test1.c

```c
#include<stdio.h>
#include<stdlib.h>
#include<conio.h>
#include<time.h>

clock_t start,end;
double cpu_time;

void heapadj(int a[], int n)
{
    int i,j,item;
    j=0;
    item=a[j];
    i=2*j+1;
    while(i<=n-1)
    {
        if(i+1<=n-1)
        {
            if(a[i]>a[i+1])
            {
            i++;
            }
        }
        if(item>a[i])
        {
            a[j]=a[i];
            j=i;
            i=2*j+1;
        }
        else
        {
            break;
        }
    }
    a[j]=item;
}

void heapcons(int a[], int n)
```

test1.c

```c
void heapcons(int a[], int n)
{
    int i,j,k,item;
    for(k=1;k<n;k++)
    {
        item=a[k];
        i=k;
        j=(i-1)/2;
        while(i>0 && item<a[j])
        {
            a[i]=a[j];
            i=j;
            j=(i-1)/2;
        }
        a[i]=item;
    }
}

int heapsort(int a[], int n)
{
    int i,temp;
    heapcons(a,n);
    for(i=n-1;i>0;i--)
    {
        temp=a[0];
        a[0]=a[i];
        a[i]=temp;
        heapadj(a,i);
    }
}

int main()
{
    int n,i,a[10000];
    srand(time(0));
    printf("enter number of elements:\n");
```

test1.c

test1.c

```c
        a[0]=a[i];
        a[i]=temp;
        heapadj(a,i);
    }
}

int main()
{
    int n,i,a[10000];
    srand(time(0));
    printf("enter number of elements:\n");
    scanf("%d", &n);
    printf("Array elements:\n");
    for(i=0;i<n;i++)
    {
       a[i]=rand()%100;
       printf("%d ",a[i]);
    }
    start= clock();
    heapsort(a,n);
    printf("\nsorted array:\n");
    for(i=0;i<n;i++)
    {
       printf("%d ",a[i]);
    }
    end = clock();
    cpu_time = (double)(end - start) / CLOCKS_PER_SEC;
    printf("\nExecution time for Heap sort = %f ms\n", cpu_time*1000);
    getch();
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 1: gcc

```
PS C:\Users\muska\OneDrive\Desktop\C programs> gcc test1.c
PS C:\Users\muska\OneDrive\Desktop\C programs> .\a.exe
enter number of elements:
50
Array elements:
58 67 76 89 28 8 91 87 84 17 67 45 66 19 7 65 41 30 20 23 93 46 85 82 19 20 30 94 60 95 86 39 81 32 57 49 79 64 81 70 67 33 73 88 43 88 6 99 8 9
sorted array:
99 95 94 93 91 89 88 88 87 86 85 84 82 81 81 79 76 73 70 67 67 67 66 65 64 60 58 57 49 46 45 43 41 39 33 32 30 30 28 23 20 20 19 19 17 9 8 8 7 6
Execution time for Heap sort = 6.000000 ms
PS C:\Users\muska\OneDrive\Desktop\C programs> gcc test1.c
PS C:\Users\muska\OneDrive\Desktop\C programs> .\a.exe
enter number of elements:
50
Array elements:
49 3 55 36 21 39 87 3 24 95 4 65 78 82 29 59 46 75 14 66 65 93 17 89 32 11 47 69 98 58 26 33 27 40 70 80 0 75 98 76 60 15 12 48 55 20 91 48 21 95
sorted array:
98 98 95 95 93 91 89 87 82 80 78 76 75 75 70 69 66 65 65 60 59 58 55 55 49 48 48 47 46 40 39 36 33 32 29 27 26 24 21 21 20 17 15 14 12 11 4 3 3 0
Execution time for Heap sort = 7.000000 ms
```