

Assignment #5: Greedy 穷举 Implementation

Updated 1939 GMT+8 Oct 21, 2024

2024 fall, Compiled by 胡新璞, 工学院

****说明: ****

- 1) 请把每个题目解题思路 (可选), 源码 Python, 或者 C++ (已经在 Codeforces/Openjudge 上 AC), 截图 (包含 Accepted), 填写到下面作业模版中 (推荐使用 typora <https://typoraio.cn>, 或者用 word)。AC 或者没有 AC, 都请标上每个题目大致花费时间。
- 3) 提交时候先提交 pdf 文件, 再把 md 或者 doc 文件上传到右侧“作业评论”。Canvas 需要有同学清晰头像、提交文件有 pdf、“作业评论”区有上传的 md 或者 doc 附件。
- 4) 如果不能在截止前提交作业, 请写明原因。

1. 题目

04148: 生理周期

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

代码:

case = 0

while True:

 p,e,i,d = map(int,input().split())

 if p == -1 and e == -1 and i == -1 and d == -1:

 break

 else:

 case += 1

 for k in range(d+1,d+21253):

 if k % 23 == p % 23 and k % 28 == e % 28 and k % 33 == i % 33:

 print("Case " + str(case) + ": the next triple peak occurs in " + str(k -

d) + " days.")

 break

代码运行截图 <mark> (至少包含有"Accepted") </mark>

状态: **Accepted**

源代码

```
case = 0
while True:
    p,e,i,d = map(int,input().split())
    if p == -1 and e == -1 and i == -1 and d == -1:
        break
    else:
        case += 1
        for k in range(d+1,d+21253):
            if k % 23 == p % 23 and k % 28 == e % 28 and k % 33 == i % 33:
                print("Case " + str(case) + ": the next triple peak occurs in " + str(k -
                break
```

基本信息

#: 46664763

题目: 04148

提交人: 2400011037

内存: 3692kB

时间: 31ms

语言: Python3

提交时间: 2024-10-22 19:35:23

18211: 军备竞赛

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

代码:

```
p = int(input())
lst = list(map(int, input().split()))
num = 0
weapon = sorted(lst)
buy, sell = 0, len(lst)-1
while buy <= sell:
    if num < 0:
        num = 0
        break
    else:
        if p >= weapon[buy]:
            num += 1
            p -= weapon[buy]
            buy += 1
        else:
            if buy == sell:
                break
            else:
                num -= 1
                p += weapon[sell]
                sell -= 1
print(num)
```

代码运行截图 == (至少包含有"Accepted") ==

状态: Accepted

源代码

```
p = int(input())
lst = list(map(int, input().split()))
num = 0
weapon = sorted(lst)
buy, sell = 0, len(lst)-1
while buy <= sell:
    if num < 0:
        num = 0
        break
    else:
        if p >= weapon[buy]:
            num += 1
            p -= weapon[buy]
            buy += 1
        else:
            if buy == sell:
                break
            else:
                num -= 1
                p += weapon[sell]
                sell -= 1
print(num)
```

基本信息

#: 46695117
题目: 18211
提交人: 2400011037
内存: 3628kB
时间: 23ms
语言: Python3
提交时间: 2024-10-23 22:26:38

21554: 排队做实验

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

代码:

```
num = int(input())
lst = list(map(int, input().split()))
lst1 = sorted([item for item in lst])
stu = [0] * num
ans = 0
for i in range(num):
    m = min(lst1)
    ans += (num - i - 1) * m
    stu[i] = lst.index(m) + 1
    lst[lst.index(m)] = max(lst) + 1
    lst1.pop(lst1.index(m))
print(" ".join(map(str, stu)))
print(f"{ans / num:.2f}")
```

代码运行截图 <mark>（至少包含有"Accepted"）</mark>

状态: **Accepted**

源代码

```
num = int(input())
lst = list(map(int, input().split()))
lst1 = sorted([item for item in lst])
stu = [0] * num
ans = 0
for i in range(num):
    m = min(lst1)
    ans += (num - i - 1) * m
    stu[i] = lst.index(m) + 1
    lst[lst.index(m)] = max(lst) + 1
    lst1.pop(lst1.index(m))
print(" ".join(map(str, stu)))
print(f"{ans / num:.2f}")
```

基本信息

#: 46699944
题目: 21554
提交人: 2400011037
内存: 3868kB
时间: 35ms
语言: Python3
提交时间: 2024-10-24 13:05:07

01008: Maya Calendar

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

代码:

```
dic_h = {}
{"pop":1,"no":2,"zip":3,"zotz":4,"tzeec":5,"xul":6,"yoxkin":7,"mol":8,"chen":9,"yax":10,"zac":11,"ceh":12,"mac":13,"kankin":14,"muan":15,"pax":16,"koyab":17,"cumhu":18,"uayet":19}
dic_t = {}
{1:"imix",2:"ik",3:"akbal",4:"kan",5:"chicchan",6:"cimi",7:"manik",8:"lamat",9:"muluk",10:"ok",11:"chuen",12:"eb",13:"ben",14:"ix",15:"mem",16:"cib",17:"caban",18:"eznab",19:"canac",20:"ahau"}
n = int(input())
print(n)
for _ in range(n):
    day_h,month_h,year_h = map(str,input().split())
    day_h,month_h,year_h = int(day_h[:-1]),dic_h[month_h],int(year_h)
    date = year_h * 365 + (month_h - 1) * 20 + day_h + 1
    year_t = (date - 1) // 260
    day_t_str = dic_t[(date - 1) % 260 % 20 + 1]
    day_t_int = (date - 1) % 260 % 13 + 1
    print(day_t_int,day_t_str,year_t)
```

代码运行截图 <mark>（至少包含有"Accepted"）</mark>

状态: Accepted

源代码

```
dic_h = {"pop":1,"no":2,"zip":3,"zotz":4,"tzeec":5,"xul":6,"yoxkin":7,"mol":8,"ceh":12,"mac":13,"kankin":14,"muan":15,"pax":16,"koyab":17,"cumhu":18,"uayet":19}
dic_t = {1:"imix",2:"ik",3:"akbal",4:"kan",5:"chicchan",6:"cimi",7:"manik",8:"lamat",9:"muluk",10:"ok",11:"chuen",12:"eb",13:"ben",14:"ix",15:"mem",16:"cib",17:"caban",18:"eznab",19:"canac",20:"ahau"}
n = int(input())
print(n)
for _ in range(n):
    day_h,month_h,year_h = map(str,input().split())
    day_h,month_h,year_h = int(day_h[:-1]),dic_h[month_h],int(year_h)
    date = year_h * 365 + (month_h - 1) * 20 + day_h + 1
    year_t = (date - 1) // 260
    day_t_str = dic_t[(date - 1) % 260 % 20 + 1]
    day_t_int = (date - 1) % 260 % 13 + 1
    print(day_t_int,day_t_str,year_t)
```

基本信息

#: 46701093
题目: 01008
提交人: 2400011037
内存: 3588kB
时间: 27ms
语言: Python3
提交时间: 2024-10-24 13:59:10

545C. Woodcutters

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

代码:

```
n = int(input())
c = [0] * n
t = [0] * n
if n == 1:
    print("1")
else:
    ans = 2
    for _ in range(n):
        ci,ti = map(int, input().split())
        c[_],t[_] = ci,ti
    for i in range(1,n-1):
        if t[i] < c[i] - c[i-1]:
            ans += 1
        elif t[i] < c[i+1] -c[i]:
            ans += 1
            c[i] += t[i]
        else:
            continue
    print(ans)
```

代码运行截图 <mark>（至少包含有"Accepted"）</mark>

By h_x_p_, contest: Codeforces Round 303 (Div. 2), problem: (C) Woodcutters, **Accepted**, #, [Copy](#)

```
n = int(input())
c = [0] * n
t = [0] * n
if n == 1:
    print("1")
else:
    ans = 2
    for _ in range(n):
        ci,ti = map(int, input().split())
        c[_],t[_] = ci,ti
    for i in range(1,n-1):
        if t[i] < c[i] - c[i-1]:
            ans += 1
        elif t[i] < c[i+1] -c[i]:
            ans += 1
            c[i] += t[i]
        else:
            continue
    print(ans)
```

###

01328: Radar Installation

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

代码:

```
```python
```

```
```
```

代码运行截图 <mark> (至少包含有"Accepted") </mark>

2. 学习总结和收获

<mark>如果作业题目简单, 有否额外练习题目, 比如: OJ"计概 2024fall 每日选做"、CF、LeetCode、洛谷等网站题目。</mark>

作业前五题其实 25 号就已经写完了, 本来想做第六题, 但是难度有点大, 以及复习期中考试没什么时间, 就耽搁了。前五题难度也比之前要大, 第一题先用穷举爆算了一遍, 然后学了一下中国剩余定理的解法; 第二题想了好一会, 再去学习了一下双指针的知识才勉强能解决。这周的题目对我来说还有个特色就是都要先 WA 几遍, 有时候没有样例数据还会傻掉找不出 bug (比如年份转换, 考虑一年的最后一天那种情况)。每日选做最近也没怎么做, 期中考之后努力补上。