Merge Sort Algorithm

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MERGE-SORT(A, p, r)
if p < r                                  // check for base case
    q = ⌊(p + r)/2⌋                       // divide
    MERGE-SORT(A, p, q)                   // conquer
    MERGE-SORT(A, q + 1, r)               // conquer
    MERGE(A, p, q, r)                     // combine
```

```
MERGE(A, p, q, r)
n1 = q − p + 1
n2 = r − q
let L[1 . . n1 + 1] and R[1 . . n2 + 1] be new arrays
for i = 1 to n1
    L[i] = A[p + i − 1]
for j = 1 to n2
    R[j] = A[q + j]
L[n1 + 1] = ∞
R[n2 + 1] = ∞
i = 1
j = 1
for k = p to r
    if L[i] ≤ R[j]
        A[k] = L[i]
        i = i + 1
    else A[k] = R[j]
        j = j + 1
```