

//QUESTION 01: implement heap sort algorithm

```
#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);
    }
}

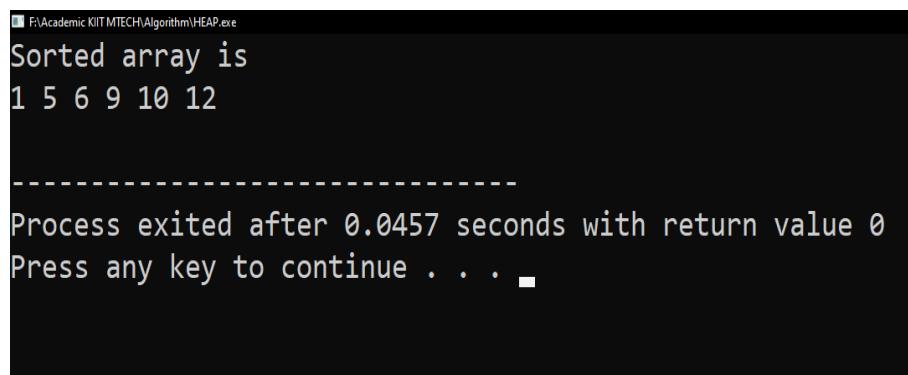
void heapSort(int arr[], int n) {
    for (int i = n / 2 - 1; i >= 0; i--)
        heapify(arr, n, i);
    for (int i = n - 1; i >= 0; i--) {
        swap(&arr[0], &arr[i]);
        heapify(arr, i, 0);
    }
}
```

```
    }
}

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

int main() {
    int arr[] = {1, 12, 9, 5, 6, 10};
    int n = sizeof(arr) / sizeof(arr[0]);
    heapSort(arr, n);
    printf("Sorted array is \n");
    printArray(arr, n);
}
```

OUTPUT:



```
F:\Academic KIT MTECH\Algorithm\HEAP.exe
Sorted array is
1 5 6 9 10 12
-----
Process exited after 0.0457 seconds with return value 0
Press any key to continue . . .
```