19.heap sort :-

```
#include <stdio.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);
	}
}
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--) {

		swap(&arr[0], &arr[i]);

		heapify(arr, i, 0);
```

```
        }
}
void printArray(int arr[], int N)
{
        for (int i = 0; i < N; i++)
                printf("%d ", arr[i]);
        printf("\n");
}
int main()
{
        int arr[] = { 12, 11, 13, 5, 6, 7 };
        int N = sizeof(arr) / sizeof(arr[0]);

        heapSort(arr, N);
        printf("Sorted array is\n");
        printArray(arr, N);
}
```