Assignment #1: 拉齐大家Python水平

Updated 0940 GMT+8 Feb 19, 2024

2024 spring, Complied by ==陈奕好 工学院==

说明：

1）数算课程的先修课是计概，由于计概学习中可能使用了不同的编程语言，而数算课程要求Python语言，因此第一周作业练习Python编程。如果有同学坚持使用C/C++，也可以，但是建议也要会Python语言。

2）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3月1日导入选课名单后启用。**作业写好后，保留在自己手中，待3月1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。

编程环境

==（请改为同学的操作系统、编程环境等）==

操作系统：macOS Sonoma 14.3.1 (c)

Python编程环境：PyCharm 2023.3.1 (Professional Edition)

1. 题目

20742: 泰波拿契數

http://cs101.openjudge.cn/practice/20742/

思路：打表，再算。

代码

```
"""
lst = [0,1,1]
for i in range(3,30):
    lst.append(lst[i-1]+lst[i-2]+lst[i-3])
print(lst)
print(len(lst))
"""


lst = [0, 1, 1, 2, 4, 7, 13, 24, 44, 81, 149, 274, 504, 927, 1705, 3136, 5768, 10609,
19513, 35890, 66012, 121415, 223317, 410744, 755476, 1389537, 2555757, 4700770, 8646064,
15902591]
print(lst[int(input())])
```

代码运行截图 ==（至少包含有"Accepted"）==

#43973816提交状态

查看　　　提交　　　统计　　　提问

状态: Accepted

基本信息

源代码

```
lst=[0, 1, 1, 2, 4, 7, 13, 24, 44, 81, 149, 274, 504, 927, 1705, 3136, 5
print(lst[int(input())])
```

#:	43973816
题目:	20742
提交人:	23n2300011030(陈奕好)
内存:	3856kB
时间:	21ms
语言:	Python3
提交时间:	2024-02-23 20:07:38

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English　帮助　关于

58A. Chat room

greedy/strings, 1000, http://codeforces.com/problemset/problem/58/A

思路：之前只是用简单find，现在尝试用正则表达式。但还是find快

代码

```
# -*- coding: utf-8 -*-
"""
Created on Fri Sep 22 19:25:31 2023

@author: ImagineBreaker123
"""
"""
n = input()
list0 = []
try:
    if 'h' in n:
```

```python
            list0.append('h')
            n = n[n.index('h')+1:]
        if 'e' in n:
            list0.append('e')
            n = n[n.index('e')+1:]
        if 'l' in n:
            list0.append('l')
            n = n[n.index('l')+1:]
        if 'l' in n:
            list0.append('l')
            n = n[n.index('l')+1:]
        if 'o' in n:
            list0.append('o')
        if list0 == ['h','e','l','l','o']:
            print('YES')
        else:
            print('NO')
except:
    print('NO')
"""


import re
string = input()
pattern = r"\w*h\w*e\w*l\w*l\w*o\w*"
matches = re.match(pattern, string)
if matches:
    print("YES")
else:
    print("NO")
```

代码运行截图 ==（至少包含有"Accepted"）==

General ▶

#	Author	Problem	Lang	Verdict	Time	Memory	Sent	Judged		
247875232	Practice: Chen_Yihao	58A - 10	Python 3	**Accepted**	62 ms	864 KB	2024-02-23 15:25:15	2024-02-23 15:25:15	⭐	Compare

→ Source Copy

```python
import re
string = input()
pattern = r"\w*h\w*e\w*l\w*l\w*o\w*"
matches = re.match(pattern, string)
if matches:
    print("YES")
else:
    print("NO")
```

Click to see test details

118A. String Task

implementation/strings, 1000, http://codeforces.com/problemset/problem/118/A

思路：感觉不如我之前的代码

代码

```
"""
word = input().lower()
word_cooked = list(map(str,word))
word_overcooked = [c for c in word_cooked if c not in ['a', 'o', 'i', 'e', 'u', 'y']]

new_word = list(map(lambda x : "." + x,word_overcooked))
print(*new_word, sep = '')
"""


string = input().lower()
tmp = ""
for i in string:
    if i not in ('a','o','y','e','u','i'):
        tmp += i
print('.'+".".join(tmp))
```

代码运行截图 ==（AC代码截图，至少包含有"Accepted"）==

→ **Source**   Copy

```
string = input().lower()
tmp = ""
for i in string:
    if i not in ('a','o','y','e','u','i'):
        tmp += i
print('.'+".".join(tmp))
```

Click to see test details

22359: Goldbach Conjecture

思路：打表，在挨个搜索。

代码

```
"""
import math
n = int(1e4)
ans = [False]*(n+1)
ans[1] = True
ans_list = []
for i in range(2,int(math.sqrt(n+1)+1)):
    if not ans[i]:
        for j in range(i**2,n+1,i):
            ans[j]= True
for i in range(2,n+1):
    if not ans[i]:
        ans_list.append(i)
print(ans_list)
"""
primes = (2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73,
79, 83, 89, 97, 101, 103, 107, 109, 113, 127, 131, 137, 139, 149, 151, 157, 163, 167, 173,
179, 181, 191, 193, 197, 199, 211, 223, 227, 229, 233, 239, 241, 251, 257, 263, 269, 271,
277, 281, 283, 293, 307, 311, 313, 317, 331, 337, 347, 349, 353, 359, 367, 373, 379, 383,
389, 397, 401, 409, 419, 421, 431, 433, 439, 443, 449, 457, 461, 463, 467, 479, 487, 491,
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617, 619, 631, 641, 643, 647, 653, 659, 661, 673, 677, 683, 691, 701, 709, 719, 727, 733,
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1997, 1999, 2003, 2011, 2017, 2027, 2029, 2039, 2053, 2063, 2069, 2081, 2083, 2087, 2089,
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```
9743, 9749, 9767, 9769, 9781, 9787, 9791, 9803, 9811, 9817, 9829, 9833, 9839, 9851, 9857,
9859, 9871, 9883, 9887, 9901, 9907, 9923, 9929, 9931, 9941, 9949, 9967, 9973)

def goldbach_conjecture(goal):
    for i in primes:
        if goal - i in primes:
            print(i, goal-i)
            exit()


goldbach_conjecture(int(input()))
```

代码运行截图 ==（AC代码截图，至少包含有"Accepted"）==

#43974748提交状态   查看   提交   统计   提问

状态: Accepted

源代码

```
"""
import math
n = int(1e4)
ans = [False]*(n+1)
ans[1] = True
ans_list = []
for i in range(2,int(math.sqrt(n+1)+1)):
    if not ans[i]:
        for j in range(i**2,n+1,i):
            ans[j]= True
for i in range(2,n+1):
    if not ans[i]:
        ans_list.append(i)
print(ans_list)
"""
primes = (2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 5

def goldbach_conjecture(goal):
    for i in primes:
        if goal - i in primes:
            print(i, goal-i)
            exit()

goldbach_conjecture(int(input()))
```

基本信息
#: 43974748
题目: 22359
提交人: 23n2300011030(陈奕妤)
内存: 8088kB
时间: 25ms
语言: Python3
提交时间: 2024-02-23 21:15:26

English   帮助   关于

23563: 多项式时间复杂度

http://cs101.openjudge.cn/practice/23563/

思路：分开

代码

```python
string = input().split("+")
a1 = []
b1 = [0]
for i in string:
    if i[0] == 'n':
        i = '1'+i
    temp = list(map(int,i.split('n^')))
    if temp[0] != 0:
        a1.append(temp[0])
        b1.append(temp[-1])
print(f"n^{b1[b1.index(max(b1))]}")
```

代码运行截图 ==（AC代码截图，至少包含有"Accepted"）==

24684: 直播计票

http://cs101.openjudge.cn/practice/24684/

思路：一个奇怪的算法

代码

```python
from collections import Counter
string = map(int,input().split())
counter = Counter(string)
maxium = max(counter.values())
ans = []

for i in list(counter.items()):
    if i[1] == maxium:
        ans.append(i[0])
ans.sort()
print(*ans)
```

代码运行截图 ==（AC代码截图，至少包含有"Accepted"）==

#43975186提交状态

状态: Accepted

源代码

```python
from collections import import Counter
string = map(int,input().split())
counter = Counter(string)
maxium = max(counter.values())
ans = []

for i in list(counter.items()):
    if i[1] == maxium:
        ans.append(i[0])
ans.sort()
print(*ans)
```

基本信息

#:	43975186
题目:	24684
提交人:	23n2300011030(陈奕好)
内存:	11924kB
时间:	49ms
语言:	Python3
提交时间:	2024-02-23 22:08:29

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"数算pre每日选做"、CF、LeetCode、洛谷等网站题目。==

有内味了，是熟悉的感觉！