Heaps 2

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1. The first exercise is implemented in the "binheap.c" file in the "src" folder.

2a. Given: $build$ and $is\_empty \in \Theta(1)$ and $extract\_min \in \Theta(|D|)$, we can compute the complexity of the code in the following way:

$$\text{Complexity} = \Theta(1) + \sum_{i=1}^{|D|}[\Theta(1) + \Theta(|D|)] \in \Theta(|D|^2)$$

2b. In the case in which $build \in \Theta(|A|), is\_empty \in \Theta(1)$ and $extract\_min \in O(\log|D|)$ the complexity would be:

$$\text{Complexity} = \Theta(n) + \sum_{i=1}^{|D|}[\Theta(1) + O(\log n))] = \Theta(n) + O(n\log n) \in O(n\log n)$$

in which n is the length of A and D.