**MERGE SORT**

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#include <stdio.h>

void merge(int a[], int lb, int mid, int ub);

void mergesort(int a[], int lb, int ub);

void merge(int a[], int lb, int mid, int ub)

{

int i = lb;

int j = mid + 1;

int k = 0;

int t = ub - lb + 1;

int b[t];

while (i <= mid && j <= ub)

{

if (a[i] <= a[j])

{

b[k] = a[i];

k++;

i++;

}

else

{

b[k] = a[j];

k++;

j++;

}

}

if (i > mid)

{

while (j <= ub)

{

b[k] = a[j];

k++;

j++;

}

}

else

{

while (i <= mid)

{

b[k] = a[i];

k++;

i++;

}

}

for (int l = 0; l < t; l++)

{

a[lb + l] = b[l];

}

}

void mergesort(int a[], int lb, int ub)

{

if (lb < ub)

{

int mid = (lb + ub) / 2;

mergesort(a, lb, mid);

mergesort(a, mid + 1, ub);

merge(a, lb, mid, ub);

}

}

void main()

{

int a[5] = {};

int n = sizeof(a);

int m = n / 4;

printf("enter array of length 5\n");

for (int i = 0; i <m; i++)

{

scanf("%d",&a[i]);

}

mergesort(a, 0, m - 1);

for (size\_t i = 0; i < m; i++)

{

printf("%d \t", a[i]);

    }

}