// ConsoleApplication41.cpp : Defines the entry point for the console application.

//

#include "stdafx.h"

#include <iostream>

using namespace std;

int main()

{

int n;

cout << "n=";

cin >> n;

int \*a = new int[n] ;

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

{

a[i] = rand() % 100;

}

//--------

cout << "Before:" << endl;

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

{

printf("%5d,",a[i]);

}

cout << endl;

// Вставок

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

{

int temp = a[i];

int j = i - 1;

while (j>=0 && a[j]>temp)

{

a[j + 1] = a[j];

}

a[j + 1] = temp;

}

//------------------

cout << "After:" << endl;

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

{

printf("%5d,", a[i]);

}

cout << endl;

//----------------

int elementForSearch;

cout << "Search element: ";

cin >> elementForSearch;

int elementIndex = -1;

//---- Лінійний пошук

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

{

if (a[i]==elementForSearch)

{

elementIndex = i;

break;

}

}

//---- Бінарний пошук

int startIndex = 0;

int endIndex = n - 1;

while (startIndex<=endIndex)

{

int middleIndex = (startIndex + endIndex) / 2;

if (a[middleIndex]==elementForSearch)

{

elementIndex = middleIndex;

break;

}

if (a[middleIndex]<elementForSearch)

{

startIndex = middleIndex + 1;

}

else

{

endIndex = middleIndex - 1;

}

}

if (elementIndex==-1)

{

cout << "No element" << endl;

}

else

{

printf("Index of element =%d\n", elementIndex);

}

system("pause");

return 0;

}