

Assignment #1: 自主学习

Updated 0110 GMT+8 Sep 10, 2024

2024 fall, Compiled by ==徐嘉期、地球与空间科学学院==

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) 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

02733: 判断闰年

<http://cs101.openjudge.cn/practice/02733/>

思路:

两重条件

先判断是否为4的倍数

再判断能否被400整除

都满足才为闰年

代码

```
#
a = int(input () )
if a % 4 == 0:
    if a % 100 == 0 and a % 400 != 0:
        print("N")
    else:
        print("Y")
else:
    print("N")
```

代码运行截图 == (至少包含有"Accepted") ==



时间: 约5min

02750: 鸡兔同笼

<http://cs101.openjudge.cn/practice/02750/>

思路:

若为奇数条腿, 则直接输出0 0

若为偶数条腿

数目最少时兔子的数目一定为达到上限, mod 4余2或0都可用 $(+2) // 4$ 的方式

数目最多时全部为鸡

代码

```
#
n = int(input())
if n%2 ==1 :
    print("0 0")
else:
    print((n+2)//4,n//2)
```

代码运行截图 == (至少包含有"Accepted") ==

OpenJudge 题目ID, 标题, 描述 徐嘉期 信箱 账号

CS101 / 题库 (包括计概、数算题目)

题目 排名 状态 提问

#46128418提交状态 查看 提交 统计 提问

状态: Accepted

源代码

```
n = int(input())
if n%2 == 1:
    print("0 0")
else:
    print((n+2)//4, n//2)
```

基本信息

#: 46128418
题目: 02750
提交人: 徐嘉期
内存: 3548kB
时间: 28ms
语言: Python3
提交时间: 2024-09-20 07:23:06

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时间: 约2min

50A. Domino piling

greedy, math, 800, <http://codeforces.com/problemset/problem/50/A>


思路:

由黑白染色知, 只要格子总数为偶数则一定可以全覆盖, $a*b//2$ 即可; 为奇数时减一再除以2

代码

```
#
str=input().split(' ')
a = int( str[0] )
b= int ( str[1] )
if a*b % 2 ==0:
    print(a*b//2)
else:
    print((a*b-1)//2)
```

代码运行截图 == (AC代码截图, 至少包含有"Accepted") ==

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PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

General

#	Author	Problem	Lang	Verdict	Time	Memory	Sent	Judged		
280666990	Practice: xjq123123	50A - 14	Python 3	Accepted	154 ms	20 KB	2024-09-11 02:14:51	2024-09-11 02:14:51	★	Compare



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```
str=input().split(' ')
a = int( str[0] )
b= int ( str[1] )
if a*b % 2 ==0:
    print(a*b//2)
else:
    print((a*b-1)//2)
```

[Click to see test details](#)

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时间：约10min

1A. Theatre Square

math, 1000, <https://codeforces.com/problemset/problem/1/A>

思路：

n,m除以a向上取整，再乘起来即可

代码

```
#
str = input().split(' ')
if int(str[0]) % int(str[2]) == 0:
    n= int(str[0])//int(str[2])
else:
    n= int(str[0])//int(str[2])+1
if int(str[1]) % int(str[2]) == 0:
    m= int(str[1])//int(str[2])
else:
    m= int(str[1])//int(str[2])+1
print(n*m)
```

时间：约20? min

代码运行截图 == (AC代码截图，至少包含有"Accepted") ==

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PROBLEMS SUBMIT STATUS STANDINGS CUSTOM TEST

A. Theatre Square

time limit per test: 1 second
memory limit per test: 256 megabytes

Theatre Square in the capital city of Berland has a rectangular shape with the size $n \times m$ meters. On the occasion of the city's anniversary, a decision was taken to pave the Square with square granite flagstones. Each flagstone is of the size $a \times a$.

What is the least number of flagstones needed to pave the Square? It's allowed to cover the surface larger than the Theatre Square, but the Square has to be covered. It's not allowed to break the flagstones. The sides of flagstones should be parallel to the sides of the Square.

Input
The input contains three positive integer numbers in the first line: n , m and a ($1 \leq n, m, a \leq 10^9$).

Output
Write the needed number of flagstones.

Examples

input	Copy
6 6 4	
output	Copy
4	

Codeforces Beta Round 1

Finished

Practice

★

→ **Virtual participation**

Virtual contest is a way to take part in past contests, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ **Clone Contest to Mashup**

You can clone this contest to a mashup.

Clone Contest

→ **Submit?**

Language: Python 3.8.10

Almost always, if you send a solution on PyPy, it works much faster

Choose file: 选择文件 未选择任何文件

Submit

112A. Petya and Strings

implementation, strings, 1000, <http://codeforces.com/problemset/problem/112/A>

思路：

首先将输入转换为小写

python内置字符串比较即为字典序，直接比较即可

代码

```
#
a,b=input(),input()
a=a.lower()
b=b.lower()
if a>b:
    print(1)
elif a<b:
    print(-1)
else:
    print(0)
```

代码运行截图 == (AC代码截图，至少包含有"Accepted") ==

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General

#	Author	Problem	Lang	Verdict	Time	Memory	Sent	Judged		
280742670	Practice: xjq123123	112A - 11	Python 3	Accepted	186 ms	16 KB	2024-09-11 17:04:36	2024-09-11 17:04:36	☆	Compare

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```
a,b=input().input()
a=a.lower()
b=b.lower()
if a>b:
    print(1)
elif a<b:
    print(-1)
else:
    print(0)
```

[Click to see test details](#)

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时间：约10min？

231A. Team

bruteforce, greedy, 800, <http://codeforces.com/problemset/problem/231/A>

思路：

对每组输入list求和，若大于1即可解决，sum+=1，最后输出sum

代码

```
#
total = int(input())
sum_ = 0
for i in range(total):
    curr = sum(map(int,input().split(' ')))
    if curr>1:
        sum_+=1
print(sum_)
```

代码运行截图 == (AC代码截图，至少包含有"Accepted") ==



General									
#	Author	Problem	Lang	Verdict	Time	Memory	Sent	Judged	
281921683	Practice: xjq123123	231A - 11	Python 3	Accepted	154 ms	16 KB	2024-09-20 02:33:38	2024-09-20 02:33:38	Compare

→ Source

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```
# total = int(input())
# sum = 0
# for i in range(total):
#     curr = 0
#     str = input().split(' ')
#     for j in str:
#         curr += int(j)
#         if curr >= 2:
#             sum += 1
#     print(sum)

total = int(input())
sum = 0
for i in range(total):
    curr = sum(map(int, input().split(' ')))
    if curr >= 2:
        sum += 1
    print(sum)

n = int(input())
cnt = 0
for i in range(n):
    s = sum(map(int, input().split()))
    if s > 1: cnt += 1
print(cnt)
```

[Click to see test details](#)

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ITMO

时间: 约15? min

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。==

- 1) python最基本语法掌握
- 2) 完成题目后看他人代码学会了map,split,sum的用法
- 3) 自己尝试中发现了字符串a>b的比较是按照字典序进行比较, 如: ab>aa
- 4) 经过简单思考后, 作业比较容易完成, 额外练习: 补8.23后的每日练习 (仍在补作业ing)