MERGE SORT

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       /****    Program to Sort an Array using Merge Sort    ****/

#include <stdio.h>

void merge_sort(int [], int, int);
void merge_array(int [], int, int, int);

main()
{
     int a[50], n, i;

     printf("\nEnter size of an array: ");
     scanf("%d", &n);

     printf("\nEnter elements of an array:\n");
     for(i=0; i<n; i++)
          scanf("%d", &a[i]);

     merge_sort(a, 0, n-1);

     printf("\n\nAfter sorting:\n");
     for(i=0; i<n; i++)
          printf("\n%d", a[i]);

     getch();
}

void merge_sort(int a[], int beg, int end)
{
     int mid;

     if (beg < end)
     {
          mid = (beg+end)/2;

          merge_sort(a, beg, mid);
          merge_sort(a, mid+1, end);

          merge_array(a, beg, mid, end);
     }
}
```

```
void merge_array(int a[], int beg, int mid, int end)
{
     int i, left_end, num, temp, j, k, b[50];

     for(i=beg; i<=end; i++)
          b[i] = a[i];

     i = beg;
     j = mid+1;
     k = beg;

     while ((i<=mid) && (j<=end))
     {
          if (b[i] <= b[j])
          {
               a[k] = b[i];
               i++; k++;
          }
          else
          {
               a[k] = b[j];
               j++; k++;
          }
     }

     if (i <= mid)
     {
          while (i <= mid)
          {
               a[k] = b[i];
               i++; k++;
          }
     }
     else
     {
          while (j <= end)
          {
               a[k] = b[j];
               j++; k++;
          }
     }
}
```