

Merge Sort:

Procedure MSort(A, l, h) {

if (h > l) {

$$m = \lfloor \frac{l+h}{2} \rfloor$$

MSort(A, l, m)

MSort(A, m+1, h)

Merge(A, l, m, h)

}

}

Procedure Merge(A, l, m, h) {

i = l

j = m+1

k = l

while ((i <= m) && (j <= h)) {

if (A[i] > A[j]) {

B[k] = A[j]

j = j+1

k = k+1

}

else {

B[k] = A[i]

i = i+1

k = k+1

}

}

if (i > m)

for p = j to h

B[k] = A[p], k = k+1

end for

else

for p = i to m

B[k] = A[p], k = k+1

end for

}

A	10	8	15	9	7	11
	1	2	3	4	5	6

l = 1

h = 6

$$MSort(A, \frac{l}{2}, \frac{h}{2}) = (7, 8, 9, 10, 11, 15)$$

$$m = \lfloor \frac{l+h}{2} \rfloor = 3$$

$$MSort(A, \frac{l}{2}, \frac{h}{2}) = (8, 10, 15)$$

$$MSort(A, 4, 6) = (7, 9, 11)$$

$$Merge(A, 1, 3, 6) = (7, 8, 9, 10, 11, 15)$$

$$m = \lfloor \frac{l+h}{2} \rfloor = 2$$

$$MSort(A, \frac{l}{2}, \frac{h}{2}) = (8, 10)$$

$$MSort(A, \frac{l}{2}, \frac{h}{2}) = (15)$$

$$Merge(A, \frac{l}{2}, 2, 3) = (8, 10, 15)$$

$$m = \lfloor \frac{l+h}{2} \rfloor = 1$$

$$MSort(A, \frac{l}{2}, \frac{h}{2}) = (10)$$

$$MSort(A, \frac{l}{2}, \frac{h}{2}) = (8)$$

$$Merge(A, \frac{l}{2}, 1, 2) = (8, 10)$$

How merge works?

A	8	10	15	7	9	11
	1	2	3	4	5	6
	i	j	i	j	j	j
B	7	8	9	10	11	
	1	2	3	4	5	6
	k	k	k	k	k	k

Here j > h while loop condition false

if (i > m) ⇒ Condition false ⇒ else

B	7	8	9	10	11	15
	1	2	3	4	5	6

Last for loop

A	7	8	9	10	11	15
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for p = l to h

A[p] = B[p]

end for