① What are Data structures ?

↳ DS provides ways to organize data for the effective use.

e.g ① crowd is organized in a line for efficiency if they want to get anything → so line is data structure
↳ queue DS in computer sciene

e.g ② To carry books you have to bundle them together
↳ stack DS in computer sciene

↳ why data structures are important ?

↳ All the software uses data so before the usage it is important to organize the data for efficiency.

↳ efficiency / perfomance of software directly depends on how data is organized or grouped together.

What is an algorithm? → if we talk generally

↳ steps we follow to complete a task.

e.g To make Tea we follow steps :

① Boil water
② Add sugar
③ add tea (black tea)
④ Add milk

} Tea algorithm

↳ In talking in language of CS (computer science) :

↳ steps, a computer go through while performing a specific task.

e.g Talking about algorithms we can consider "Graph algorithms" that are used to get shortest path from one place to other.

What makes a good algorithm ?

① correctness → It can solve problem
② Efficiency → and it should solve problem efficiently.

Why are Data structure & Algorithms Important:

↳ As a computer scientist/engineer your responsibility is to perform operations on data.

↳ any task involves these steps:

① Input → ② Processing → ③ Output

e.g You give "your current location" as input and "location where you want to go" as input

↳ That input is processed. ↳ to do this efficiently Google use "graph datastructure" & "graph algos"

↳ and gives you output.

Real life example:

For example you need a book from library named "Intro to Data Science"

→ What you will do?

① → Go to Library
② → Go to CS Dept
③ → Go to Data Science Portion
④ → And you will get that book

Here books are Data that are organized using datastructure & finding the book is algorithm.

↳ what if books are not organized?

↳ You might not get it :(