconds:878200  Time taken in milliseconds: 1”  And then will show the menu | pass |
| d. Perform recursive binary and linear search. On a found integer on array | |  | | --- | | 1 then 3 |   Then 40 | It will result with :  Print remaining number of the array each time it loops “40 was found at index position 13: Iterative Binary Search  Time taken in nanoseconds:872800  Time taken in milliseconds: 1  40 was found at index position 40: Iterative Linear Search  Time taken in nanoseconds:186600  Time taken in milliseconds: 0”  And then will show the menu |  |