一维数组sort排序

人员

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上周作业检查

上周作业链接: https://www.luogu.com.cn/contest/212761

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报名 编辑比赛

题目数 11 | 报名人数 20

比赛说明 题目列表 排行榜

名次	参赛者	总分	A	B	C	D	E	F	G	H	I	J	K
#1	刘轩铜	1100 (17.66h)	100 (31.65min)	100 (36.43min)	100 (42.72min)	100 (47.18min)	100 (50.28min)	100 (54.13min)	100 (3.51h)	100 (1.46h)	100 (1.87h)	100 (3.72h)	100 (2.73h)
#2	王晗廷	1100 (21.14h)	100 (27.08min)	100 (33.83min)	100 (38.28min)	100 (45.73min)	100 (49.37min)	100 (54.43min)	100 (1.27h)	100 (1.38h)	100 (1.87h)	100 (2.19h)	100 (10.28h)
#3	燕润石	1100 (22.57h)	100 (27.48min)	100 (34.33min)	100 (43.65min)	100 (1.25h)	100 (1.08h)	100 (56.27min)	100 (2.15h)	100 (1.25h)	100 (1.87h)	100 (6.18h)	100 (6.09h)
#4	谢梓轩	1100 (1.95d)	100 (26.23min)	100 (31.62min)	100 (34.63min)	100 (40.00min)	100 (43.55min)	100 (49.00min)	100 (57.97min)	100 (1.31h)	100 (1.89h)	100 (2.18h)	100 (1.53d)
#5	苑钊	1100 (4.27d)	100 (31.72min)	100 (34.88min)	100 (36.75min)	100 (40.98min)	100 (37.92min)	100 (47.27min)	100 (1.52h)	100 (3.46d)	100 (2.13h)	100 (2.19h)	100 (9.75h)
#6	韩昱辰	1080 (12.55d)	100 (33.73min)	100 (39.23min)	100 (41.47min)	100 (48.40min)	100 (50.38min)	100 (58.68min)	100 (1.37h)	100 (1.57d)	100 (1.85h)	100 (4.52d)	80 (6.13d)
#7	隋梓予	900 (24.86d)	100 (1.25h)	100 (1.51h)	100 (6.09d)	100 (6.10d)	100 (6.47d)	100 (6.48d)	100 (6.57d)	100 (6.59d)	100 (2.14h)		
#8	贾庚澔	890 (24.86d)	100 (46.02min)	100 (1.14h)	90 (5.33d)	100 (5.35d)	100 (5.35d)	100 (5.35d)	100 (5.36d)		100 (5.35d)	100 (5.36d)	
#9	李宜恬	880 (14.11d)	100 (39.02min)	100 (46.12min)	100 (1.19h)	100 (1.30h)	100 (2.50d)	100 (3.41d)			100 (2.19h)	100 (3.51d)	80 (4.44d)
#10	周熙皓	800 (5.94d)	100 (30.77min)	100 (44.78min)	100 (1.25h)	100 (1.41h)	100 (1.56h)			100 (5.55d)	100 (1.77h)	100 (2.17h)	
#11	邢致远	800 (9.20d)	100 (32.85min)	100 (40.38min)	100 (54.05min)	100 (1.31h)	100 (1.38h)	100 (6.41d)		100 (2.50d)	100 (2.15h)		
#12	罗艺山	786 (7.84d)	100 (31.62min)	100 (39.17min)	100 (45.33min)	100 (54.30min)	100 (12.50h)	86 (12.88h)			100 (2.14h)		100 (6.58d)
#13	王森	700 (3.20d)	100 (29.05min)	100 (36.70min)	100 (47.38min)	100 (11.66h)	100 (51.07min)	100 (2.51d)				100 (2.15h)	
#14	郭浩宇	600 (14.42d)		100 (1.26h)	100 (2.49d)	100 (2.50d)	100 (2.50d)		100 (3.44d)	100 (3.44d)			
#15	李嘉行	514 (24.86d)	100 (42.00min)	100 (1.29h)	100 (5.55d)	8 (5.52d)	2 (5.56d)	4 (6.22d)	100 (6.19d)		100 (5.59d)		
#16	郭韩	500 (5.40h)	100 (34.37min)	100 (1.03h)	100 (1.16h)	100 (1.27h)	100 (1.37h)						
#17	胡曝辰	500 (20.00d)	100 (1.21h)	100 (1.52h)		100 (6.62d)	100 (6.63d)	100 (6.63d)					
#18	王奕皓	400 (4.95h)	100 (1.10h)	100 (41.48min)	100 (1.25h)		100 (1.91h)						
#19	刘梓勋	200 (2.79h)	100 (1.32h)	100 (1.47h)									
#20	王馨琪	100 (6.50d)	100 (6.50d)										

作业

https://www.luogu.com.cn/contest/214162

课堂表现

同学们课上听讲做题都很认真。今天讲的一维数组 sort 排序是一个非常重要的内容，同学们课下也要认真复习，并认真完成今天题目。

课堂内容

U501786 删除数组的最小数

```
1. 想找到最小值 minn

2.
for (int i = 1; i <= n; i++) {
    if (a[i] != minn) {
        cout << a[i] << " ";
    }
}
```

```
#include <iostream>

using namespace std;

int main()
{
  int a[1005];
  int n; cin >> n;
  for (int i = 1; i <= n; ++i) cin >> a[i];

  int minn = 10000000, p;
  for (int i = 1; i <= n; ++i) {
    if (a[i] < minn) {
        minn = a[i];
        p = i;
    }
  }

  for (int i = 1; i <= n; ++i) {
    if (i != p) {
      cout << a[i] << " ";
    }
  }
  cout << endl;
  return 0;
}
```

U501787 求n个数中出现次数最多的数

```
cnt[1] ~ cnt[10]: 1 ~ 10 出现的次数

for (int i = 1; i <= n; i++) {
    cin >> x;
    cnt[x]++;
}

找 cnt[1], cnt[2], cnt[3], ..., cnt[10] 里面的最大值 maxx

for (int i = 1; i <= 10; i++) {
    if (cnt[i] == maxx) {
        cout << i << endl;
    }
}
```

```
#include <iostream>

using namespace std;

int w[15];

int main() {
    int n; cin >> n;
    for (int i = 1; i <= n; ++i) {
        int x; cin >> x; w[x]++;
    }

    int maxx = 0;
    for (int i = 1; i <= 10; ++i) {
        if (w[i] > maxx) {
            maxx = w[i];
        }
    }

    for (int i = 1; i <= 10; i++) {
        if (w[i] == maxx) {
            cout << i << endl;
        }
    }
    return 0;
}
```

U501788 COUNT

```
n: 1 ~ n 中 0/1/2/.../9 每个数出现的次数

11: 1 2 3 4 5 6 7 8 9 10 11
```

```
    0: 1
    1: 4
    2: 1
    ...
    9: 1

cnt[0] ~ cnt[9]: 0 ~ 9 出现的次数
for (int i = 1; i <= n; i++) {
    int t = i;
    while (t != 0) {
        cnt[t%10]++;
        t/=10;
    }
}

for (int i = 0; i <= 9; i++) {
    cout << cnt[i] << endl;
}
```

```
#include <iostream>

using namespace std;

int w[15];

int main() {
    int n; cin >> n;
    for (int i = 1; i <= n; ++i) {
        int t = i;
        while (t) {
            w[t%10]++;
            t /= 10;
        }
    }

    for (int i = 0; i <= 9; i++) {
        cout << w[i] << endl;
    }
    return 0;
}
```

U501790 缺失的数字

```
1, 2, 3, , 5, 6, , 8, 9, ..., n

用一个桶来记录一下
cnt[1], cnt[2], ..., cnt[n] 代表 1, 2, ..., n 出现的次数
```

最后，在 1 ~ n 中，谁出现的次数是 0，说明谁没出现

```
#include <iostream>

using namespace std;

int w[100000];

int main() {
    int n; cin >> n;
    for (int i = 1; i <= n; i++) {
        int x; cin >> x; w[x]++;
    }

    for (int i = 1; i <= n; i++) {
        if (w[i] == 0) {
            cout << i << " ";
        }
    }
    return 0;
}
```

U493770 标准零件的数量

```
// 方法一
for (int i = 1; i <= n; i++) {
    if (a[i] > x) {
        if (a[i]-x <= 5) {
            cnt++;
        }
    } else {
        if (x-a[i] <= 5) {

        }
    }
}

// 方法二
for (int i = 1; i <= n; i++) {
    if (x-a[i]<=5 && a[i]-x<=5) {

    }
}

// 方法三
for (int i = 1; i <= n; i++) {
    if (abs(a[i]-x) <= 5) {
```

```
    }
}
```

```
#include <iostream>

using namespace std;

int a[105];

int main()
{
    int n;
    cin >> n;
    for (int i = 1; i <= n; i++) {
        cin >> a[i];
    }

    int x;
    cin >> x;

    int cnt = 0;
    for (int i = 1; i <= n; i++) {
        if (abs(x-a[i]) <= 5) {
            cnt++;
        }
    }
    cout << cnt << endl;
    return 0;
}
```

sort 排序 和 reverse 反转

```
1. 头文件: #include <algorithm>

2. sort(a+1, a+n+1);  // a[1] ~ a[n] 排序
   sort(a, a+n);  // a[0] ~ a[n-1] 排序
   sort(a+l, a+r+1);  // a[l] ~ a[r] 排序

3. 是什么，2边就加什么，然后右边额外 +1

4. 数组反转: reverse

   reverse(a+1, a+n+1);  // a[1] ~ a[n] 反转
   reverse(a, a+n);  // a[0] ~ a[n-1] 反转
   reverse(a+l, a+r+1);  // a[l] ~ a[r] 反转
```

```cpp
// 代码演示
#include <iostream>
#include <algorithm>

using namespace std;

int a[100];

int main()
{
    a[1] = 9, a[2] = 13, a[3] = 4, a[4] = 8, a[5] = 2, a[6] = 7;
    int n = 6;

    for (int i = 1; i <= n; i++) {
        cout << a[i] << " ";
    }
    cout << endl;

    sort(a+1, a+n+1);  // 1 ~ n 从小到大排序（sort 排序默认从小到大排序）
    for (int i = 1; i <= n; i++) {
        cout << a[i] << " ";
    }
    cout << endl;

    reverse(a+1, a+n+1);  // 1 ~ n 反转
    for (int i = 1; i <= n; i++) {
        cout << a[i] << " ";
    }
    return 0;
}
```

U493756 排序

```cpp
#include <iostream>
#include <algorithm>

using namespace std;

int a[15];

int main()
{
    int n;
    cin >> n;
    for (int i = 1; i <= n; i++) {
        cin >> a[i];
    }
    sort(a+1, a+n+1);
    for (int i = 1; i <= n; i++) {
        cout << a[i] << " ";
```

```
    }
    return 0;
}
```

U493776 第 k 大数

```
#include <iostream>
#include <algorithm>

using namespace std;

int a[1005];

int main()
{
    int n, k;
    cin >> n >> k;
    for (int i = 1; i <= n; i++) {
        cin >> a[i];
    }
    sort(a+1, a+n+1);
    cout << a[n-k+1] << endl;
    return 0;
}
```

U477522 第 k 大 + 第 k 小

```
#include <iostream>
#include <algorithm>

using namespace std;

int a[100005];

int main()
{
    int n, k;
    cin >> n >> k;
    for (int i = 1; i <= n; i++) {
        cin >> a[i];
    }
    sort(a+1, a+n+1);
    cout << a[k] + a[n-k+1] << endl;
    return 0;
}
```

U493777 选橘子

```
sort(a+1, a+n+1);

最小: a[1]    最大: a[n]

算 a[2] ~ a[n-1] 平均值

sum = 0;
for (int i = 2; i <= n-1; i ++) {
    sum += a[i];
}
double ping = 1.0 * sum / (n-2);

printf("%.1lf\n", ping);  ->  需要 #include<cstdio>

for (int i = 2; i <= n-1; i ++) {
    cout << a[i] << " ";
}
```

```
#include <iostream>
#include <algorithm>

using namespace std;

int a[205];

int main()
{
    int n;
    cin >> n;
    for (int i = 1; i <= n; i++) {
        cin >> a[i];
    }
    sort(a+1, a+n+1);

    int sum = 0;
    for (int i = 2; i <= n-1; i++) {
        sum += a[i];
    }
    printf("%.1lf\n", 1.0*sum/(n-2));
    for (int i = 2; i <= n-1; i++) {
        cout << a[i] << " ";
    }
    return 0;
}
```

U493754 发礼物

```
for (int i = 1; i <= n; i++) {
    把 a[i] 变成 >=10, 而且是 4 的倍数
    while(true) {
        if (a[i]>=10 && a[i]%4==0) {
            break;
        } else {
            a[i]++;
        }
    }
}

sort(a+1, a+n+1);
reverse(a+1, a+n+1);

for (int i = 1; i <= n; i++) {
    cout << a[i] << " ";
}
```

```
#include <iostream>
#include <algorithm>

using namespace std;

int a[105];

int main()
{
    int n;
    cin >> n;
    for (int i = 1; i <= n; i++) {
        cin >> a[i];
    }

    for (int i = 1; i <= n; i++) {
        while (true) {
            if (a[i]>10 && a[i]%4==0) {
                break;
            }
            else {
                a[i]++;
            }
        }
    }

    sort(a+1, a+n+1);
    reverse(a+1, a+n+1);

    for (int i = 1; i <= n; i++) {
        cout << a[i] << " ";
    }
```

```
    return 0;
}
```