1.HEAP SORT

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#include <stdio.h>

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) {
      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 n;

    printf("Enter the number of elements: ");
    scanf("%d", &n);

    int arr[n];

    printf("Enter the elements:\n");
    for (int i = 0; i < n; i++)
        scanf("%d", &arr[i]);

    heapSort(arr, n);

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

    return 0;
}
```