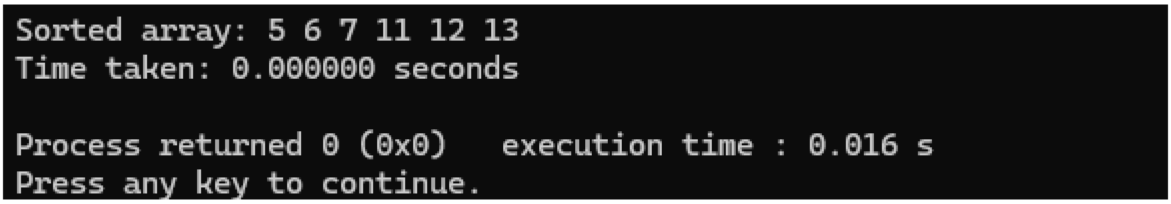
Heap Sort + Time Calculation

```
#include <stdio.h>

#include <stdlib.h>

#include <time.h>


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

    int largest = i;

    int l = 2*i + 1;

    int r = 2*i + 2;


    if (l < n && arr[l] > arr[largest])

        largest = l;

    if (r < n && arr[r] > arr[largest])

        largest = r;


    if (largest != i) {

        int temp = arr[i];

        arr[i] = arr[largest];

        arr[largest] = temp;


        heapify(arr, n, largest);

    }

}


void heapSort(int arr[], int n) {

    for (int i = n / 2 - 1; i >= 0; i--)

        heapify(arr, n, i);


    for (int i = n - 1; i >= 0; i--) {
        int temp = arr[0];
        arr[0] = arr[i];
        arr[i] = temp;

        heapify(arr, i, 0);
    }
}

int main() {
    int arr[] = {12, 11, 13, 5, 6, 7};
    int n = sizeof(arr)/sizeof(arr[0]);

    clock_t start = clock();
    heapSort(arr, n);
    clock_t end = clock();

    printf("Sorted array: ");
    for (int i = 0; i < n; i++)
        printf("%d ", arr[i]);
    printf("\n");

    double time_taken = ((double)(end - start)) / CLOCKS_PER_SEC;
    printf("Time taken: %f seconds\n", time_taken);
    return 0;
}
```

OUTPUT:



```
Sorted array: 5 6 7 11 12 13
Time taken: 0.000000 seconds

Process returned 0 (0x0)   execution time : 0.016 s
Press any key to continue.
```