program-10

#include<stdio.h>

#include<stdlib.h>

#include<time.h>

int temp;

void heapify(int arr[], int size, int i)

{

int largest = i;

int left = 2\*i + 1;

int right = 2\*i + 2;

if (left < size && arr[left] >arr[largest])

largest = left;

if (right < size && arr[right] > arr[largest])

largest = right;

if (largest != i)

{

temp = arr[i];

arr[i]= arr[largest];

arr[largest] = temp;

heapify(arr, size, largest);

}

}

void heapSort(int arr[], int size)

{

int i;

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

heapify(arr, size, i);

for (i=size-1; i>=0; i--)

{

temp = arr[0];

arr[0]= arr[i];

arr[i] = temp;

heapify(arr, i, 0);

}

}

void main()

{

int arr[20];

int i;

int size;

clock\_t start,end;

double taken\_time;

printf("Enter the array size\n");

scanf("%d",&size);

printf("Enter the array elements\n");

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

scanf("%d",&arr[i]);

start=clock();

heapSort(arr,size);

end=clock();

taken\_time=((double)(end-start)) / CLOCKS\_PER\_SEC;

printf("printing sorted elements\n");

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

printf("%d\n",arr[i]);

printf("\nTime taken to sort:%lf\n",time);

}

output:

[shilpa@shilpa-linux ~]$ cd Desktop

[shilpa@shilpa-linux Desktop]$ cd ADA\_LAB-PROG-main

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ gcc -o heapsort heapsort.c

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ ./heapsort

Enter the array size

5

Enter the array elements

12 9 6 10 5

printing sorted elements

5

6

9

10

12

Time taken to sort:0.000000