Table of Dry Runs and Algo8rithms for Practice

1. Insertion in Array (Insert an element at a specific position)

Algorithm for Insertion:

Shift all elements starting from the position where the element is to be inserted to the right by one position.

Insert the new element at the specified position.

Adjust the size of the array.

Dry Run for Insertion:

DATA: `[10, 20, 30, 40, 50]`

Element to insert: `25`

Position to insert: `2` (index 2)

Step	Array Before Insertion	Element to Insert	Action	Array After Insertion
Initial	`[10, 20, 30, 40, 50]`	25	Starting with the original array	`[10, 20, 30, 40, 50]`
1	`[10, 20, 30, 40, 50]`	25	Shift elements right from index 2	`[10, 20, 30, 40, 50]`
2	`[10, 20, 30, 40, 50]`	25	Insert 25 at index 2	`[10, 20, 25, 30, 40, 50]`

Array after insertion: `[10, 20, 25, 30, 40, 50]`

Table of Dry Runs and Algo8rithms for Practice

2. Deletion in Array (Delete an element at a specific position)

Algorithm for Deletion:

Remove the element at the given position.

Shift all elements after the deleted element to the left by one position.

Adjust the size of the array.

Dry Run for Deletion:

DATA: `[10, 20, 30, 40, 50]`

Position to delete: `2` (index 2)

Step	Array Before Deletion	Action	Array After Deletion
Initial	`[10, 20, 30, 40, 50]`	Starting with the original array	`[10, 20, 30, 40, 50]`
1	`[10, 20, 30, 40, 50]`	Delete element at index 2 (value 30)	`[10, 20, 40, 50]`
2	`[10, 20, 40, 50]`	Shift remaining elements left	`[10, 20, 40, 50]`

Array after deletion: `[10, 20, 40, 50]`

Table of Dry Runs and Algo8rithms for Practice

3. Linear Search in Array (Search for an element)

Algorithm for Linear Search:

1. **Start from the first element of the array.**
2. **Compare each element with the target element.**
3. **If a match is found, return the index.**
4. **If the target element is not found after traversing the entire array, return -1.**

Dry Run for Linear Search:

DATA: `[10, 20, 30, 40, 50]`

Target Element: `30`

Step	Current Element	Action	Index Found
Initial	10	Start at index 0	Not Found
1	20	Compare with target (30)	Not Found
2	30	Match found at index 2	2

Index of `30` : `2`

Practice Questions for Insertion, Deletion, and Linear Search in Arrays:

1. **Given the array [5, 12, 23, 36, 44], insert 18 at index 3. What is the resulting array?**
2. **For the array [1, 4, 8, 12, 15], delete the element at index 1. What is the resulting array?**
3. **Given the array [5, 7, 9, 10, 12], search for the element 10 using linear search. What is the index of 10?**
4. **For the array [10, 20, 30, 40, 50], insert 60 at the end of the array. What is the resulting array?**
5. **For the array [5, 8, 12, 16, 22, 28], delete the element at index 4. What is the resulting array?**
6. **Search for 16 in the array [5, 8, 12, 16, 22, 28] using linear search. What is the index of 16?**

Filename: Document1
Directory:
Template: C:\Users\Abdullah\AppData\Roaming\Microsoft\Templates\Normal.dotm
Title:
Subject:
Author: Abdullah
Keywords:
Comments:
Creation Date: 11/17/2024 2:30:00 PM
Change Number: 1
Last Saved On:
Last Saved By:
Total Editing Time: 25 Minutes
Last Printed On: 11/17/2024 2:55:00 PM
As of Last Complete Printing
Number of Pages: 3
Number of Words: 220 (approx.)
Number of Characters: 1,259 (approx.)