举例：
求所有满足下面条件的三位数：它的各位数字的三次方之和恰好等于自己（即水仙花数）。
（1）
```
for (n = 100; n <= 999; n++) {
    i = n / 100;
    j = n / 10 - i * 10;
    k = n % 10;
    if (i * i * i + j * j * j + k * k * k == n) {
        System.out.println(n);
    }
}
```
（2）
```
for (i = 1; i <= 9; i++) {
    for (j = 0; j <= 9; j++) {
        for (k = 0; k <= 9; k++) {
            if (i * i * i + j * j * j + k * k * k == i * 100 + j * 10 + k) {
                System.out.println(i * 100 + j * 10 + k);
            }
        }
    }
}
```
（3）
```
n = 99;
for (i = 1; i <= 9; i++) {
    ic = i * i * i;
    for (j = 0; j <= 9; j++) {
        jc = j * j * j;
        for (k = 0; k <= 9; k++) {
            n++;
            if (ic + jc + k * k * k == n) {
                System.out.println(n);
            }
        }
    }
}
```
（4）
```
for (a = 0; a <= 9; a++) {
    c[a] = a * a * a;
}
n = 99;
for (i = 1; i <= 9; i++) {
    ic = c[i];
    for (j = 0; j <= 9; j++) {
        jc = c[j];
```

```
        for (k = 0; k <= 9; k++) {
            n++;
            if (ic + jc + c[k] == n) {
                System.out.println(n);
            }
        }
    }
}
```

上机题（题号前带*为选做题）：

1. 求所有满足下面条件的四位数：它的各位数字的四次方之和恰好等于自己。

2. 求所有满足下面条件的三位数：它能被 11 整除，且所得的商恰好等于它的各位数字的平方和。

3. 设 a,b 都是不超过 100 的正整数。在整数范围内，设(a^2+b^2)除以(a+b)所得的商为 q，余数为 r。求满足 $q^2+r=2008$ 的所有正整数对(a,b)。

4. 已知一个递增序列，元素两两不等，它们满足下面的条件：（1）数 1 在序列中。（2）若数 x 在序列中，则 2x,3x,5x 也在序列中。（3）除此之外，序列中无其他数。求该序列开头的 100 个元素。

5. Finding the gcd

Given n positive integers between 1 and 200000 ($1 \leqslant n \leqslant 100$), you are required to find the greatest common divisor of the n integers.

For example, if $n = 3$, and the integers are 18, 63, 36, then the greatest common divisor is 9.

*6. Number Lists

Given P integers 1, 2, 3, …, P, you can construct a list which contains L integers chosen from the P integers, but the list can not have K or more than K consecutive 1's. ($1 \leqslant P < 10, 1 < L < 31, 1 < K < L + 1$)

For example, when $P = 2$, $L = 3$, and $K = 2$, the lists can be

121
122
212
221
222

There are 5 lists.

In the case of $P = 3$, $L = 3$, and $K = 3$, the lists can be

112 211 311
113 212 312
121 213 313
122 221 321

123 222 322
131 223 323
132 231 331
133 232 332
233 333

There are 26 lists.

Given three integers *P*, *L*, and *K*, you are required to calculate the total number of allowable lists as described above.