冒泡:

#include <iostream>

using namespace std;

void bubbleSort(int arr[], int n) {

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

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

if (arr[j] > arr[j + 1]) {

swap(arr[j], arr[j + 1]);

}

}

}

}

插入:

void insertionSort(int arr[], int n) {

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

int key = arr[i];

int j = i - 1;

while (j >= 0 && arr[j] > key) {

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

j--;

}

arr[j + 1] = key;

}

}

希尔:

void shellSort(int arr[], int n) {

for (int gap = n / 2; gap > 0; gap /= 2) {

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

int temp = arr[i];

int j;

for (j = i; j >= gap && arr[j - gap] > temp; j -= gap) {

arr[j] = arr[j - gap];

}

arr[j] = temp;

}

}

}

堆:

void heapify(int arr[], int n, int i) {

int largest = i;

int left = 2 \* i + 1;

int right = 2 \* i + 2;

if (left < n && arr[left] > arr[largest])

largest = left;

if (right < n && arr[right] > arr[largest])

largest = right;

if (largest != i) {

swap(arr[i], arr[largest]);

heapify(arr, n, largest);

}

}

void heapSort(int arr[], int n) {

for (int i = n / 2 - 1; i >= 0; i--)

heapify(arr, n, i);

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

swap(arr[0], arr[i]);

heapify(arr, i, 0);

}

}

选择:

void selectionSort(int arr[], int n) {

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

int minIndex = i;

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

if (arr[j] < arr[minIndex])

minIndex = j;

}

swap(arr[minIndex], arr[i]);

}

}

归并:

void merge(int arr[], int left, int mid, int right) {

int n1 = mid - left + 1;

int n2 = right - mid;

int\* L = new int[n1];

int\* R = new int[n2];

for (int i = 0; i < n1; i++)

L[i] = arr[left + i];

for (int j = 0; j < n2; j++)

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

int i = 0, j = 0, k = left;

while (i < n1 && j < n2) {

if (L[i] <= R[j]) {

arr[k] = L[i];

i++;

} else {

arr[k] = R[j];

j++;

}

k++;

}

while (i < n1) {

arr[k] = L[i];

i++;

k++;

}

while (j < n2) {

arr[k] = R[j];

j++;

k++;

}

delete[] L;

delete[] R;

}

void mergeSort(int arr[], int left, int right) {

if (left < right) {

int mid = left + (right - left) / 2;

mergeSort(arr, left, mid);

mergeSort(arr, mid + 1, right);

merge(arr, left, mid, right);

}

}

快速:

int partition(int arr[], int low, int high) {

int pivot = arr[high];

int i = (low - 1);

for (int j = low; j < high; j++) {

if (arr[j] < pivot) {

i++;

swap(arr[i], arr[j]);

}

}

swap(arr[i + 1], arr[high]);

return (i + 1);

}

void quickSort(int arr[], int low, int high) {

if (low < high) {

int pi = partition(arr, low, high);

quickSort(arr, low, pi - 1);

quickSort(arr, pi + 1, high);

}

}

基数:

int getMax(int arr[], int n) {

int max = arr[0];

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

if (arr[i] > max)

max = arr[i];

return max;

}

void countingSort(int arr[], int n, int exp) {

int\* output = new int[n];

int count[10] = {0};

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

count[(arr[i] / exp) % 10]++;

for (int i = 1; i < 10; i++)

count[i] += count[i - 1];

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

output[count[(arr[i] / exp) % 10] - 1] = arr[i];

count[(arr[i] / exp) % 10]--;

}

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

arr[i] = output[i];

delete[] output;

}

void radixSort(int arr[], int n) {

int max = getMax(arr, n);

for (int exp = 1; max / exp > 0; exp \*= 10)

countingSort(arr, n, exp);

}