Assignment #5: Greedy穷举Implementation

Updated 1939 GMT+8 Oct 21, 2024

2024 fall, Complied by 李振硕、院系 信息管理系

1. 题目

04148: 生理周期

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

思路：

代码：

状态: Accepted

源代码

```
k=0
while True:
    p, e, i, d = map(int, input().split())
    k+=1
    if p == e == i == -1:
        break

    t_p = (p % 23)
    t_e = (e % 28)
    t_i = (i % 33)

    m = d + 1

    while True:
        # Check if the current day m aligns with all three cycles
        if (m % 23 == t_p) and (m % 28 == t_e) and (m % 33 == t_i):
            print(f'Case {k}: the next triple peak occurs in {m - d} days.')
            break
        m += 1
```

基本信息

#:	46645543
题目:	04148
提交人:	24n2300093007
内存:	3564kB
时间:	33ms
语言:	Python3
提交时间:	2024-10-21 21:01:39

18211: 军备竞赛

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

思路：

代码：

状态：Accepted

源代码

```python
def maximize_weapon_difference(budget, designs):
    designs.sort()  # 将设计图按成本升序排列
    leaf_village_weapons = 0  # 木叶村的武器数量
    enemy_weapons = 0  # 敌国的武器数量

    while len(designs) > 0:
        while budget > 0 and len(designs) > 0:
            if budget >= designs[0]:
                budget -= designs.pop(0)
                leaf_village_weapons += 1
            else:
                break

        if len(designs) == 1 or len(designs) == 0:
            break

        if leaf_village_weapons > enemy_weapons:
            budget += designs.pop(-1)
            enemy_weapons += 1
        else:
            break

    return leaf_village_weapons - enemy_weapons

# 输入处理
initial_budget = int(input())
weapon_designs = list(map(int, input().split()))

# 输出结果
print(maximize_weapon_difference(initial_budget, weapon_designs))
```

基本信息

#: 46800365
题目: 18211
提交人: 24n2300093007
内存: 3684kB
时间: 29ms
语言: Python3
提交时间: 2024-10-28 21:09:06

```python

```

代码运行截图 ==（至少包含有"Accepted"）==

21554: 排队做实验

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

思路：

代码：

#46647284提交状态

查看 提交 统计 提问

状态: Accepted

源代码

```
n = int(input())
t_ = list(map(int, input().split()))
sorted_data = sorted(enumerate(t_, start=1), key=lambda x: x[1])
order = [x[0] for x in sorted_data]
print(' '.join(map(str, order)))

total_wait_time = 0
current_wait_time = 0
for i in range(n - 1):  # 最后一个学生无需等待
    current_wait_time += sorted_data[i][1]
    total_wait_time += current_wait_time

average_wait_time = total_wait_time / n


print(f'{average_wait_time:.2f}')
```

基本信息

#: 46647284
题目: 21554
提交人: 24n2300093007
内存: 3668kB
时间: 21ms
语言: Python3
提交时间: 2024-10-21 22:14:30

01008: Maya Calendar

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

思路：

代码：

状态: Accepted

源代码

```
haab_months = [
    "pop", "no", "zip", "zotz", "tzec", "xul", "yoxkin", "mol", "chen",
    "yax", "zac", "ceh", "mac", "kankin", "muan", "pax", "koyab", "cumhu", "uay
]

tzolkin_days = [
    "imix", "ik", "akbal", "kan", "chicchan", "cimi", "manik", "lamat",
    "muluk", "ok", "chuen", "eb", "ben", "ix", "mem", "cib", "caban",
    "eznab", "canac", "ahau"
]
data=[]
n=int(input())
for i in range(n):
    Numberoftheyear,Month,year=map(str,input().split())
    noy=int(Numberoftheyear[:-1])
    year=int(year)
    all_date=noy+365*year+haab_months.index(Month)*20
    tzolkin_number = (all_date % 13) + 1
    tzolkin_day_name = tzolkin_days[all_date % 20]
    tzolkin_year = all_date // 260
    data.append([tzolkin_number,tzolkin_day_name,tzolkin_year])
print(len(data))
for [x,y,z] in data:
    print(x,y,z)
```

基本信息

#:	46659017
题目:	01008
提交人:	24n2300093007
内存:	3772kB
时间:	24ms
语言:	Python3
提交时间:	2024-10-22 15:42:31

545C. Woodcutters

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

时间：311ms

代码：

By sot10130, contest: Codeforces Round 303 (Div. 2), problem: (C) Woodcutters, **Accepted**, #, Copy

```
def max_felled_trees(n, trees):
    if n == 1:
        return 1

    felled = 1
    last_position = trees[0][0]

    for i in range(1, n - 1):
        x, h = trees[i]
        if x - h > last_position:
            felled += 1
            last_position = x
        elif x + h < trees[i + 1][0]:
            felled += 1
            last_position = x + h
        else:
            last_position = x

    felled += 1
    return felled

n = int(input())
trees = [tuple(map(int, input().split())) for _ in range(n)]
print(max_felled_trees(n, trees))
```

01328: Radar Installation

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

代码：

状态：Accepted

基本信息

#：46678526
题目：01328
提交人：24n2300093007
内存：3684kB
时间：49ms
语言：Python3
提交时间：2024-10-23 13:48:55

源代码

```python
import math

case = 1

while True:
    line = input().strip()
    if not line:
        continue

    n, d = map(int, line.split())
    if n == 0 and d == 0:
        break

    data = []
    valid_case = True

    for _ in range(n):
        x, y = map(int, input().split())
        if y > d:
            valid_case = False
        else:
            dx = math.sqrt(d**2 - y**2)
            x_min = x - dx
            x_max = x + dx
            data.append((x_min, x_max))

    if not valid_case:
        print(f"Case {case}: -1")
        case += 1
        continue
```

```python
    data.sort(key=lambda interval: interval[1])

    radars = 0
    current_position = -float('inf')

    for x_min, x_max in data:
        if x_min > current_position:
            radars += 1
            current_position = x_max

    print(f"Case {case}: {radars}")
    case += 1
```

2. 学习总结和收获

感觉很难，但同时学到的东西也不少。