```
Merge(A, p, q, r)
1.  n1 = q - p + 1
2.  n2 = r - q
3.  let L[1..n1 + 1] and R[1..n2 + 1] be new arrays
4.  for i = 1 to n1
5.      L[i] = A[p + i - 1]
6.  for j = 1 to n2
7.      R[j] = A[q + j]
8.  L[n1 + 1] = inf
9.  R[n2 + 1] = inf
10. i = 1
11. j = 1
12. for k = p to r
13.     if L[i] <= R[j]
14.         A[k] = L[i]
15.         i++
16.     else
17.         A[k] = R[j]
18.         j++
```

```
Merge-Sort(A, p, r)
1.  if p < r
2.      q = floor((p + r) / 2)
3.      Merge-Sort(A, p, q)
4.      Merge-Sort(A, q+1, r)
5.      Merge(A, p, q, r)
```

```
Merge-Without-Sentinels(A, p, q, r)
1.  n1 = q - p + 1
2.  n2 = r - q
3.  let L[1..n1] and R[1..n2] be new arrays
4.  for i = 1 to n1
5.      L[i] = A[p + i - 1]
6.  for j = 1 to n2
7.      R[j] = A[q + j]
8.  i = 1
9.  j = 1
10. for k = p to r
11.     if i > n1
12.         while j <= n2
13.             A[k] = R[j]
14.             j++
15.             k++
16.     else if j > n2
17.         while i <= n1
18.             A[k] = L[i]
19.             i++
20.             k++
21.     else if L[i] <= R[j]
22.         A[k] = L[i]
23.         i++
24.     else
25.         A[k] = R[j]
26.         j++
```