Analyzing Algorithmic Patterns Based on Real Coding Interview Questions

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October 1, 2017

1 General Patterns for Analysis

1.1 Palindrome

General Structure of a Palindrome Algorithm
The following description is a general algorithm for solving the palindrome problem which is a common problem in Java and other languages. This approach can be used to solve numerous other problems by altering the inside of the loop.
Algorithm:
Set the left to index the leftmost/first character
Set right to index the rightmost/last character
while left is less than right
        compare the left and right characters
        if they are not equal then return false
        increment left
        decrement right
end of the while loop
return true

1.2 Merge Sort

General Structure of a Merge Sort Algorithm
Merge Sort uses the idea of divide and conquer, this means the list to be sorted should be divided up into equal parts first, then these new smaller parts should be sorted individually first before recreating the full list.
The following is a general algorithm for solving a sorting problem using the merge sort approach.
Algorithm:
If there is only one element in the list to be sorted, it is already sorted, return.
Else, divide the list recursively into two halves until it can no longer be divided.
Then merge the smaller lists into new list in sorted order.