

MERGE( $A, p, q, r$ )

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1   $n_L = q - p + 1$            // length of  $A[p : q]$ 
2   $n_R = r - q$                // length of  $A[q + 1 : r]$ 
3  let  $L[0 : n_L - 1]$  and  $R[0 : n_R - 1]$  be new arrays
4  for  $i = 0$  to  $n_L - 1$     // copy  $A[p : q]$  into  $L[0 : n_L - 1]$ 
5       $L[i] = A[p + i]$ 
6  for  $j = 0$  to  $n_R - 1$     // copy  $A[q + 1 : r]$  into  $R[0 : n_R - 1]$ 
7       $R[j] = A[q + j + 1]$ 
8   $i = 0$                      //  $i$  indexes the smallest remaining element in  $L$ 
9   $j = 0$                      //  $j$  indexes the smallest remaining element in  $R$ 
10  $k = p$                      //  $k$  indexes the location in  $A$  to fill
11 // As long as each of the arrays  $L$  and  $R$  contains an unmerged element,
12 //    copy the smallest unmerged element back into  $A[p : r]$ .
13 while  $i < n_L$  and  $j < n_R$ 
14     if  $L[i] \leq R[j]$ 
15          $A[k] = L[i]$ 
16          $i = i + 1$ 
17     else  $A[k] = R[j]$ 
18          $j = j + 1$ 
19          $k = k + 1$ 
20 // Having gone through one of  $L$  and  $R$  entirely, copy the
21 //    remainder of the other to the end of  $A[p : r]$ .
22 while  $i < n_L$ 
23      $A[k] = L[i]$ 
24      $i = i + 1$ 
25      $k = k + 1$ 
26 while  $j < n_R$ 
27      $A[k] = R[j]$ 
28      $j = j + 1$ 
29      $k = k + 1$ 
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