1.

```
#include<iostream>
using namespace std;
#include<vector>

class N2
{
public:
    vector<int>v;

    void pup()
    {
        int n = v.size();
        for (int i = 0; i < n; i++)
        {
            for (int j = i + 1; j < n; j++)
            {
                if (v[i] > v[j])
                {
                    swap(v[i], v[j]);
                }
            }
        }
    }
};
```

2.

```
class NlogN
{
public:
    vector<int>v;

    void merge(int *a,int low,int mid,int high)
    {
        int *b = new int[high - low + 1];
        int i = low, j = mid + 1, k = 0;
        while (i <= mid && j <= high)
        {
            if (a[i] <= a[j])
            {
                b[k++] = a[i++];
            }
            else
            {
                b[k++] = a[j++];
            }
        }
        while (i <= mid)
        {
            b[k++] = a[i++];
        }
        while (j <= high)
        {
            b[k++] = a[j++];
        }
        k = 0;
        for (int i = 0; i < high; i++)
        {
            a[i] = b[k++];
        }
        delete []b;
    }

    void mergesort(int *a,int low, int high)
    {
        if (low < high)
        {
            int mid = (low + high) / 2;
            mergesort(a, low, mid);
            mergesort(a, mid + 1, high);
            merge(a, low, mid, high);
        }
    }
};
```

3.

```
class N
{
public:

    void jishusort(int a[],int lenth)//假设a中数字为0-6
    {
        int *b;
        unorder_map hash= { {0,0},{1,0},{2,0},{3,0},{4,0},{5,0},{6,0} };
        for (int i = 0; i < lenth; i++)
        {
            hash[a[i]]++;
        }
        for (int i = 1; i < 7; i++)
        {
            hash[i] += hash[i - 1];
        }
        for (int i = 0; i < lenth; i++)
        {
            b[hash[a[i] - 1]] = a[i];
        }
        for (int i = 0; i < lenth; i++)
        {
            a[i] = b[i];
        }
    }
};
```