

# Time Complexity of building a heap - GeeksforGeeks

Consider the following algorithm for building a Heap of an input array A.

```
BUILD-HEAP(A)
    heapsize := size(A);
    for i := floor(heapsize/2) downto 1
        do HEAPIFY(A, i);
    end for
END
```

*What is the worst case time complexity of the above algo?*

Although the worst case complexity looks like  $O(n \log n)$ , upper bound of time complexity is  $O(n)$ . See following links for the proof of time complexity.

<http://www.cse.iitk.ac.in/users/sbaswana/Courses/ESO211/heap.pdf/>

[http://www.cs.sfu.ca/CourseCentral/307/petra/2009/SLN\\_2.pdf](http://www.cs.sfu.ca/CourseCentral/307/petra/2009/SLN_2.pdf)