

```
/*heap sort(descending)*/
```

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

```
int n = 0;
```

```
void heap_sort(int arr[]);
```

```
void create_max_heap(int arr[]);
```

```
void max_heapify(int arr[], int n, int i);
```

```
int main() {
```

```
    int i, arr[20];
```

```
    printf("Enter the array size (the array is an array representation of a heap): ");
```

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

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

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

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

```
    }
```

```
    printf("The array (heap) is: ");
```

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

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

```
    }
```

```
    printf("\n");
```

```
    heap_sort(arr);
```

```
    printf("After heap sort, the sorted array is: ");
```

```
    for (i = n-1; i >= 0; i--) { //creating min heap and printing it
```

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

```
    }
```

```
    printf("\n");
```

```
    return 0;
```

```
}
```

```

void heap_sort(int arr[]) {
    create_max_heap(arr);
    for (int i = n - 1; i >= 1; i--) {
        int max = arr[0];
        arr[0] = arr[i];
        arr[i] = max;
        max_heapify(arr, i, 0);
    }
}

```

```

void create_max_heap(int arr[]) {
    int last_non_leaf = (n - 1) / 2;
    for (int i = last_non_leaf; i >= 0; i--) {
        max_heapify(arr, n, i);
    }
}

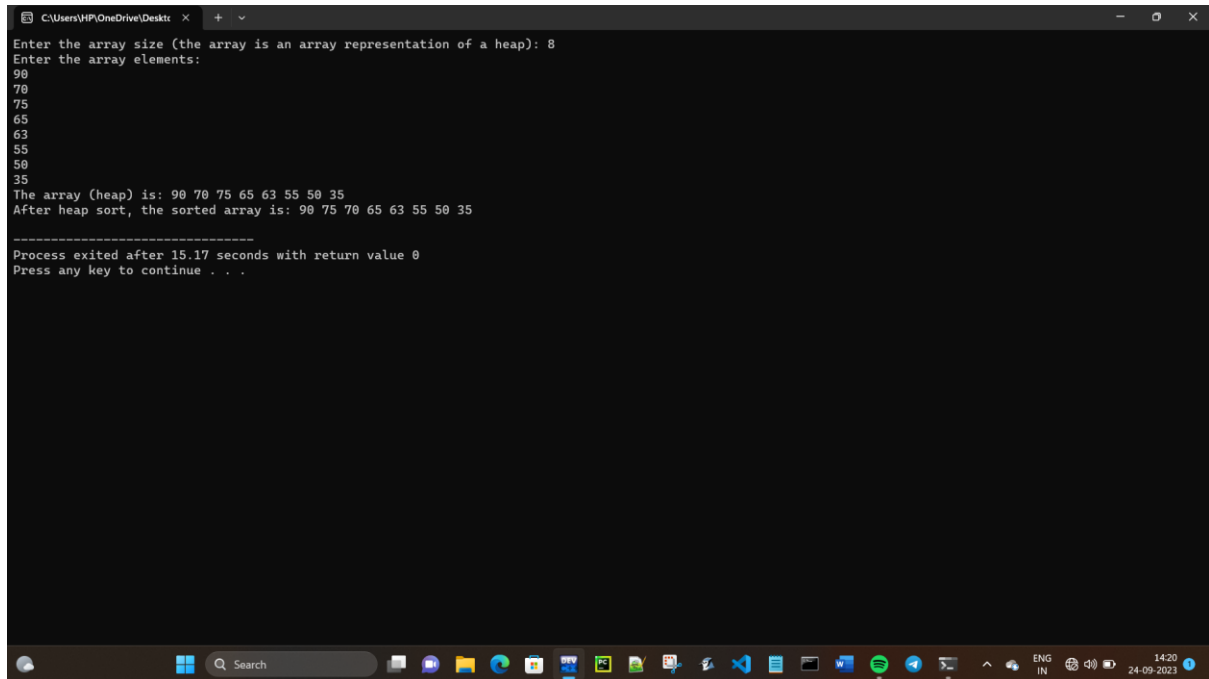
```

```

void max_heapify(int arr[], int n, int i) {
    int lc, rc, largest;
    lc = 2 * i + 1;
    rc = 2 * i + 2;
    if (lc < n && arr[lc] > arr[i]) {
        largest = lc;
    } else {
        largest = i;
    }
    if (rc < n && arr[rc] > arr[largest]) {
        largest = rc;
    }
    if (largest != i) {
        int temp = arr[i];

```

```
    arr[i] = arr[largest];  
    arr[largest] = temp;  
    max_heapify(arr, n, largest);  
}  
}
```



A screenshot of a Windows command prompt window. The title bar shows the file path "C:\Users\HP\OneDrive\Desktop". The window contains the following text:

```
Enter the array size (the array is an array representation of a heap): 8  
Enter the array elements:  
90  
70  
75  
65  
63  
55  
50  
35  
The array (heap) is: 90 70 75 65 63 55 50 35  
After heap sort, the sorted array is: 90 75 70 65 63 55 50 35  
-----  
Process exited after 15.17 seconds with return value 0  
Press any key to continue . . .
```

The Windows taskbar is visible at the bottom, showing the Start button, a search bar, and several application icons. The system tray on the right shows the language "ENG IN", the date "24-09-2023", and the time "14:20".