Stephanie Marin Velasquez Spring 2016

Professor: Humei Huo

Lab Assigment 2 RECURSION

1. Compute the exponent of a number

#include <iostream>

#include<cmath>

using namespace std;

int cnt=0;

double expo(double bas, int pow)

{

if(pow==0)

{

return 1;

}

cnt++;

return bas \*expo(bas, pow-1);

}

int main()

{

double base;

int exp;

cout<< "Input the base: ";

cin>> base;

cout<< "Input the exponent: ";

cin>>exp;

cout<< "The total is "<< expo(base, exp)<<endl;

cout<< "Excecuted "<< cnt <<" Times";

return 0;

}

1. Insertion Sorting

#include<iostream>

using namespace std;

void InsertionSort( int n, int a[])

{

int temp, j;

if (n>1)

{

InsertionSort((n-1), a);

}

j=n-1;

while(j>=0 && a[j]< a[j-1])

{

temp = a[j];

a[j]=a[j-1];

a[j-1]=temp;

j--;

}

}

int main(){

int a[8], n;

cout<<"enter the number of digits: ";

cin>>n;

int \*pa= new int [n];

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

cin>> a[i];

pa[i]=a[i];

}

cout<< "Before: ";

for(int i=0; i<n; i++)

cout<< a[i]<< " ";

///call sorting function

InsertionSort(n,pa);

////// output the sorted numbers

cout<< "\n \nAfter: ";

for(int i=0; i<n; i++)

cout<< pa[i]<< " ";

cout<<endl;

}

1. Tower of Hanoi

#include<iostream>

using namespace std;

void Hanoid(int n, char source, char spare, char dest)

{

if(n>0)

{

Hanoid( n-1, source, dest, spare);

cout<<"Move disc "<<n<<" from "<< source<<" to "<<dest<<endl;

Hanoid(n-1, spare, source, dest);

}

}

int main(){

int n;

cout<<"enter the number of disks: ";

cin>>n;

cout<< "The sequence of move involved in the Tower of Hanoi are:"<<endl;

Hanoid(n, 'a','b','c');

return 0;

}