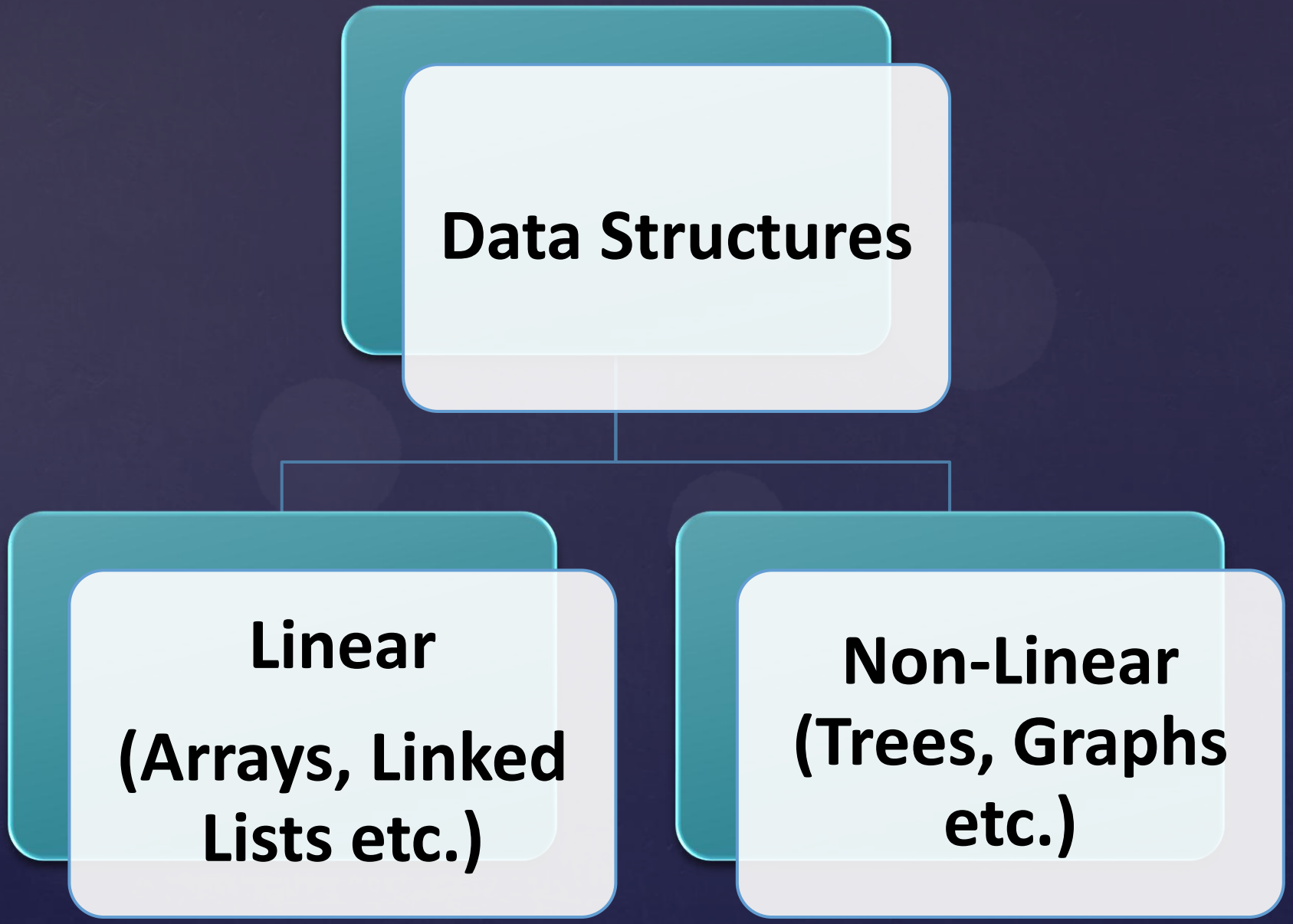
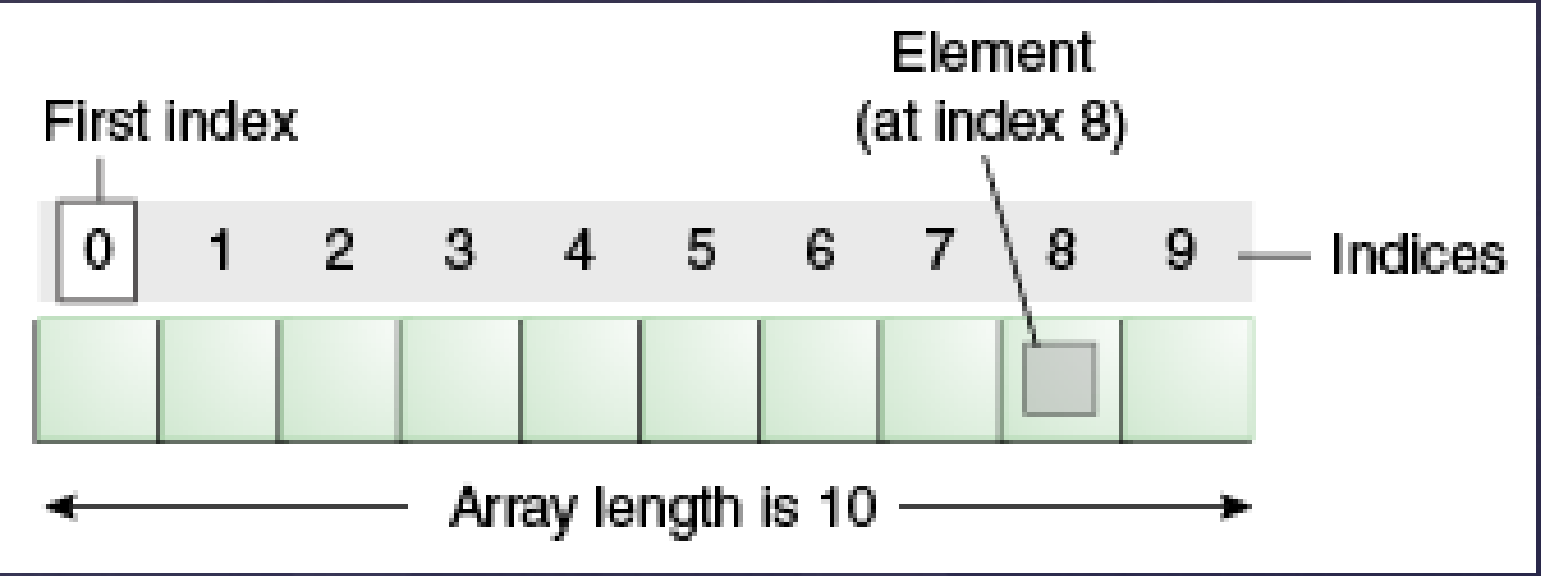
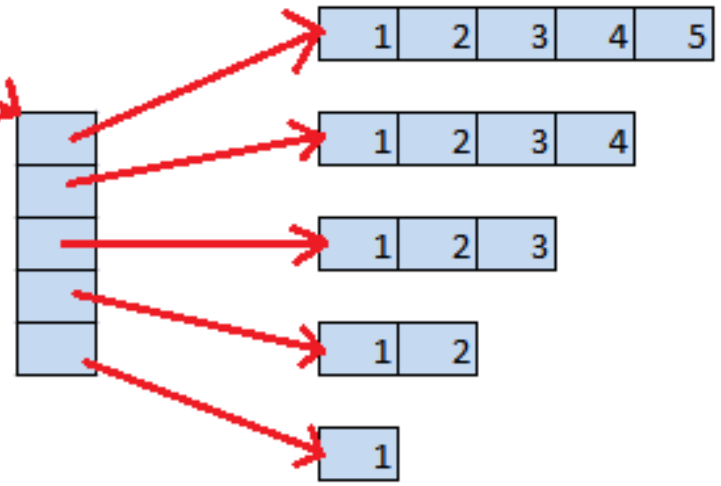
Arrays and Strings


Data Structures
Linear
(Arrays, Linked Lists etc.)
Non-Linear
(Trees, Graphs etc.)



- We can also have 2-D, 3-D, …, n-D arrays

```
int[][] triangleArray = {
      {1, 2, 3, 4, 5},
      {2, 3, 4, 5},
      {3, 4, 5},
      {4, 5},
      {5},
};
```



- You can define 2-D arrays as 1-D arrays storing references of other 1-D arrays and lengths of these arrays need not be same.

- In arrays we can access any random element in constant time i.e. O(1); independent of the position of the element whereas in Linked Lists we say O(n) time is required to access any element.

Strings

Sequence of characters

- We basically deal with strings using character type arrays or string data type.
- The string data type is internally implemented using classes.
- Characters and integers can be used interchangeably.
- You can subtract an integer from a character (‘s’-15), a character from a character (‘r’-‘s’) and a character from an integer (130-’s’).

Questions

Note: Make sure you know how to implement linear search, binary search, bubble sort, selection sort and insertion sort.

1. Reverse the elements of an array without using another array.
2. Find the unique element: You are given an array of numbers where all the elements appear twice, except one number, find and return that number.
3. Sort 0's and 1's: Sort an array containing 0's and 1's only.

Questions

4. Pair Sum: Find the number of pairs in an array having sum equal to a given number k.
5. Merge two sorted arrays.
6. Print a given 2-D array in spiral form on the console.

Questions

7. Array rotation: Left rotate the array by k elements.
8. Check if a given string is a palindrome.
9. Count the number of words in a given string.

Questions

10. Reverse all the words of a given string.
11. Given a string print it on the console in the following manner:

    I/P: This is competitive coding circle

    O/P: circle coding competitive is This
12. Count the number of insertions you'll have to make within a sentence to make it a Pangram (a sentence containing every letter of the alphabet).

Questions

12. Check if two strings are permutations of each other.
13. Remove consecutive duplicates in a given string.

    I/P: sssstrriiiinnggggggss

    O/P: strings
15. Find the first non-repeating character in a string. Ex: I/P: competitive; O/P: t