5/7/21 ADA Lab Test

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Write a heap sort program in C

```
#include <stdio.h>

void heapify(int arr[], int n, int i)
{
    int s, l, r;
    s = i;
    l = 2*i + 1;
    r = 2*i + 2;
    if (l < n && arr[l] < arr[s])
        s = l;
    if (r < n && a[r] < a[s])
        s = r;
    if (s != i)
    {
        temp = arr[i];
        arr[i] = arr[s];
        arr[s] = temp;
        heapify(arr, n, s);
    }
}

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--)
    {
        temp = arr[0];
        arr[0] = arr[i];
        arr[i] = temp;
        heapify(arr, i, 0);
    }
}
```

```
void printarray(int arr[], int n)
{
    for (int i=0; i<n; i++)
    {
        printf("%d ", arr[i]);
    }
}
void main()
{
    clock_t start, end;
    int n, i, *arr[6000];
    printf("Enter no of elements");
    scanf("%d", &n);
    printf("Enter elements:");
    for(int i=0; i<n; i++)
    {
        scanf("%d", &arr[i]);
    }
    start = clock();
    heapsort(arr, n);
    end = clock();
    t = ((double)(end - start)) / CLOCKS_PER_SEC;
    printf("\n The time taken for computing is %f", t);
    printf("\n The sorted array is:");
    printarray(arr, n);
}
```