第二章 简单计算和模拟

2.1 鸡兔同笼（POJ 3237）

```
n=int(input())
if n % 2 != 0:
    a = b = 0
elif n % 4 != 0:
    a = (n+2)/4
    b = n/2
else:
    a = n/4
    b = n/2
print(f'{int(a)} {int(b)}')
```

2.2 校门外的树（POJ 2808）

```
a = input().split()
b = [[] for i in range(int(a[1]))]
for i in range(int(a[1])):
    b[i] = input().split()
c = [i for i in range(int(a[0])+1)]
for i in range(int(a[1])):
    for j in range(int(b[i][0]),int(b[i][1])+1):
        c[j] = 'k'
print(len(c)-int(c.count('k')))
```

2.3 装箱问题（POJ 1017）

```
def solve(n):
    c = n[5] + n[4] + n[3] - int(-n[2]//4)
    if n[2] % 4 == 1:
        r = 5
    elif n[2] % 4 == 2:
        r = 3
    elif n[2] % 4 == 3:
        r = 1
    else:
        r = 0
    if n[1] >= 5*n[3] + r:
        c -= int(-(n[1] - 5*n[3] - r)//9)
    if n[0] >= 36*c - 36*n[5] - 25*n[4] - 16*n[3] - 9*n[2] - 4*n[1]:
        c -= int(-(n[0] -36*c + 36*n[5] + 25*n[4] + 16*n[3] + 9*n[2] + 4*n[1])//36)
    return c
while True:
    a = input().split()
    a = [int(x) for x in a]
```

```
    if a == [0 for i in range(6)]:
        break
    print(solve(a))
```

2.4 约瑟夫问题（POJ 2746）

```
while True:
    a = input().split()
    a = [int(x) for x in a]
    if a == [0,0]:
        break
    b = [i for i in range(1,a[0]+1)]
    c = 0
    for i in range(a[0]-1):
        del b[(c+a[1])%len(b)-1]
        if (c+a[1])%(len(b)+1)-1 != -1:
            c = (c+a[1])%(len(b)+1)-1
        else:
            c = 0
    print(b[0])
```

2.5 显示器（POJ 2745）

```
def solve(s,k,t):
    if t == 1:
        if k in [2,3,5,6,7,8,9,0]:
            c = ' '+'-'*int(s)+' '
        else:
            c = ' '*int(s+2)
    elif t in [int(k) for k in range(2,2+s)]:
        if k in [1,2,3,7]:
            c = ' '*int(s+1)+'|'
        elif k in [5,6]:
            c = '|'+' '*int(s+1)
        else:
            c = '|'+' '*int(s)+'|'
    elif t == s+2:
        if k in [2,3,4,5,6,8,9]:
            c = ' '+'-'*int(s)+' '
        else:
            c = ' '*int(s+2)
    elif t in [int(k) for k in range(s+3,2*s+3)]:
        if k in [1,3,4,5,7,9]:
            c = ' '*int(s+1)+'|'
        elif k in [6,8,0]:
            c = '|'+' '*int(s)+'|'
        else:
            c = '|'+' '*int(s+1)
    else:
        if k in [2,3,5,6,8,9,0]:
```

```
            c = ' '+'-'*int(s)+' '
        else:
            c = ' '*int(s+2)
    return c
while True:
    try:
        a = input().split()
        s = int(a[0])
        m = list(str(a[1]))
        m = [int(x) for x in m]
        for i in range(2*s+2):
            print(' '.join(solve(s,k,i+1) for k in m))
        print(' '.join(solve(s,k,2*s+3) for k in m)+'\n')
    except EOFError:
        break
```

2.6 排列（POJ 1833）

```
def next_permutation(a,b):
    j = False
    for i in range(a-2,-1,-1):
        if b[i] < b[i+1]:
            c = b[i]
            d = sorted(b[i:])
            e = d.index(c)
            g = d.pop(e+1)
            d.insert(0,g)
            h = b[:i] + d
            j = True
            break
    if j == False:
        h = sorted(b)
    return h
a = int(input())
while True:
    try:
        b = input().split()
        c = list(map(int,input().split()))
        d = int(b[0])
        e = int(b[1])
        for _ in range(e):
            c = next_permutation(d,c)
        print(' '.join([str(x) for x in c]))
    except EOFError:
        break
```

2.7 与7无关的数（POJ 2701）

```
b = int(input())
print(sum(k**2 for k in range(b+1) if '7' not in list(str(k)) and k % 7 != 0))
```

2.8 细菌繁殖（POJ 2712）

```
a = int(input())
b = [31,28,31,30,31,30,31,31,30,31,30,31]
while True:
    try:
        c = list(map(int,input().split()))
        d = c[2]*(2**(sum(b[x] for x in range(c[0]-1,c[3]-1))+c[4]-c[1]))
        print(d)
    except EOFError:
        break
```

2.9 判断闰年（POJ 2733）

```
n=int(input())
if n % 4 ==0 and n % 100 != 0 or n % 400 == 0:
    print('Y')
else:
    print('N')
```

2.10 求一元二次方程的根（POJ 2707）

```
from math import sqrt
a = int(input())
while True:
    try:
        a = list(map(float,input().split()))
        if a[1]**2 > 4*a[0]*a[2]:
            x1 = (-a[1]+sqrt(a[1]**2-4*a[0]*a[2]))/(2*a[0])
            x2 = (-a[1]-sqrt(a[1]**2-4*a[0]*a[2]))/(2*a[0])
            print(f'x1={x1:.5f};x2={x2:.5f}')
        elif a[1]**2 < 4*a[0]*a[2]:
            b = -a[1]/(2*a[0])
            if b == -0.0:
                b = 0.0
            c = abs(sqrt(-a[1]**2+4*a[0]*a[2])/(2*a[0]))
            print(f'x1={b:.5f}+{c:.5f}i;x2={b:.5f}-{c:.5f}i')
        else:
            x = -a[1]/(2*a[0])
            print(f'x1=x2={x:.5f}')
    except EOFError:
        break
```

2.11 合唱队列（POJ 2711）

```
a = int(input())
b =list(map(int,input().split()))
d = [0 for i in range(a)]
def upper(a):
    c = [1 for i in range(len(a))]
    for i in range(len(a)):
        for j in range(i):
            if a[i] > a[j]:
                c[i] = max(c[i],c[j]+1)
    return c[len(a)-1]
for i in range(a):
    d[i] = upper(b[:i+1])+upper(b[i:][::-1])
print(a+1-max(d))
```

第三章 枚举

3.1 假币问题（POJ 2692）

```
a = ['A','B','C','D','E','F','G','H','I','J','K','L']
n = int(input())
for _ in range(n):
    b = input().split()
    c = input().split()
    d = input().split()
    e = [0 for i in range(12)]
    f = ['heavy','light']
    for i in range(12):
        for j in range(2):
            e[i] = (-1)**j
            if sum(e[x] for x in [a.index(y) for y in b[0]]) > sum(e[x] for x in
[a.index(y) for y in b[1]]):
                if b[2] != 'up':
                    continue
            elif sum(e[x] for x in [a.index(y) for y in b[0]]) < sum(e[x] for x in
[a.index(y) for y in b[1]]):
                if b[2] != 'down':
                    continue
            else:
                if b[2] != 'even':
                    continue
            if sum(e[x] for x in [a.index(y) for y in c[0]]) > sum(e[x] for x in
[a.index(y) for y in c[1]]):
                if c[2] != 'up':
                    continue
            elif sum(e[x] for x in [a.index(y) for y in c[0]]) < sum(e[x] for x in
[a.index(y) for y in c[1]]):
                if c[2] != 'down':
                    continue
            else:
                if c[2] != 'even':
```

```
                    continue
            if sum(e[x] for x in [a.index(y) for y in d[0]]) > sum(e[x] for x in
[a.index(y) for y in d[1]]):
                if d[2] != 'up':
                    continue
            elif sum(e[x] for x in [a.index(y) for y in d[0]]) < sum(e[x] for x in
[a.index(y) for y in d[1]]):
                if d[2] != 'down':
                    continue
            else:
                if d[2] != 'even':
                    continue
            print(f'{a[i]} is the counterfeit coin and it is {f[j]}.')
        e[i] = 0
```

3.2 生理周期（POJ 4148）

```
a = 1
while True:
    b = list(map(int,input().split()))
    if b == [-1 for _ in range(4)]:
        break
    c = [b[2]+33*x for x in range((b[3]-b[2])//33+1,(21253+b[3]-b[2])//33+1)]
    for i in range(len(c)):
        if (c[i]-b[0])%23 == 0 and (c[i]-b[1])%28 == 0:
            d = c[i]-b[3]
            print(f'Case {a}: the next triple peak occurs in {d} days.')
            break
    a += 1
```

3.3 完美立方（POJ 2810）

```
n = int(input())
b = n
a = [i**3 for i in range(2,n+1)]
for i in range(6,n+1):
    for j in range(2,int(n/(3**(1/3)))):
        for k in range(j,int(n/(2**(1/3)))):
            for l in range(k,n):
                if a[i-2] == a[l-2] + a[j-2] + a[k-2]:
                    print(f'Cube = {i}, Triple = ({j},{k},{l})')
```

3.4 熄灯问题（POJ 2811）

```
from copy import deepcopy
origin = [[] for _ in range(5)]
for i in range(5):
    origin[i] = list(map(int,input().split()))
origin.append([0,0,0,0,0,0])
```

```
a = deepcopy(origin)
def solve(a,b,c):
    d = []
    e = []
    for i in range(6):
        e.append((a[i]+c[i])%2)
    a = [0]+a+[0]
    for i in range(6):
        d.append((b[i]+a[i]+a[i+1]+a[i+2])%2)
    del a[7]
    del a[0]
    return [d,e]
v = False
for i in range(2):
    if v == True:
        break
    for j in range(2):
        if v == True:
            break
        for k in range(2):
            if v == True:
                break
            for l in range(2):
                if v == True:
                    break
                for m in range(2):
                    if v == True:
                        break
                    for n in range(2):
                        s = [0,i,j,k,l,m,n,0]
                        w = []
                        for r in range(6):
                            a[0][r] = (a[0][r]+s[r]+s[r+1]+s[r+2])%2
                            a[1][r] = (a[1][r]+s[r+1])%2
                        w.append(s[1:7])
                        for p in range(4):
                            w.append(a[p])
                            a[p+1] = solve(a[p],a[p+1],a[p+2])[0]
                            a[p+2] = solve(a[p],a[p+1],a[p+2])[1]
                        if a[4] == [0,0,0,0,0,0]:
                            for o in range(5):
                                print(' '.join(str(x) for x in w[o]))
                            v = True
                            break
                        a = deepcopy(origin)
```

3.5 讨厌的青蛙（POJ 2812）

```
from collections import defaultdict
a,b = map(int,input().split())
k = int(input())
```

```
dic = defaultdict(list)
l = []
for _ in range(k):
    m,n = map(int,input().split())
    dic[m-1].append(n-1)
    l.append([m-1,n-1])
l.sort()
ans = 0
for i in range(k):
    for j in range(i+1,k):
        x,y = l[i]
        dx,dy = l[j][0]-x,l[j][1]-y
        if x+ans*dx >= a:
            break
        if 0<=y-dy<b and x-dx>=0:
            continue
        if y+ans*dy >= b or y+ans*dy < 0:
            continue
        p = 0
        q = False
        while x<a and 0<=y<b:
            if y in dic[x]:
                p += 1
                x += dx
                y += dy
            else:
                q = True
                break
        if q == True:
            continue
        ans = max(ans,p)
if ans > 2:
    print(ans)
else:
    print(0)
```

3.6 数字三元组（POJ 4146）

```
n = int(input())
ans = 0
for i in range(min(n+1,10)):
    for j in range(min(n+1,15)):
        for k in range(min(n+1,30)):
            if (i+k)%2 == 0 and (i+j+k)%5 == 0 and (j+k)%3 == 0:
                while i <= n-10:
                    i += 10
                while j <= n-15:
                    j += 15
                while k <= n-30:
                    k += 30
                ans = max(ans,i+j+k)
```

```
print(ans)
```

3.7 质数的和与积（POJ 4138）

```
n = int(input())
def solve(a):
    f = True
    for i in range(2,int(a/2)+1):
        if a % i == 0:
            f = False
            break
    return f
ans = 0
for i in range(2,int(n/2)+1):
    if solve(i) and solve(n-i):
        ans = max(ans,i*(n-i))
print(ans)
```

3.8 不定方程求解 （POJ 4139）

```
a,b,c = map(int,input().split())
d = 0
for i in range(int(c/a)+1):
    if (c-a*i) % b == 0:
        d += 1
print(d)
```

3.9 砝码称重（POJ 4141）

```
x = list(map(int,input().split()))
a = [[] for _ in range(6)]
b = []
a[0] = [i+1 for i in range(x[0])]
a[1] = [2*(i+1) for i in range(x[1])]
a[2] = [3*(i+1) for i in range(x[2])]
a[3] = [5*(i+1) for i in range(x[3])]
a[4] = [10*(i+1) for i in range(x[4])]
a[5] = [20*(i+1) for i in range(x[5])]
for i in range(6):
    b = list(set(b + a[i] +[e+f for e in b for f in a[i]]))
print(f'Total={len(b)}')
```

3.10 垃圾炸弹（POJ 4133）

```
d = int(input())
n = int(input())
t = [[0]*1025 for _ in range(1025)]
for _ in range(n):
    a,b,c = map(int,input().split())
    for i in range(max(0,a-d),min(1024,a+d)+1):
        for j in range(max(0,b-d),min(1024,b+d)+1):
            t[i][j] += c
ans = max(max(t[i]) for i in range(1025))
v = sum(t[i].count(ans) for i in range(1025))
print(f'{v} {ans}')
```

第六章 贪心算法

6.1 圣诞老人的礼物（POJ 4110）

```
a,b = map(int,input().split())
c = []
d = 0
for _ in range(a):
    x,y = map(int,input().split())
    c.append([x,y,x/y])
c.sort(key = lambda x:x[2],reverse=True)
for i in range(a):
    if b > c[i][1]:
        d += c[i][0]
        b -= c[i][1]
    else:
        d += c[i][2]*b
        break
print(f'{d:.1f}')
```

6.2 电池的寿命（POJ 3468）

```
while True:
    try:
        n = int(input())
        l = sorted(list(map(int,input().split())))
        if l[-1] > sum(l[:-1]):
            print(f'{sum(l[:-1]):.1f}')
        else:
            print(f'{sum(l)/2:.1f}')
    except EOFError:
        break
```

6.3 建立雷达（POJ 1328）

```
ans = 1
```

```
while True:
    n,d = map(int,input().split())
    if [n,d] == [0,0]:
        break
    l = []
    g = False
    for _ in range(n):
        x,y = map(int,input().split())
        if d < y:
            g = True
        p = x-(d**2-y**2)**(1/2)
        q = x+(d**2-y**2)**(1/2)
        l.append([p,q])
    w = input()
    if g == True:
        print(f'Case {ans}: -1')
        ans += 1
        continue
    l.sort(key=lambda x: x[1])
    s = l[0][0]-1
    d = 0
    for i in range(n):
        if l[i][0] > s:
            d += 1
            s = l[i][1]
    print(f'Case {ans}: {d}')
    ans += 1
```

6.4 田忌赛马（POJ 2287）

```
while True:
    n = int(input())
    if n == 0:
        break
    a = sorted(list(map(int,input().split())))
    b = sorted(list(map(int,input().split())))
    ans = 0
    while True:
        if not a:
            break
        if a[-1] > b[-1]:
            ans += 200
            del a[-1]
            del b[-1]
        elif a[-1] < b[-1]:
            ans -= 200
            del a[0]
            del b[-1]
        else:
            if a[0] > b[0]:
                del a[0]
```

```
                del b[0]
                ans += 200
            else:
                if a[0] < b[-1]:
                    ans -= 200
                del a[0]
                del b[-1]
    print(ans)
```

6.5 钓鱼（POJ 1042）

```
from copy import deepcopy
while True:
    n = int(input())
    if n == 0:
        break
    h = int(input())*12
    a = list(map(int,input().split()))
    b = list(map(int,input().split()))
    c = list(map(int,input().split()))
    f = [[a[m],b[m],m,0] for m in range(n)]
    l = []
    p = []
    for j in range(n):
        o = deepcopy(f)
        d = sorted(o[:j+1],key=lambda x: (-x[0]))
        t = h-sum(c[:j])
        ans = 0
        if t < 0:
            break
        for _ in range(t):
            ans += d[0][0]
            d[0][0] = max(d[0][0]-d[0][1],0)
            d[0][3] += 5
            for i in range(j):
                if d[i][0] < d[i+1][0]:
                    d[i],d[i+1] = d[i+1],d[i]
                else:
                    break
            for i in range(1,j+1)[::-1]:
                if d[i][0] == d[0][0]:
                    if d[i][2] < d[i-1][2]:
                        d[i],d[i-1] = d[i-1],d[i]
        l.append([ans,j])
        p.append(d)
    k = max(l,key=lambda x: x[0])[1]
    ans = max(l,key=lambda x: x[0])[0]
    s =sorted(p[k],key=lambda x: x[2])
    print(', '.join([str(x[3]) for x in s]+['0']*(n-len(s))))
    print(f'Number of fish expected: {ans}\n')
```

6.6 畜栏保留问题（POJ 4144）

```
import heapq
n = int(input())
l = []
for i in range(n):
    l.append(list(map(int,input().split()))+[i])
l.sort(key=lambda x: x[0])
ans = [[0,1]]
heapq.heapify(ans)
p = 1
q = []
for x in l:
    r = heapq.heappop(ans)
    if x[0] <= r[0]:
        p += 1
        q.append([p,x[2]])
        heapq.heappush(ans,[x[1],p])
        heapq.heappush(ans,r)
    else:
        q.append([r[1],x[2]])
        heapq.heappush(ans,[x[1],r[1]])
q.sort(key=lambda x: x[1])
print(p)
for x in q:
    print(x[0])
```

6.7 金银岛（POJ 2795）

```
k = int(input())
for _ in range(k):
    w = int(input())
    s = int(input())
    l = list(map(int,input().split()))
    a = []
    b = []
    t = []
    ans = 0
    for i in range(2*s)[::2]:
        a.append(l[i])
    for i in range(2*s)[1::2]:
        b.append(l[i])
    for i in range(s):
        t.append([a[i],b[i],b[i]/a[i]])
    t.sort(key=lambda x: x[2],reverse = True)
    for i in range(s):
        if t[i][0] < w:
            w -= t[i][0]
            ans += t[i][1]
        else:
```

```
            ans += w*t[i][2]
            break
    print(f'{ans:.2f}')
```

6.8 最短前缀（POJ 2797）

```
l = []
while True:
    try:
        l.append(input())
    except EOFError:
        break
for x in l:
    ans = True
    p = l
    for i in range(len(x)):
        q = []
        for y in p:
            if len(y) >= i+1 and y[i] == x[i]:
                q.append(y)
        p = q
        if len(p) == 1:
            k = i
            ans = False
            break
    if ans:
        print(x,x)
    else:
        print(x,x[:k+1])
```

6.9 书架（POJ 3406）

```
n,b = map(int,input().split())
l = []
for _ in range(n):
    l.append(int(input()))
l = sorted(l,reverse = True)
ans = 0
for i in range(n):
    ans += l[i]
    if ans >= b:
        print(i+1)
        break
```

6.10 最小新整数（POJ 4137）

```
t = int(input())
for _ in range(t):
    n,k = map(str,input().split())
```

```
    n = [int(x) for x in list(n)]
    m = len(n)
    k = int(k)
    ans = False
    s = 0
    for _ in range(k):
        for i in range(s,len(n)-1):
            if n[i] > n[i+1]:
                del n[i]
                ans = True
                s = max(0,i-1)
                break
        if ans == False:
            break
    print(''.join([str(x) for x in n[:m-k]]))
```

6.11 拼点游戏（POJ 4005）

```
def solve(c,d):
    from copy import deepcopy
    a = deepcopy(c)
    b = deepcopy(d)
    ans = 0
    while a:
        if a[-1] > b[-1]:
            del a[-1]
            del b[-1]
            ans += 3
        elif a[-1] < b[-1]:
            del a[0]
            del b[-1]
            ans += 1
        else:
            if a[0] > b[0]:
                del a[0]
                del b[0]
                ans += 3
            elif a[0] < b[0]:
                del a[0]
                del b[-1]
                ans += 1
            else:
                if a[0] < b[-1]:
                    del a[0]
                    del b[-1]
                    ans += 1
                else:
                    del a[0]
                    del b[-1]
                    ans += 2
    return ans
```

```
while True:
    n = int(input())
    if n == 0:
        break
    a = sorted(list(map(int,input().split())))
    b = sorted(list(map(int,input().split())))
    print(solve(b,a),4*n-solve(a,b))
```

第七章 动态规划

7.1 最长上升子序列（POJ 2533）

```
n = int(input())
l = list(map(int,input().split()))
t = [1 for _ in range(n)]
for i in range(1,n):
    for j in range(i):
        if l[j] < l[i]:
            t[i] = max(t[j]+1,t[i])
print(max(t))
```

7.2 最长公共子序列 （POJ 1458）

```
while True:
    try:
        a = list(input().split())
        x = len(a[0])
        y = len(a[1])
        l = [[0 for _ in range(y+1)] for _ in range(x+1)]
        for i in range(1,x+1):
            for j in range(1,y+1):
                if a[0][i-1] == a[1][j-1]:
                    l[i][j] = l[i-1][j-1] + 1
                else:
                    l[i][j] = max(l[i][j-1],l[i-1][j])
        print(l[x][y])
    except EOFError:
        break
```

7.3 Charm Bracelet（POJ 4131）

```
a,b = map(int,input().split())
l = [0 for _ in range(b+1)]
for _ in range(a):
    x,y = map(int,input().split())
    if x > b:
        continue
    else:
```

```
        a = [0 for _ in range(b+1)]
        for i in range(x,b+1):
            a[i] = max(l[i],l[i-x]+y)
        for i in range(x):
            a[i] = l[i]
        l = a
print(l[b])
```

7.4 滑雪（POJ 1088）

```
r,c = map(int,input().split())
l = [[1 for _ in range(c)] for _ in range(r)]
ans = [[1 for _ in range(c)] for _ in range(r)]
b = []
for i in range(r):
    a = list(map(int,input().split()))
    for j in range(c):
        l[i][j] = a[j]
        b.append([i,j,a[j]])
b.sort(key = lambda x: x[2])
for i in range(r*c):
    for [x,y] in [[b[i][0],b[i][1]+1],[b[i][0],b[i][1]-1],[b[i][0]+1,b[i][1]],[b[i]
[0]-1,b[i][1]]]:
        if 0<=x<r and 0<=y<c and l[x][y] < l[b[i][0]][b[i][1]]:
            ans[b[i][0]][b[i][1]] = max(ans[b[i][0]][b[i][1]],ans[x][y]+1)
print(max(ans[b[x][0]][b[x][1]] for x in range(r*c)))
```

7.5 灌溉草场（POJ 2373）

```
import heapq
n,l = list(map(int,input().split()))
a,b = list(map(int,input().split()))
q = [0 for _ in range(l+1)]
w = [0 for _ in range(l+1)]
f = []
heapq.heapify(f)
for _ in range(n):
    s,e = list(map(int,input().split()))
    for i in range(s+1,e):
        q[i] = 1
for i in range(0,l+1,2):
    if q[i] == 0:
        if 2*a <= i <= 2*b:
            w[i] = 1
            heapq.heappush(f,[w[i],i])
        else:
            p = []
            y = 0
            while not i-2*b <= y <= i-2*a and f:
                [x,y] = heapq.heappop(f)
```

```
                if not y < i-2*b:
                    p.append([x,y])
            if i-2*b <= y <= i-2*a:
                w[i] = 1+x
                heapq.heappush(f,[1+x,i])
            for x in p:
                heapq.heappush(f,x)
if w[l] == 0:
    print(-1)
else:
    print(w[l])
```

7.6 简单的整数划分问题（POJ 4117）

```
while True:
    try:
        a = int(input())
        l = [[0 for _ in range(a+1)]]+[[1 for _ in range(a+1)] for _ in range(a)]
        for j in range(1,a+1):
            for i in range(1,a+1):
                if i <= j:
                    l[i][j] = l[i-1][j]+l[i][j-i]
                else:
                    l[i][j] = l[j][j]
        print(l[a][a])
    except EOFError:
        break
```

7.7 开餐馆（POJ 4118）

```
t = int(input())
for _ in range(t):
    n,k = map(int,input().split())
    m = list(map(int,input().split()))
    p = list(map(int,input().split()))
    l = [p[0] for _ in range(n)]
    for i in range(1,n):
        l[i] = max(max([l[j] for j in range(i) if m[i]-m[j] <= k]+[0]),max([l[j]+p[i] for
j in range(i) if m[i]-m[j] > k]+[p[i]]))
    print(max(l))
```

7.8 复杂的整数划分问题（POJ 4119）

```
l = [[0 for _ in range(50)] for _ in range(51)]
l[0][0] = 1
for i in range(1,50+1):
    for j in range(min(i,50)):
        l[i][j] = sum(l[i-j-1][x] for x in range(j+1))
t = [[0 for _ in range(51)] for _ in range(51)]
```

```
t[0][0] = 1
for i in range(1,51):
    for j in range(1,i+1):
        t[i][j] = sum(t[i-j][x] for x in range(j))
s = [[0 for _ in range(51)] for _ in range(51)]
s[0][1] = 1
for i in range(1,51):
    for j in range(1,i+1):
        s[i][j] = sum(s[i-j][x] for x in range(j,-1,-2))
while True:
    try:
        n,k = map(int,input().split())
        print(l[n][k-1])
        print(sum(t[n][x] for x in range(1,n+1)))
        print(sum(s[n][x] for x in range(n+1)))
    except EOFError:
        break
```

7.9 硬币（POJ 4120）

```
n,x = map(int,input().split())
l = list(map(int,input().split()))
a = [[1]+[0 for _ in range(x)] for _ in range(n)]
for i in range(1,n):
    for j in range(x+1):
        if a[i-1][j] == 1:
            a[i][j] = 1
            if j+l[i-1] <= x:
                a[i][j+l[i-1]] = 1
b = [[1]+[0 for _ in range(x)] for _ in range(n)]
for i in range(1,n):
    for j in range(x+1):
        if b[i-1][j] == 1:
            b[i][j] = 1
            if j+l[n-i] <= x:
                b[i][j+l[n-i]] = 1
ans = []
for i in range(n):
    p = False
    for j in range(x+1):
         if a[i][j] == 1 and b[n-i-1][x-j] == 1:
            p = True
            break
    if not p:
        ans.append(l[i])
print(len(ans))
print(' '.join([str(x) for x in ans]))
```

7.10 宠物小精灵之收服（POJ 4102）

```python
n,m,k = map(int,input().split())
l = [[0 for _ in range(m)]]+[[float('inf') for _ in range(m)] for _ in range(k)]
for p in range(k):
    a,b = map(int,input().split())
    for i in range(1,p+2)[::-1]:
        for j in range(b,m)[::-1]:
            l[i][j] = min(l[i][j],a+l[i-1][j-b])
for i in range(k+1)[::-1]:
    if l[i][m-1] <= n:
        q = i
        break
ans = True
for j in range(m)[::-1]:
    if l[q][j] > n:
        w = j
        ans = False
        break
if ans:
    w = -1
print(q,m-1-w)
```