LAB#28

Example#1:

Write a code to sort an unsorted array listed below through a heap sort algorithm:

Solution:

```python
def heapify(arr, n, i):
    largest = i
    left = 2 * i + 1
    right = 2 * i + 2

    if left < n and arr[i] < arr[left]:
        largest = left

    if right < n and arr[largest] < arr[right]:
        largest = right

    if largest != i:
        arr[i], arr[largest] = arr[largest], arr[i]


        heapify(arr, n, largest)

def heap_sort(arr):
    n = len(arr)

```

```
    for i in range(n // 2 - 1, -1, -1):
        heapify(arr, n, i)

    for i in range(n - 1, 0, -1):
        arr[i], arr[0] = arr[0], arr[i]
        heapify(arr, i, 0)

arr = [15,5,20,1,17,10,30]
heap_sort(arr)
print("Sorted array:", arr)

```

Result:

```
Sorted array: [1, 5, 10, 15, 17, 20, 30]
```

Class Assignment

Q.1: Perform a detail dry run of the above code(LAB#28 Q.1) with a visual explanation for each step.