```c
#include <stdio.h>

// Function declarations
void mergesort(int a[], int first, int last);
void merge(int a[], int first, int mid, int last);

int main()
{
   int a[40], n, i;

   printf("Enter the size of array: ");
   scanf("%d", &n);

   printf("Enter the elements: ");
   for(i = 0; i < n; i++)
      scanf("%d", &a[i]);

   mergesort(a, 0, n - 1);

   printf("Sorted elements are: ");
   for(i = 0; i < n; i++)
      printf("%d ", a[i]);

   return 0;
}

// Merge Sort function
void mergesort(int a[], int first, int last) {
   int mid;
   if(first < last) {
      mid = (first + last) / 2;
      mergesort(a, first, mid);
      mergesort(a, mid + 1, last);
      merge(a, first, mid, last);
   }
}

// Merge function
void merge(int a[], int first, int mid, int last) {
   int b[50];
   int i = first, j = mid + 1, k = 0;

   // Merge both halves into b[]
   while(i <= mid && j <= last) {
      if(a[i] <= a[j])
         b[k++] = a[i++];
      else
         b[k++] = a[j++];
   }

   // Copy remaining elements
   while(i <= mid)
```

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        b[k++] = a[i++];

    while(j <= last)
        b[k++] = a[j++];

    // Copy sorted data back into original array
    for(i = first, j = 0; i <= last; i++, j++)
        a[i] = b[j];
}
```

OUTPUT

```
Enter the size of array: 5
Enter the elements: 4
7
3
8
2
Sorted elements are: 2 3 4 7 8
```