DSA ptl

Def

An algorithm is a sequence of computational steps that transforms an input to an output.

NP completeness

- NP complete problem ⟶ no one has ever proven that an efficient algorithm for one of them exists.
- If there exist an efficient algorithm for one of them exists for everyone.

MEGA TIP

If you prove that a problem is NP-complete, you can try to find a near optimal solution instead.

See insertion-sort notebook

But how do we prove that an algorithm is indeed correct?

very very important

Loop invariance

A property that holds before and after iteration of the loop and proving that

We need to verify the invariant in 3 Stages:

1) Initialization
2) Maintenance
3) Termination

Analyzing an algorithm.

Big O Notation

insertion sort — $O(n^2)$ ☹

important note

see cracking the coding interview Ch.

Examples 4, 5, 9, 11, 12!

→ very very tricky