Assignment1

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院系：心理与认知科学学院

一、 作业题目

1、27653:Fraction 类(40min)

```python
numbers = input().split()
fenmu = int(numbers[1]) * int(numbers[3])
fenzi = int(numbers[0]) * int(numbers[3]) + int(numbers[1]) * int(numbers[2])
import math
def find_gcd(fenzi,fenmu):
    return math.gcd(fenzi,fenmu)
gcd = find_gcd(fenzi, fenmu)
result = ((str(int(fenzi/gcd)) + '/' + str(int(fenmu/gcd))))
print(result)
```

2、04110:圣诞老人的礼物-Santa Clau's Gifts(1h30min)

```python
n,w = list(map(int,(input().split())))
board=[]
price=[]
new = []
for i in range(n):
    board.append(list(map(int, input().split())))
for j in range(n):
    x = board[j][0]/board[j][1]
    price.append(x)
for k in range(n):
    new.append([price[k],board[k][1]])
new.sort(reverse=True)
curP=0
curW = 0
for i in new:
    if w-(curW+i[1]) >= 0:
        curW += i[1]
        curP += i[0]*i[1]
    else:
        curP += i[0]*(w-curW)
        break
print(curP)
```

#44114184提交状态

状态: Accepted

基本信息

源代码

```python
n,w = list(map(int,(input().split())))
board=[]
price=[]
new = []

for i in range(n):
    board.append(list(map(int, input().split())))

for j in range(n):
    x = board[j][0]/board[j][1]
    price.append(x)

for k in range(n):
    new.append([price[k],board[k][1]])

new.sort(reverse=True)

curP=0
curW = 0
for i in new:
    if w-(curW+i[1]) >= 0:
        curW += i[1]
        curP += i[0]*i[1]
    else:
        curP += i[0]*(w-curW)
        break

print(curP)
```

#:	44114184
题目:	04110
提交人:	22n2000092113
内存:	3564kB
时间:	23ms
语言:	Python3
提交时间:	2024-03-08 11:32:51

3、T-primes (2h30min)

自己原来写的（time limit exceeded）：

```python
num = int(input())
tp = input().split()
import math
def count_factors(n):
    factors_count = 0
    for i in range(1, int(math.sqrt(n)) + 1):
        if n % i == 0:
            factors_count += 1
    return factors_count
def is_square(n):
    root = math.sqrt(n)
    if root == int(root):
        return True
for i in range(num):
    if count_factors(int(tp[i])) == 2 and is_square(int(tp[i])) == True:
        print("YES")
    else:
        print("NO")
```

参考答案的：

```python
n = 1000000
a = [1] * n
s = set()
for i in range(2,n):
    if a[i]:
        s.add(i*i)
        for j in range(i*i,n,i):
            a[j] = 0
input()
for x in map(int,input().split()):
    print(["NO","YES"][x in s])
```

4、18176:2050 年成绩计算（2h）

自己原来写的（time limit exceeded）：

```python
import math
def count_factors(n):
    factors_count = 0
    for i in range(1, int(math.sqrt(n)) + 1):
        if n % i == 0:
            factors_count += 1
    return factors_count
def is_square(n):
    root = math.sqrt(n)
    if root == int(root):
        return True
def tprime(n):
    if count_factors(n) == 2 and is_square(n) == True:
        return True
m,n=map(int,input().split())
for i in range(m):
    a=0
    l0=list(map(int,input().split()))
    for j in range(len(l0)):
        if tprime(l0[j])==True:
            a+=l0[j]/len(l0)
    if int(a)==0:
        print(0)
    else:
        print("%.2f" % a)
```

参考同学的：

```python
from math import sqrt
n=10000
ls,x,y=[True]*(n+1),2,int(sqrt(n))+1
while x<y:
    if ls[x]==True:
        for i in range(x*2,n+1,x):
            ls[i]=False
    x+=1
ls=set([i**2 for i in range(2,n+1) if ls[i]==True])

m,n=map(int,input().split())
for _ in range(m):
    scores=list(map(int,input().split()))
    score=0
    for i in scores:
        if i in ls:
            score+=i
    print("%.2f"%(score/len(scores)) if score else 0)
```

5、18182:打怪兽（2h50min）

```python
xbag={}
ncase=int(input())
for i in range(ncase):
    xbag[i]={}
    n,m,b = map(int,input().split())
    xbag[i][0]=(m,b)
    for ii in range(n):
        t,x = map(int,input().split())
        if t not in xbag[i].keys():
            xbag[i][t]=[x]
        else:
            xbag[i][t].append(x)
            xbag[i][t]=sorted(xbag[i][t], reverse=True)
for i in range(ncase):
    sorted_key=sorted(xbag[i].keys())
    m,b=xbag[i][0]
    for k in sorted_key[1:]:
        b-=sum(xbag[i][k][:m])
        if b<=0:
            print(k)
            break
    if b>0:
        print("alive")
```

学习感受与心得：

这一次的作业比上一次耗时要长，而且发现程序能跑出来也不行，还会超时（心累...），想要 ac 还是得改进自己的方法，看了参考答案之后确实有一种豁然开朗的感觉。感觉有时候能 ac 了还是需要看看参考答案优化一下自己的思路。