```c
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

void swap(int *a, int *b) {
    int temp = *a;
    *a = *b;
    *b = temp;
}

void heapify(int arr[], int n, int i) {

    int largest = i;
    int left = 2 * i + 1;
    int right = 2 * i + 2;

    if (left < n && arr[left] > arr[largest])
        largest = left;

    if (right < n && arr[right] > arr[largest])
        largest = right;

    if (largest != i) {
        swap(&arr[i], &arr[largest]);
        heapify(arr, n, largest);
    }
}
```

```c
28      }
29
30
31    void heapSort(int arr[], int n) {
32
33        for (int i = n / 2 - 1; i >= 0; i--)
34            heapify(arr, n, i);
35
36
37        for (int i = n - 1; i >= 0; i--) {
38            swap(&arr[0], &arr[i]);
39
40
41            heapify(arr, i, 0);
42        }
43    }
44
45
46    void printArray(int arr[], int n) {
47        for (int i = 0; i < n; ++i)
48            printf("%d ", arr[i]);
49        printf("\n");
50    }
51
52
53    int main() {
54        int n=10, i, j, temp,c;
55        int arr[10];
```

```c
void printArray(int arr[], int n) {
    for (int i = 0; i < n; ++i)
        printf("%d ", arr[i]);
    printf("\n");
}


int main() {
    int n=10, i, j, temp,c;
    int arr[10];
    printf("Genrating random nos.:\n");
    srand(time(0));
    for (c = 0; c < n; c++){
        arr[c]=rand()%100 +1;
        printf("%d\t\n",arr[c]);
    }
    clock_t begin = clock();

    heapSort(arr, n);

    printf("Sorted array is \t");
    printArray(arr, n);
    clock_t end = clock();
    double time_spent = (double)(end - begin) / CLOCKS_PER_SEC;
    printf("\n\nEXECUTION TIME : %.10fseconds\n", time_spent);
}
```

```
void printArray(int arr[], int n) {
47    for (int i = 0; i < n; ++i)
```

Genrating random nos.:
39
72
41
58
50
13
77
66
59
30
Sorted array is   13 30 39 41 50 58 59 66 72 77

EXECUTION TIME : 0.0000140000seconds

...Program finished with exit code 0
Press ENTER to exit console.[]