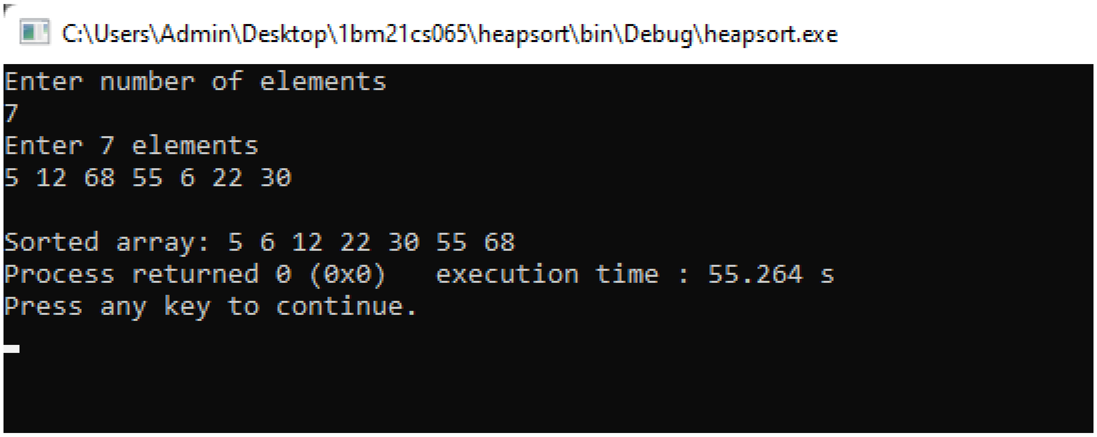
WEEK 10

Sort a given set of N integer elements using Heap Sort technique.

CODE:

```
#include <stdio.h>

void heapify(int arr[], int n, int i) {
    int largest = i, left = 2 * i + 1, 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 arr[10], n, i;
    printf("Enter number of elements \n");
    scanf("%d", &n);
    printf("Enter %d elements \n", n);
    for (i = 0; i < n; i++)
        scanf("%d", &arr[i]);
    heapsort(arr, n);

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

    return 0;
}
```

OUTPUT:



C:\Users\Admin\Desktop\1bm21cs065\heapsort\bin\Debug\heapsort.exe

```
Enter number of elements
7
Enter 7 elements
5 12 68 55 6 22 30

Sorted array: 5 6 12 22 30 55 68
Process returned 0 (0x0)   execution time : 55.264 s
Press any key to continue.
```