Heap Sort

The entire algorithm works in-place, using $O(n\log(n))$ time and only $O(1)$ space in addition to the space used by the heap array $H$.

**A.** Build a heap in the array $H[0] \ldots H[n-1]$.

We could do this in $O(n\log(n))$ time with $n$ INSERT operations, or we can use the linear time heap construction algorithm.

**B.** DELETEMIN each element in a total of $O(n\log(n))$ time.

```plaintext
while nextRB > 0 do begin
    nextRB := nextRB - 1
    exchange $H[0]$ and $H[nextRB]$
    PERCDOWN(0)
end
```

**C.** $H$ is now sorted (going from right to left).