**Task # 1:** Write a program to implement concept of Heap Sort

**Solution**

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace Lab11\_AVL

{

class HeapSort

{

public static void Sort(int[] array)

{

int heapSize = array.Length;

// Build the heap

for (int i = heapSize / 2 - 1; i >= 0; i--)

{

Heapify(array, heapSize, i);

}

for (int i = heapSize - 1; i >= 0; i--)

{

int temp = array[0];

array[0] = array[i];

array[i] = temp;

Heapify(array, i, 0);

}

}

private static void Heapify(int[] array, int heapSize, int index)

{

int largest = index;

int left = 2 \* index + 1;

int right = 2 \* index + 2;

if (left < heapSize && array[left] > array[largest])

{

largest = left;

}

if (right < heapSize && array[right] > array[largest])

{

largest = right;

}

if (largest != index)

{

int temp = array[index];

array[index] = array[largest];

array[largest] = temp;

Heapify(array, heapSize, largest);

}

}

static void Main(string[] args)

{

int[] array = { 3, 5, 1, 2, 4 };

Console.Write("\n Unsorted : ");

for (int i = 0; i < array.Length; i++)

{

Console.Write(array[i]+", ");

}

HeapSort.Sort(array);

Console.Write("\n Sorted : ");

Console.Write(string.Join(", ", array)); // 1, 2, 3, 4, 5

Console.ReadLine();

}

}

}

**Output**

**A picture containing text

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