// sắp xếp chèn giảm:

#include <iostream>

using namespace std;

void show(int\* a, int n) {

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

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

cout << "\n";

}

void insert(int\* a, int pos, int value) {

int i = pos - 1; //chi so of thang cuoi cung da sx

while (i >= 0 && a[i] <= value) {

a[i + 1] = a[i]; //de gia tri a[i] vao vi tri a[i+1]

i--; //lui 1 chi so

}

a[i + 1] = value; //dat dung cho can dat

}

void insertSort(int\* a, int n) {

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

insert(a, i, a[i]);

}

}

void nhap(int\* &a, int &n) {

cout << "Nhap so luong pt mang: ";

cin >> n;

a = new int[n]; //cap phat mang a co n pt

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

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

cin >> a[i];

}

}

int main() {

int n, \* a;

nhap(a, n);

cout << "Mang truoc khi sx: ";

show(a, n);

insertSort(a, n);

cout << "Mang sau khi sx : ";

show(a, n);

}

Sắp xếp chèn tăng:

#include <iostream>

using namespace std;

void show(int\* a, int n) {

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

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

cout << "\n";

}

void insert(int\* a, int pos, int value) {

int i = pos - 1; //chi so of thang cuoi cung da sx

while (i >= 0 && a[i] >= value) {

a[i + 1] = a[i]; //de gia tri a[i] vao vi tri a[i+1]

i--; //lui 1 chi so

}

a[i + 1] = value; //dat dung cho can dat

}

void insertSort(int\* a, int n) {

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

insert(a, i, a[i]);

}

}

void nhap(int\* &a, int &n) {

cout << "Nhap so luong pt mang: ";

cin >> n;

a = new int[n]; //cap phat mang a co n pt

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

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

cin >> a[i];

}

}

int main() {

int n, \*a;

nhap(a, n);

cout << "Mang truoc khi sx: ";

show(a, n);

insertSort(a, n);

cout << "Mang sau khi sx : ";

show(a, n);

}

Sắp xếp chọn giảm cách 1:

//sx chon giam dan

//co mang a: n phan tu ngau nhien

//chon pt min: dat vao ben phai

#include <iostream>

using namespace std;

int find\_id\_of\_min(int \* a, int n) {

int min\_id = 0;

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

if (a[i] < a[min\_id]) min\_id = i;

return min\_id;

}

void swap(int \* a, int i, int j) {

int temp = a[i];

a[i] = a[j];

a[j] = temp;

}

void show(int \* a, int n) {

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

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

cout << "\n";

}

void selectionSort(int \*a, int n){

for (int i = n - 1; i >= 0; i--) {

int id\_of\_min = find\_id\_of\_min(a, i + 1);

if (id\_of\_min != i) swap(a, i, id\_of\_min);

}

}

void nhap(int\* &a, int &n){

cout << "Nhap so luong pt mang: ";

cin >> n;

a = new int[n]; //cap phat mang a co n pt

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

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

cin >> a[i];

}

}

int main() {

int n, \*a;

nhap(a,n);

cout << "Mang truoc khi sap xep: ";

show(a, n);

selectionSort(a,n);

cout << "Mang sau khi sap xep : ";

show(a, n);

}

Sắp xếp chọn giảm cách 1:

//sx chon giam dan

//co mang a: n phan tu ngau nhien

//chon pt max: dat vao ben trai

#include <iostream>

using namespace std;

int find\_id\_of\_max(int \* a, int from, int to) {

int max\_id = from;

for (int i = from+1; i <= to; i++)

if (a[i] > a[max\_id]) max\_id = i;

return max\_id;

}

void swap(int \* a, int i, int j) {

int temp = a[i];

a[i] = a[j];

a[j] = temp;

}

void show(int \* a, int n) {

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

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

cout << "\n";

}

void selectionSort(int \*a, int n){

for (int i = 0; i < n-1; i++) {

int id\_of\_max = find\_id\_of\_max(a, i, n-1);

if (id\_of\_max != i) swap(a, i, id\_of\_max);

}

}

void nhap(int\* &a, int &n){

cout << "Nhap so luong pt mang: ";

cin >> n;

a = new int[n]; //cap phat mang a co n pt

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

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

cin >> a[i];

}

}

int main() {

int n, \*a;

nhap(a,n);

cout << "Mang truoc khi sap xep: ";

show(a, n);

selectionSort(a,n);

cout << "Mang sau khi sap xep : ";

show(a, n);

}

Sắp xếp chọn tăng cách 1:

//sx chon tang dan

//co mang a: n phan tu ngau nhien

//chon pt max: dat vao ben phai

#include <iostream>

using namespace std;

int find\_id\_of\_max(int \* a, int n) {

int max\_id = 0;

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

if (a[i] > a[max\_id]) max\_id = i;

return max\_id;

}

void swap(int \* a, int i, int j) {

int temp = a[i];

a[i] = a[j];

a[j] = temp;

}

void show(int \* a, int n) {

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

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

cout << "\n";

}

void selectionSort(int \*a, int n){

for (int i = n - 1; i >= 0; i--) {

int id\_of\_max = find\_id\_of\_max(a, i + 1);

if (id\_of\_max != i) swap(a, i, id\_of\_max);

}

}

void nhap(int\* &a, int &n){

cout << "Nhap so luong pt mang: ";

cin >> n;

a = new int[n]; //cap phat mang a co n pt

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

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

cin >> a[i];

}

}

int main() {

int n, \*a;

nhap(a,n);

cout << "Mang truoc khi sap xep: ";

show(a, n);

selectionSort(a,n);

cout << "Mang sau khi sap xep : ";

show(a, n);

}

Sắp xếp chọn tăng cách 2:

//sx chon giam dan

//co mang a: n phan tu ngau nhien

//chon pt max: dat vao ben trai

#include <iostream>

using namespace std;

int find\_id\_of\_min(int \* a, int from, int to) {

int min\_id = from;

for (int i = from+1; i <= to; i++)

if (a[i] < a[min\_id]) min\_id = i;

return min\_id;

}

void swap(int \* a, int i, int j) {

int temp = a[i];

a[i] = a[j];

a[j] = temp;

}

void show(int \* a, int n) {

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

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

cout << "\n";

}

void selectionSort(int \*a, int n){

for (int i = 0; i < n-1; i++) {

int id\_of\_min = find\_id\_of\_min(a, i, n-1);

if (id\_of\_min != i) swap(a, i, id\_of\_min);

}

}

void nhap(int\* &a, int &n){

cout << "Nhap so luong pt mang: ";

cin >> n;

a = new int[n]; //cap phat mang a co n pt

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

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

cin >> a[i];

}

}

int main() {

int n, \*a;

nhap(a,n);

cout << "Mang truoc khi sap xep: ";

show(a, n);

selectionSort(a,n);

cout << "Mang sau khi sap xep : ";

show(a, n);

}