**1.INSERTION SORT**

#include<iostream>

#include<cstdlib>

#include <cmath>

#include <fstream>

using namespace std;

int no\_comp=0;

int\* getRandomEveryTime(int range,int s){ //gives the sizes of array

int \*arr=new int[s];

int flag=0;

for(int i=0;i<s;){

flag=0;

int x=rand()% range+30;

for(int j=0;j<i;j++){

if(arr[j]==x){

flag=1;

break;

}

}

if(flag==0){

arr[i]=x;

i++;

}

}

return arr;

}

int \*getRandom(int range,int s){ //gives the sizes of array

int \*arr=new int[s];

for(int i=0;i<s ;i++){

arr[i]=rand()% range+30;

}

return arr;

}

void print\_arr(int \*arr,int s){

for(int i=0;i<s ;i++){

cout<<arr[s]<<",";

}

}

void insertionSort(int \*arr,int n){

no\_comp =0;

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

int curr=arr[i];

int j=i-1;

while( ++no\_comp && j>=0 && arr[j]>curr){

arr[j+1]=arr[j];

j--;

}

arr[j+1]=curr;

}

}

int main(){

ofstream nlogn("nlognNew.txt");

ofstream nsq("nsqNew.txt");

ofstream nsize("nNew.txt");

ofstream comp("compNew.txt");

int s =100; // 100 different sizes of inputs

int \*arr=getRandomEveryTime(970,s); // 30 - 1000

for(int i=0 ;i<s;i++){

int siz = arr[i];

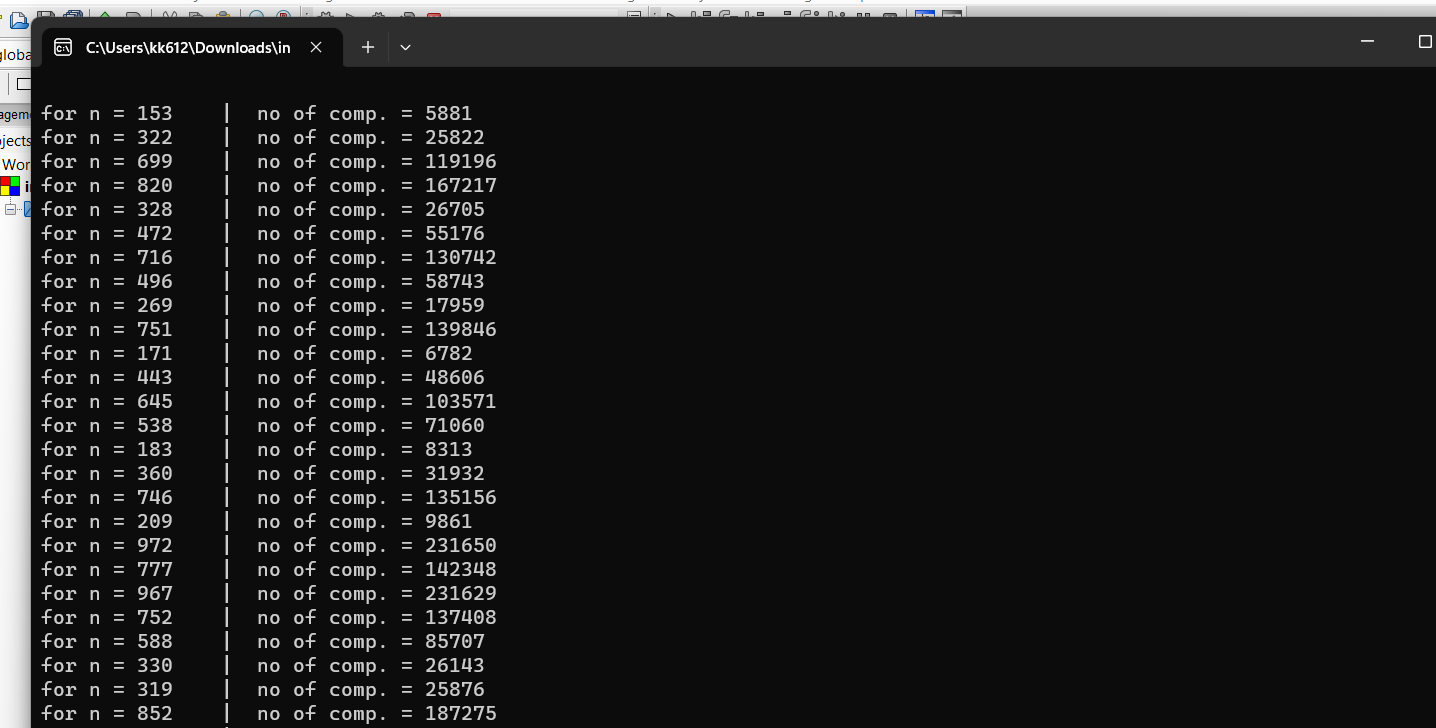
int \*arrx = getRandom(100,siz);

insertionSort(arrx,siz);

double n = siz;

cout<<"for n = "<<siz<<" | no of comp. = "<<no\_comp<<endl;

}

}