

```
#include <stdio.h>
```

```
void merge(int arr[], int start, int mid, int end)
```

```
{
```

```
int i,j,k;
```

```
int len1 = mid - start + 1;
```

```
int len2 = end - mid;
```

```
int leftArr[len1], rightArr[len2];
```

```
for ( i = 0; i < len1; i++)
```

```
leftArr[i] = arr[start + i];
```

```
for (j = 0; j < len2; j++)
```

```
rightArr[j] = arr[mid + 1 + j];
```

```
i = 0;
```

```
j = 0;
```

```
k = start;
```

```
while (i < len1 && j < len2)
```

```
{
```

```
if (leftArr[i] <= rightArr[j])
```

```
{
```

```
arr[k] = leftArr[i];
```

```
i++;
```

```
}
```

```
else
```

```
{
```

```
arr[k] = rightArr[j];
```

```
j++;
```

```
}
```

```
k++;
```

```
}
```

```
while (i < len1) {
```

```
arr[k] = leftArr[i];
```

```
i++;
```

```
k++;
```

```
}
```

```
while (j < len2) {
```

```
arr[k] = rightArr[j];
```

```
j++;
```

```
k++;
```

```
}
```

```
}
```

```
void mergeSort(int arr[], int start, int end) {
```

```
if (start < end) {
```

```
int mid = start + (end - start) / 2;
```

```
mergeSort(arr, start, mid);
```

```
mergeSort(arr, mid + 1, end);
```

```
merge(arr, start, mid, end);
```

```
}
```

```
}
```

```
void display(int arr[], int size)

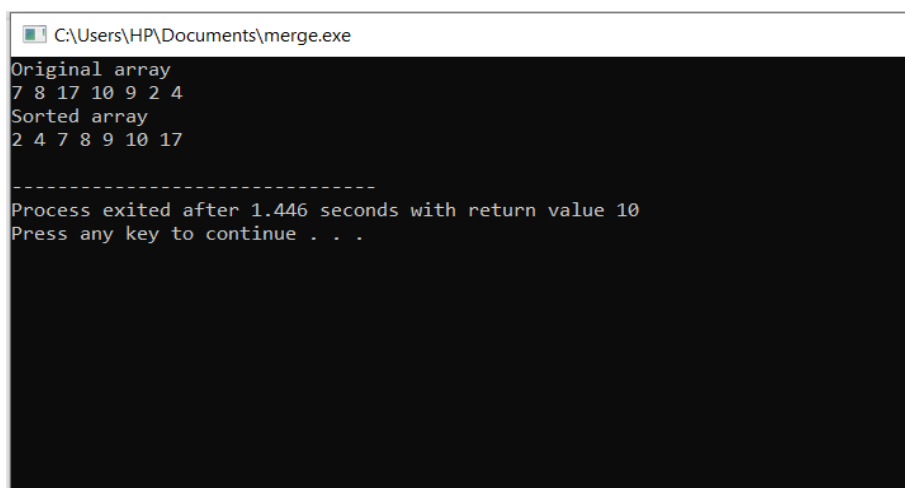
{

int i;

for (i = 0; i < size; i++)

printf("%d ", arr[i]);
printf("\n");
}

int main() {
int arr[] = {7, 8, 17, 10, 9, 2 , 4};
int size = sizeof(arr) / sizeof(arr[0]);
printf("Original array\n");
display(arr, size);
mergeSort(arr, 0, size - 1);
printf("Sorted array\n");
display(arr, size);
}
```



The screenshot shows a Windows command prompt window titled "C:\Users\HP\Documents\merge.exe". The output of the program is displayed as follows:

```
Original array
7 8 17 10 9 2 4
Sorted array
2 4 7 8 9 10 17

-----
Process exited after 1.446 seconds with return value 10
Press any key to continue . . .
```