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#include <stdio.h>

void heapify(int a[], int n, int i) {
    int largest = i;
    int l = 2 * i + 1;
    int r = 2 * i + 2;
    int temp;

    if (l < n && a[l] > a[largest])
        largest = l;
    if (r < n && a[r] > a[largest])
        largest = r;

    if (largest != i) {
        temp = a[i];
        a[i] = a[largest];
        a[largest] = temp;
        heapify(a, n, largest);
    }
}

void heapSort(int a[], int n) {
    int i, temp;
    for (i = n / 2 - 1; i >= 0; i--)
        heapify(a, n, i);

    for (i = n - 1; i > 0; i--) {
        temp = a[0];
        a[0] = a[i];
        a[i] = temp;
        heapify(a, i, 0);
    }
}

int main() {
    int a[100], n, i;
    printf("Enter number of elements: ");
    scanf("%d", &n);

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

    heapSort(a, n);

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

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return 0;  
}
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