Have you ever wondered why most of the product-based companies focus so much on data structures and algorithms in their interviews for positions like Software Development Engineer, Data Scientist, Machine Learning Engineer, and so on?  
If yes, all the answers to your questions lie here.

It’s always crucial to understand why to learn data structures and algorithms, their needs and applications, and other questions related to data structures and algorithms. Let's deep dive into it.

**Why Learn Data Structures and Algorithms?**

Data Structure is something that can be used to store and organize data in a particular fashion. And, now comes the algorithm. An algorithm is a step-by-step set of instructions to solve a particular problem.

In simple words, you can say that Data Structures are nothing but “meaningful” arrangements of data that algorithms can use to solve any particular problem!

Can you imagine going to a library and finding all 10,000 books stored randomly? No! It will be a very hectic task to find the book you want. So we need to create an better or optimized solution to store and search the books instead of a simple solution of randomly searching. And that’s why we need to learn data structures and algorithms and understand their tradeoffs for different situations to be able to create optimized solutions

**Need of Data Structures and Algorithms**

* **To solve some real-world complex problems:** Yes you heard it right. Consider the above example of searching books in the library, there you can't search books randomly, you need a proper approach to search books in order to save time, and here data structures and algorithms came into play to solve some real-life based problems.
* **Optimization and Scalability:** Once you have knowledge of data structures and algorithms, you can easily decide which data structure can be used at which place and which algorithm will be best for your use case. This helps in writing more optimized and scalable code.
* **Improving your problem solving skills:** DSA is your toolbox for tackling some of the toughest challenges in the tech world. From your WhatsApp chat to LinkedIn Feed - everything uses DSA user the hood in some form. Whether you build your own projects, participate in competitive coding contests or work as a software developer - the knowledge of DSA is always helpful.
* **For job opportunities:** Another point is that these days most product-based companies ask DSA and algorithms in their interviews as they want to judge the problem-solving skills of the candidate. So learning DSA and algorithms will give you an advantage during the interviews and hence can land you in your dream company.

**Importance of Data Structures and Algorithms:**

* **Reducing time complexity**- DSA plays a major role in reducing the time complexity of the code. A problem can be solved using various approaches, but you have to pick the optimized one in order to be more productive and solve the problem in lesser time. It can be done through learning data structures and algorithms.
* **The core of computer science** - Data structures and algorithms are considered to be the foundation of computer science. With advancements in technologies, more and more data is getting stored. A huge amount of data can slow down the processing speed of computer systems. This is where data structures can help us. They can improve the processing power of the computer by the effective utilization and storage of data.

**How to learn data structures and algorithms?**

* **Learn DSA from Scaler:** You can learn DSA through the Scaler Topics. We offer a complete series of in depth DSA tutorials along with suitable real life examples. These are targeted for absolute beginners who want to dive into the field of data structures and algorithms.
* **Learn through books:** You can learn DSA through various available books also. A few famous books are: “Introduction to Algorithms” by Thomas H. Cormen, “The Algorithm Design Manual” by Steven S. Skiena, “Algorithms” by Robert Sedgewick, and Kevin Wayne, and many more.

**Applications of Data Structures and Algorithms:**

There are a lot of real-life applications of Data structures and algorithms you can see around you. Like Facebook, how that connection and friend’s logic is built. All that logic is built through Graph data structure.

Similarly, Google maps uses the Graph data structure internally. So there are tons of applications of data structures and algorithms which you can see all around you.

Some of the problems that can be solved using DSA and Algorithms are-

1. Knapsack problem
2. Tower of Hanoi
3. Shortest distance between two points
4. Project scheduling

and many more...

Hope you get an idea about Data structures and algorithms and their importance and need. One should learn DSA in order to enhance their problem-solving skills and for better job opportunities in good companies.

# What is Data Structure?