

Recursion

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Recursion: in computer science, is a method of defining functions which the function being defined is applied within its own definition; specifically it is defining an infinite statement using finite components.

Essential properties of recursion methods

- Every recursive call must simplify the computation in some way.
- There must be special (terminal) cases to handle the simplest computation directly.
- Common error: infinite recursion, this happens because of a missing terminal case or failure of a terminal case.
- Good steps that help you think recursively:
 - 1- Consider different ways to simplify inputs.
 - 2- Combine solutions with simpler inputs into a solution of the original problem.
 - 3- Find solutions to the simplest inputs.
 - 4- Implement the solution by combining the simple cases and the reduction step.
- Different types of recursive methods
 - 1- Recursive helper methods.
 - 2- Mutual recursions: a form of recursion where two mathematical or computational functions are defined in terms of each other.
- Using the debugger is a good idea to help tracking the recursive methods.
- Any iterative problem can be expressed recursively but the other way is not always necessarily true.