Assignment #3: 惊蛰 Mock Exam

Updated 1641 GMT+8 Mar 5, 2025

2025 spring, Complied by 同学的姓名、院系

> **说明:**
>
> 1. **惊蛰月考**：AC4（请改为同学的通过数）。考试题目都在"题库（包括计概、数算题目）"里面，按照数字题号能找到，可以重新提交。作业中提交自己最满意版本的代码和截图。
>
> 2. **解题与记录:**
>
>   对于每一个题目，请提供其解题思路（可选），并附上使用Python或C++编写的源代码（确保已在OpenJudge，Codeforces，LeetCode等平台上获得Accepted）。请将这些信息连同显示"Accepted"的截图一起填写到下方的作业模板中。（推荐使用Typora https://typoraio.cn 进行编辑，当然你也可以选择Word。）无论题目是否已通过，请标明每个题目大致花费的时间。
>
> 3. **提交安排:** 提交时，请首先上传PDF格式的文件，并将.md或.doc格式的文件作为附件上传至右侧的"作业评论"区。确保你的Canvas账户有一个清晰可见的头像，提交的文件为PDF格式，并且"作业评论"区包含上传的.md或.doc附件。
>
> 4. **延迟提交:** 如果你预计无法在截止日期前提交作业，请提前告知具体原因。这有助于我们了解情况并可能为你提供适当的延期或其他帮助。
>
> 请按照上述指导认真准备和提交作业，以保证顺利完成课程要求。

1. 题目

E04015: 邮箱验证

strings, http://cs101.openjudge.cn/practice/04015

思路：

- 做过

- 考场上想用正则做但是失败了，看来还是正则功夫不到家

代码：

```python
from sys import stdin
mails = stdin.read().split()
for mail in mails:
    if mail[0] != "." and mail[0] != "@" and "@" in mail and ".@" not in mail and "@." not in mail and mail[-1] != "@" and mail[-1] != ".":
        left = mail[mail.index("@") + 1:]
        if "@" not in left and "." in left:
            print("YES")
        else:
            print("NO")
    else:
        print("NO")
```

代码运行截图 （至少包含有"Accepted"）

M02039: 反反复复

implementation, http://cs101.openjudge.cn/practice/02039/

思路：

- 有点像螺旋矩阵

代码：

```python
from pprint import pprint
DIRECTIONS = ((1, 0), (0, 1))
c = int(input())
coded = input()
n = len(coded)
a = 0
b = -1
matrix = [["0" for i in range(n // c)] for j in range(c)]
step = -1
for i in range(n):
    if i % c:
        a += step
    else:
        b += 1
        step = -step
    matrix[a][b] = coded[i]
for line in matrix:
    print("".join(line), end="")
```

代码运行截图 （至少包含有"Accepted"）

#48445650提交状态

查看 提交 统计 提问

状态: Accepted

源代码

```
from pprint import pprint
DIRECTIONS = ((1, 0), (0, 1))
c = int(input())
coded = input()
n = len(coded)
a = 0
b = -1
matrix = [["0" for i in range(n // c)] for j in range(c)]
step = -1
for i in range(n):
    if i % c:
        a += step
    else:
        b += 1
        step = -step
    matrix[a][b] = coded[i]
for line in matrix:
    print("".join(line), end="")
```

基本信息

#: 48445650
题目: M02039
提交人: 颜鼎垫(24n2400011125)
内存: 3916kB
时间: 31ms
语言: Python3
提交时间: 2025-03-05 15:47:23

English 帮助 关于

OJ-02039

M02092: Grandpa is Famous

implementation, http://cs101.openjudge.cn/practice/02092/

思路：

- 看了好几遍题目才明白意思
- 其实不难
- ~~爷爷得了MVP，我就是town in go~~

代码：

```python
while True:
    N, M = map(int, input().split())
    if N == 0:
        break
    rankings = [list(map(int, input().split())) for i in range(N)]
    player = [-1] + [0] * 10000
    second = []
    for rank in rankings:
        for i in rank:
            player[i] += 1
    mvp = max(player)
    player[player.index(mvp)] = -1
    mvp = max(player)
    print(*[p for p in range(10001) if player[p] == mvp])
```

代码运行截图 （至少包含有"Accepted"）

CS101 / **20250305惊蛰 cs201 Mock Exam** 已经结束

题目   排名   状态   统计   提问

#48446352提交状态

查看   提交   统计   提问

状态: **Accepted**

源代码

```python
while True:
    N, M = map(int, input().split())
    if N == 0:
        break
    rankings = [list(map(int, input().split())) for i in range(N)]
    player = [-1] + [0] * 10000
    second = []
    for rank in rankings:
        for i in rank:
            player[i] += 1
    mvp = max(player)
    player[player.index(mvp)] = -1
    mvp = max(player)
    print(*[p for p in range(10001) if player[p] == mvp])
```

基本信息

    #: 48446352
    题目: M02092
    提交人: 颜鼎堃(24n2400011125)
    内存: 17740kB
    时间: 168ms
    语言: Python3
    提交时间: 2025-03-05 16:17:56

OJ-02092

M04133: 垃圾炸弹

matrices, http://cs101.openjudge.cn/practice/04133/

思路:

- 做过，有印象

代码:

```python
d = int(input())
n = int(input())
road = [[0 for i in range(1025)] for j in range(1025)]
for i in range(n):
    x, y, i = map(int, input().split())
    for row in range(max(0, x - d), min(1025, x + d + 1)):
        for col in range(max(0, y - d), min(1025, y + d + 1)):
            road[row][col] += i
max_gar = max(map(max, road))
cnt = 0
for i in road:
    cnt += i.count(max_gar)
print(cnt, max_gar)
```

代码运行截图 （至少包含有"Accepted"）

CS101 / **20250305惊蛰 cs201 Mock Exam** 已经结束

题目   排名   状态   统计   提问

#48446045提交状态

查看   提交   统计   提问

状态: **Accepted**

源代码

```
d = int(input())
n = int(input())
road = [[0 for i in range(1025)] for j in range(1025)]
for i in range(n):
    x, y, i = map(int, input().split())
    for row in range(max(0, x - d), min(1025, x + d + 1)):
        for col in range(max(0, y - d), min(1025, y + d + 1)):
            road[row][col] += i
max_gar = max(map(max, road))
cnt = 0
for i in road:
    cnt += i.count(max_gar)
print(cnt, max_gar)
```

基本信息

#: 48446045
题目: M04133
提交人: 颜鼎堃(24n2400011125)
内存: 12660kB
时间: 94ms
语言: Python3
提交时间: 2025-03-05 16:04:42

English 帮助 关于

OJ-04133

T02488: A Knight's Journey

backtracking, http://cs101.openjudge.cn/practice/02488/

思路：

- 考场上看到这题，想到了另外一题，担心自己会超时，根本就没动笔
- 其实不难，后悔后悔
- 最大的收获是学会了怎样跳出递归

代码：

```Python
from collections import deque
from math import ceil
DIRECTIONS = ((-1, -2), (1, -2), (-2, -1), (2, -1), (-2, 1), (2, 1), (-1, 2), (1, 2))
ans = "impossible"
class Found(Exception):
    pass


def check(coors):
    global ans
    ans = ""
    for i, j in coors:
        ans += chr(65 + j) + str(i + 1)
def dfs(x, y, path):
    # print(x, y, path)
    global p, q
    if len(path) == p * q:
        check(path)
        raise Found
    for dx, dy in DIRECTIONS:
        nx, ny = x + dx, y + dy
        if 0 <= nx < p and 0 <= ny < q and not board[nx][ny]:
            board[nx][ny] = 1
            dfs(nx, ny, path + [(nx, ny)])
```

```
25              board[nx][ny] = 0
26
27
28  for i in range(1, 1 + int(input())):
29      ans = "impossible"
30      p, q = map(int, input().split())
31      board = [[0 for i in range(q)] for j in range(p)]
32      board[0][0] = 1
33      try:
34          dfs(0, 0, [(0, 0)])
35      except Found:
36          pass
37      print(f"Scenario #{i}:\n" + ans + "\n")
38
```

代码运行截图 （至少包含有"Accepted"）

OJ-02488

T06648: Sequence

heap, http://cs101.openjudge.cn/practice/06648/

思路：

- 不会写
- 让AI写了个，对着学习学习吧
- AI比我强太多

代码：

```Python
1   import heapq
2
3   def main():
4       import sys
5       input = sys.stdin.read().split()
6       ptr = 0
7       T = int(input[ptr])
8       ptr += 1
```

```python
 9          for _ in range(T):
10              m = int(input[ptr])
11              n = int(input[ptr+1])
12              ptr += 2
13              sequences = []
14              for _ in range(m):
15                  seq = list(map(int, input[ptr:ptr+n]))
16                  ptr += n
17                  seq.sort()
18                  sequences.append(seq)
19              if m == 0:
20                  continue  # as per problem constraints, m >0
21              prev_sums = sequences[0].copy()
22              for i in range(1, m):
23                  curr = sequences[i]
24                  heap = []
25                  for i_prev in range(n):
26                      s = prev_sums[i_prev] + curr[0]
27                      heapq.heappush(heap, (s, i_prev, 0))
28                  new_sums = []
29                  while len(new_sums) < n and heap:
30                      s, i_prev, j_curr = heapq.heappop(heap)
31                      new_sums.append(s)
32                      if j_curr + 1 < n:
33                          next_j = j_curr + 1
34                          next_s = prev_sums[i_prev] + curr[next_j]
35                          heapq.heappush(heap, (next_s, i_prev, next_j))
36                  prev_sums = new_sums
37              print(' '.join(map(str, prev_sums)))
38
39  if __name__ == "__main__":
40      main()
```

代码运行截图 （AC代码截图，至少包含有"Accepted"）

OJ-06648

2. 学习总结和收获

如果发现作业题目相对简单，有否寻找额外的练习题目，如"数算2025spring每日选做"、LeetCode、Codeforces、洛谷等网站上的题目。

本来可以AC5的，倒数第二题让我想起了之前提到的一个题，据说很容易超时，就没尝试，最后一题又不会写

怎么感觉这学期这么不想学习呢，但自己又菜，那不完蛋了吗