**Assignment #5: Greedy 穷举 Implementation**

2024 fall, Complied by 吕金浩，物理学院

**1. 题目**

**04148: 生理周期**

brute force, http://cs101.openjudge.cn/practice/04148

代码：

```
case=1
while True:
    a,b,c,d=map(int,input().split())
    ans=0
    if a==-1:
        break
    else:
        for i in range(d+1,d+21253):
            if (i-a)%23==0 and (i-b)%28==0 and (i-c)%33==0:
                ans=i-d
                break
        print('Case {}: the next triple peak occurs in {} days.'.format(str(case),str(ans)))
        case+=1
```


**18211: 军备竞赛**

greedy, two pointers, http://cs101.openjudge.cn/practice/18211

代码：

```
own=int(input())
costs=[int(x) for x in input().split()]
costs.sort()
more=0
most=0
while costs:
    if own<costs[0]:
```

```
            if more==0:
                break
            else:
                more-=1
                own+=costs[-1]
                del costs[-1]

            #break
        else:
            own-=costs[0]
            more+=1
            del costs[0]
    most=max(more,most)
print(most)
```

#46698821提交状态

查看 提交 统计 提问

状态: Accepted

源代码

```
own=int(input())
costs=[int(x) for x in input().split()]
costs.sort()
more=0
most=0
while costs:
    if own<costs[0]:
        if more==0:
            break
        else:
            more-=1
            own+=costs[-1]
            del costs[-1]

        #break
    else:
        own-=costs[0]
        more+=1
        del costs[0]
    most=max(more,most)
print(most)
```

基本信息

#: 46698821
题目: 18211
提交人: lvjinhao
内存: 3628kB
时间: 21ms
语言: Python3
提交时间: 2024-10-24 11:32:04



English 帮助 关于

**21554: 排队做实验**

greedy, http://cs101.openjudge.cn/practice/21554

代码:

```
n=int(input())
lst=input().split()
for i in range(n):
    lst[i]=(int(lst[i]),i)
lst.sort()
ans1=''
tot_time=0
for i in range(n):
    ans1+=str(lst[i][1]+1)+' '
    tot_time+=(n-1-i)*lst[i][0]
```

print(ans1.rstrip())
a=tot_time/n

print('%.2f' % a)


**01008: Maya Calendar**

implementation, http://cs101.openjudge.cn/practice/01008/

代码:

```
t=int(input())
print(t)
Haab=['pop', 'no', 'zip', 'zotz', 'tzec', 'xul', 'yoxkin', 'mol', 'chen', 'yax', 'zac', 'ceh', 'mac', 'kankin', 'muan', 'pax', 'koyab', 'cumhu','uayet']
Haab_name_to_num={}
Tzolkin=['imix', 'ik', 'akbal', 'kan', 'chicchan', 'cimi', 'manik', 'lamat', 'muluk', 'ok', 'chuen', 'eb', 'ben', 'ix', 'mem', 'cib', 'caban', 'eznab', 'canac', 'ahau']
#Tzolkin_name_to_num={}
for i in range(19):
    Haab_name_to_num[Haab[i]]=i

#for i in range(20):
    #Tzolkin_name_to_num[Tzolkin[i]]=i


for _ in range(t):
    a,b,c=map(str,input().split())
    a=int(a.rstrip('.'))
    c=int(c)
    whole_days=c*365+Haab_name_to_num[b]*20+a
    year=whole_days//260
    rest_days=whole_days%260
```

num=rest_days%13+1
name=Tzolkin[rest_days%20]
print(str(num)+' '+name+' '+str(year))

#46698853提交状态

查看 提交 统计 提问

状态: Accepted

源代码

```
t=int(input())
print(t)
Haab=['pop', 'no', 'zip', 'zotz', 'tzec', 'xul', 'yoxkin', 'mol', 'chen', 'yax',
Haab_name_to_num={}
Tzolkin=['imix', 'ik', 'akbal', 'kan', 'chicchan', 'cimi', 'manik', 'lamat', 'mul
#Tzolkin_name_to_num={}
for i in range(19):
    Haab_name_to_num[Haab[i]]=i

#for i in range(20):
    #Tzolkin_name_to_num[Tzolkin[i]]=i


for _ in range(t):
    a,b,c=map(str,input().split())
    a=int(a.rstrip('.'))
    c=int(c)
    whole_days=c*365+Haab_name_to_num[b]*20+a
    year=whole_days//260
    rest_days=whole_days%260
    num=rest_days%13+1
    name=Tzolkin[rest_days%20]
    print(str(num)+' '+name+' '+str(year))
```

基本信息

| | |
|---|---|
| #: | 46698853 |
| 题目: | 01008 |
| 提交人: | lvjinhao |
| 内存: | 3660kB |
| 时间: | 26ms |
| 语言: | Python3 |
| 提交时间: | 2024-10-24 11:34:28 |



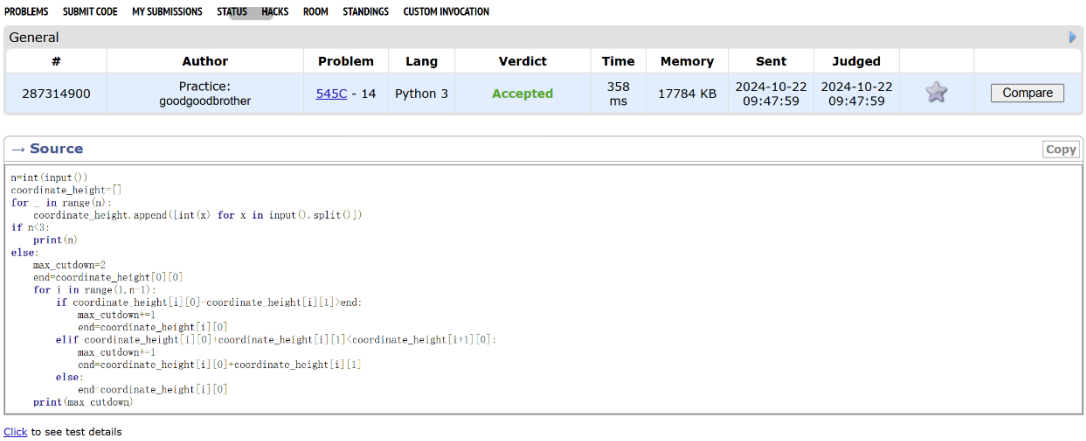
English 帮助 关于

**545C. Woodcutters**

dp, greedy, 1500, https://codeforces.com/problemset/problem/545/C

代码:

```
n=int(input())
coordinate_height=[]
for _ in range(n):
    coordinate_height.append([int(x) for x in input().split()])
if n<3:
    print(n)
else:
    max_cutdown=2
    end=coordinate_height[0][0]
    for i in range(1,n-1):
        if coordinate_height[i][0]-coordinate_height[i][1]>end:
            max_cutdown+=1
            end=coordinate_height[i][0]
        elif coordinate_height[i][0]+coordinate_height[i][1]<coordinate_height[i+1][0]:
            max_cutdown+=1
            end=coordinate_height[i][0]+coordinate_height[i][1]
        else:
            end=coordinate_height[i][0]
    print(max_cutdown)
```




**01328: Radar Installation**

greedy, http://cs101.openjudge.cn/practice/01328/

代码:

```
t=0
from math import *
while True:
    t+=1
    n,d=map(int,input().split())
    radar=1

    if n:
        coordinates=[]
        if_skip=False
        for _ in range(n):
            x,y=map(int,input().split())



            if y>d or d<0:
                #print('Case '+str(t)+': -1')
                if_skip=True
            else:
                coordinates.append((x-sqrt(d**2-y**2),x+sqrt(d**2-y**2)))
        input()
        if if_skip:
            print('Case ' + str(t) + ': -1')

            continue
        else:
```

```
            coordinates.sort()
            #coordinates[0]=set(range(coordinates[0][0],coordinates[0][1]+1))
            common=coordinates[0]
            for i in range(1,n):
                #coordinates[i]=set(range(coordinates[i][0],coordinates[i][1]+1))
                #common=coordinates[i]&coordinates[i-1]
                if coordinates[i][0]>common[1]:
                    common=coordinates[i]
                    radar+=1
                else:
                    common=(coordinates[i][0],min(common[1],coordinates[i][1]))

                '''if not common:
                    radar+=1
                else:
                    coordinates[i]=common'''
            print('Case '+str(t)+': '+str(radar))
        #input()


    else:
        break
```

**#46698911提交状态**

查看 提交 统计 提问

状态: Accepted

基本信息

#: 46698911
题目: 01328
提交人: lvjinhao
内存: 3800kB
时间: 58ms
语言: Python3
提交时间: 2024-10-24 11:37:57

源代码

```
t=0
from math import *
while True:
    t+=1
    n,d=map(int,input().split())
    radar=1

    if n:
        coordinates=[]
        if_skip=False
        for _ in range(n):
            x,y=map(int,input().split())


            if y>d or d<0:
                #print('Case '+str(t)+': -1')
                if_skip=True
            else:
                coordinates.append((x-sqrt(d**2-y**2),x+sqrt(d**2-y**2)
        input()
        if if_skip:
            print('Case ' + str(t) + ': -1')

            continue
        else:
```

**2. 学习总结和收获**

最近每日选做做起来比较顺利，基本都能一次 AC，或者抱着尝试心态 TLE 一次，做了优化后也能 AC（比如 Cipher）。那道标示难度 1700 的 466C: Number of Ways 我做了二三十分钟左右，一次 AC，也给了自己一点信心。只是发现自己一道题可能用时太长，有时可能得

三四十分钟，感觉有点慌（