Assignment #4: T-primes + 贪心

Updated 0337 GMT+8 Oct 15, 2024

2024 fall, Complied by 同学的姓名、院系

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）课程网站是Canvas平台, https://pku.instructure.com, 学校通知9月19日导入选课名单后启用。**作业写好后，保留在自己手中，待9月20日提交。**

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

34B. Sale

greedy, sorting, 900, https://codeforces.com/problemset/problem/34/B

思路：

代码

```
#
n,m=map(int,input().split())
s=[int(x) for x in input().split()]
num=0
lst=[]
for i in s:
    if i<0:
        num+=1
        lst.append(i)
if num<=m:
    print(abs(sum(lst)))
else:
    lst=sorted(lst)
    print(abs(sum(lst[0:m])))
```

代码运行截图 （至少包含有"Accepted"）

General

#	Author	Problem	Lang	Verdict
282173340	Practice: wrc2006	34B - 4	Python 3	Accepted

→ Source

```
n,m=map(int,input().split())
s=[int(x) for x in input().split()]
num=0
lst=[]
for i in s:
    if i<0:
        num+=1
        lst.append(i)
if num<=m:
    print(abs(sum(lst)))
else:
    lst=sorted(lst)
    print(abs(sum(lst[0:m])))
```

:lick to see test details

160A. Twins

greedy, sortings, 900, https://codeforces.com/problemset/problem/160/A

思路:

代码

```
n=int(input())
s=[int(x) for x in input().split()]
s.sort(reverse=True)
all_sum=sum(s)
mine=0
num=0
for i in s:
    mine+=i
    num+=1
    if mine>all_sum-mine:
        print(num)
        break
```

代码运行截图 ==（至少包含有"Accepted"）==

General

#	Author	Problem	Lang	Verdict	Tin
282195749	Practice: wrc2006	160A - 20	Python 3	Accepted	12 m

→ Source

```
n=int(input())
s=[int(x) for x in input().split()]
s.sort(reverse=True)
all_sum=sum(s)
mine=0
num=0
for i in s:
    mine+=i
    num+=1
    if mine>all_sum-mine:
        print(num)
        break
```

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1879B. Chips on the Board

constructive algorithms, greedy, 900, https://codeforces.com/problemset/problem/1879/B

思路:

代码

```
t=int(input())
for i in range(t):
    n=int(input())
    a=[int(x) for x in input().split()]
    b=[int(x) for x in input().split()]
    mina=min(a)
    minb=min(b)
    min1=sum([mina+m for m in b])
    min2=sum([minb+n for n in a])
    print(min(min1,min2))
```

代码运行截图 (至少包含有"Accepted")

General

#	Author	Problem	Lang	Verdict
282599994	Practice: wrc2006	1879B - 10	Python 3	Accepted

→ Source

```
=int(input())
or i in range(t):
    n=int(input())
    a=[int(x) for x in input().split()]
    b=[int(x) for x in input().split()]
    mina=min(a)
    minb=min(b)
    min1=sum([mina+m for m in b])
    min2=sum([minb+n for n in a])
    print(min(min1,min2))
```

ck to see test details

158B. Taxi

*special problem, greedy, implementation, 1100, https://codeforces.com/problemset/problem/158/B

思路:

代码

```
import math
n=int(input())
kids=[int(x) for x in input().split()]
a,b,c,d=map(kids.count,(1,2,3,4))
ans=d+c
a=max(0,a-c)
ans+=math.ceil((b*2+a)/4)
print(ans)
```

代码运行截图 (至少包含有"Accepted")

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS STANDINGS CUSTOM INVOCATION

General

#	Author	Problem	Lang	Verdict
286156422	Practice: wrc2006	158B - 10	Python 3	Accepted

→ Source

```
import math
n=int(input())
kids=[int(x) for x in input().split()]
a,b,c,d=map(kids.count,(1,2,3,4))
ans=d+c
a=max(0,a-c)
ans+=math.ceil((b*2+a)/4)
print(ans)
```

Click to see test details

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*230B. T-primes（选做）

binary search, implementation, math, number theory, 1300, http://codeforces.com/problemset/problem/230/B

思路:

代码

```
def is_prime(n):
    lst=[True]*(n+1)
    primes=[]
    lst[1]=False
    for i in range(2,n+1):
        if lst[i]:
            primes.append(i)
        for p in primes:
            if i*p>n:
                break
            lst[i*p]=False
            if i%p==0:
                break
    return lst
n=int(input())
x=[int(x) for x in input().split()]
lst=is_prime(1000000)
for i in x:
    sqrt_i=i**0.5
    if (sqrt_i)%1==0:
        if lst[int(sqrt_i)]:
            print('YES')
        else:
            print('NO')
```

```
    else:
        print('NO')
```

代码运行截图 （至少包含有"Accepted"）

General

#	Author	Problem	Lang	Verdict	Time
284320017	Practice: wrc2006	230B - 28	PyPy 3-64	Accepted	654 ms

→ Source

```
def is_prime(n):
    lst=[True]*(n+1)
    primes=[]
    lst[1]=False
    for i in range(2,n+1):
        if lst[i]:
            primes.append(i)
        for p in primes:
            if i*p>n:
                break
            lst[i*p]=False
            if i%p==0:
                break
    return lst
n=int(input())
x=[int(x) for x in input().split()]
lst=is_prime(1000000)
for i in x:
    sqrt_i=i**0.5
    if (sqrt_i)%1==0:
        if lst[int(sqrt_i)]:
            print('YES')
        else:
            print('NO')
    else:
        print('NO')
```

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*12559: 最大最小整数 （选做）

greedy, strings, sortings, http://cs101.openjudge.cn/practice/12559

思路：

代码

```
n=int(input())
s=[x for x in input().split()]
maxn,minn='',''
s.sort(reverse=True)
while True:
    exchange=0
    for i in range(len(s)-1):
        if s[i+1] in s[i]:
            if s[i+1]+s[i]>s[i]+s[i+1]:
                s[i],s[i+1]=s[i+1],s[i]
                exchange+=1
    if exchange==0:
```

```
        break

for i in s:
    maxn+=i
s.reverse()
for i in s:
    minn+=i
print(int(maxn),int(minn))
```

代码运行截图 （至少包含有"Accepted"）

#46534904提交状态

状态: Accepted

源代码

```
n=int(input())
s=[x for x in input().split()]
maxn,minn='',''
s.sort(reverse=True)
while True:
    exchange=0
    for i in range(len(s)-1):
        if s[i+1] in s[i]:
            if s[i+1]+s[i]>s[i]+s[i+1]:
                s[i],s[i+1]=s[i+1],s[i]
                exchange+=1
    if exchange==0:
        break

for i in s:
    maxn+=i
s.reverse()
for i in s:
    minn+=i
print(int(maxn),int(minn))
```


2. 学习总结和收获

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。

每日一练还是没有跟上，哎。很多题目拿到手没有思路，好不容易想出来的也是暴力解题法，千辛万苦把代码编出来并测试正确后又是超时，基本遇上超时就没辙了，想不到优化的方法，也想不出另一个解题思路，大多数时候都得瞄一眼答案的思路，再重新按照答案的思路来写，哎