Algorithm Analysis Of Recurrence/Recursive Relations

In this part 3 of 5 we will understand and analyze complexity of a recursive relation using iterative method.

Algorithm Analysis And Design

Solving Recurrence Relations With Iterative Method

Objectives:

1. What is iterative method?
2. How can iterative methods be used to solve recurrence relations?
3. Explain via example how to implement iterative method in recurrence relations.

In this blog post we will understand what an iterative method is, how can we use it to solve recurrence problems, understand via example and analyze complexity of an iterative method.

So before we begin we need to understand what iterative method is?

This technique is also called backward substitution, since in this we continue to substitute the values until we see some sort of pattern. Once we discover the pattern we can generate the formulae for the nth series. Next once we generate the formulae we need to prove it actually solves the recurrence relation.

Three important steps mentioned:

1. Substitute the values till you see a pattern.
2. Deduce the formulate from the pattern.
3. Prove that the formulae actually solves the recurrence relation.

Let us walk through an example keeping the steps involved in mind.

<script src="https://gist.github.com/NavneetPrakashSingh/4957859c74090cdef86d04bf2e50ae94.js"></script>

Now we know how to find the complexity of recurrence relation using iterative method.

That’s all for now, later in the exercise section we will work on more examples and give exercises related to the same. In the next section we will work on solving recurrence relation using recurrence tree method.