

Open Ended Lab

BS-AI(22) | F22607017

LAB Task

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**Lab Tasks:**

**Task 1:**

**Q. Write a C++ program for Heap sort?**

**CODE:**

#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 ArrayPrint(int arr[], int size){

for (int i = 0; i < size; i++)

cout << arr[i] << " ";

cout << endl;

}

int main() {

const int size = 5;

int arr[size];

cout << "Enter " << size << " Floating point numbers :" << endl;

for (int i = 0; i < size; i++)

cin >> arr[i];

int N = sizeof(arr) / sizeof(arr[0]);

heapSort(arr, N);

cout << "Sorted array is \n";

ArrayPrint(arr, N);

cout << "Sorted Array after Heap sort is : ";

ArrayPrint(arr, size);

return 0;

}

OUTPUT:

A screenshot of a computer

Description automatically generated