Data Structures and Algorithms

1. Data structures is a way of collecting and organizing the data and various operations can be performed on the data in efficient way
2. Two data structures a. Primitive (e.g Char, Int, Float, String, Double etc) b. User defined or abstract data structure (e.g Array, List, Graph, Tree etc).
3. User defined data types are of a. Linear (Array, Linked List) b. Non linear (Tree, Graph) c.Homogenous(Array - Elements of same type) d.Non - Homogenous (Struct, class - Elements of different Types)
4. Algorithm is a set of logic, executed in definite way and produce correct result
5. Algorithm efficiency can be measured by Space and Time complexity
6. Time Complexity - Time taken by the algorithm to execute, complete and produce results
7. Space Complexity - Memory used by the algorithm during execution and complete results
8. Asymptotic notation is used to measure time complexity of the algorithm
9. Various Asymptotic notation used are a. Big Theta, Big O and Big Omega
10. Big O - Is the worst case or maximum time taken for the algorithm to complete its execution i.e time taken <= N
11. Big Omega - Is the best case or minimum time required to complete the execution of the algorithm i.e time take >= N
12. Sorting allows to arrange the data in ascending or descending order. It helps in searching process
13. Types of sorting a. Bubble Sort b.Heap Sort c. Selection Sort d. Merge Sort e. Insertion Sort f.Quick Sort

Reference

https://www.geeksforgeeks.org/
https://www.studytonight.com/data-structures/