

# Data Structures & Algorithms

This course will get you prepared for placements and will teach you how to create efficient and fast algorithms

Data Structure and algorithms are two different things

Data Structures :- Arrangement of data so that they can be used efficiently in memory (data items)

Algorithms :- Sequence of steps on data using efficient data structures to solve a given problem

Other Terminology :-

Database :- Collection of information in permanent storage for faster retrieval and updation

Data warehousing :- Management of huge amount of legacy data for better analysis

Big Data :- Analysis of too large or complex data which cannot be dealt with traditional data processing application

Data Structures and Algorithms are nothing new. If you have done programming in any language like C you must have used Arrays →

A data structure and some sequence of processing steps to solve a problem  $\rightarrow$  Algorithm

## Memory layout of C programs

when the program starts, its code is copied to the main memory

Stack holds the memory occupied by the functions

Heap contains the data which is requested by the program as dynamic memory

Initialized and uninitialized data segments hold initialized and uninitialized global variables respectively

