

```
/*merge sort*/
```

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

```
void merge_sort(int arr[], int low, int high);
```

```
void merge(int arr[], int low, int mid, int high);
```

```
int main() {
```

```
    int n, i;
```

```
    printf("Enter the array size: ");
```

```
    scanf("%d", &n);
```

```
    int arr[n];
```

```
    printf("Enter the array elements:\n");
```

```
    for (i = 0; i < n; i++) {
```

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

```
    }
```

```
    merge_sort(arr, 0, n - 1);
```

```
    printf("\nAfter sorting the array: ");
```

```
    for (i = 0; i < n; i++) {
```

```
        printf("%d ", arr[i]);
```

```
    }
```

```
    return 0;
```

```
}
```

```
void merge_sort(int arr[], int low, int high) {
```

```
    if (low < high) {
```

```
        int mid = (low + high) / 2;
```

```
        merge_sort(arr, low, mid);
```

```
        merge_sort(arr, mid + 1, high);
```

```
        merge(arr, low, mid, high);
```

```
    }
```

```
}
```

```
void merge(int arr[], int low, int mid, int high) {
```

```
    int i, j, k, n1, n2;
```

```
    n1 = mid - low + 1;
```

```
    n2 = high - mid;
```

```
    int l1[n1], l2[n2];
```

```
    for (i = 0; i < n1; i++) {
```

```
        l1[i] = arr[low + i];
```

```
    }
```

```
    for (j = 0; j < n2; j++) {
```

```
        l2[j] = arr[mid + 1 + j];
```

```
    }
```

```
    i = j = 0;
```

```
    k = low;
```

```
    while (i < n1 && j < n2) {
```

```
        if (l1[i] <= l2[j]) {
```

```
            arr[k] = l1[i];
```

```
            i++;
```

```
        } else {
```

```
            arr[k] = l2[j];
```

```
            j++;
```

```
        }
```

```
        k++;
```

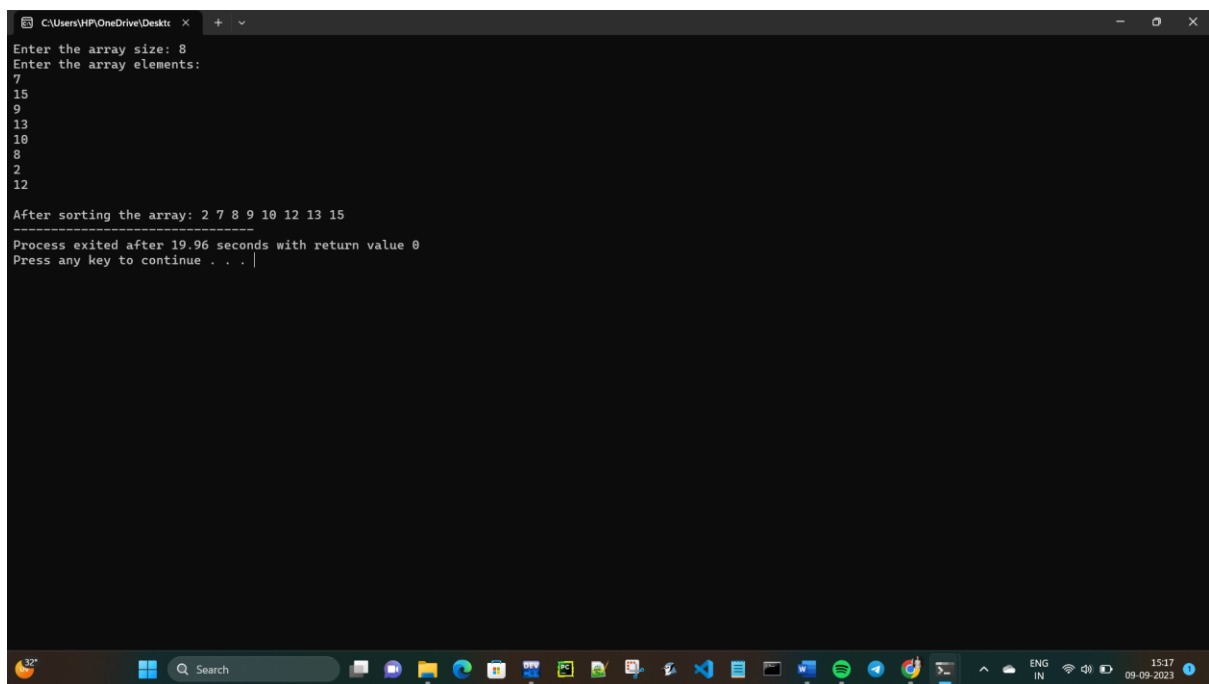
```
    }
```

```
    while (i < n1) {
```

```
        arr[k] = l1[i];
```

```
        i++;
```

```
        k++;  
    }  
  
    while (j < n2) {  
        arr[k] = l2[j];  
        j++;  
        k++;  
    }  
}
```



The screenshot shows a Windows command prompt window with the following text:

```
C:\Users\HP\OneDrive\Desktop > Enter the array size: 8  
Enter the array elements:  
7  
15  
9  
13  
10  
8  
2  
12  
  
After sorting the array: 2 7 8 9 10 12 13 15  
-----  
Process exited after 19.96 seconds with return value 0  
Press any key to continue . . .
```

The window title bar shows the path "C:\Users\HP\OneDrive\Desktop". The taskbar at the bottom displays the Windows logo, a search bar, and various application icons. The system tray on the right shows the date and time as "15:17 09-09-2023".