**Assignment No:-**

**Assignment Name:-**

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**Roll No:-04**

//HeapSort in Descending Order

#include <iostream.h>

#include <conio.h>

class HEAPSORT

{

private:

int\*A,n;

public:

HEAPSORT(int size);

void READ();

void ADJUST(int node, int n);

void HEAPIFY();

void DISPLAY();

void HSORT();

};

HEAPSORT :: HEAPSORT(int size)

{

n = size;

A= new int[n+1];

}

void HEAPSORT :: READ()

{

for(int i=1; i<=n; i++)

{

cin>>A[i];

}

}

void HEAPSORT :: ADJUST(int node, int n)

{

int j, item;

j = 2\*node;

item = A[node];

while(j<=n)

{

if(j < n && A[j] > A[j+1])

{

j = j + 1;

}

if(item < A[j])

break;

else

A[j/2] = A[j];

j = 2\*j;

}

A[j/2] = item;

}

void HEAPSORT :: HEAPIFY()

{

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

{

ADJUST(i,n);

}

}

void HEAPSORT :: HSORT()

{

for(int i = n; i>=2; i--)

{

int temp = A[1];

A[1] = A[i];

A[i] = temp;

ADJUST(1,i-1);

}

}

void HEAPSORT :: DISPLAY()

{

for(int i=1; i<=n; i++)

{

cout<<A[i]<<" ";

}

}

void main()

{

clrscr();

int size;

cout<<"Enter the size of list: ";

cin>>size;

HEAPSORT obj(size);

obj.READ();

obj.HEAPIFY();

obj.HSORT();

cout<<"\n\nElements after HEAPSORT: ";

obj.DISPLAY();

getch();

}