**ASSIGNMENT NO – 10**

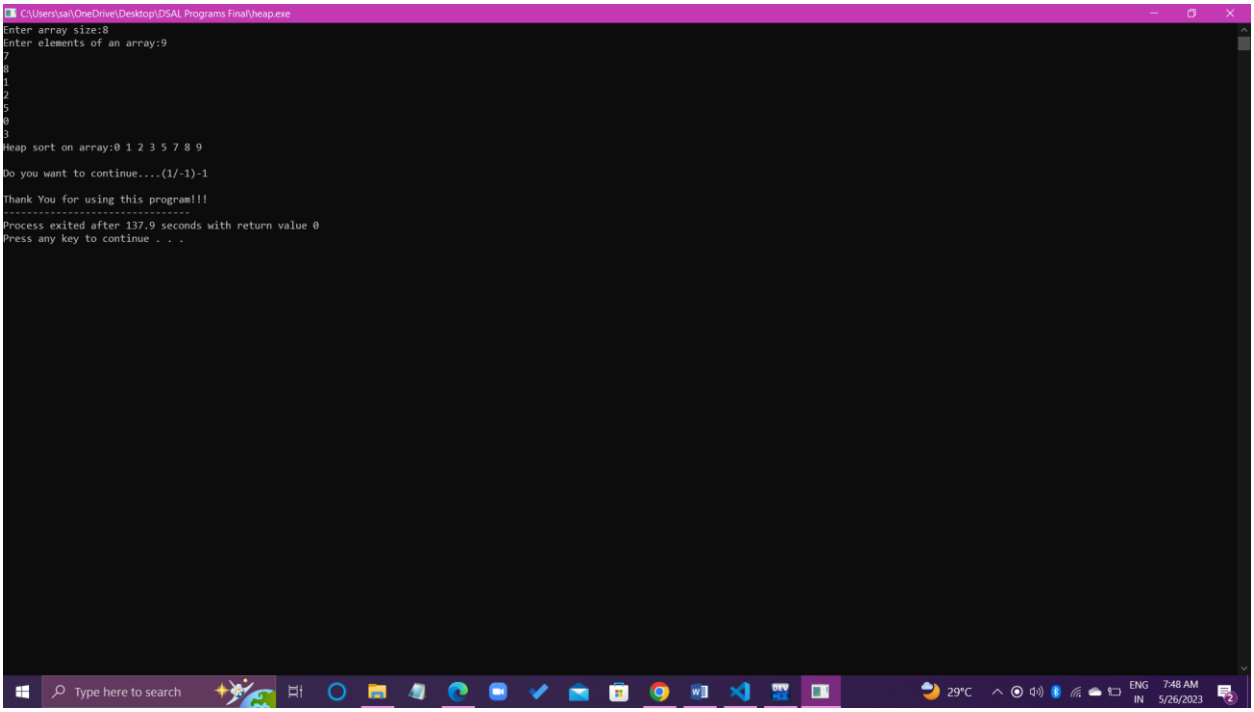
Implement the Heap sort algorithm demonstrating heap/shell data structure with modularity of programming language.

```
#include<iostream>
using namespace std;

void heapify(int arr[],int n,int i)
{
    int largest=i;
    int l=2*i+1;
    int r=2*i+2;
    if(l<n && arr[l]>arr[largest])
    {
        largest=l;
    }
    if(r<n && arr[r]>arr[largest])
    {
        largest=r;
    }
    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++)
    {
        cout<<arr[i]<<" ";
    }
    cout<<endl;
```

```
}


int main()
{
    int n;
    int ch;
    do
    {
        cout<<"Enter array size:";
        cin>>n;
        int arr[n];
        cout<<"Enter elements of an array:";
        for(int i=0;i<n;i++)
        {
            cin>>arr[i];
        }
        cout<<"Heap sort on array:";
        heapSort(arr,n);
        printArray(arr,n);
        cout<<"\nDo you want to continue....(1/-1)";
        cin>>ch;
    }while(ch!=-1);
    cout<<"\nThank You for using this program!!!";
    return 0;
}
```


C:\Users\sai\OneDrive\Desktop\DSAL Programs Final\heap.exe
Enter array size:8
Enter elements of an array:9
7
8
1
2
5
0
3
Heap sort on array:0 1 2 3 5 7 8 9
Do you want to continue....(1/-1)-1
Thank You for using this program!!!
Process exited after 137.9 seconds with return value 0
Press any key to continue . . .
Type here to search
29°C
ENG
IN
7:48 AM
5/26/2023