

# 一维数组入门

## 人员

邢志远、王晗廷、王馨琪、刘轩铜、李宜恬、郭浩宇、周熙皓 到课

## 作业

<https://www.luogu.com.cn/contest/198239>

## 课堂表现

上课整体纪律良好，轩铜 同学这节课做题比较快比较好，提出表扬！

## 课堂内容

### U476423 设置颜色

```
#include <bits/stdc++.h>

using namespace std;

int main()
{
    int n, m;
    cin >> n >> m;
    for (int i = 1; i <= n; i++) {
        // 对于第 i 幅画，要考虑它在 1~m 中有几个因数
        int cnt = 0;
        for (int j = 1; j <= m; j++) {
            if (i%j == 0) {
                cnt++;
            }
        }

        // 对第 i 幅画，有 i 个因数
        if (cnt%2 == 0) {
            cout << i << " ";
        }
    }
    return 0;
}
```

### U476425 菱形输出

```
#include <bits/stdc++.h>
```

```

using namespace std;

int main()
{
    int n;
    cin >> n;
    int k = (n-1)/2;
    for (int i = 1; i <= n; i+=2) {
        for (int j = 1; j <= k; j++) {
            cout << " ";
        }
        k--;
        // 这一行一共有 i 个星号
        for (int j = 1; j <= i; j++) {
            cout << "*";
        }
        cout << endl;
    }

    k = 1;
    for (int i = n-2; i >= 1; i-=2) {
        for (int j = 1; j <= k; j++) {
            cout << " ";
        }
        k++;
        for (int j = 1; j <= i; j++) {
            cout << "*";
        }
        cout << endl;
    }
    return 0;
}

```

## U476426 选球问题

```

#include <bits/stdc++.h>

using namespace std;

int main()
{
    int a, b, c, k;
    cin >> a >> b >> c >> k;

    int cnt = 0;
    for (int i = 0; i <= a; i++) {
        for (int j = 0; j <= b; j++) {
            for (int t = 0; t <= c; t++) {
                if (i+j+t == k) {
                    cnt++;
                }
            }
        }
    }
}

```

```
    }  
  }  
}  
cout << cnt << endl;  
return 0;  
}
```

## U476427 百钱买百鸡 1

```
#include <bits/stdc++.h>  
  
using namespace std;  
  
int main()  
{  
    for (int i = 1; i <= 20; i++) {  
        for (int j = 1; j <= 33; j++) {  
            for (int k = 1; k <= 300; k++) {  
                if (i+j+k==100 && 5*i+3*j+k/3==100 && k%3==0) {  
                    cout << i << " " << j << " " << k << endl;  
                }  
            }  
        }  
    }  
    return 0;  
}
```

## U476428 百钱买百鸡 2

```
#include <bits/stdc++.h>  
  
using namespace std;  
  
int main()  
{  
    int n, a, b, c;  
    cin >> n >> a >> b >> c;  
    int cnt = 0;  
    for (int i = 1; i <= n/a; i++) {  
        for (int j = n/b; j >= 1; j--) {  
            for (int k = 1; k <= n*c; k++) {  
                if (i+j+k==n && a*i+b*j+k/c==100 && k%c==0) {  
                    cout << i << " " << j << " " << k << endl;  
                    cnt++;  
                }  
            }  
        }  
    }  
}
```

```
    if (cnt == 0) {  
        cout << -1 << endl;  
    }  
    return 0;  
}
```

### U476429 百钱买百鸡 3

把 3 个循环减成 2 个循环

```
#include <bits/stdc++.h>  
  
using namespace std;  
  
int main()  
{  
    int n, a, b, c;  
    cin >> n >> a >> b >> c;  
    int cnt = 0;  
    for (int i = 1; i <= n/a; i++) {  
        for (int j = n/b; j >= 1; j--) {  
            int k = n-i-j;  
            if (i*a+j*b+k/c==n && k%c==0 && k>0) {  
                cout << i << " " << j << " " << k << endl;  
                cnt++;  
            }  
        }  
    }  
  
    if (cnt == 0) {  
        cout << -1 << endl;  
    }  
    return 0;  
}
```

### 一维数组

数组定义: `int a[10];`  
代表定义了 10 个变量, 即 `a[0]`, `a[1]`, `a[2]`, `a[3]`, `a[4]`, `a[5]`, `a[6]`, `a[7]`, `a[8]`, `a[9]`

输入 n 个变量:  
`for (int i = 1; i <= n; i++) {`  
    `cin >> a[i];`  
`}`

数组和核心作用: 存储数据

**U477528 与指定数字相同的数的个数**

```
#include <bits/stdc++.h>

using namespace std;

int main()
{
    int n, m, cnt=0;
    cin >> n >> m;
    for (int i = 1; i <= n; i++) {
        int x;
        cin >> x;
        if (x == m) {
            cnt++;
        }
    }
    cout << cnt << endl;
    return 0;
}
```

**B2087 与指定数字相同的数的个数**

```
#include <bits/stdc++.h>

using namespace std;

int main()
{
    int n;
    cin >> n;
    int a[101];
    for (int i = 1; i <= n; i++) {
        cin >> a[i];
    }
    int m;
    cin >> m;
    int cnt = 0;
    for (int i = 1; i <= n; i++) {
        if (a[i] == m) {
            cnt++;
        }
    }
    cout << cnt << endl;
    return 0;
}
```

**P1046 [NOIP2005 普及组] 陶陶摘苹果**

```
#include <bits/stdc++.h>

using namespace std;

int main()
{
    int a[11];
    for (int i = 1; i <= 10; i++) {
        cin >> a[i];
    }
    int h;
    cin >> h;

    int cnt = 0;
    for (int i = 1; i <= 10; i++) {
        if (a[i] <= h+30) {
            cnt++;
        }
    }
    cout << cnt << endl;
    return 0;
}
```