Data Structures and Algorithms

Assignment 1

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1. Common operations of data structures in word or PDF document.

A data structure is specialized way of organizing data in a computer that enables us to perform different operations effectively and efficiently.

Some examples are array, linked list, stack, queue, tree, graph etc.
Operations we can perform on a data structure are:

- **Insertion**: here we can insert an element at the beginning, end or at the i'th position (or index).
- **Deletion**: here we can delete an element from the beginning, the end or the i'th position (or index).
- **Traverse**: here we can print all the elements or some elements.
- **Access**: we can access the first, middle, last or a random element.
- **Sort**: sorting can be used to organize the elements in a certain order, like in an ascending, descending or alphabetical order.
- **Merge**: we can merge multiple data structures in a single data structure.
- **Search**: we can search for a particular element in an array or linked list.
- **Reverse**: we can reverse a list of elements, like arrays or linked lists.
- **Modify**: modify means we can update an element or we can swap two elements.

We can or cannot perform all the above-mentioned operations on a single data structure. For example, we can perform all the mentioned operations on an array but sorting a graph can be hard.

2. Upload any e-book on Data Structures.

Uploaded Data Structures and Algorithms by Alfred V. Aho, John E. Hopcroft and Jeffrey D. Ullman.