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include <stdio.h>

// lets take a[5] = {32, 45, 67, 2, 7} as the
array to be sorted.

// merge sort function
void mergeSort(int a[], int p, int r)
{
   int q;
   if(p < r)
   {
      q = (p + r) / 2;
      mergeSort(a, p, q);
      mergeSort(a, q+1, r);
      merge(a, p, q, r);
   }
}

// function to merge the subarrays
void merge(int a[], int p, int q, int r)
{
   int b[5];  //same size of a[]
   int i, j, k;
   k = 0;
   i = p;
   j = q + 1;
   while(i <= q && j <= r)
   {
      if(a[i] < a[j])
      {
         b[k++] = a[i++];   // same as
b[k]=a[i]; k++; i++;
      }
```

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        else
        {
            b[k++] = a[ j++];
        }
    }

    while(i <= q)
    {
        b[k++] = a[i++];
    }

    while( j <= r)
    {
        b[k++] = a[ j++];
    }

    for(i=r; i >= p; i--)
    {
        a[i ] = b[--k];  // copying back the
sorted list to a[]
    }
}

// function to print the array
void printArray(int a[], int size)
{
    int i;
    for (i=0; i < size; i++)
    {
        printf("%d ", a[i ]);
    }
    printf("\n");
}
```

```
int main()
{
    int arr[] = {32, 45, 67, 2, 7};
    int len = sizeof(arr)/sizeof(arr[0]);

    printf("Given array: \n");
    printArray(arr, len);

    // calling merge sort
    mergeSort(arr, 0, len - 1);

    printf("\nSorted array: \n");
    printArray(arr, len);
    return 0;
}
```

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