



CS 1332

DATA STRUCTURES AND ALGORITHMS

Programming in Java

Dr. Mary Hudacheck-Buswell

BuildHeap

- Given an array of numbers how do we convert it into a heap.
- We could iterate through the array and insert each number into heap but this requires us to have space big enough for twice the quantity of numbers we have.
- We want to convert in place.
- Note: We will assume that element 0 is not used.
- Don't confuse this with heapify. BuildHeap will use heapify and is used to create the Heap



BuildHeap

- Assume that we have the number of elements in a variable called size

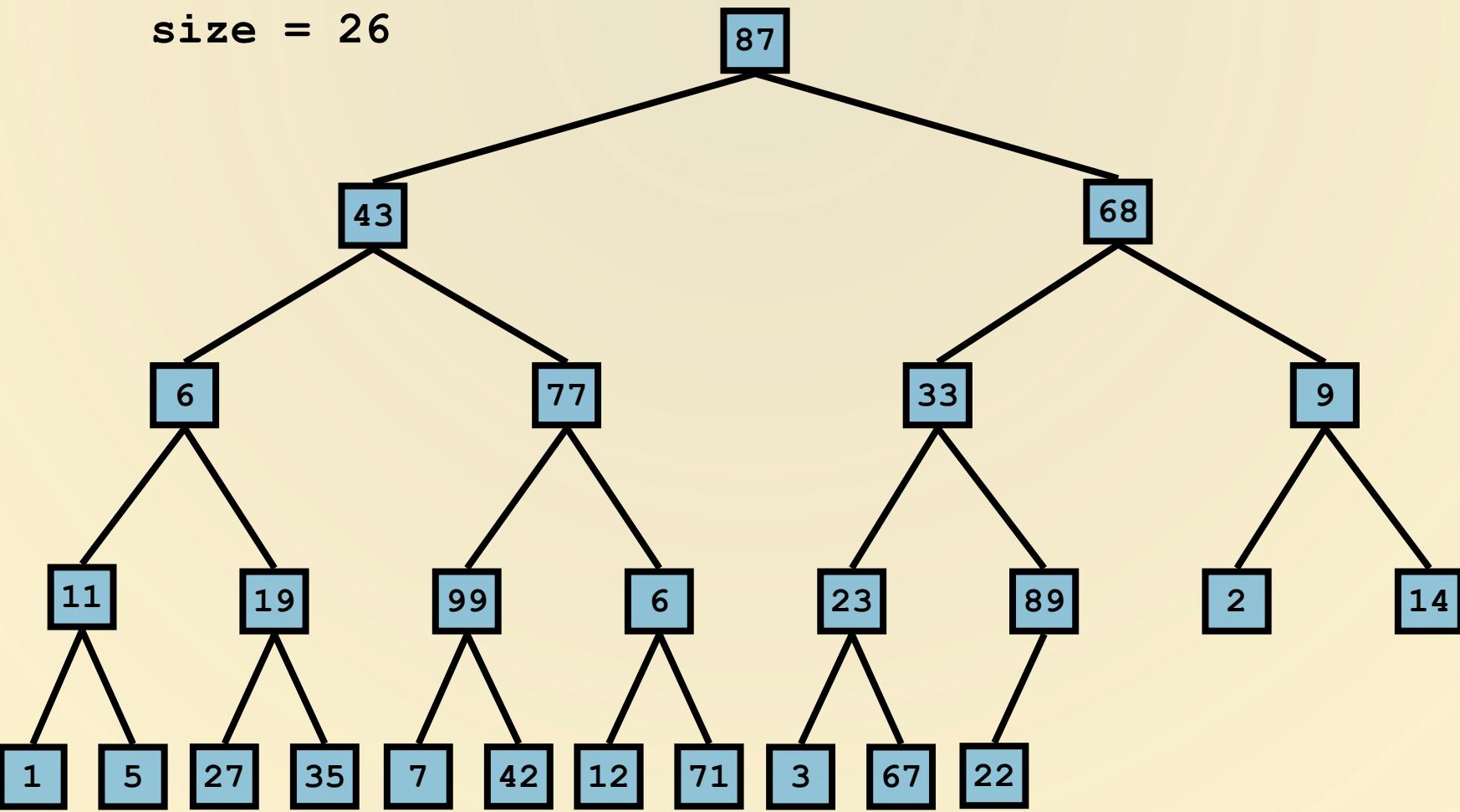
Iterate index from size/2 down to 1

heapify(index)

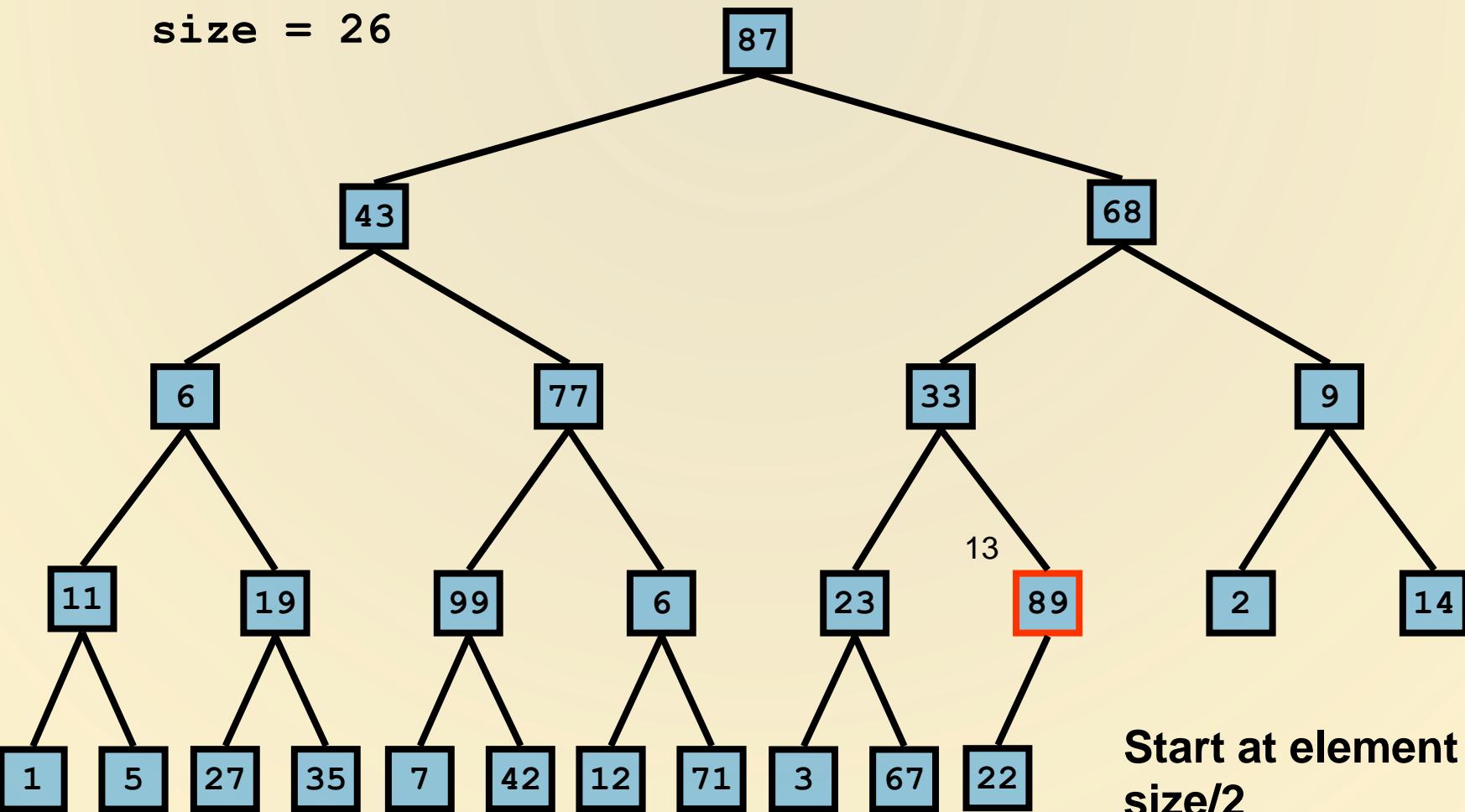


BuildHeap

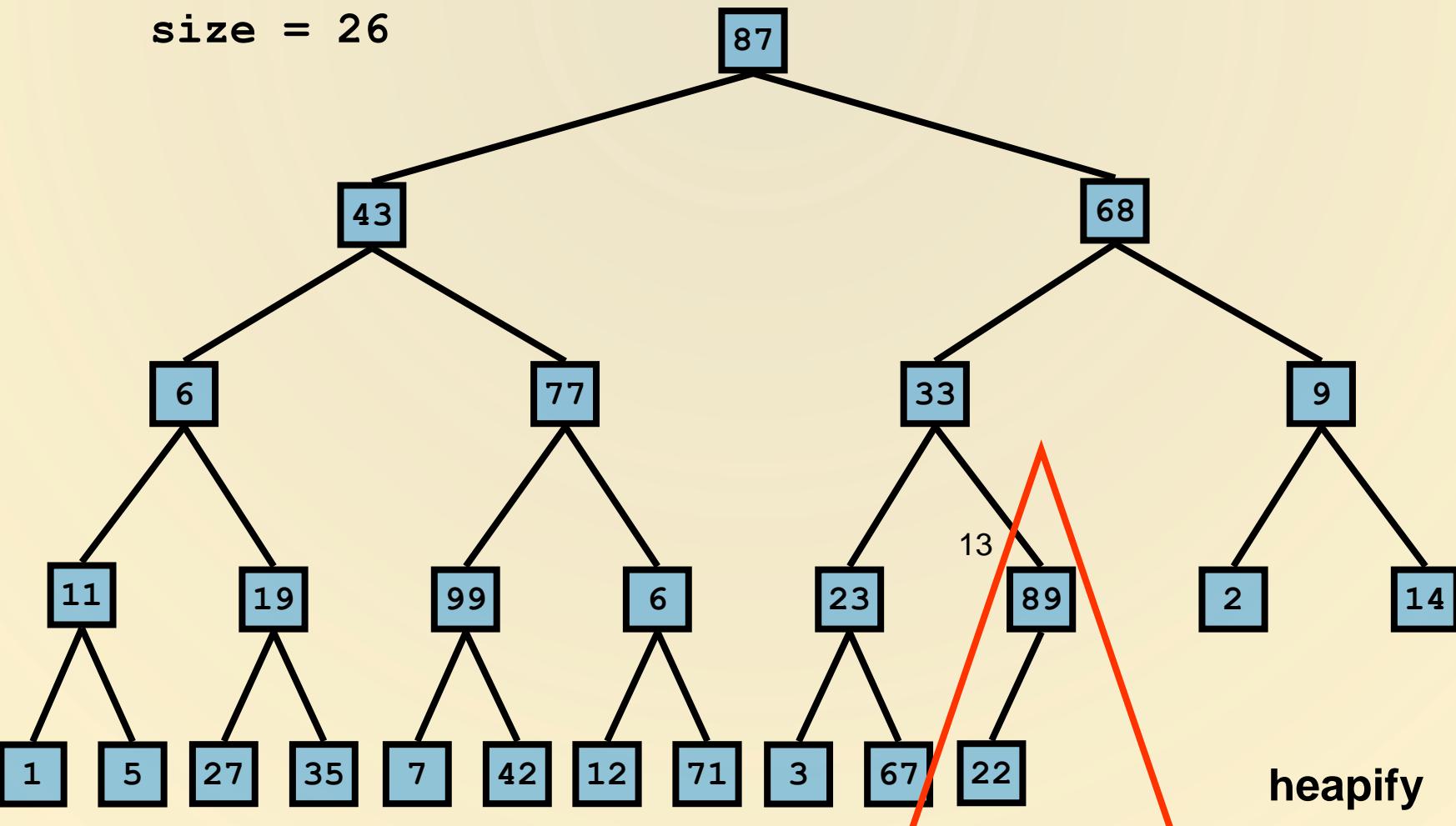
size = 26



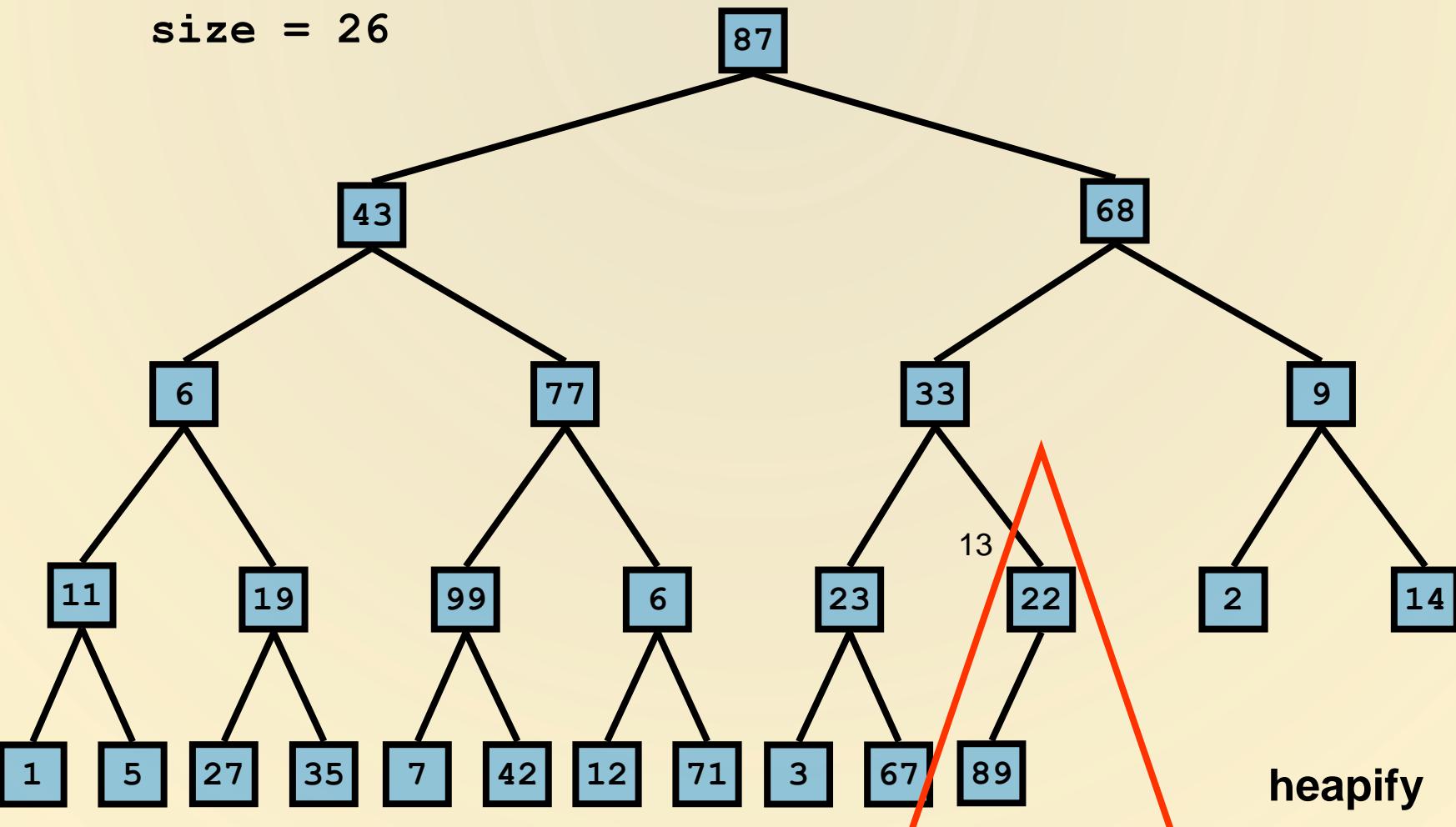
BuildHeap



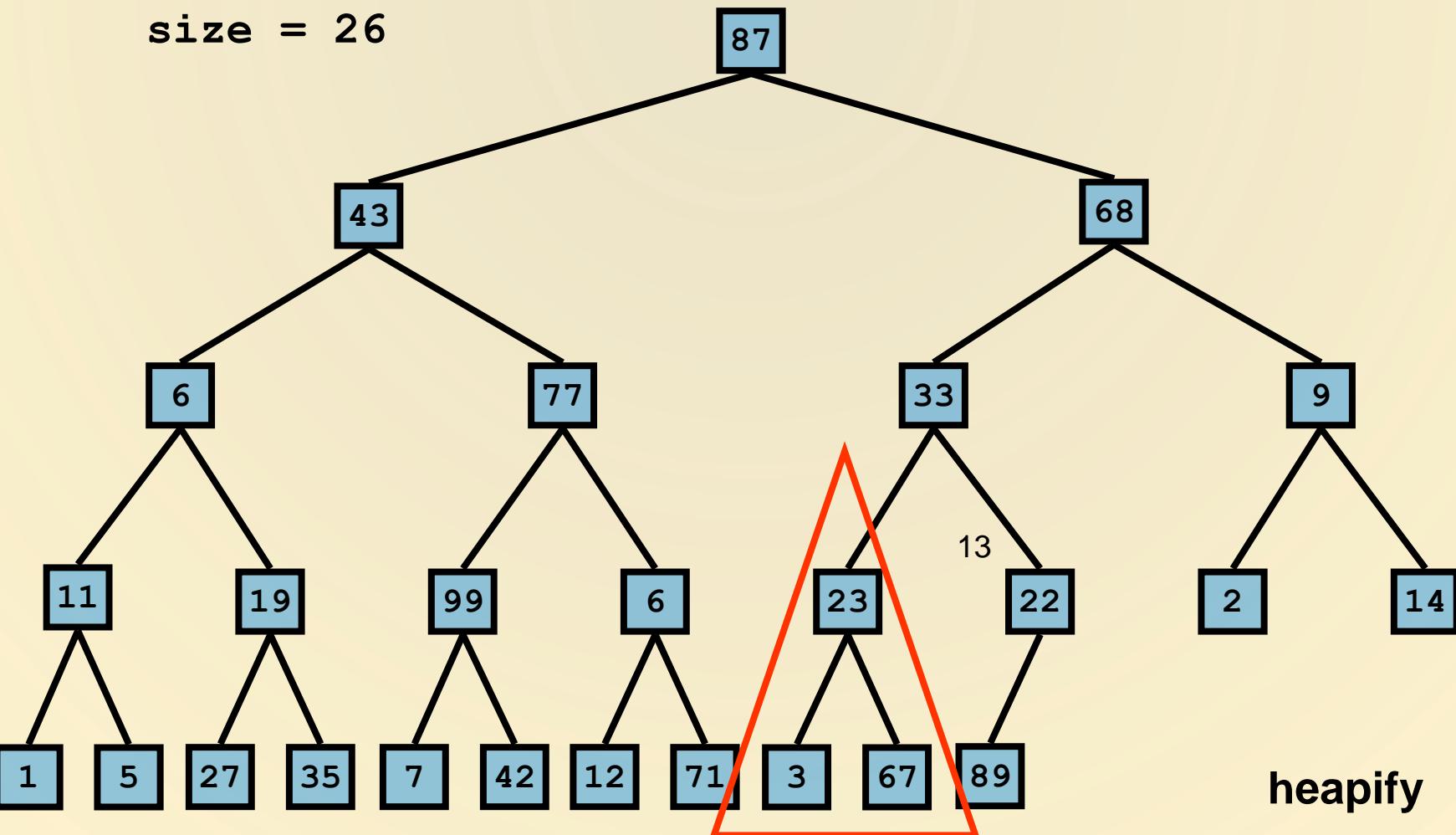
BuildHeap



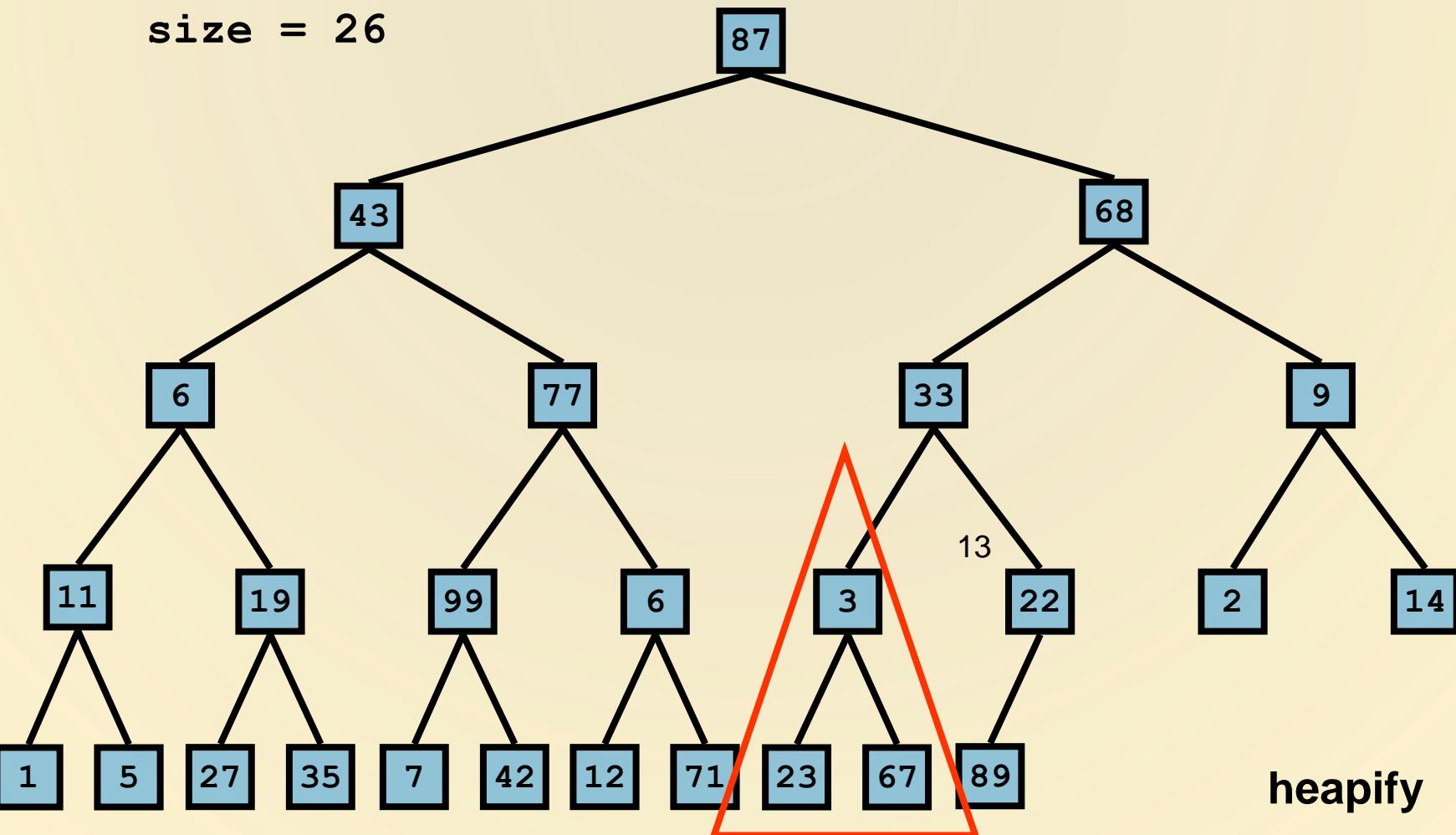
BuildHeap



BuildHeap

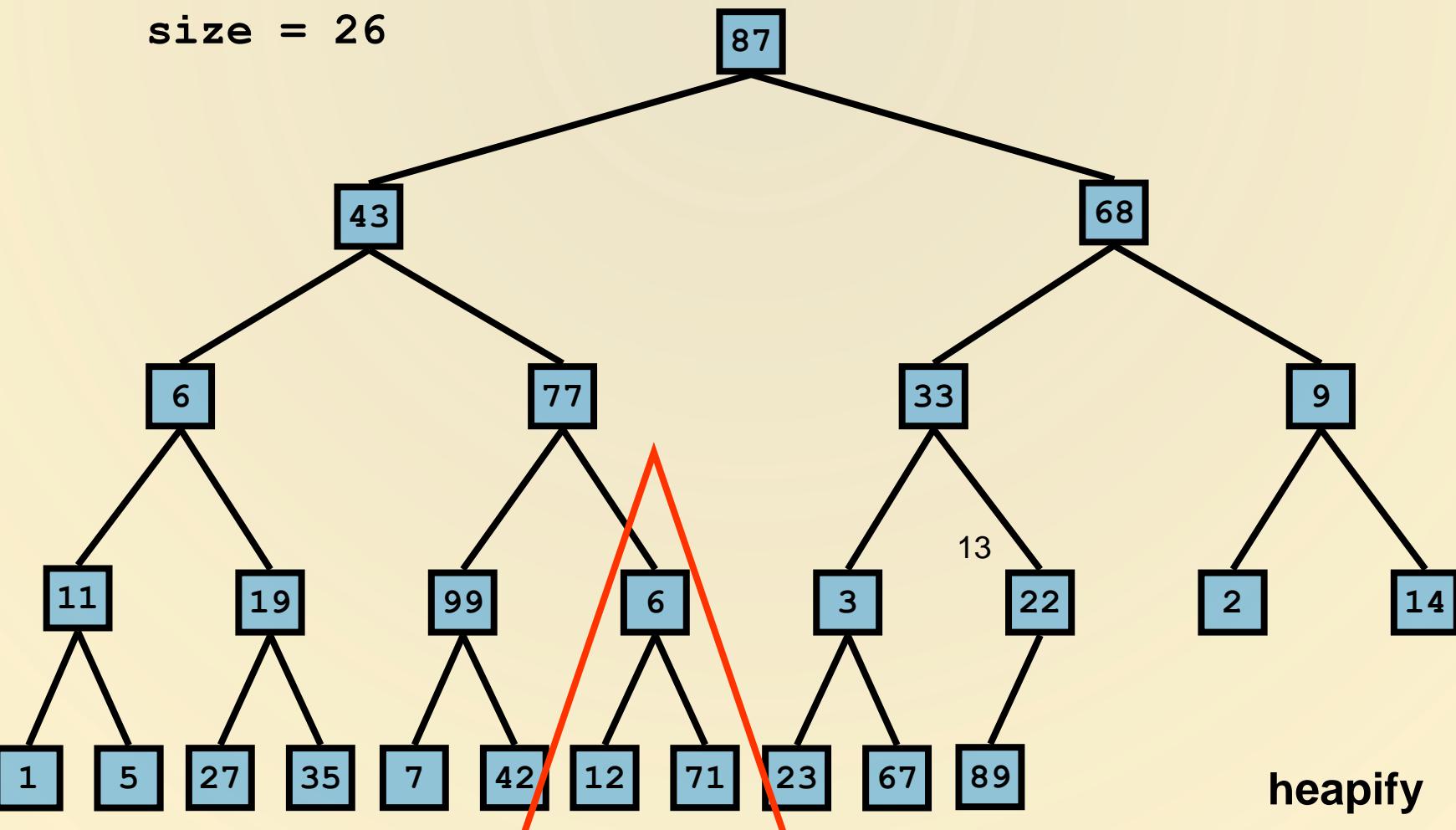


BuildHeap

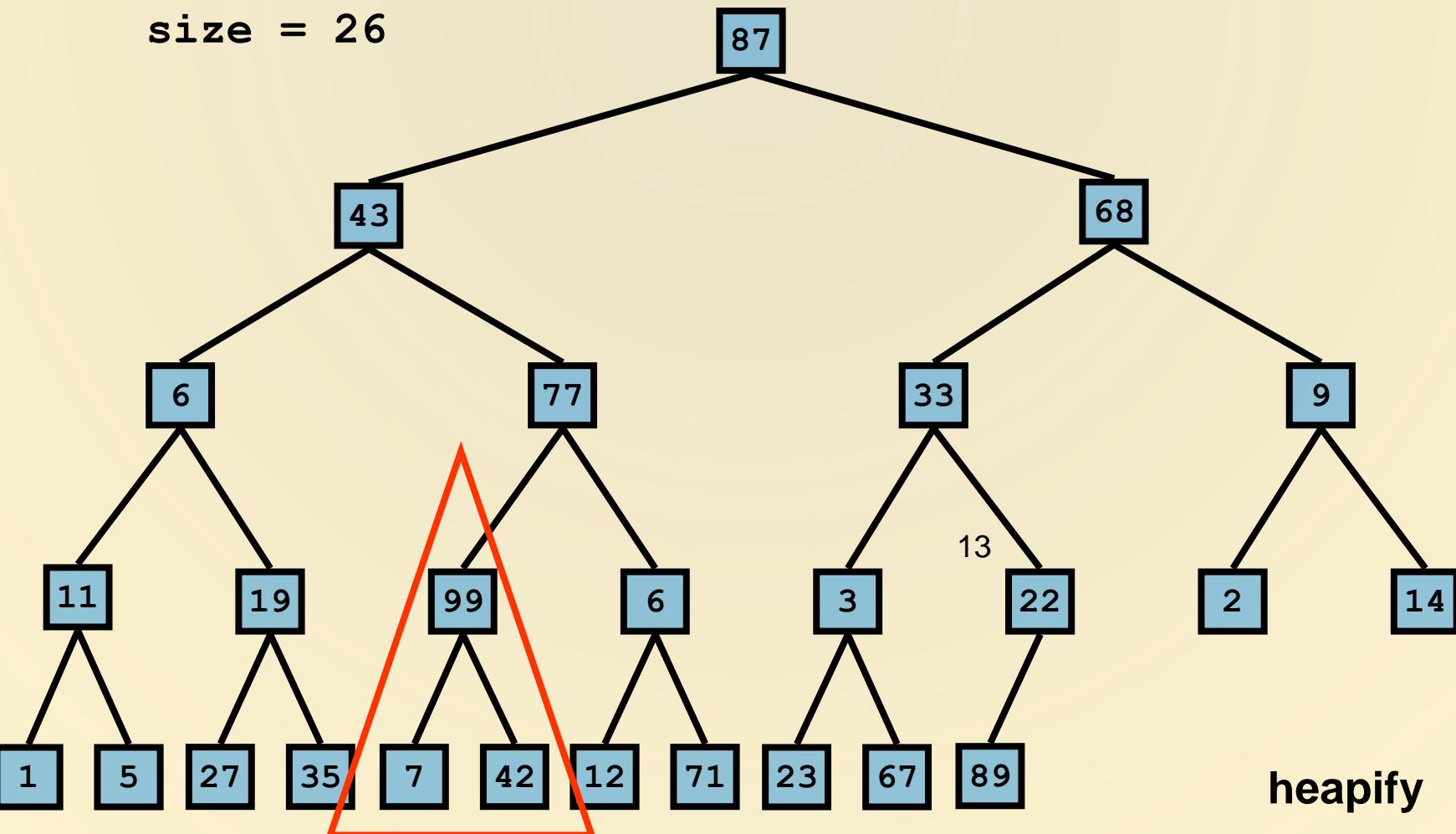


BuildHeap

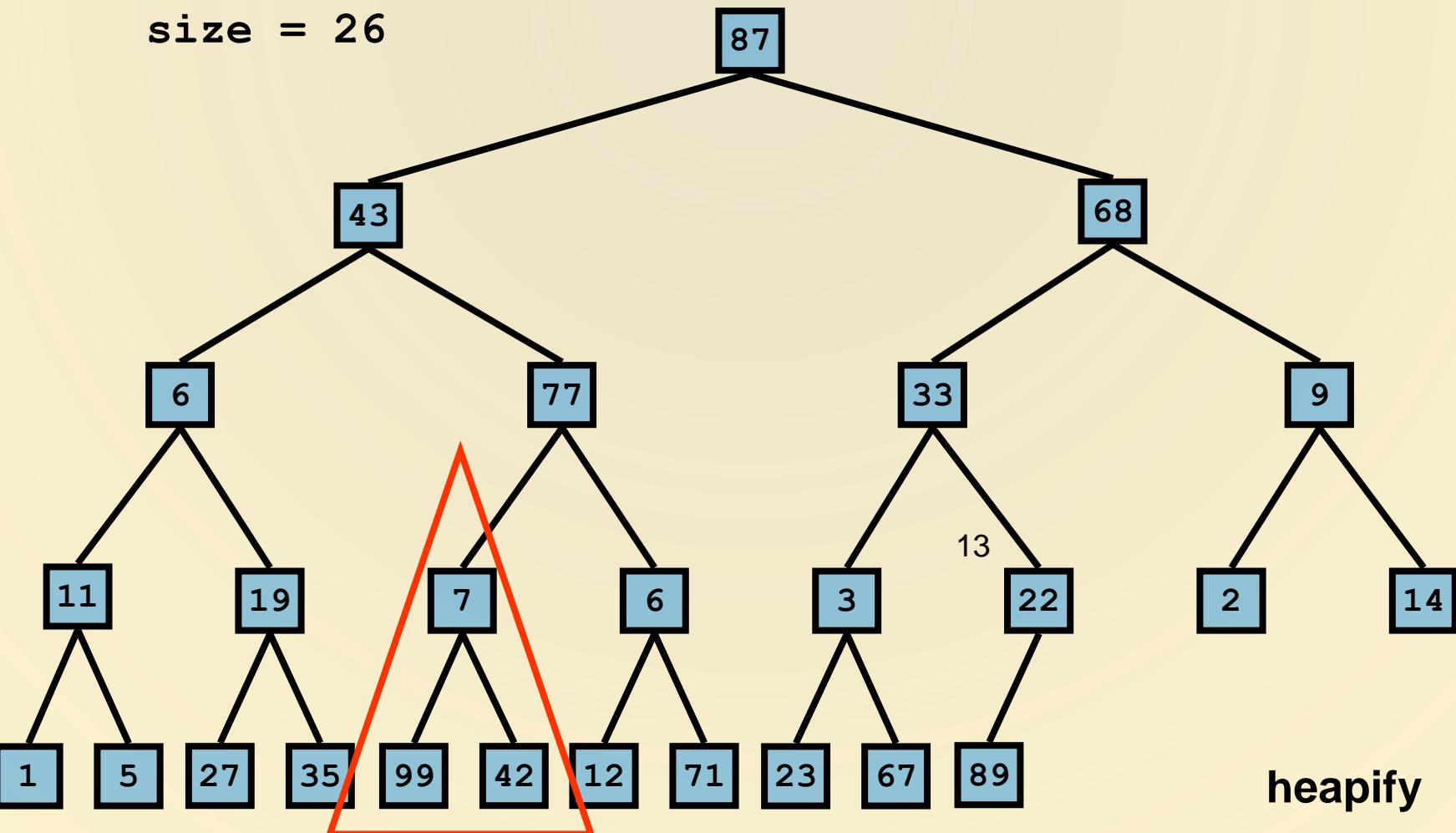
size = 26



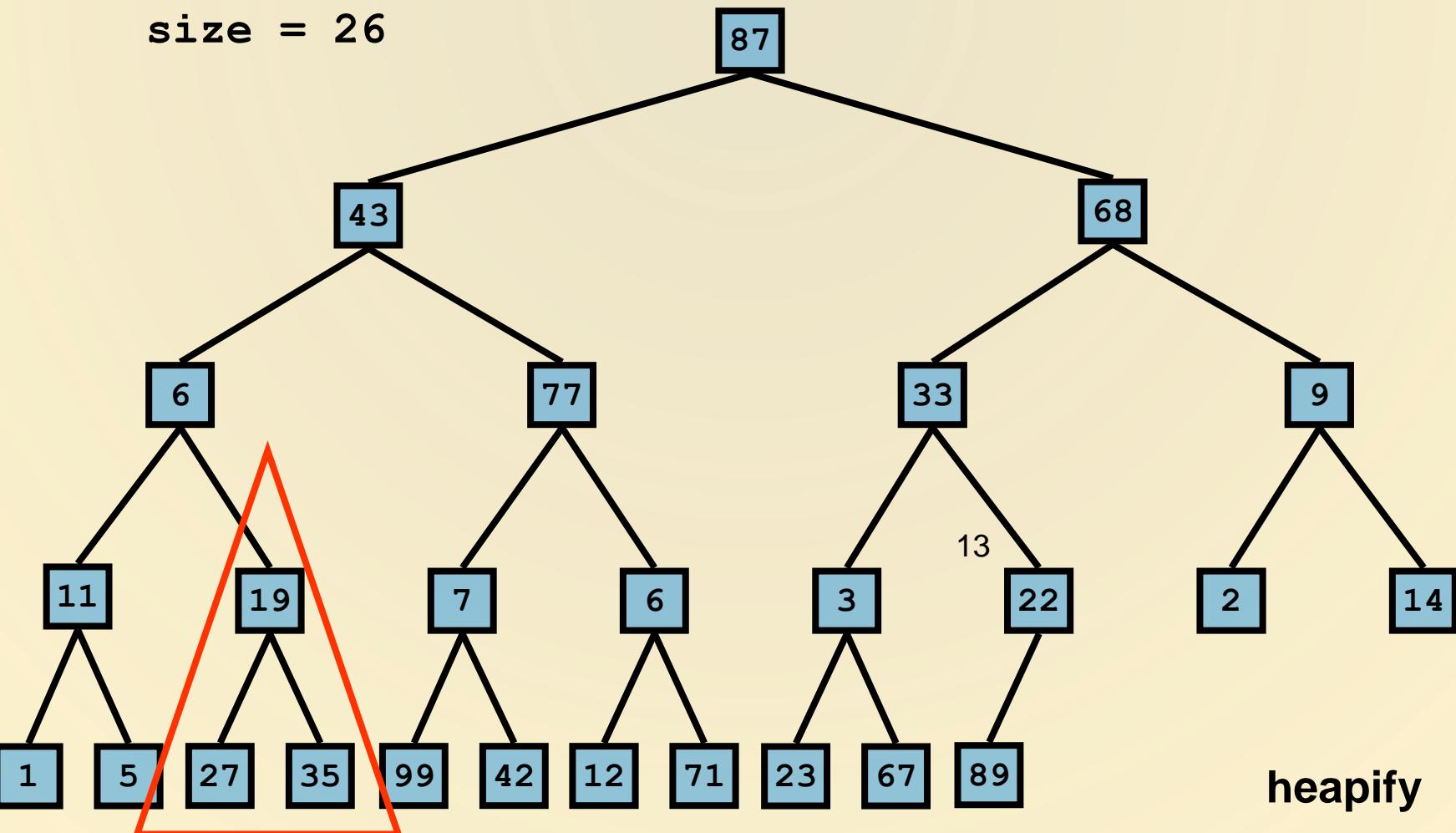
BuildHeap



BuildHeap

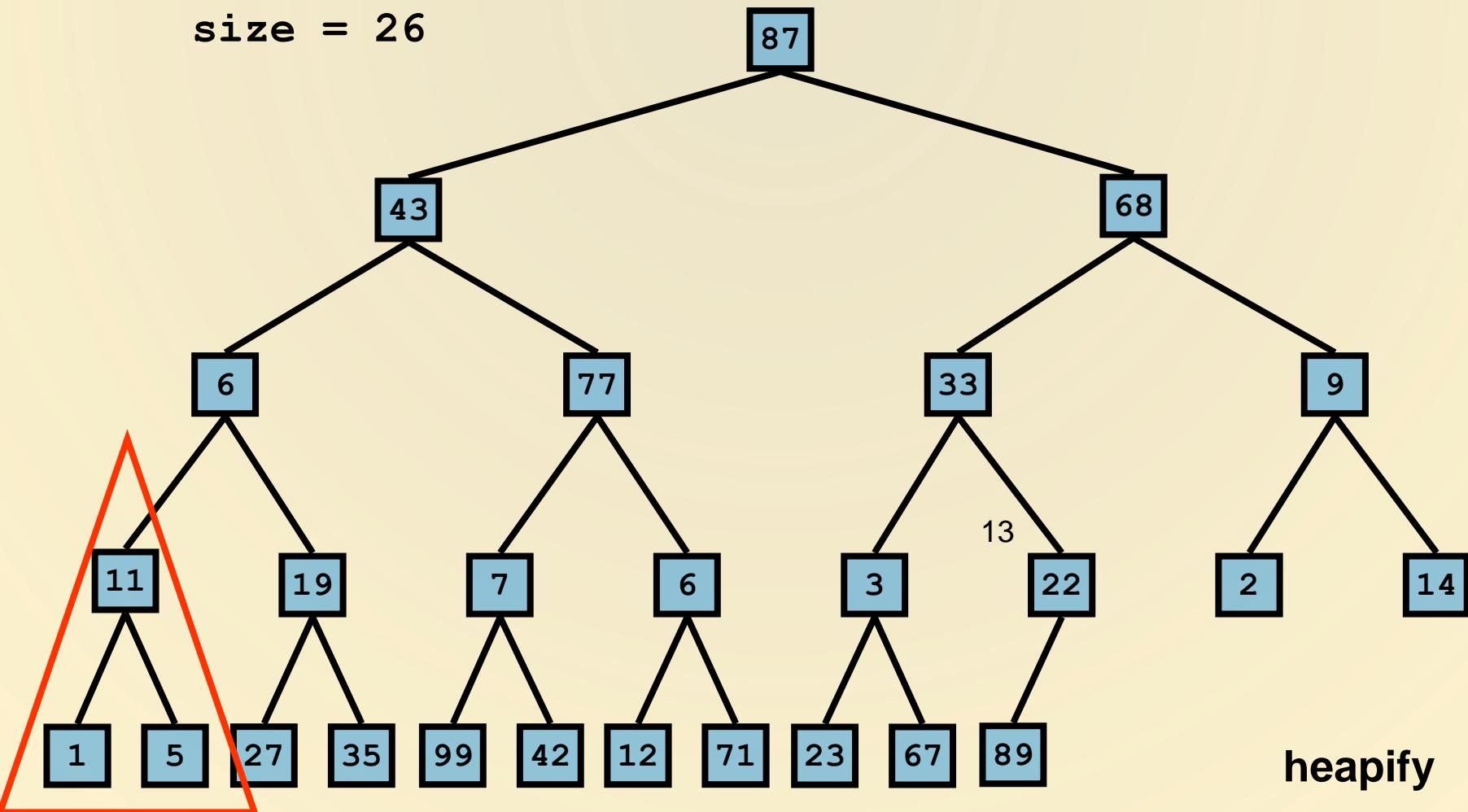


BuildHeap



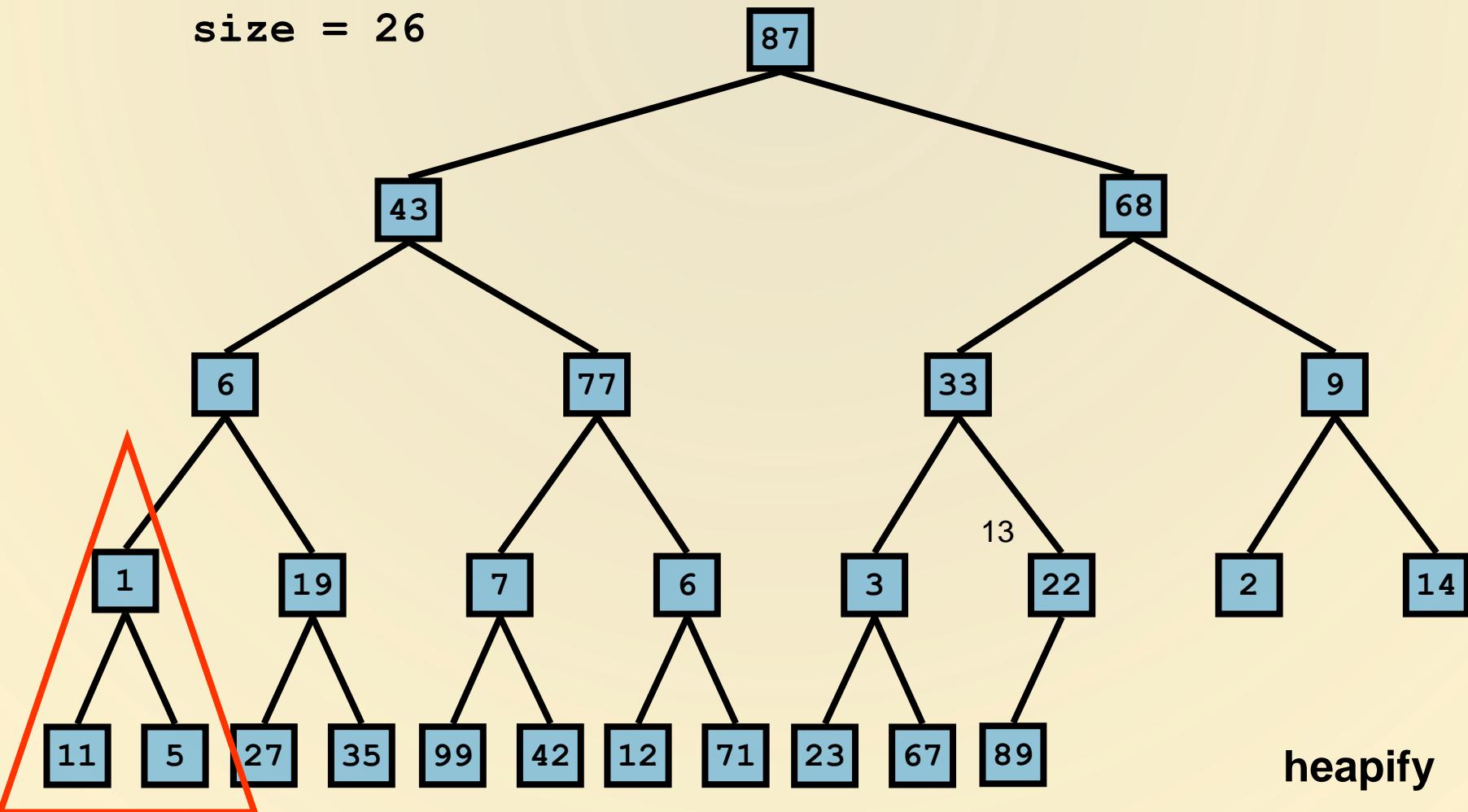
BuildHeap

size = 26

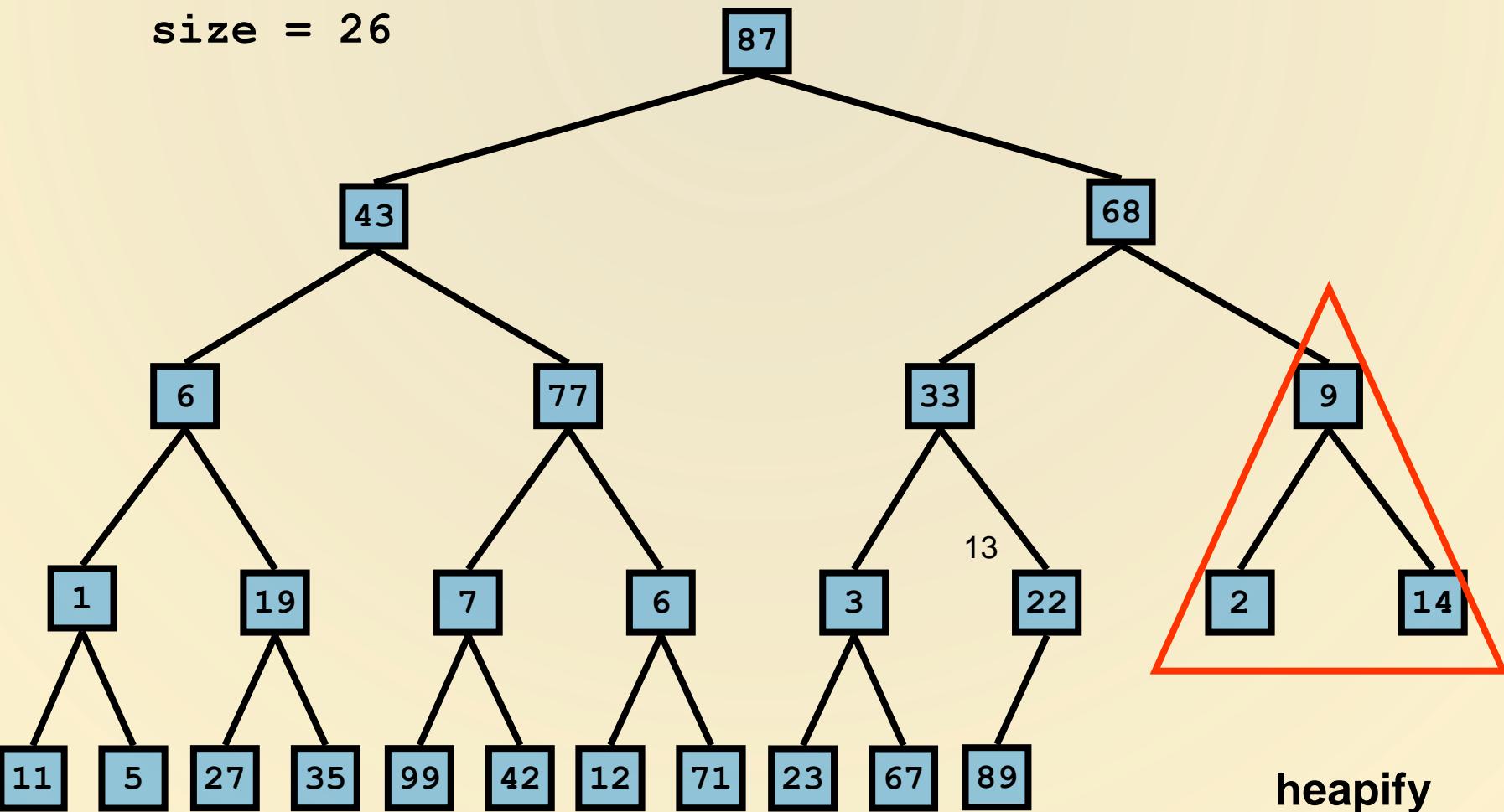


BuildHeap

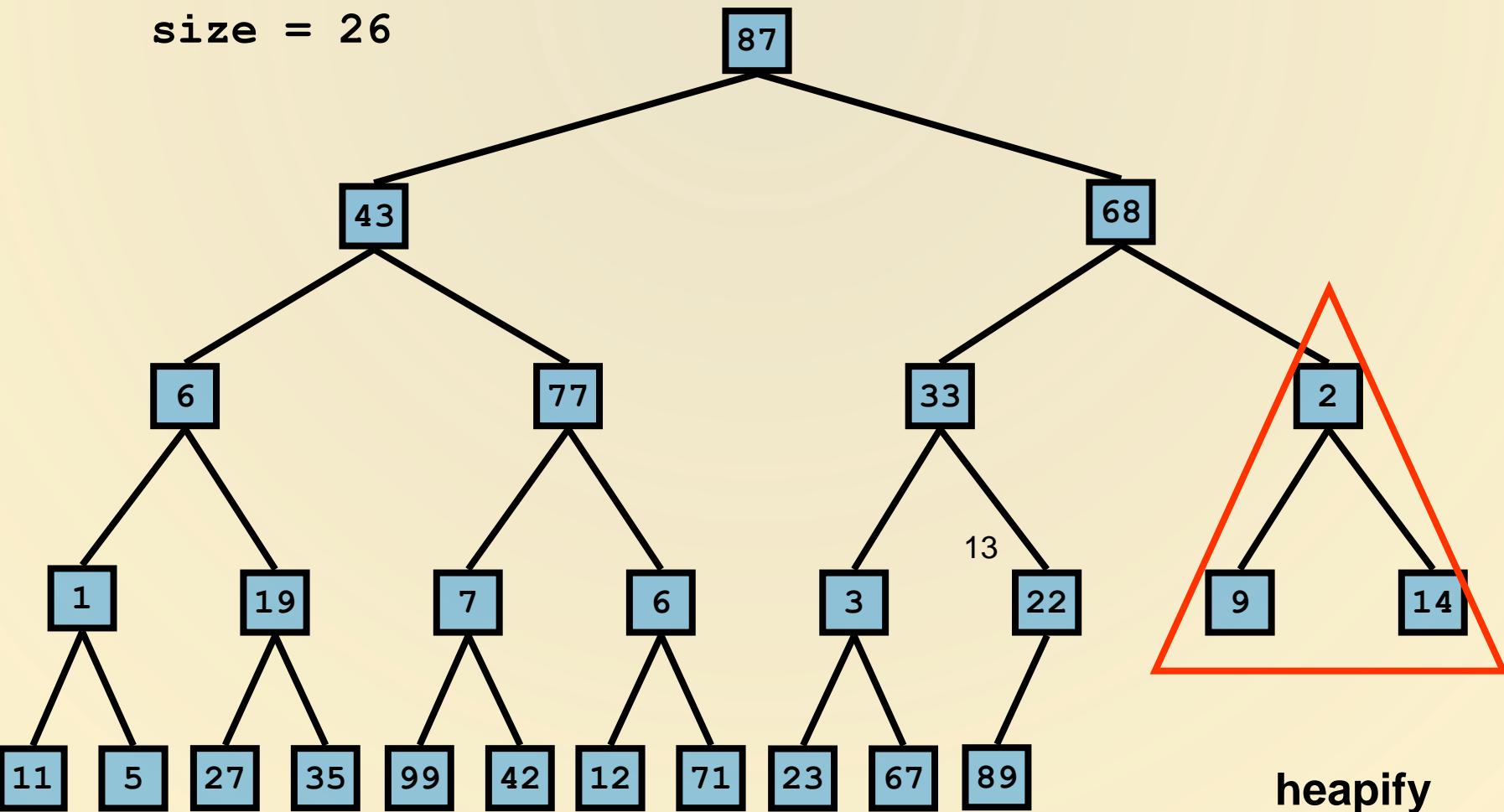
size = 26



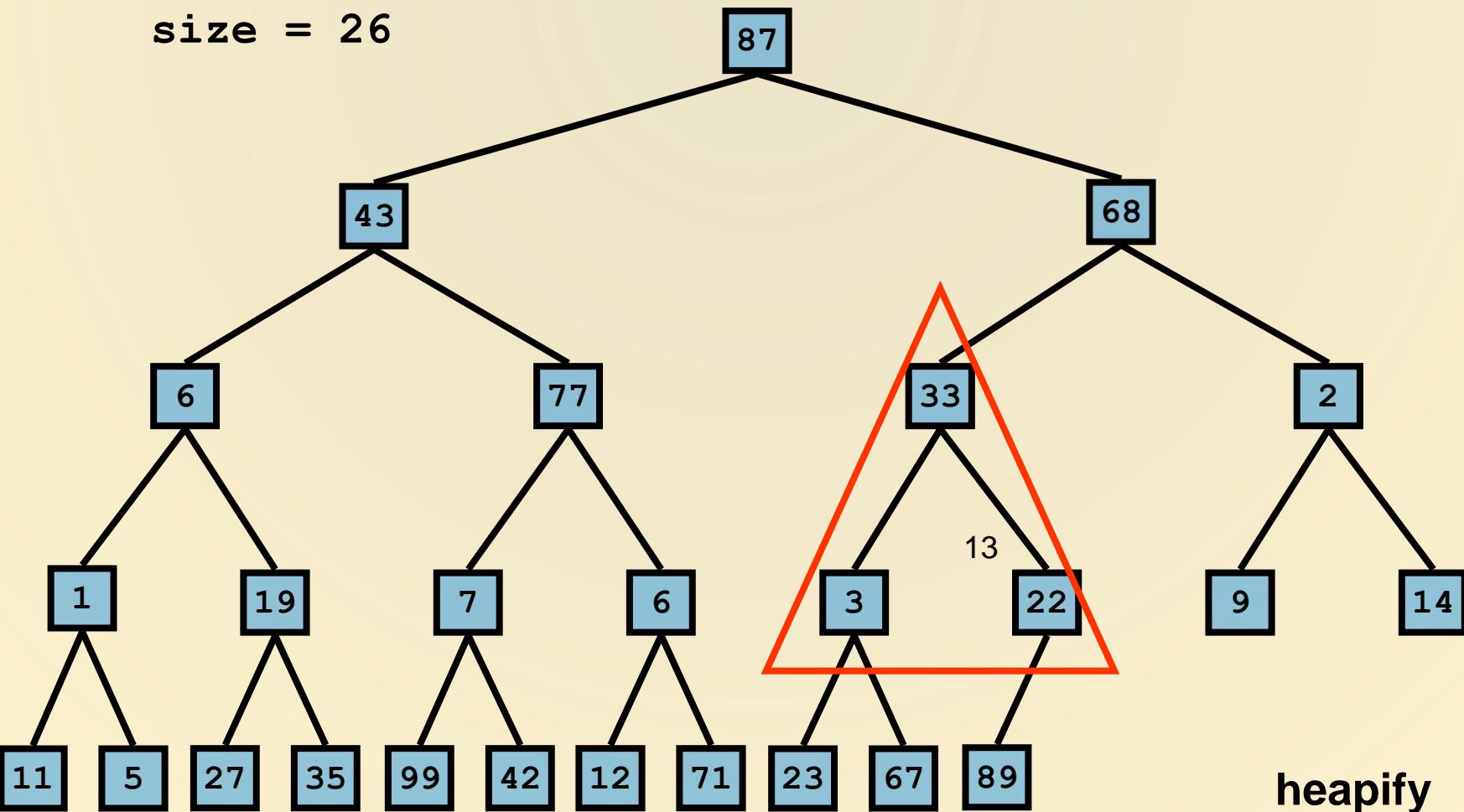
BuildHeap



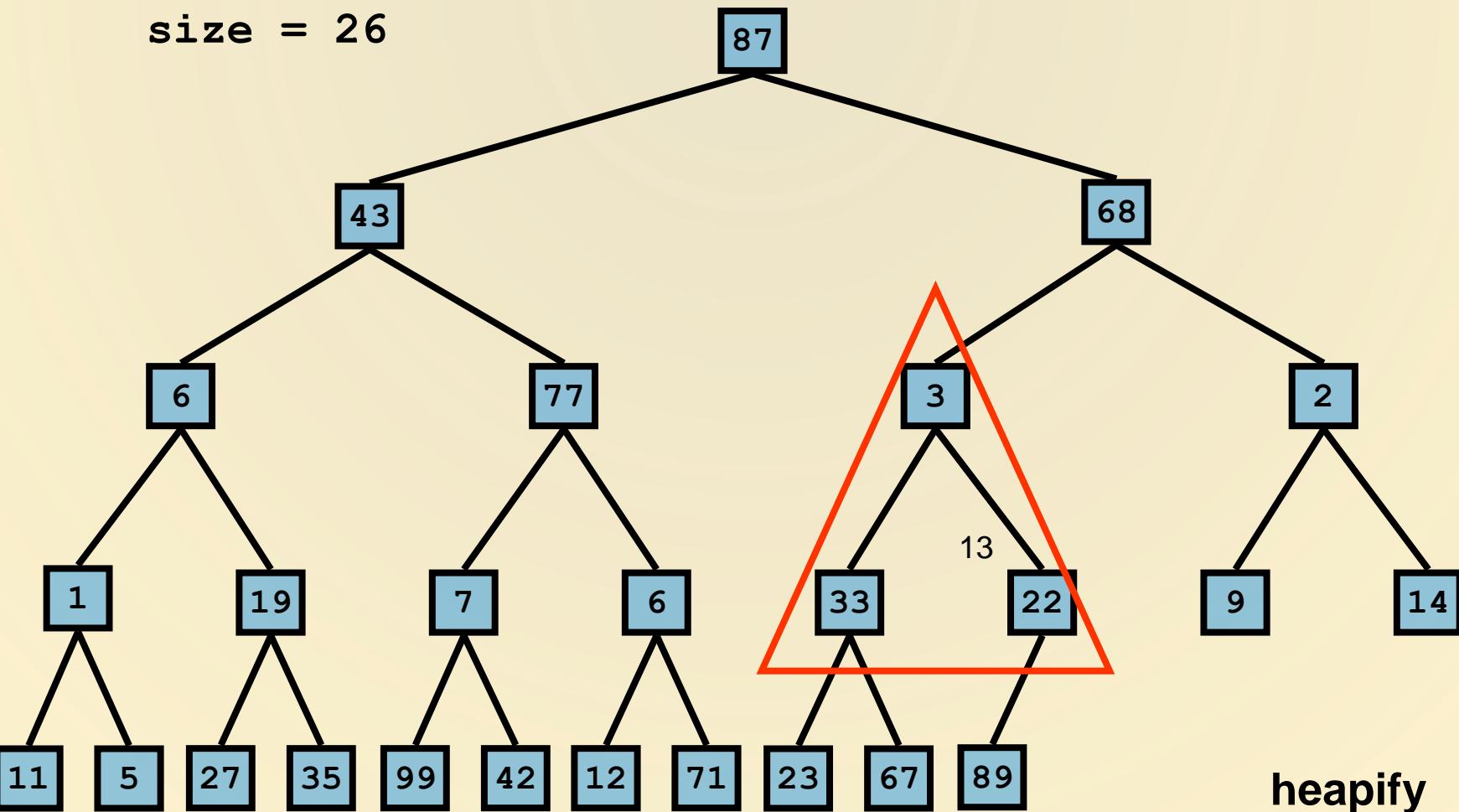
BuildHeap



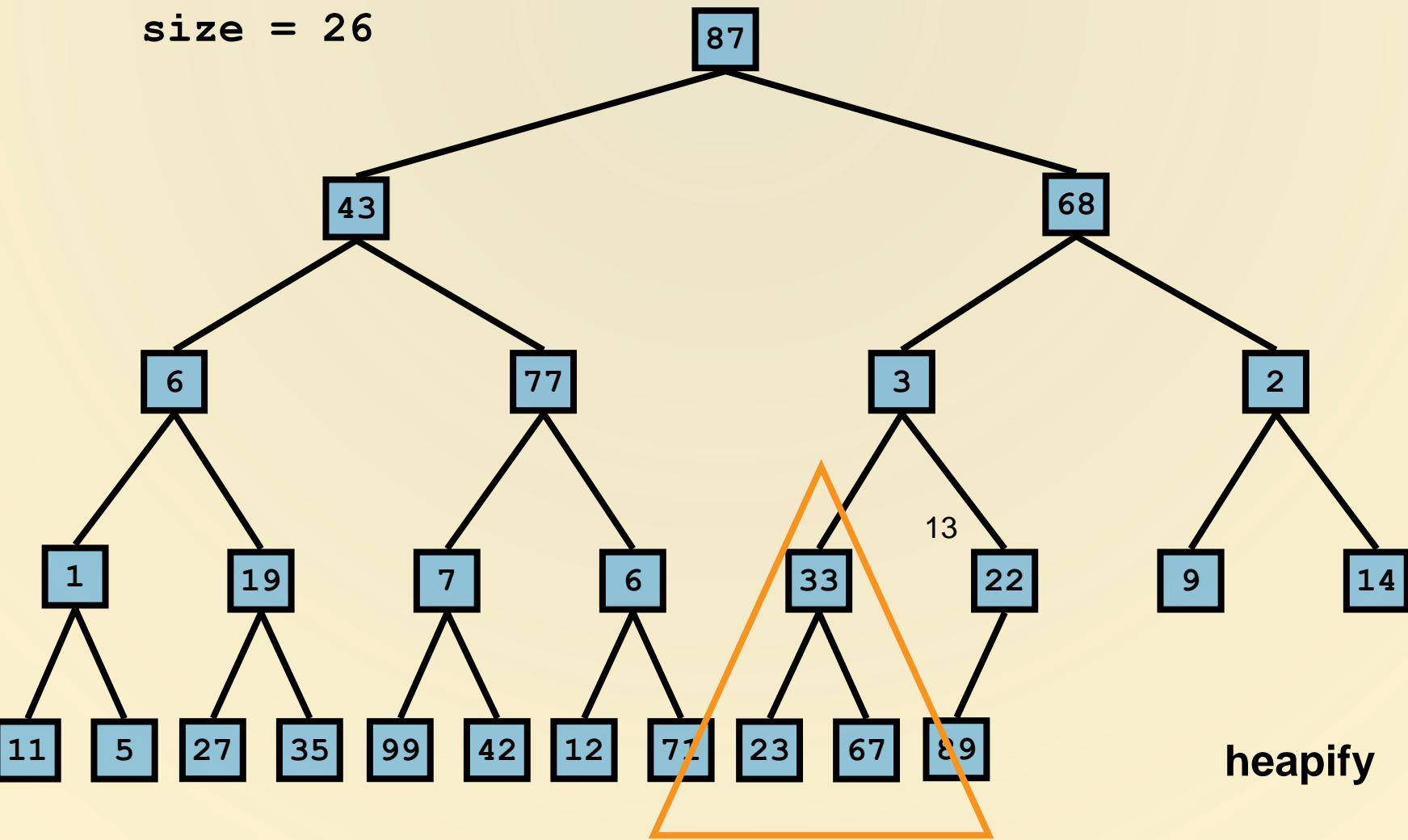
BuildHeap



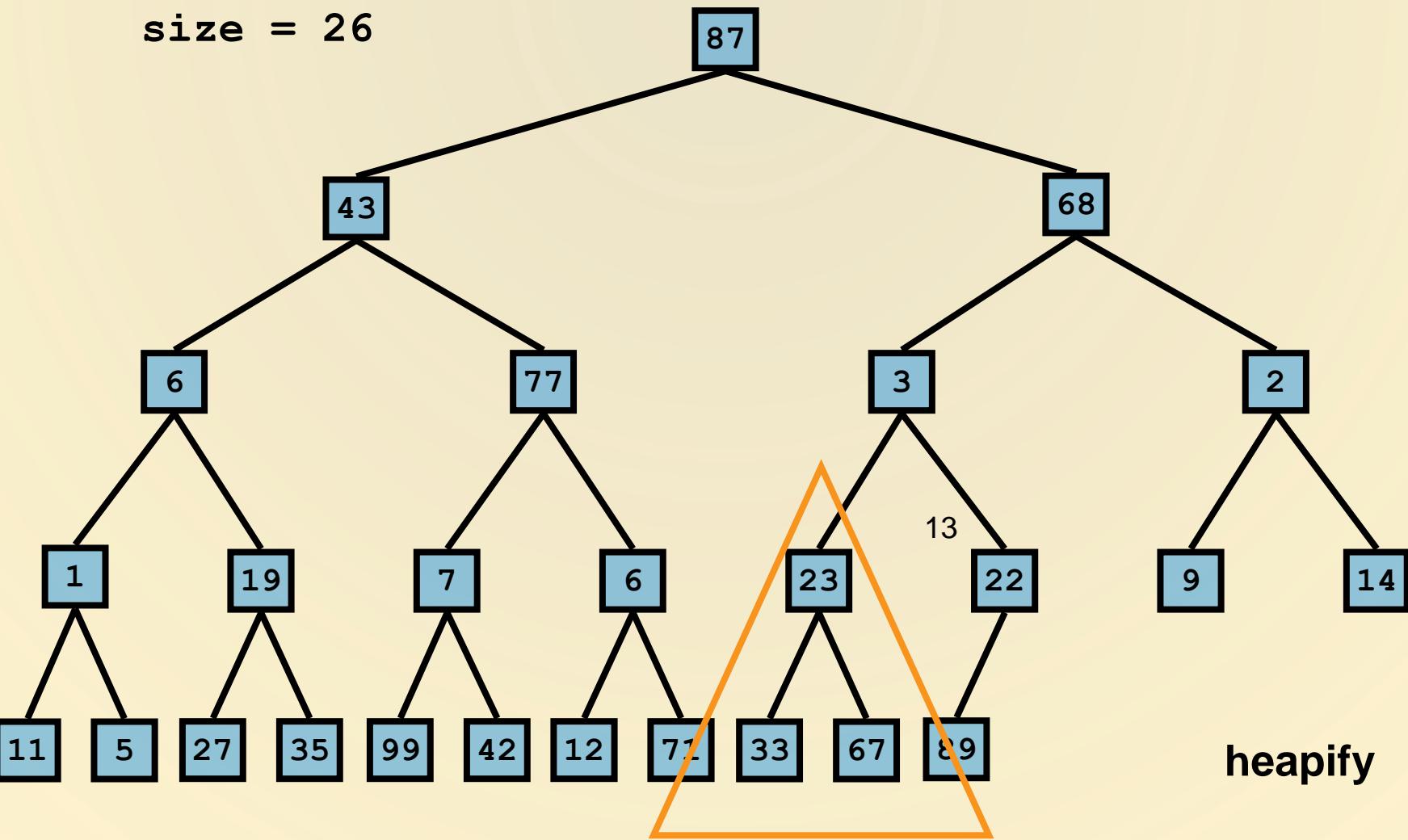
BuildHeap



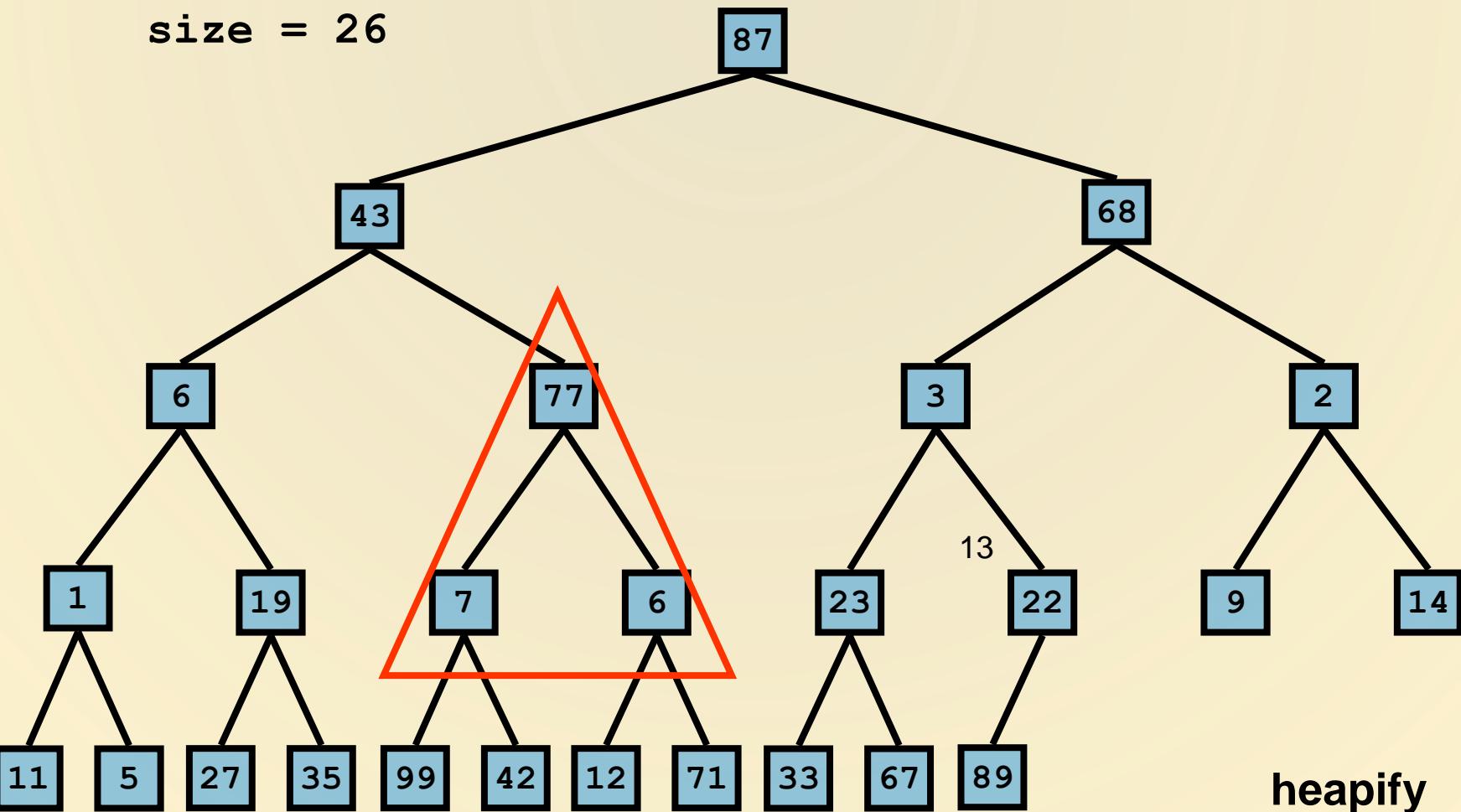
BuildHeap



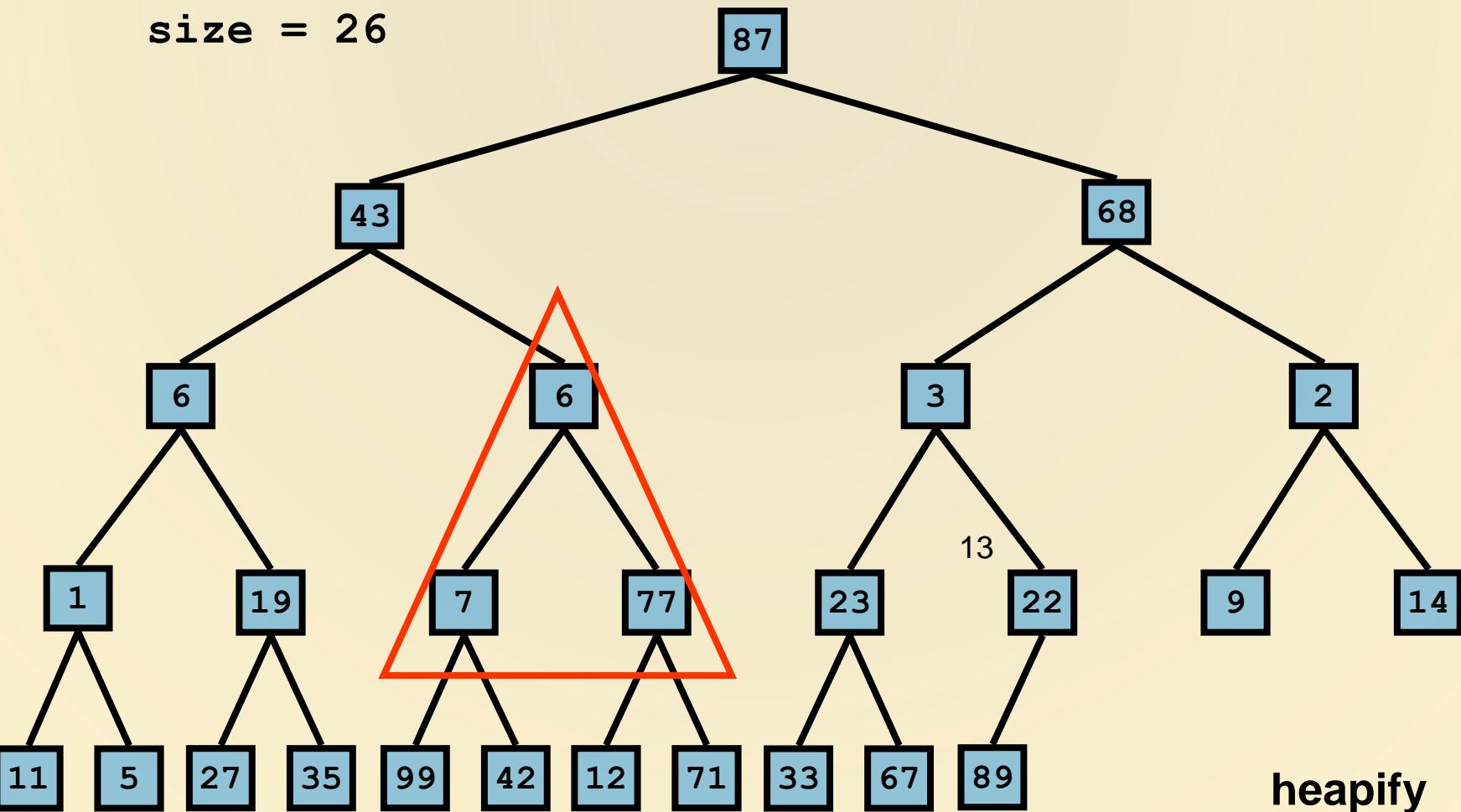
BuildHeap



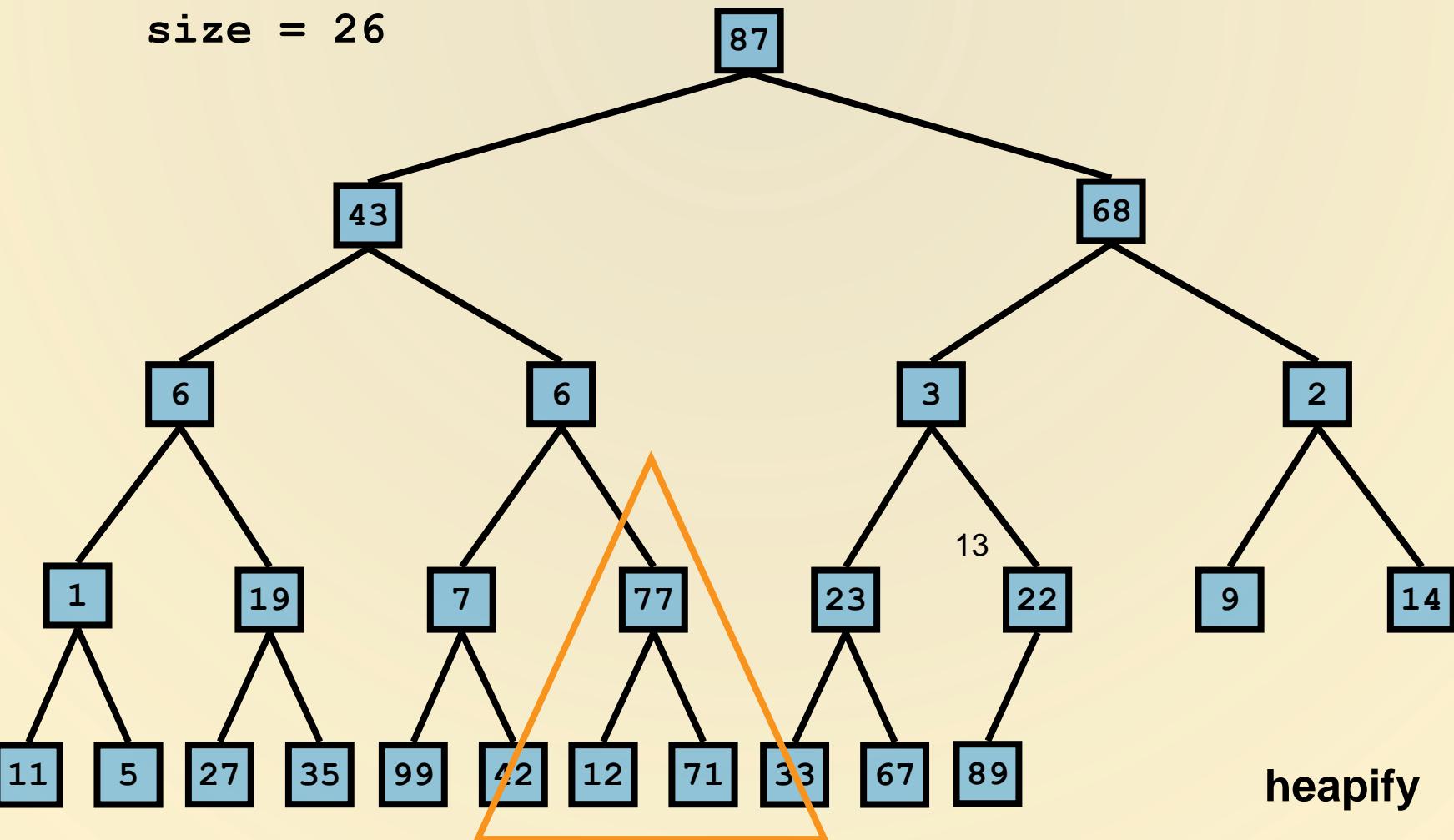
BuildHeap



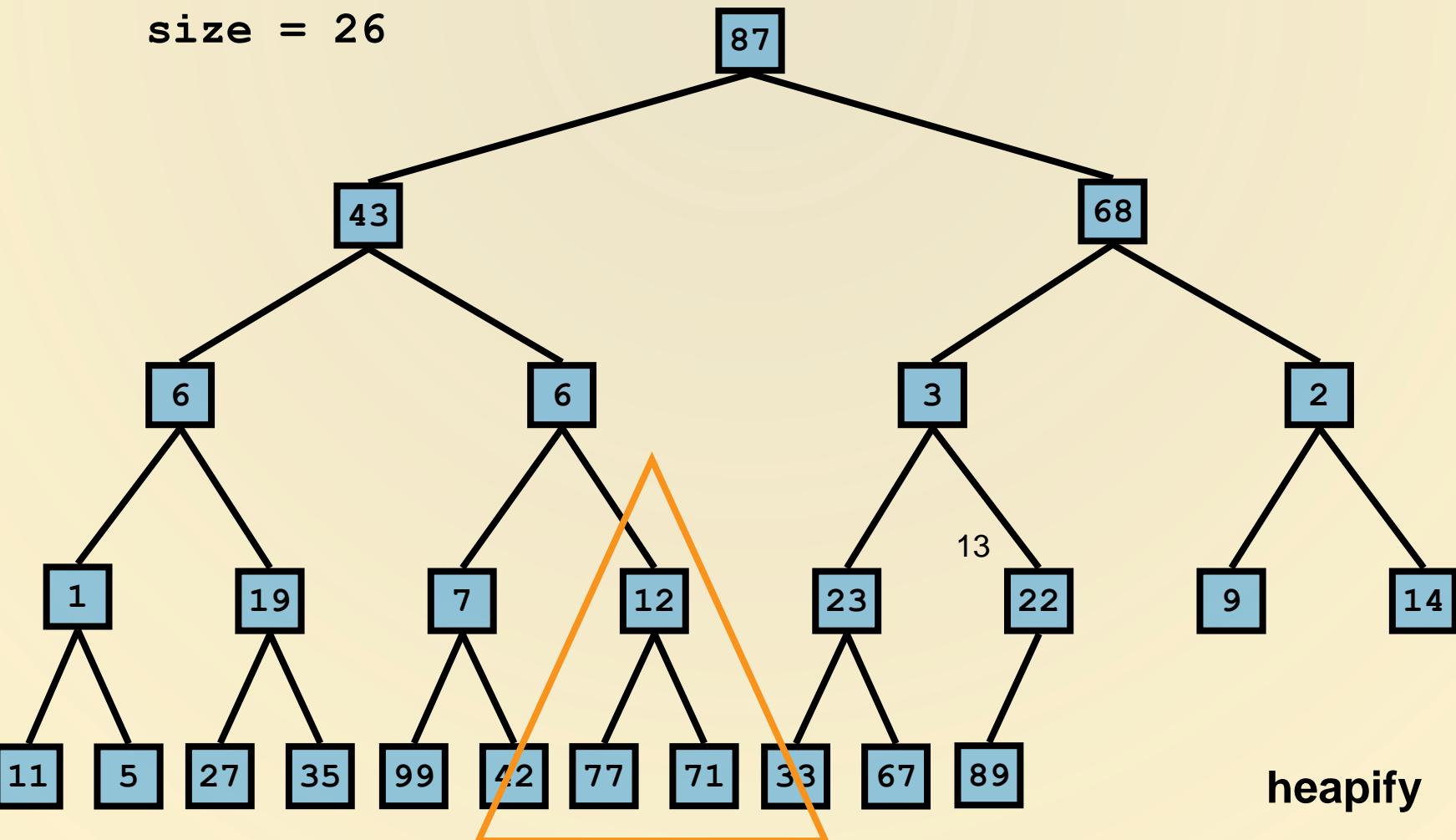
BuildHeap



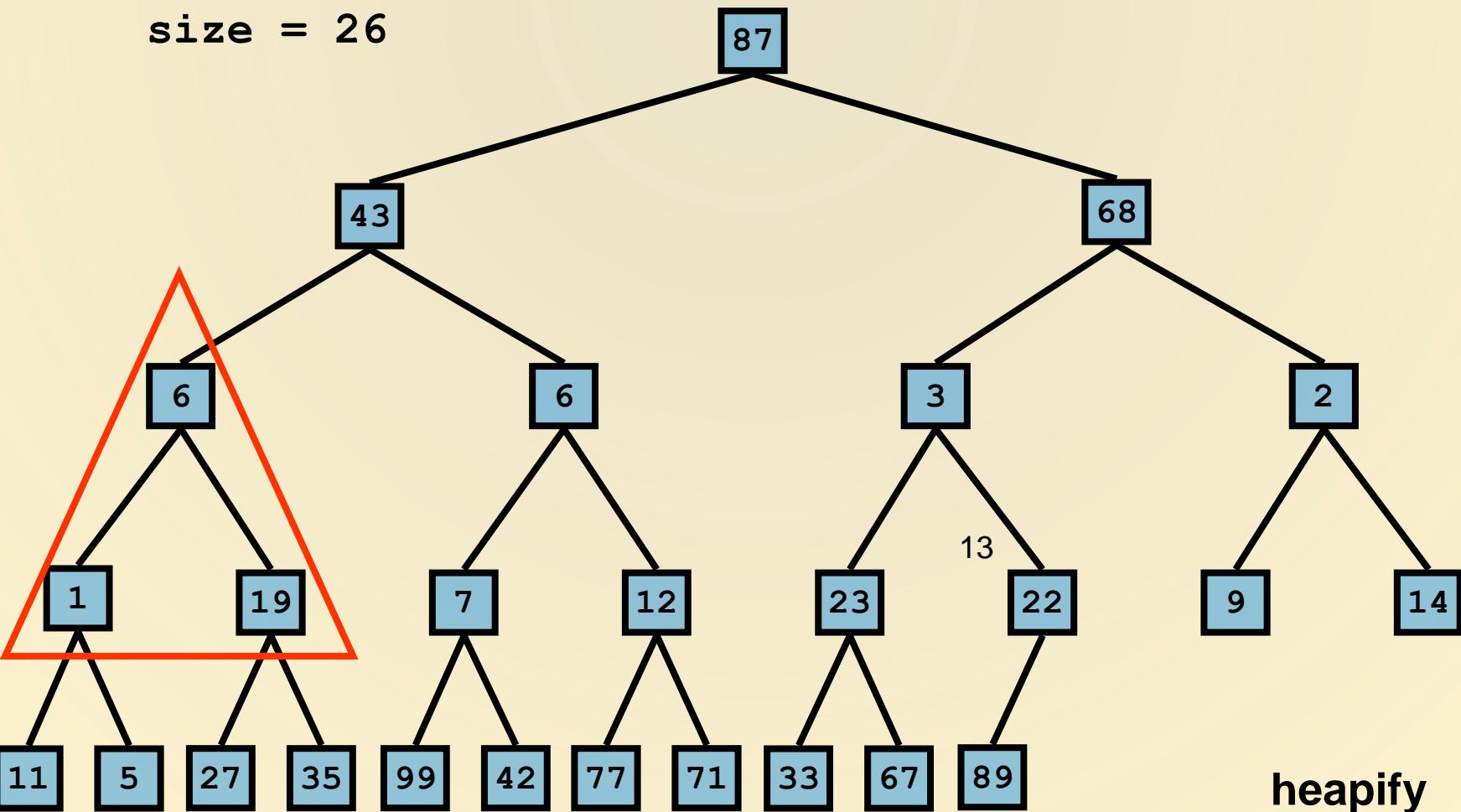
BuildHeap



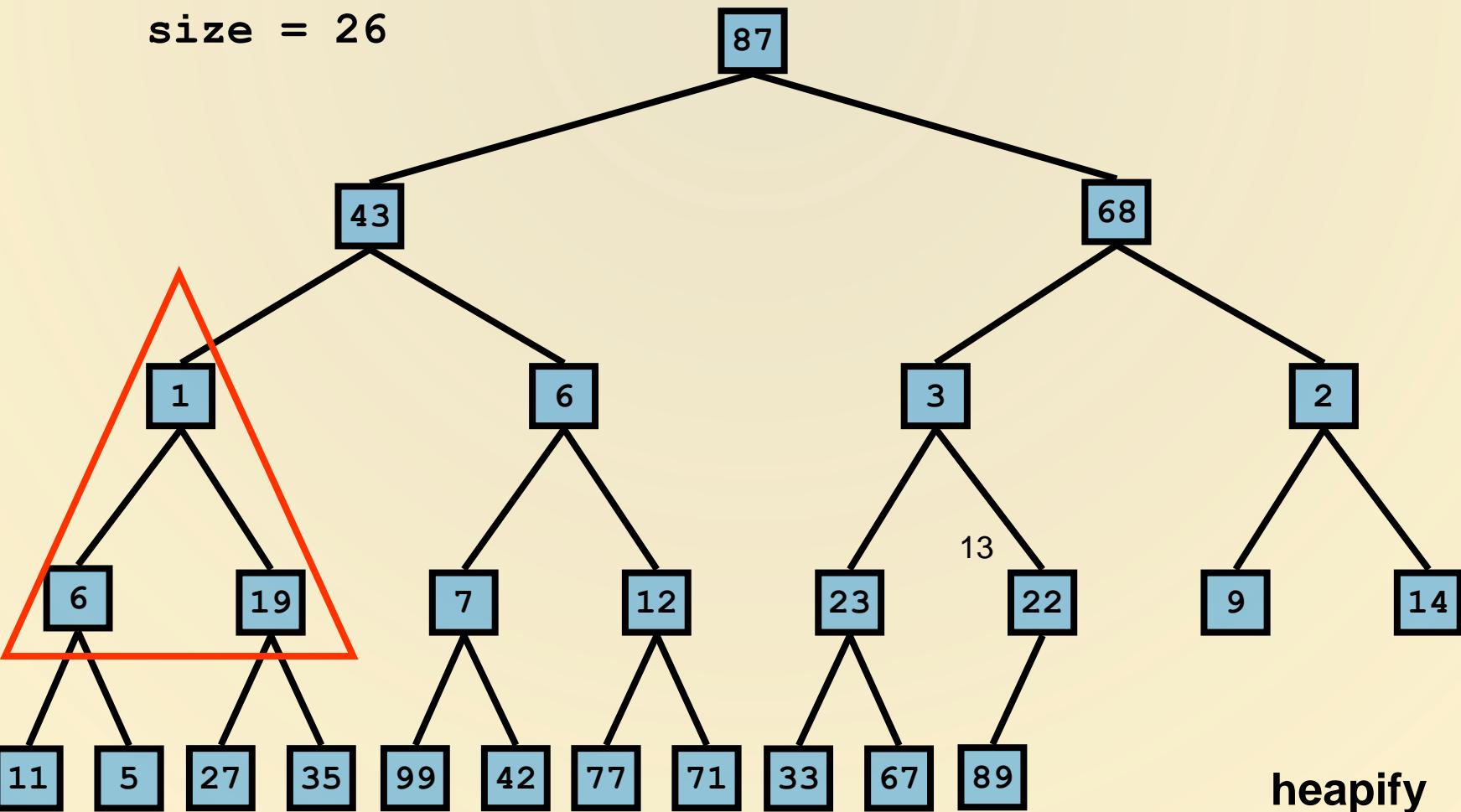
BuildHeap



BuildHeap

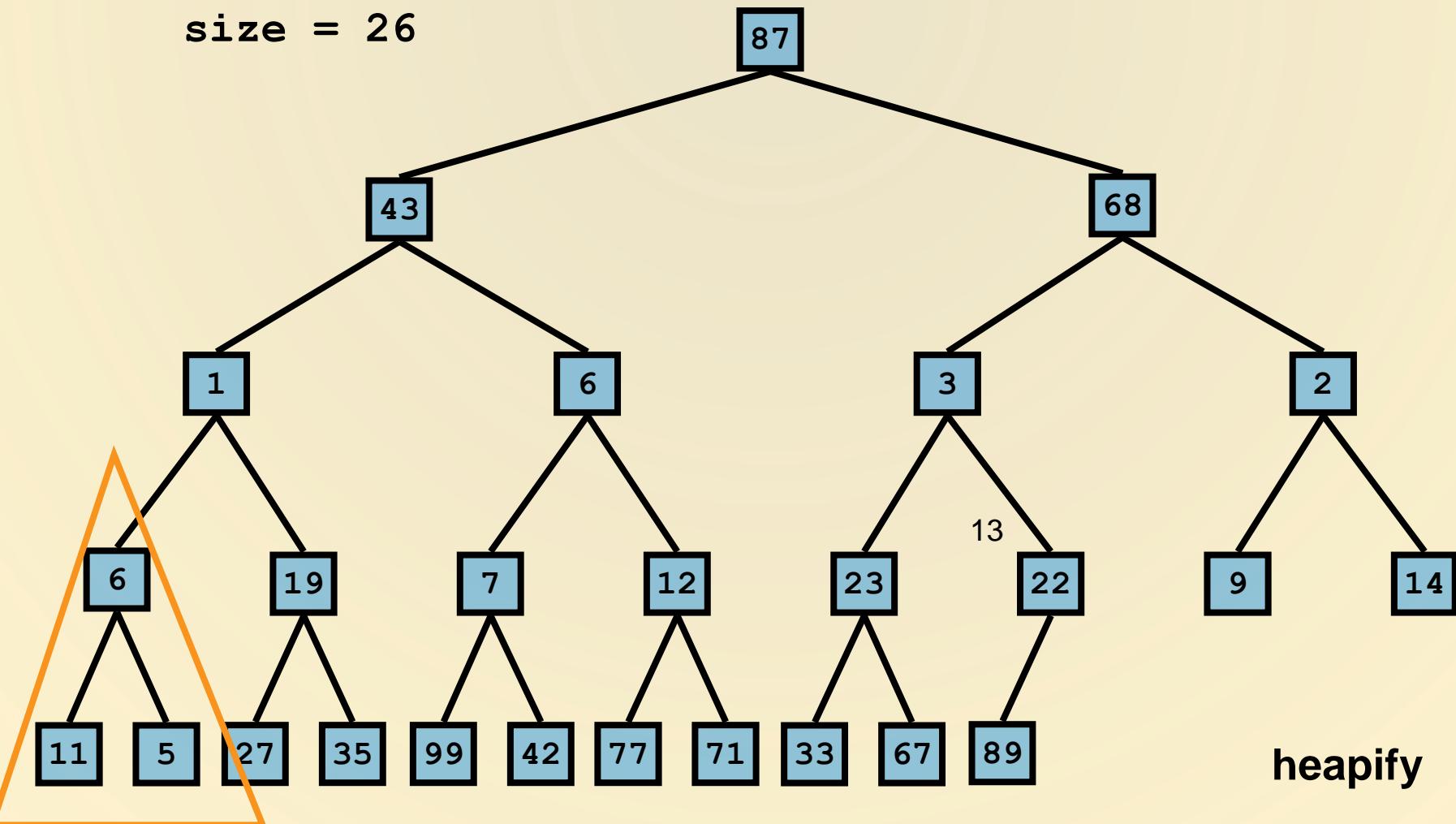


BuildHeap



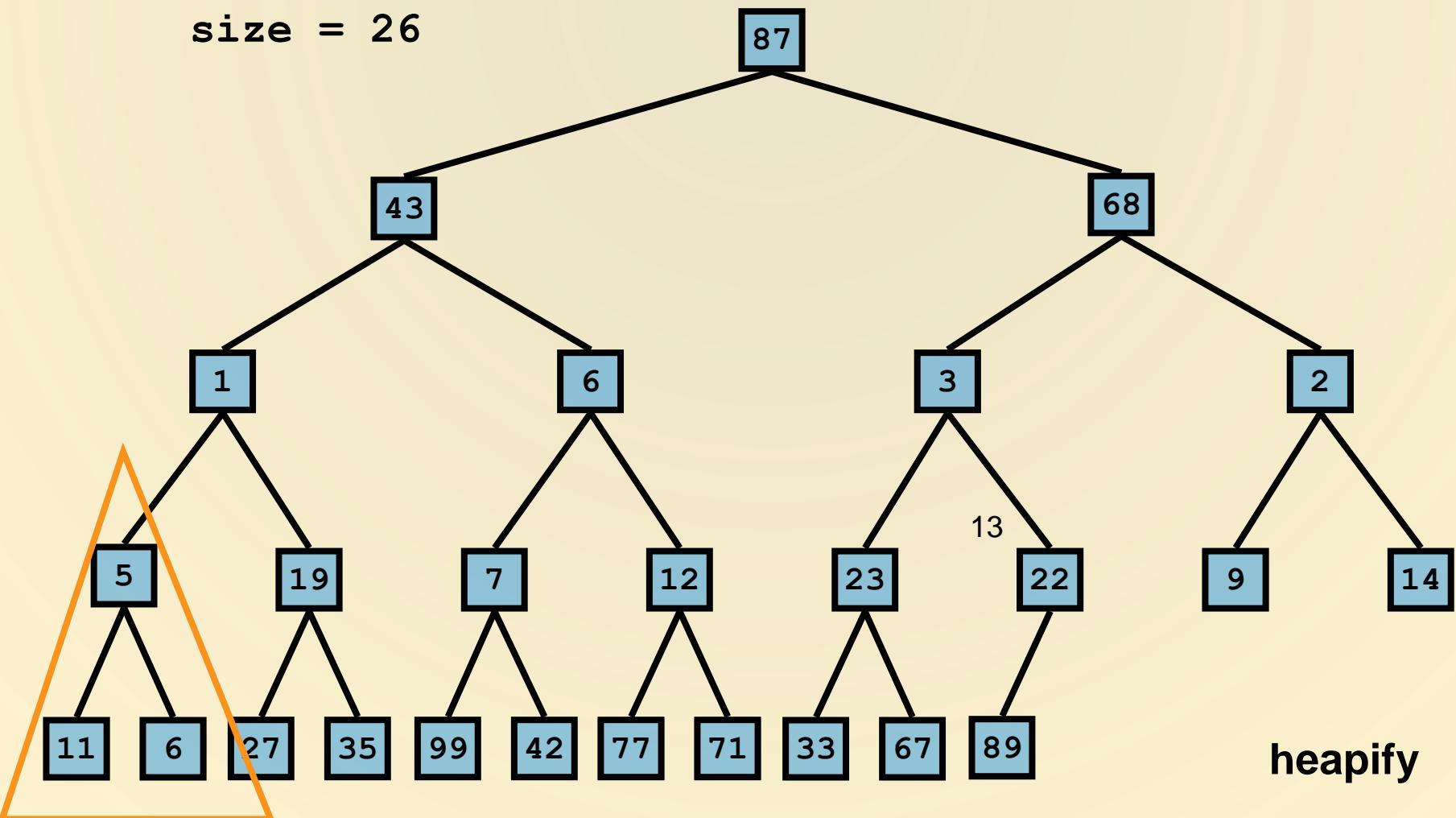
BuildHeap

size = 26

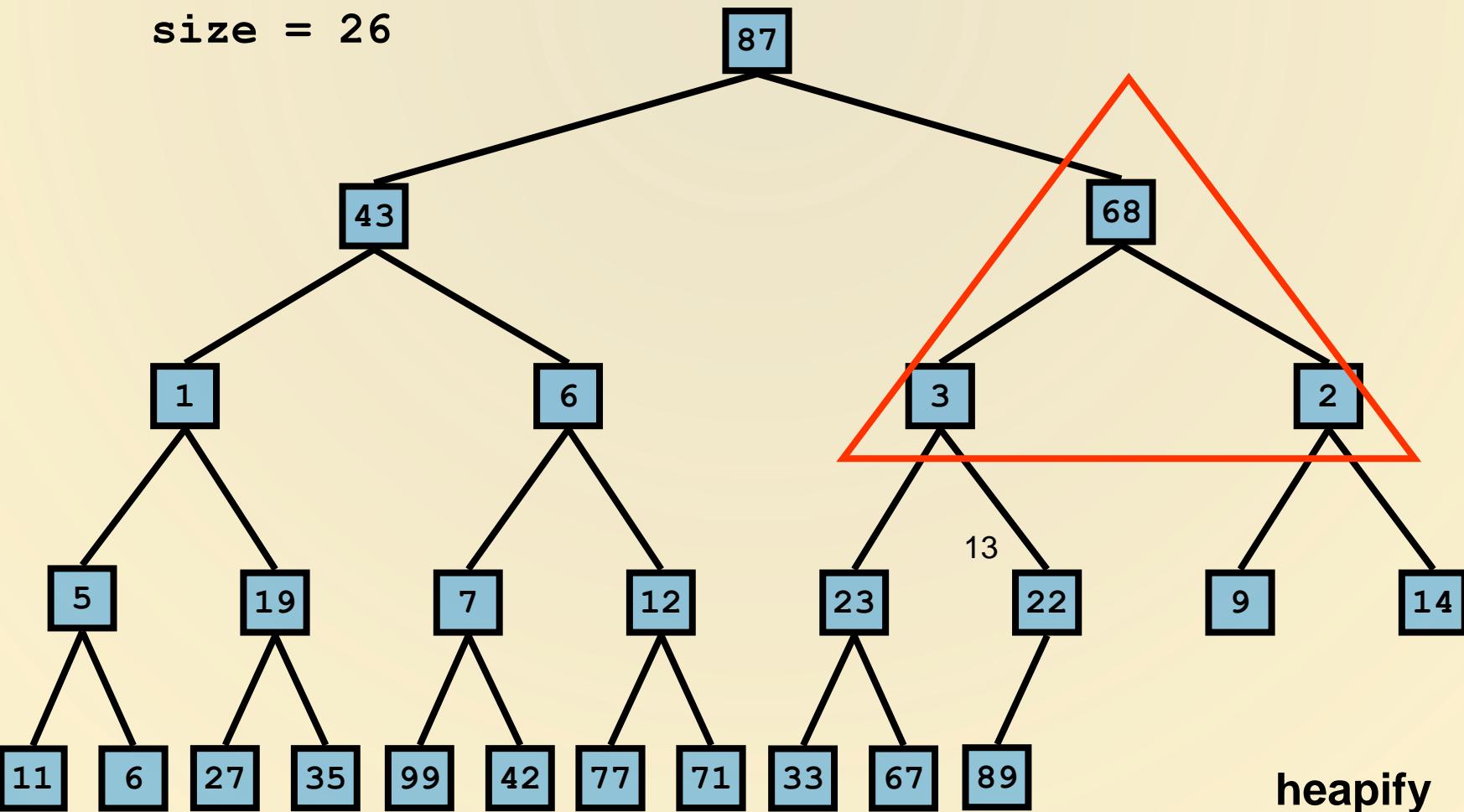


BuildHeap

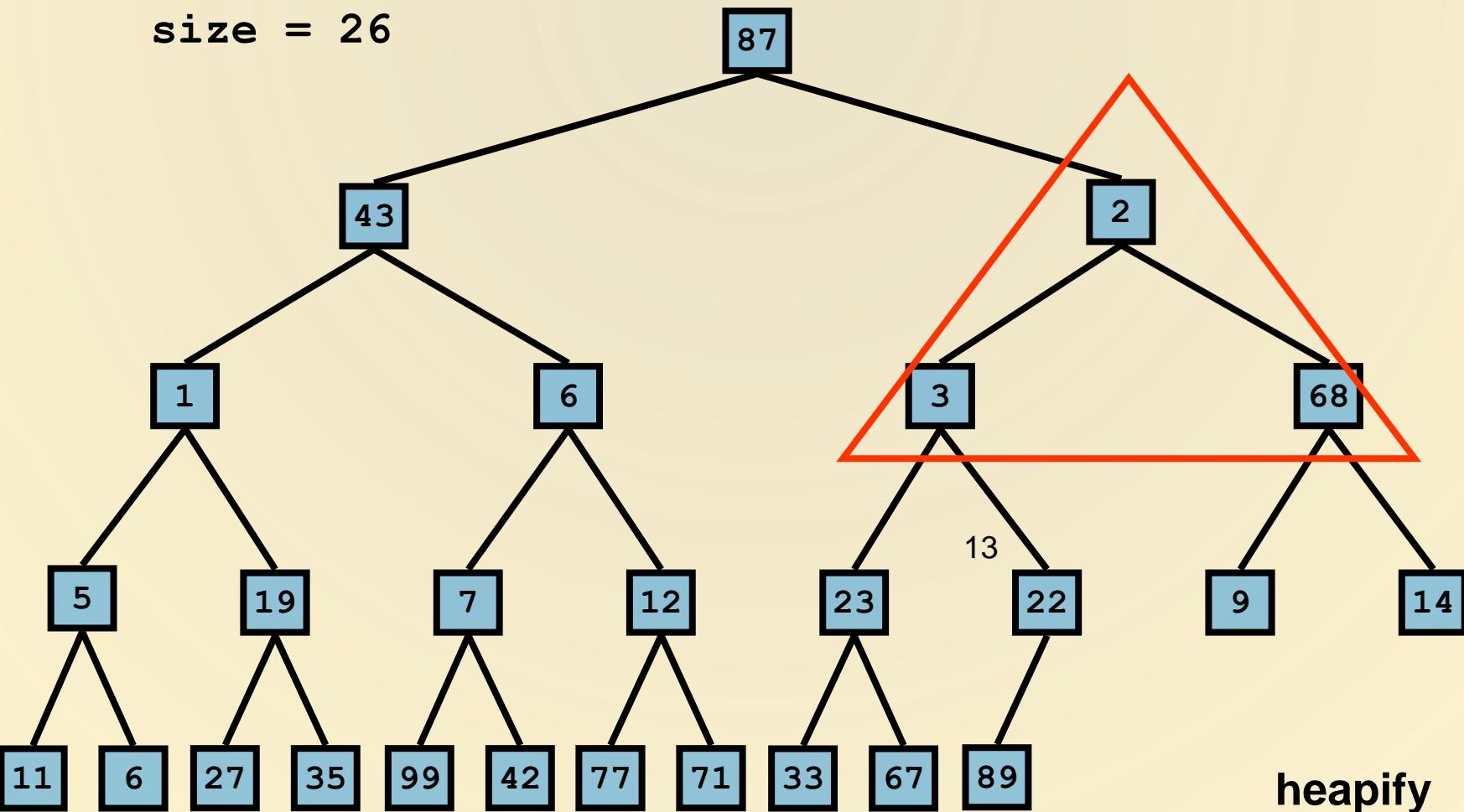
size = 26



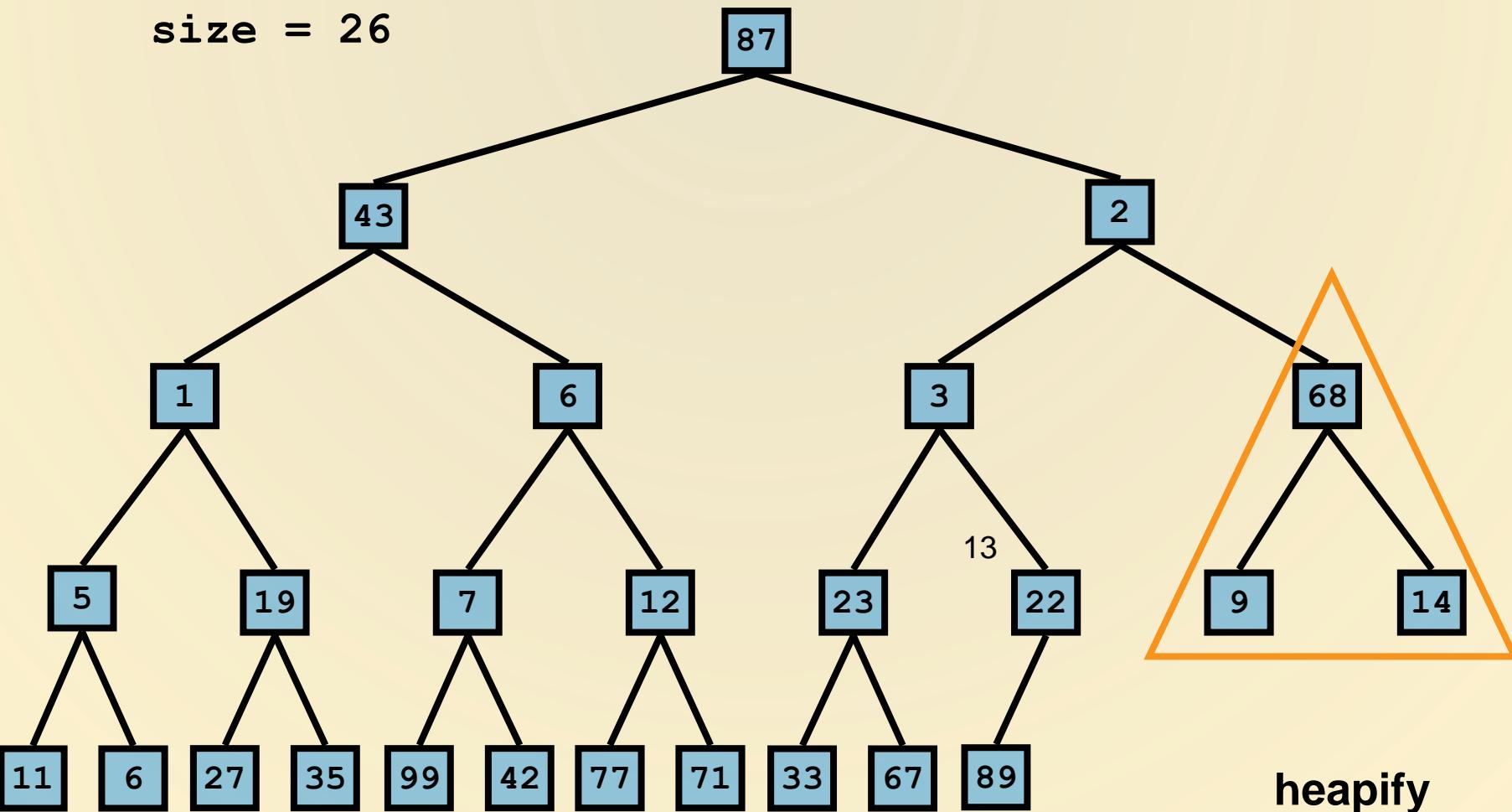
BuildHeap



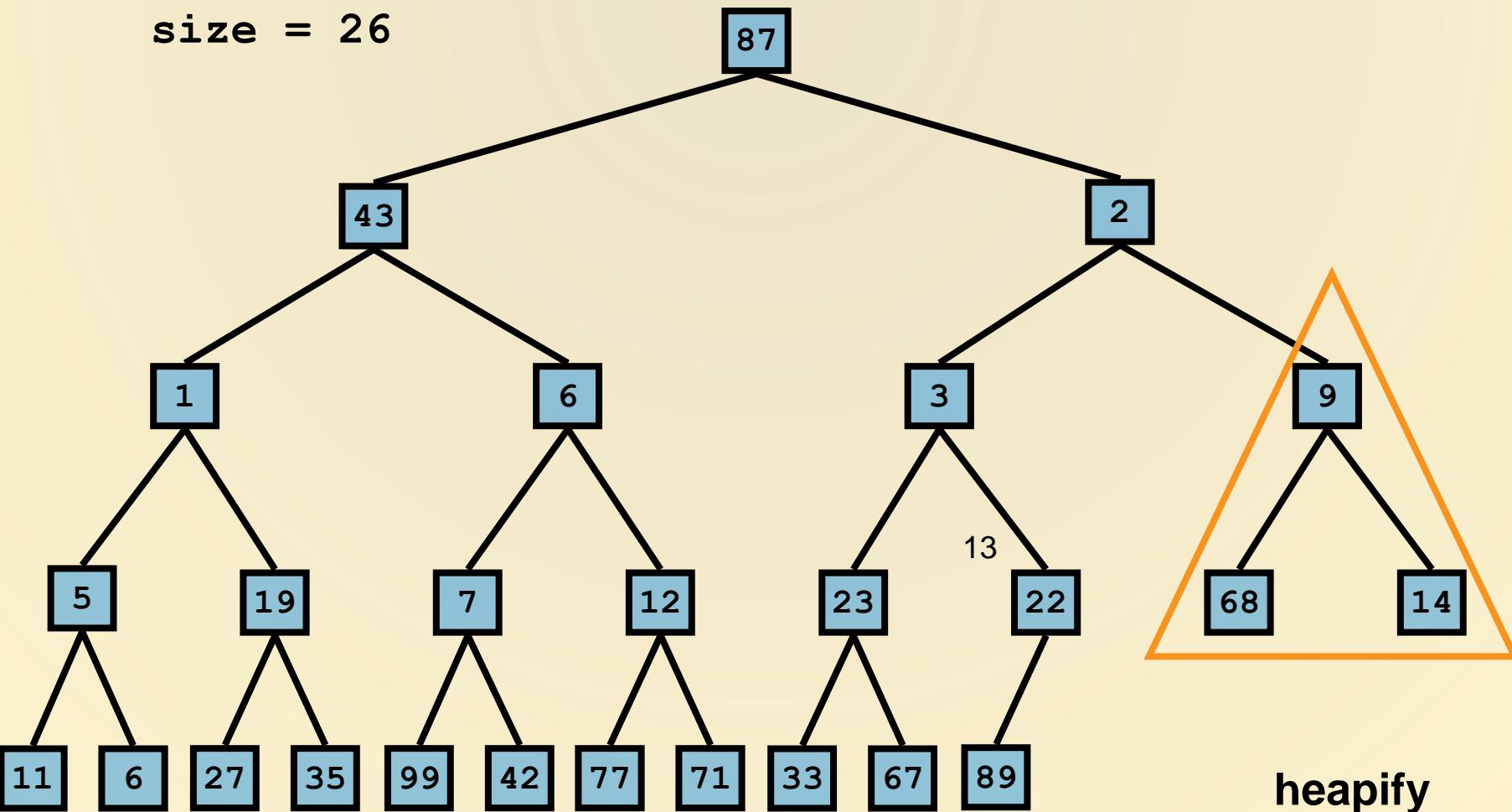
BuildHeap



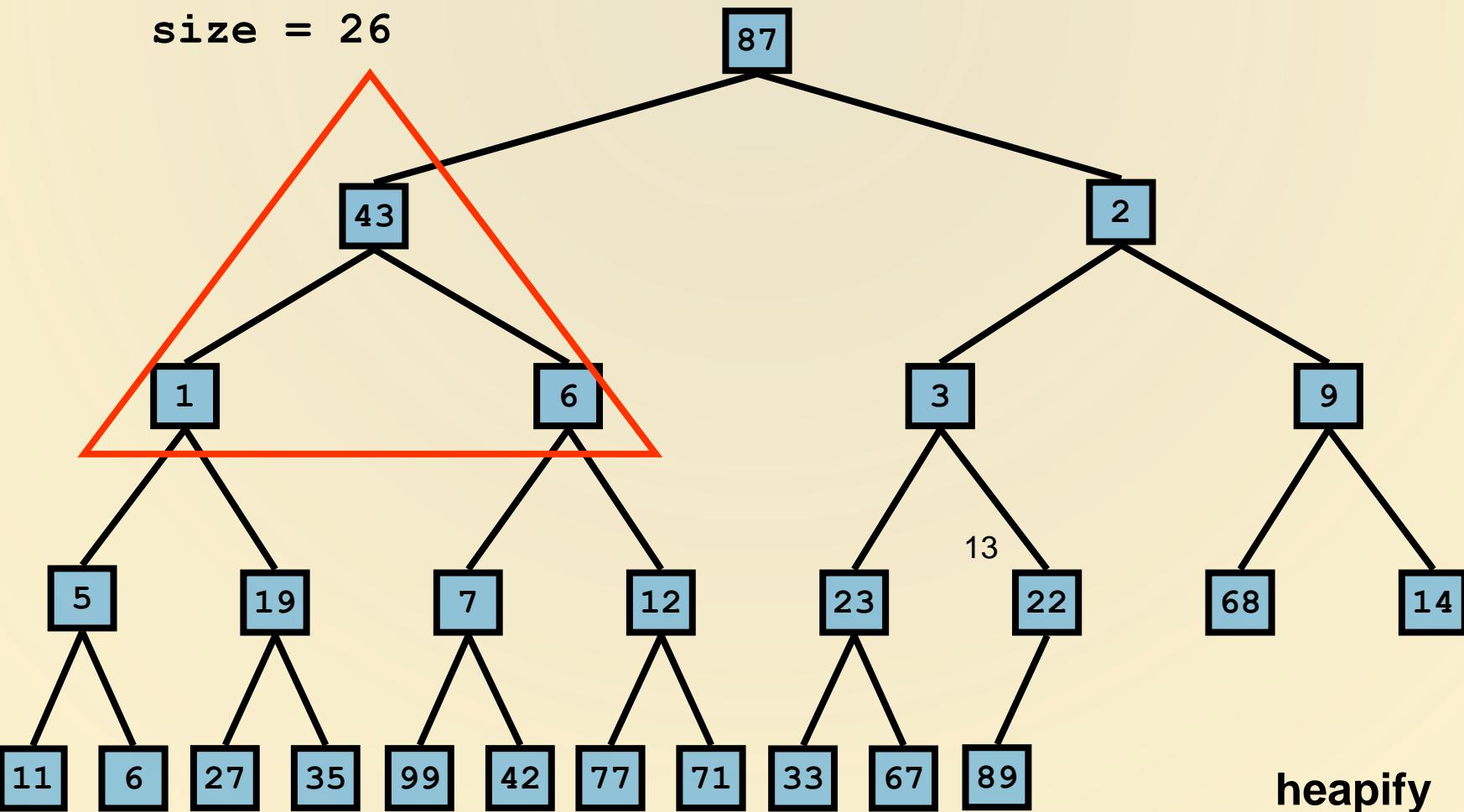
BuildHeap



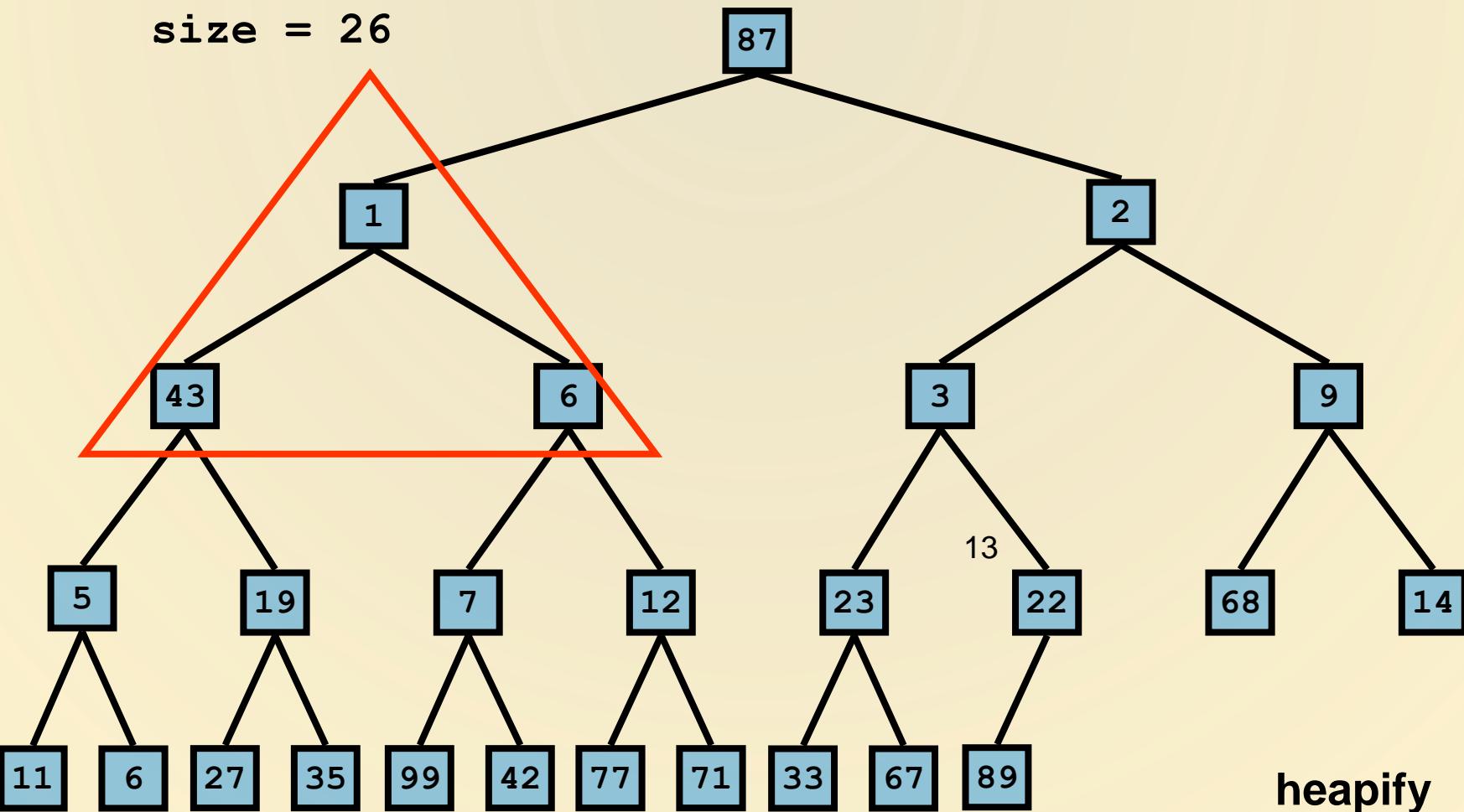
BuildHeap



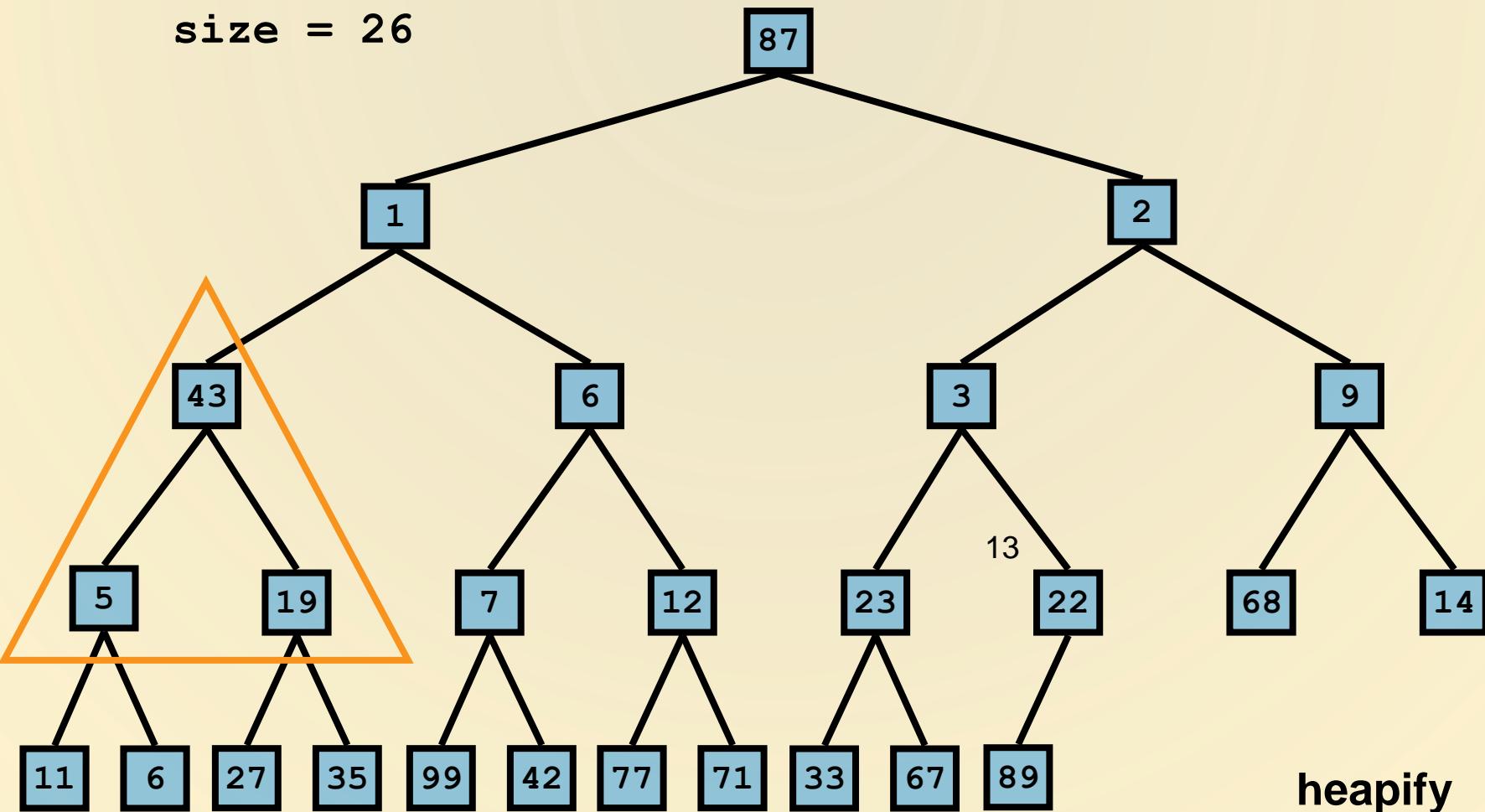
BuildHeap



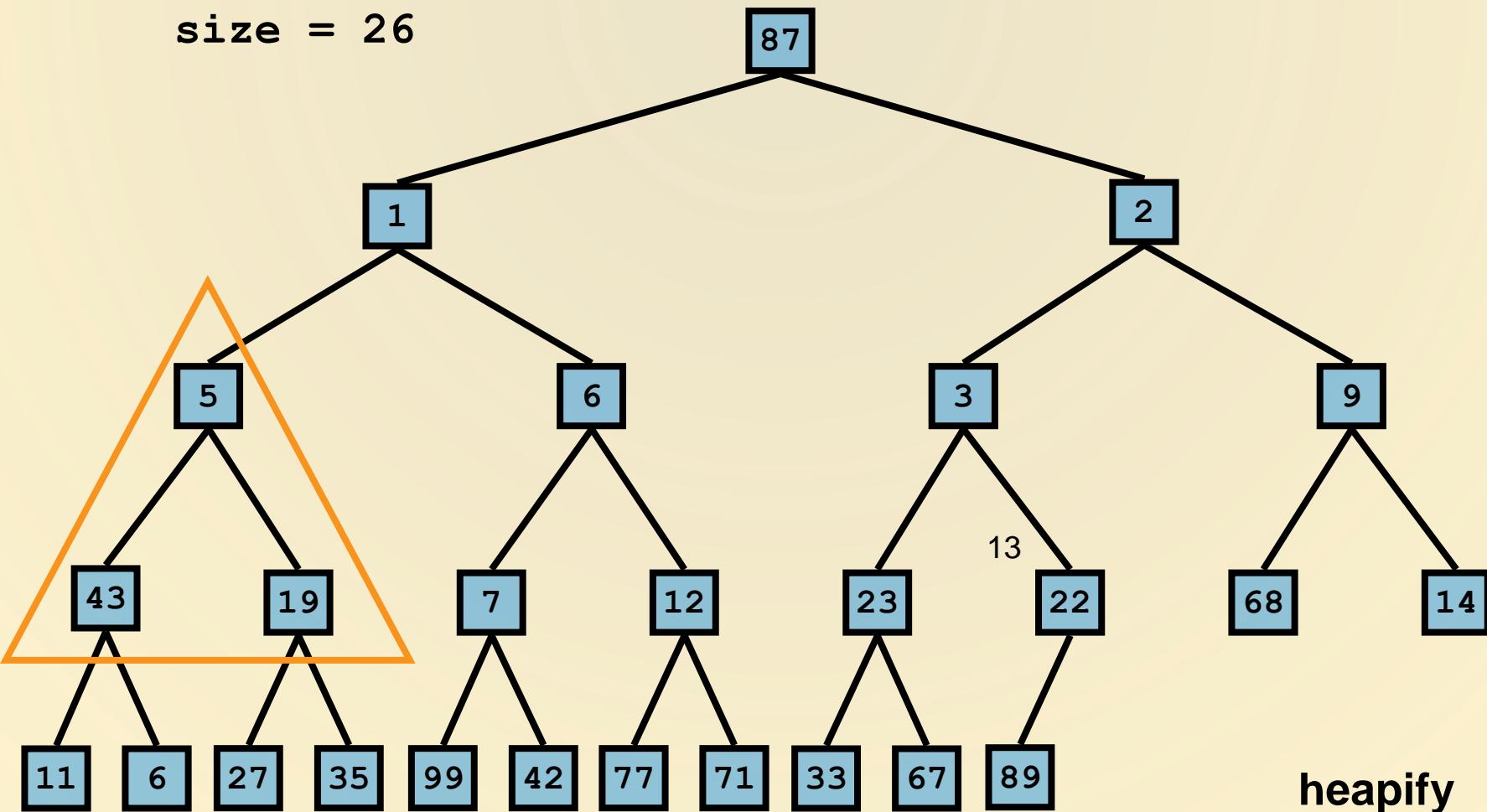
BuildHeap



BuildHeap

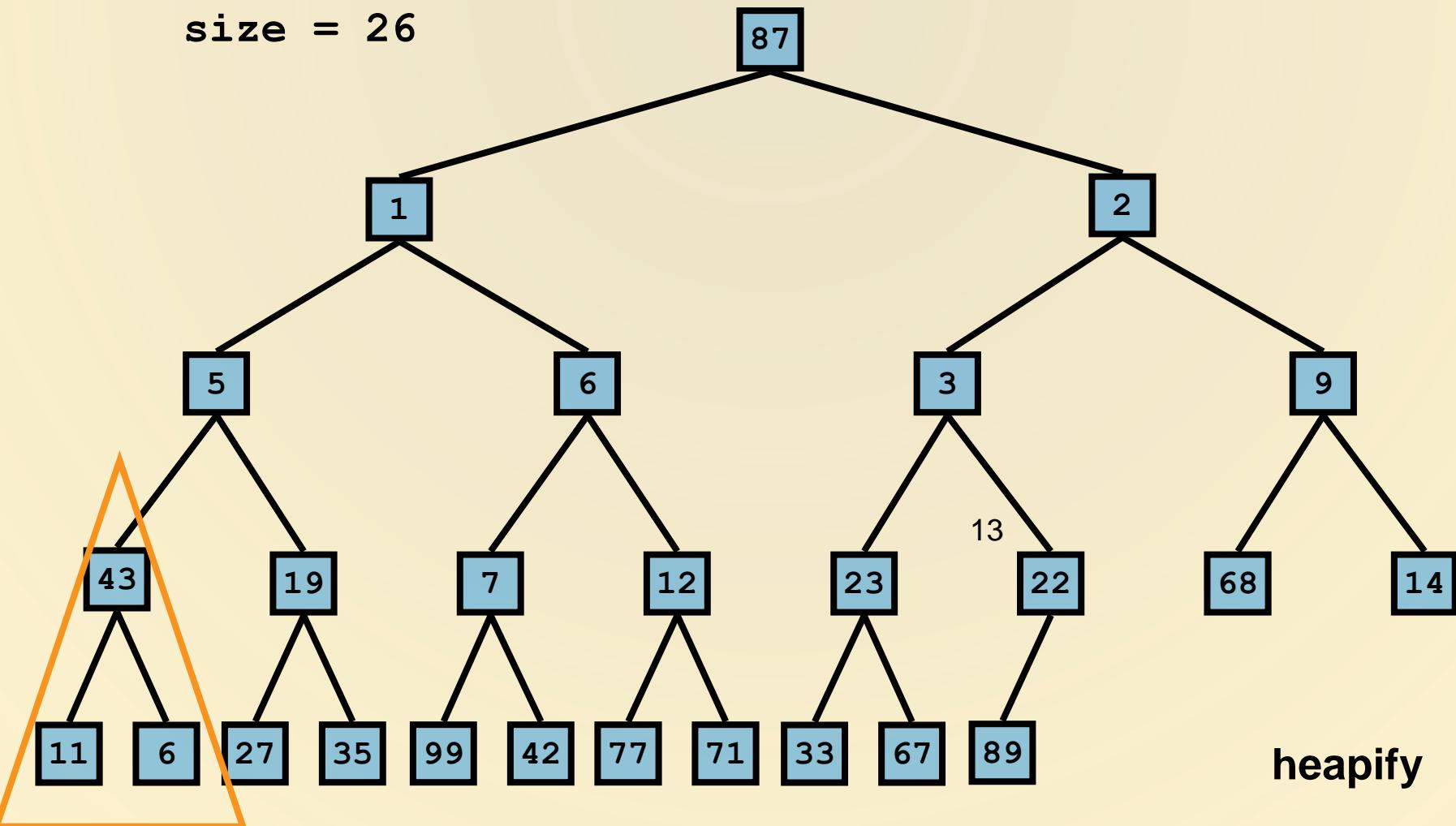


BuildHeap



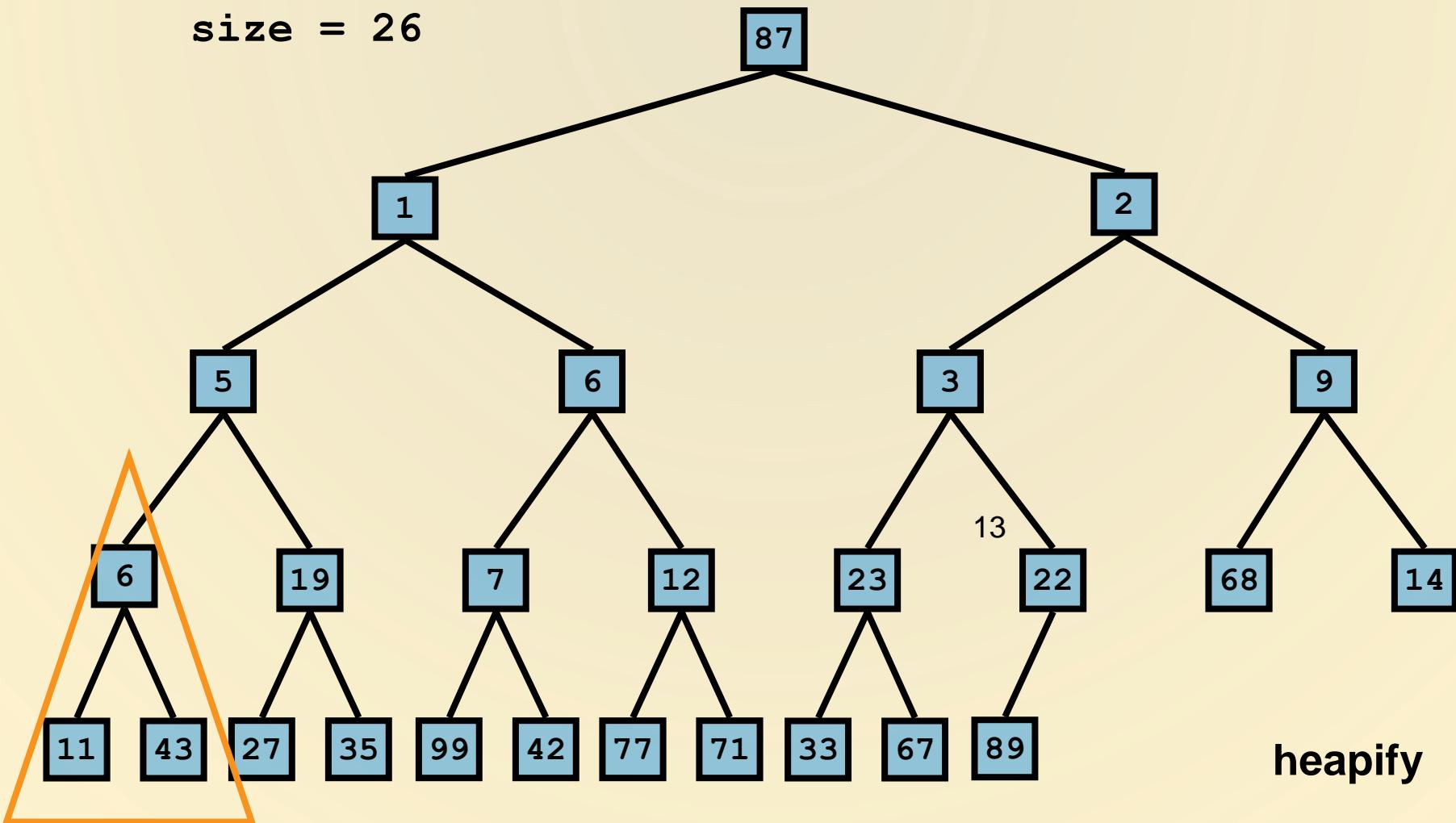
BuildHeap

size = 26



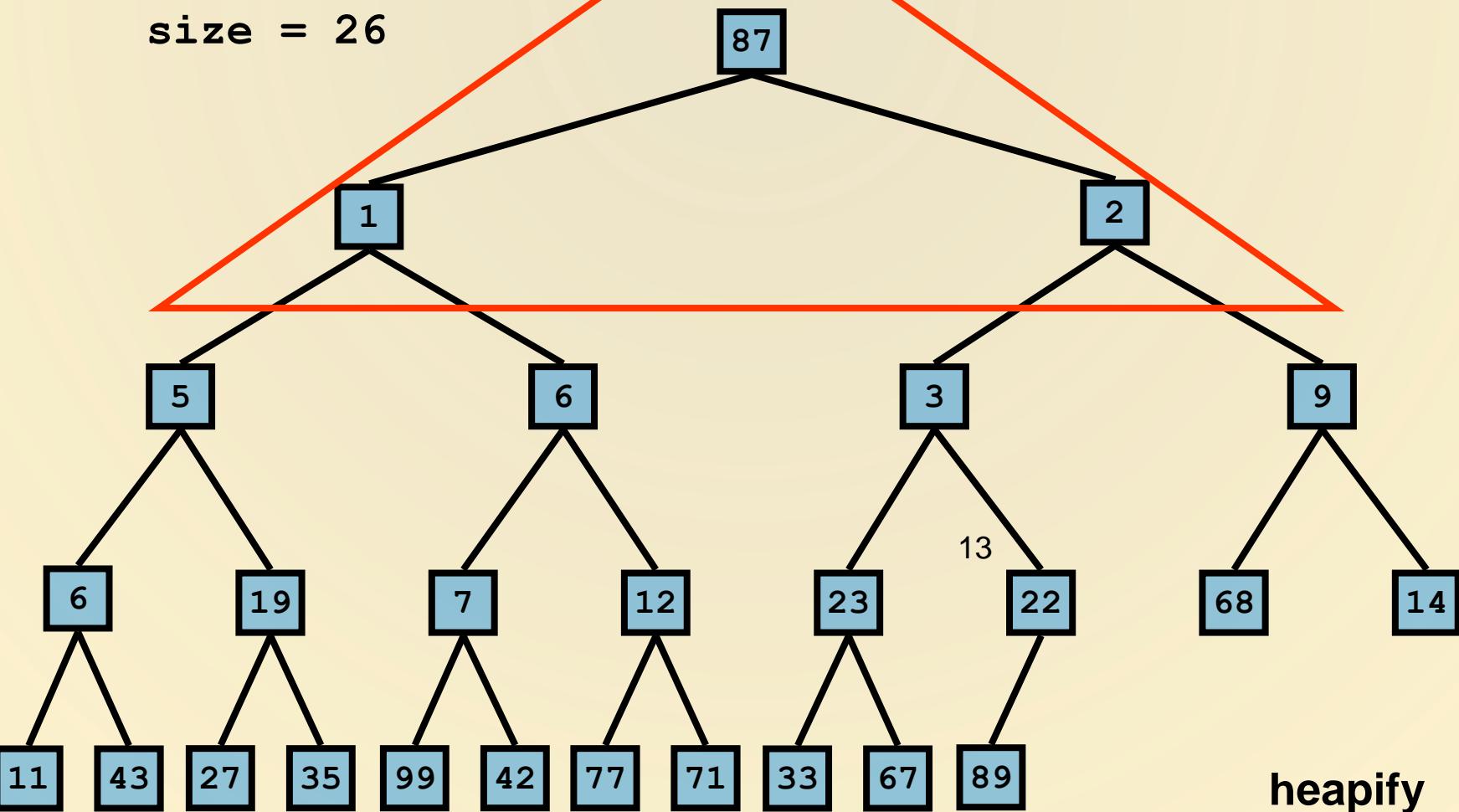
BuildHeap

size = 26



BuildHeap

size = 26

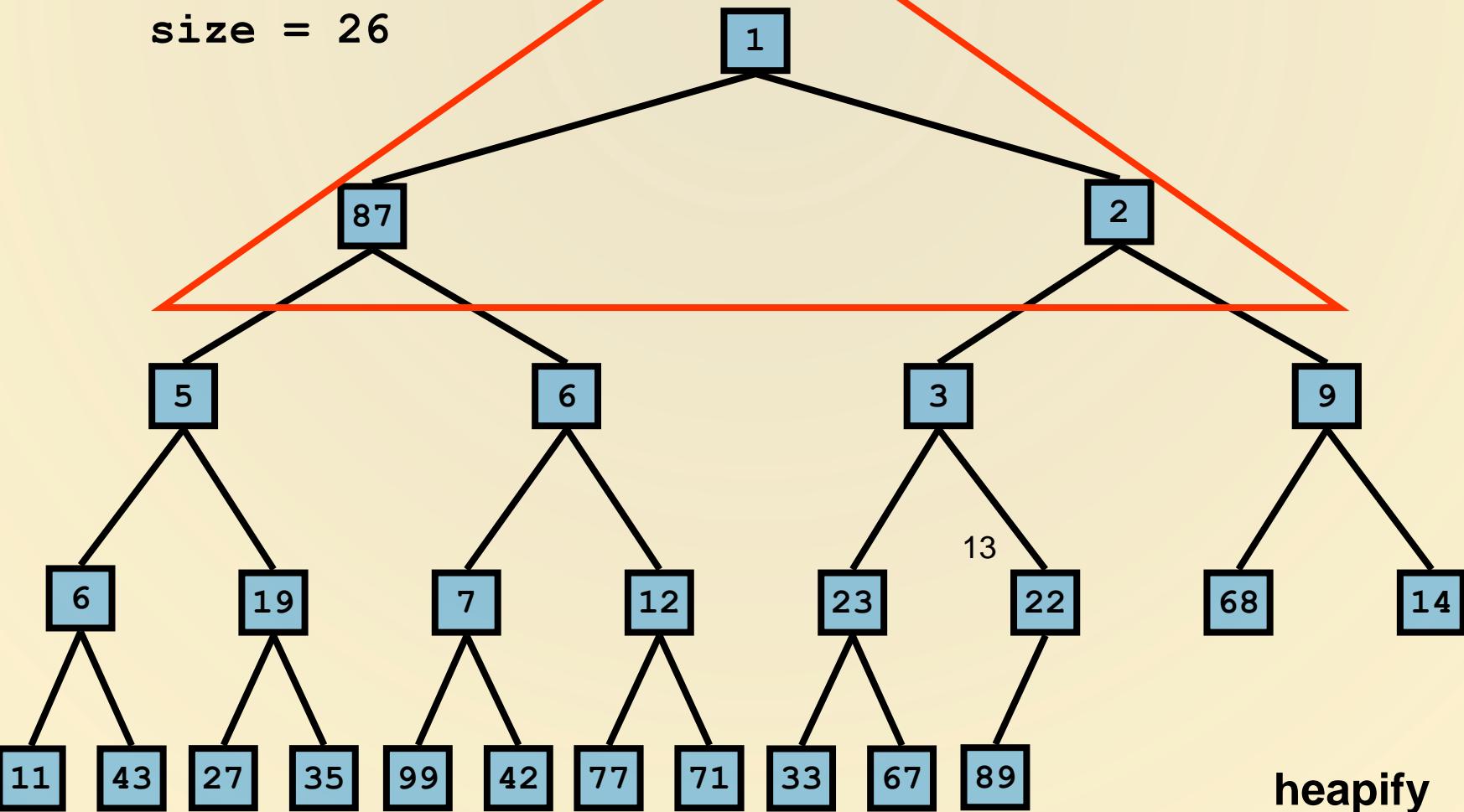


heapify

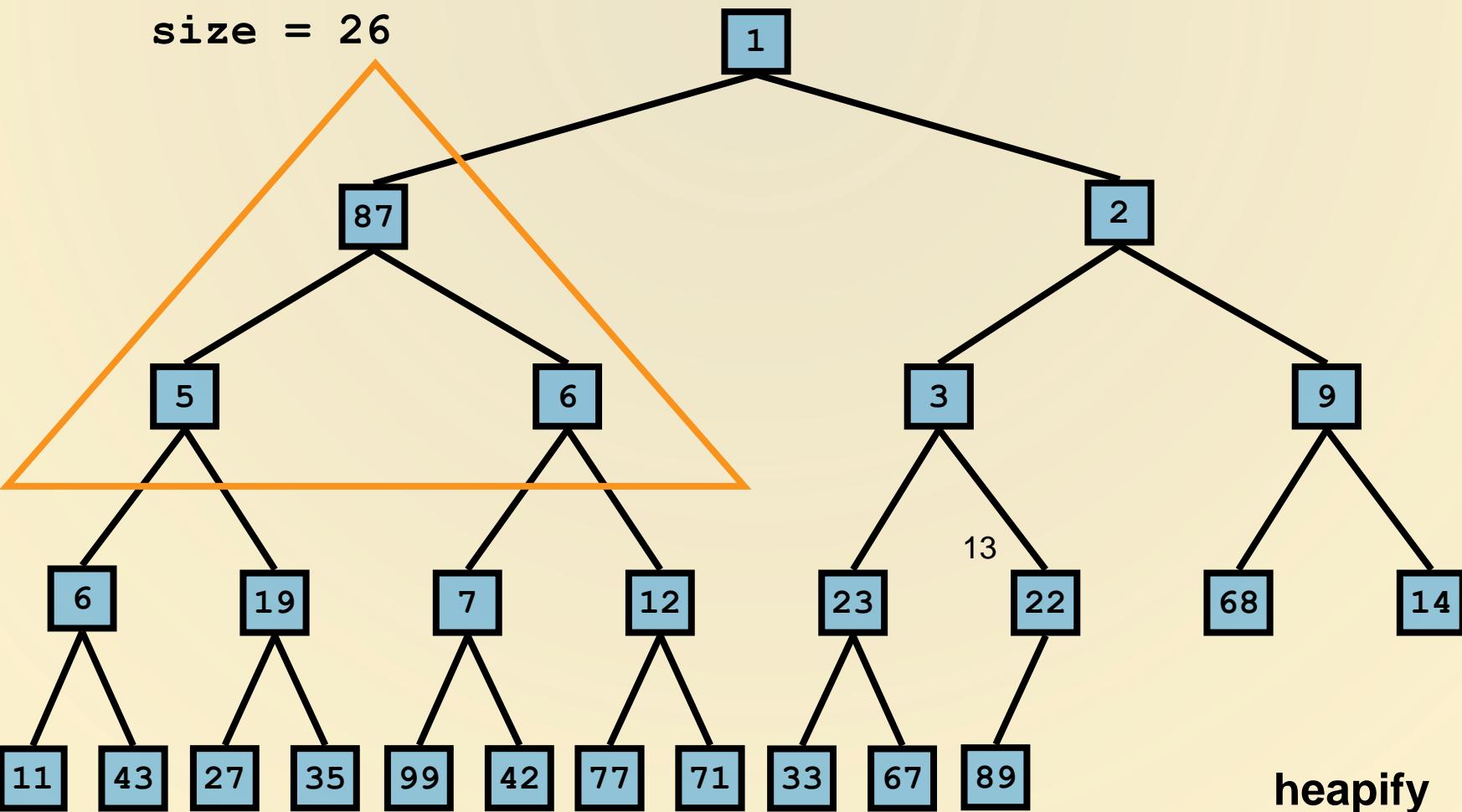


BuildHeap

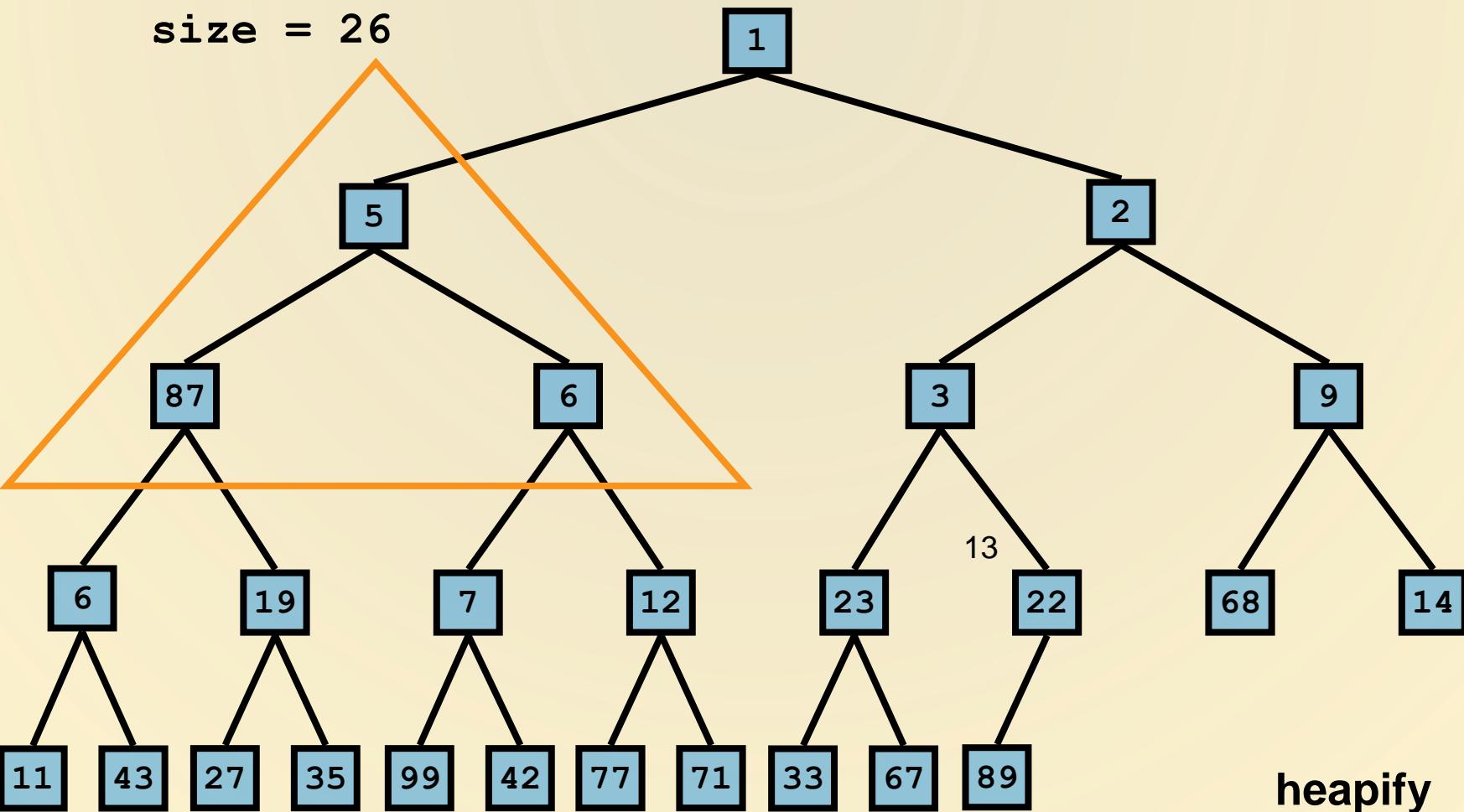
size = 26



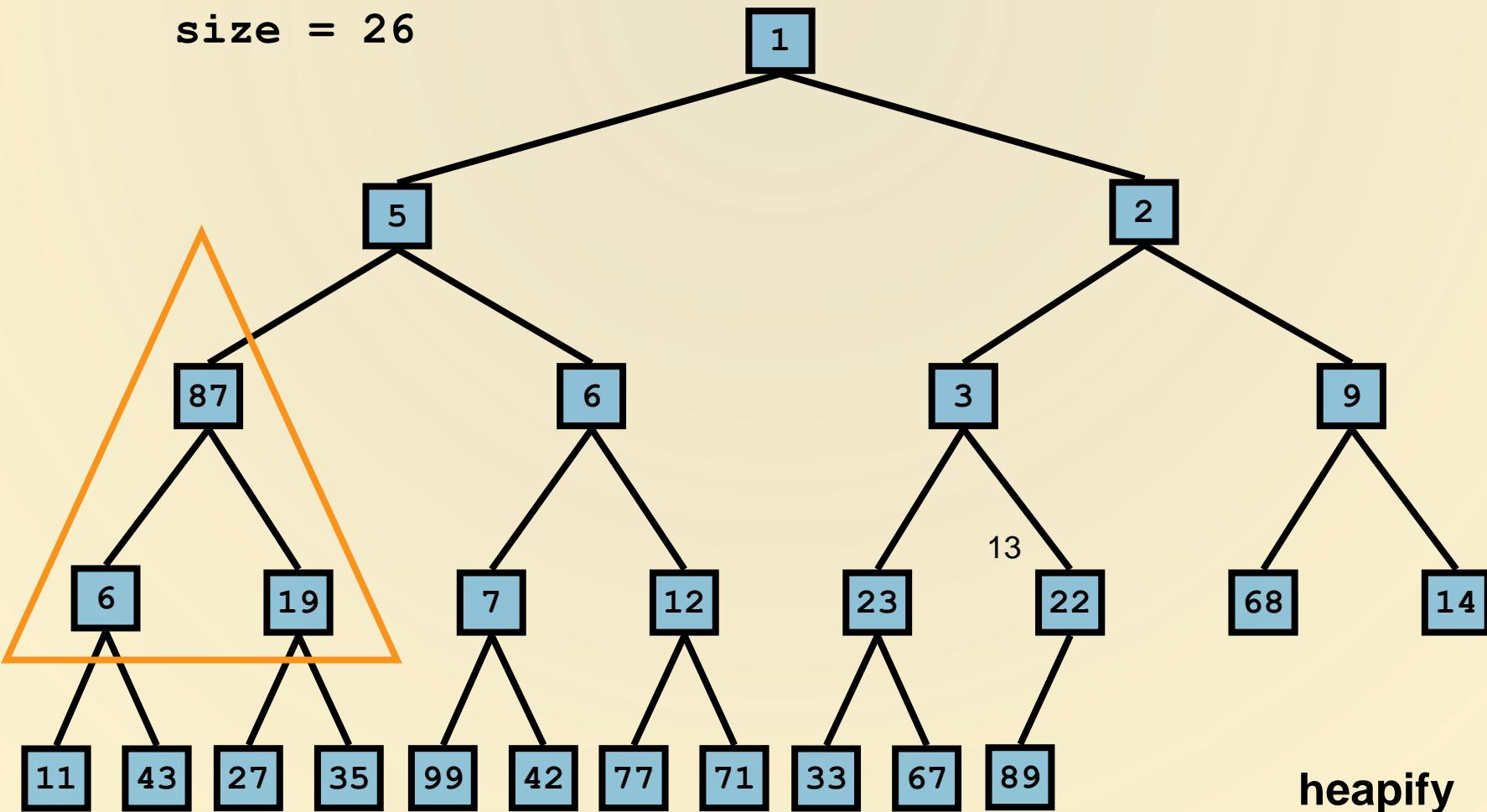
BuildHeap



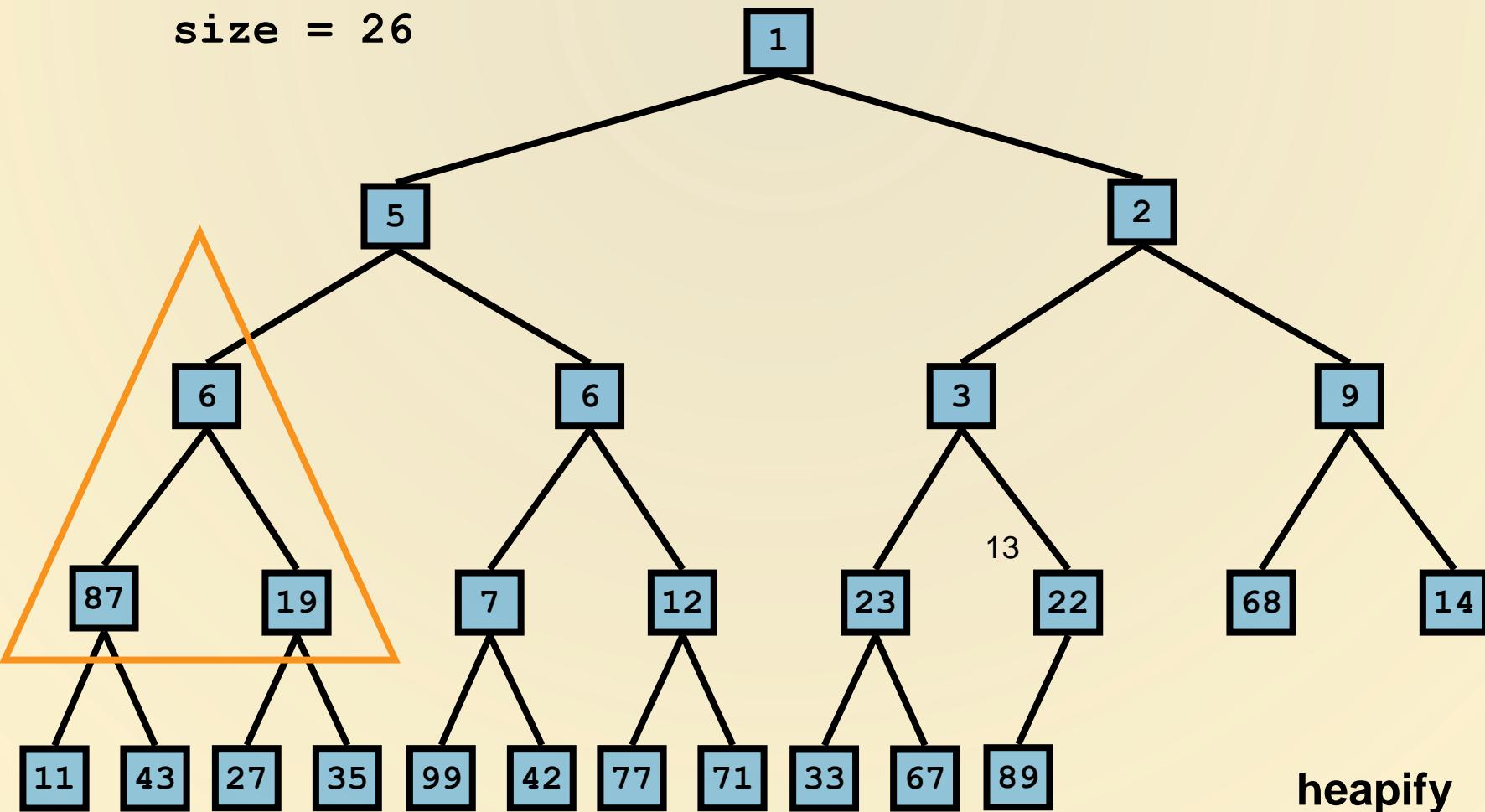
BuildHeap



BuildHeap

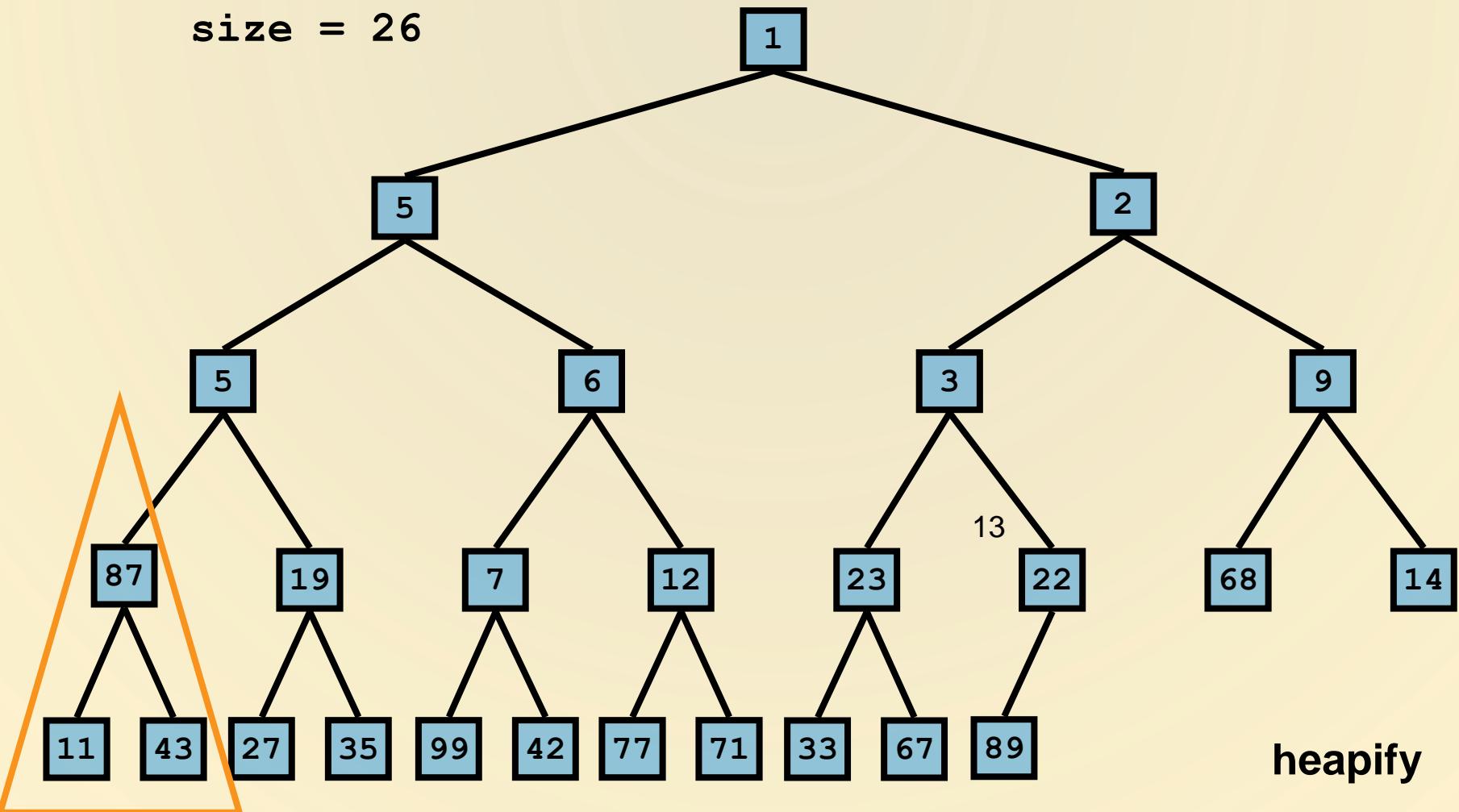


BuildHeap



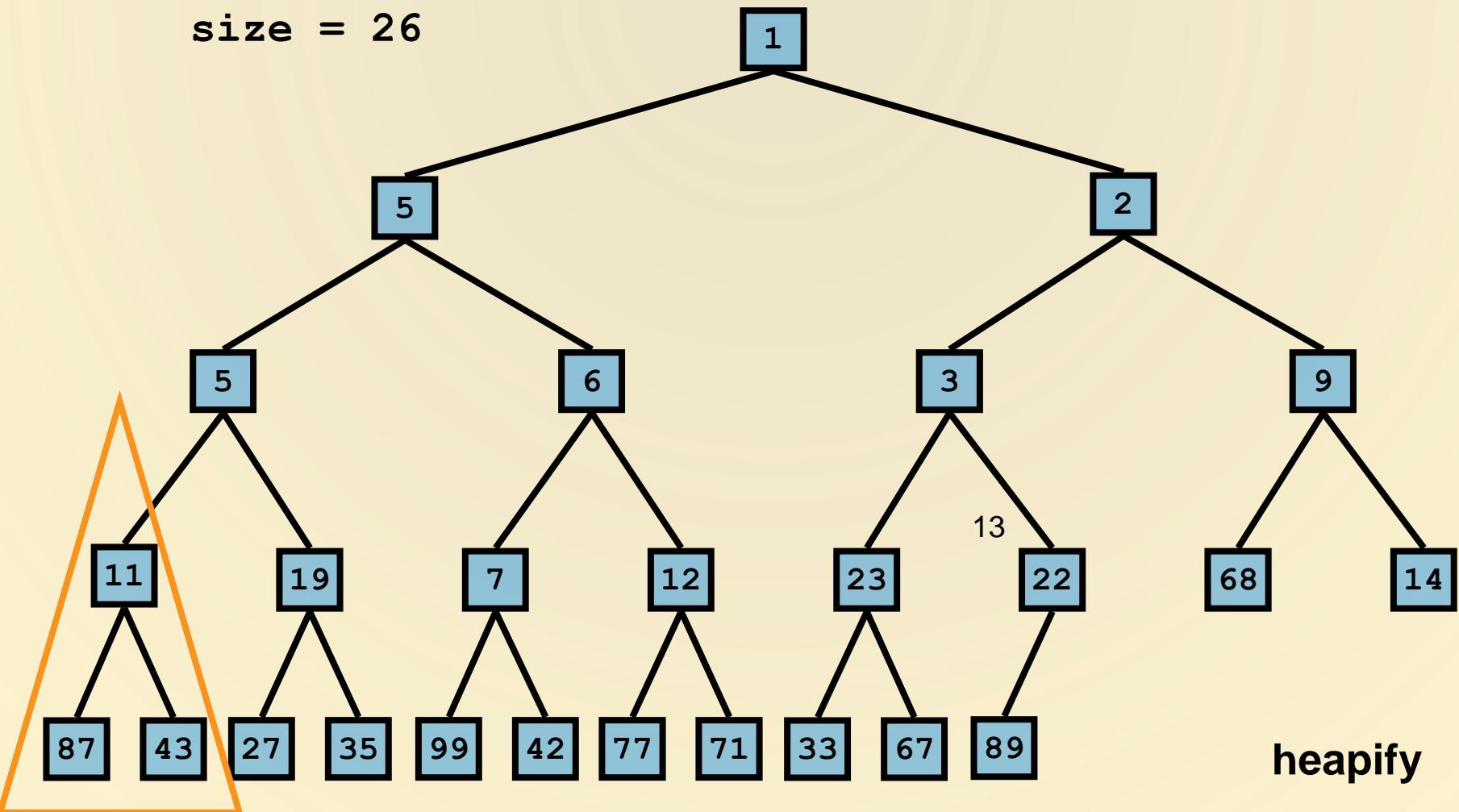
BuildHeap

size = 26



BuildHeap

size = 26



BuildHeap

size = 26

