Binary Heap

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April 2019

Abstract

This report aims to analyze the running time in the average case for the recursive and iterative implementation of a min Binary Heap (BH).

1 Introduction

In order to evaluate the running time of building the heap and removing the minimum element, an array of random numbers is set as problem instance. The array elements are of integer type in the range (1, d) where $d = 1 * 10^5$. In order to smooth out fluctuations, the average of 100 runs is taken. The C code has been compiled with -O4 optimization.

2 Average Case

Figure 1 shows the running time as a function of the array size for the recursive and the iterative version. As

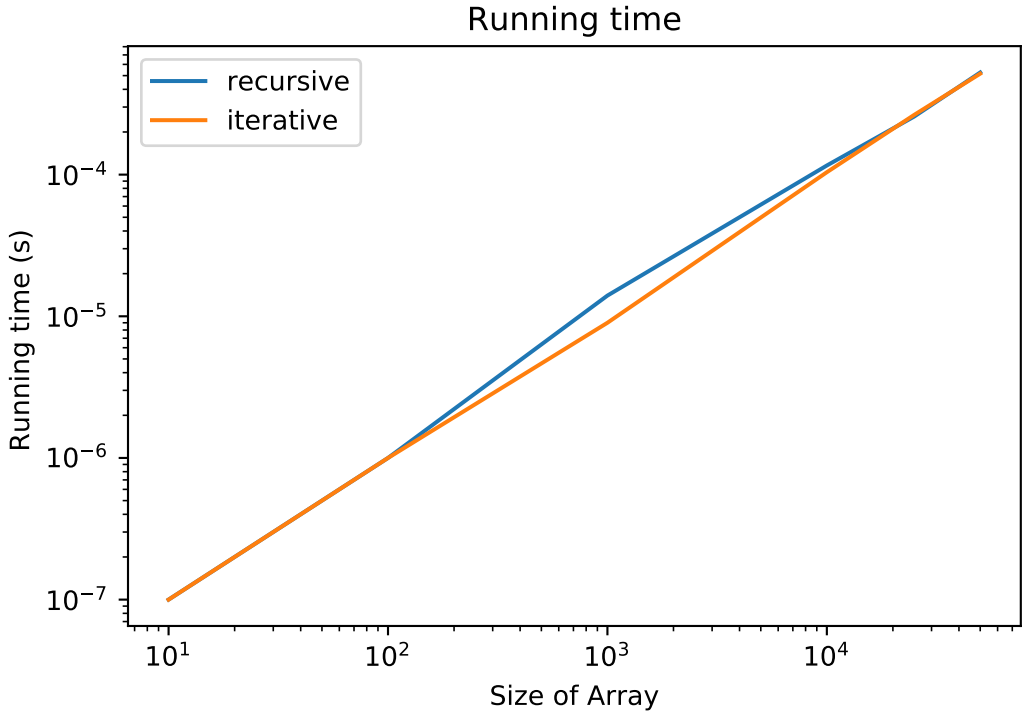

Figure 1: Running time in seconds (d = $1 * 10^6$)

it can be seen, the two implementations are fairly similar in running time. This is probably due to the fact that the HEAPIFY function, the recursive one, is quite short in length and most probably inlined multiple times by the compiler.