

Assignment #D: 十全十美

Updated 1254 GMT+8 Dec 17, 2024

2024 fall, Compiled by 万馨雅 城环

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。
- 2) 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。
- 3) 如果不能在截止前提交作业，请写明原因。

1. 题目

02692: 假币问题

brute force, <http://cs101.openjudge.cn/practice/02692>

思路:

代码:

```
n=int(input())
for _ in range(n):
    dic='ABCDEFGHIIJKL'
    g=set()
    light=set()
    heavy=set()
    for _ in range(0,3):
        m,n,zhuangtai=input().split()
        if zhuangtai=='even':
            g.update(m)
            g.update(n)
        elif zhuangtai=='up':
            heavy.update(m)
            light.update(n)
        else:
            light.update(m)
            heavy.update(n)
    for i in dic:
        if i in g:
            continue
        if i in heavy and i not in light:
            print(f'{i} is the counterfeit coin and it is heavy.')
            break
        elif i in light and i not in heavy:
```

```
print(f'{i} is the counterfeit coin and it is light.')
break
```

代码运行截图 (至少包含有"Accepted")

#47814935提交状态

状态: Accepted

源代码

```
n=int(input())
for _ in range(n):
    dic='ABCDEFGHIJKL'
    g=set()
    light=set()
    heavy=set()
    for _ in range(0,3):
        m,n,zhuangtai=input().split()
        if zhuangtai=='even':
            g.update(m)
            g.update(n)
        elif zhuangtai=='up':
            heavy.update(m)
            light.update(n)
        else:
            light.update(m)
            heavy.update(n)
    for i in dic:
        if i in g:
            continue
        if i in heavy and i not in light:
            print(f'{i} is the counterfeit coin and it is heavy.')
            break
        elif i in light and i not in heavy:
            print(f'{i} is the counterfeit coin and it is light.')
            break
```

基本信息

题目
提交
内存
时间
语言
提交时间

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01088: 滑雪

dp, dfs similar, <http://cs101.openjudge.cn/practice/01088>

思路:

代码:

```
r,c=map(int,input().split())
m=[list(map(int,input().split())) for _ in range(r)]
dp=[[-1]*c for _ in range(r)]
directions=[(1,0),(-1,0),(0,1),(0,-1)]
def dfs(x,y):
    if dp[x][y]!=-1:
        return dp[x][y]
    max_length=1
    for dx,dy in directions:
        nx,ny=x+dx,y+dy
```

```

        if 0<=nx<r and 0<=ny<c and m[nx][ny]<m[x][y]:
            max_length=max(dfs(nx,ny)+1,max_length)
        dp[x][y]=max_length
    return max_length
result=0
for i in range(r):
    for j in range(c):
        result=max(result,dfs(i,j))
print(result)

```

代码运行截图 == (至少包含有"Accepted") ==

#47837850提交状态

状态: Accepted

看

源代码

```

r,c=map(int,input().split())
m=[list(map(int,input().split())) for _ in range(r)]
dp=[[-1]*c for _ in range(r)]
directions=[(1,0),(-1,0),(0,1),(0,-1)]
def dfs(x,y):
    if dp[x][y]!=-1:
        return dp[x][y]
    max_length=1
    for dx,dy in directions:
        nx,ny=x+dx,y+dy
        if 0<=nx<r and 0<=ny<c and m[nx][ny]<m[x][y]:
            max_length=max(dfs(nx,ny)+1,max_length)
    dp[x][y]=max_length
    return max_length
result=0
for i in range(r):
    for j in range(c):
        result=max(result,dfs(i,j))
print(result)

```

25572: 螃蟹采蘑菇

bfs, dfs, <http://cs101.openjudge.cn/practice/25572/>

思路:

代码:

```

from collections import deque
def bfs(i,j,k,l,c):
    q=deque()
    q.append((i,j,k,l))

```

```

visited.append((i,j,k,l))
while q:
    i,j,k,l=q.popleft()
    if c[i][j]==9 or c[k][l]==9:
        return True
    for dx,dy in directions:
        ni=i+dx;nj=j+dy
        nk=k+dx;n1=l+dy
        if 0<=ni<n and 0<=nj<n and 0<=nk<n and 0<=n1<n and c[ni][nj] !=1 and
c[nk][n1] !=1 and (ni,nj,nk,n1) not in visited:
            q.append((ni,nj,nk,n1))
            visited.append((ni,nj,nk,n1))
    return False

directions=[(1,0),(-1,0),(0,1),(0,-1)]
visited=[]
now=[]
n=int(input())
c=[list(map(int,input().split())) for _ in range(n)]
for a in range(n):
    for b in range(n):
        if c[a][b]==5:
            now.append(a)
            now.append(b)
i,j,k,l=now
if bfs(i,j,k,l,c):
    print('yes')
else:
    print('no')

```

代码运行截图 (至少包含有"Accepted")

状态: Accepted

基本信息

源代码

提交

提交

```

from collections import deque
def bfs(i,j,k,l,c):
    q=deque()
    q.append((i,j,k,l))
    visited.append((i,j,k,l))
    while q:
        i,j,k,l=q.popleft()
        if c[i][j]==9 or c[k][l]==9:
            return True
        for dx,dy in directions:
            ni=i+dx;nj=j+dy
            nk=k+dx;nl=l+dy
            if 0<=ni<n and 0<=nj<n and 0<=nk<n and 0<=nl<n and c[ni][nj]:
                q.append((ni,nj,nk,nl))
                visited.append((ni,nj,nk,nl))
    return False

directions=[(1,0),(-1,0),(0,1),(0,-1)]
visited=[]
now=[]
n=int(input())
c=[list(map(int,input().split())) for _ in range(n)]
for a in range(n):
    for b in range(n):
        if c[a][b]==5:
            now.append(a)
            now.append(b)
i,j,k,l=now
if bfs(i,j,k,l,c):
    print('yes')
else:
    print('no')

```

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27373: 最大整数

dp, <http://cs101.openjudge.cn/practice/27373/>

思路:

代码:

```

m=int(input())
n=int(input())
c=list(map(str,input().split()))
for i in range(len(c)-1):
    for j in range(i+1, len(c)):
        #print(i,j)
        if int(c[i] + c[j]) < int(c[j] + c[i]):
            c[i], c[j] = c[j], c[i]
dp=[[0]*(m+1) for _ in range(n+1)]
for i in range(1,n+1):
    for j in range(1,m+1):
        if j<len(c[i-1]):
            dp[i][j]=dp[i-1][j]
        else:
            dp[i][j]=max(dp[i-1][j],int(str(dp[i-1][j-len(c[i-1]]))+c[i-1]))

```

```
print(dp[-1][-1])
```

代码运行截图 (至少包含有"Accepted")

OpenJudge

题目ID, 标题, 描述

erxiduodianla

CS101 / 题库 (包括计概、数算题目)

题目

排名

状态

提问

#47863913提交状态

查看 提交

状态: Accepted

源代码

```
m=int(input())
n=int(input())
c=list(map(str,input().split()))
for i in range(len(c)-1):
    for j in range(i+1, len(c)):
        #print(i,j)
        if int(c[i] + c[j]) < int(c[j] + c[i]):
            c[i], c[j] = c[j], c[i]
dp=[[0]*(m+1) for _ in range(n+1)]
for i in range(1,n+1):
    for j in range(1,m+1):
        if j<len(c[i-1]):
            dp[i][j]=dp[i-1][j]
        else:
            dp[i][j]=max(dp[i-1][j],int(str(dp[i-1][j-len(c[i-1]]))+c[i-1]))
print(dp[-1][-1])
```

基本信息

#: 47863913

题目: 27373

提交人: erxiduodianla

内存: 5312kB

时间: 643ms

语言: Python3

提交时间: 2024-12-20

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Eng

02811: 熄灯问题

brute force, <http://cs101.openjudge.cn/practice/02811>

思路:

代码:

```
x = [[0,0,0,0,0,0,0,0]]
y = [[0,0,0,0,0,0,0,0]]
for _ in range(5):
    x.append([0] + [int(x) for x in input().split()] + [0])
    y.append([0 for x in range(8)])
x.append([0,0,0,0,0,0,0,0])
y.append([0,0,0,0,0,0,0,0])

import copy
for a in range(2):
```

```

Y[1][1] = a
for b in range(2):
    Y[1][2] = b
    for c in range(2):
        Y[1][3] = c
        for d in range(2):
            Y[1][4] = d
            for e in range(2):
                Y[1][5] = e
                for f in range(2):
                    Y[1][6] = f

A = copy.deepcopy(X)
B = copy.deepcopy(Y)
for i in range(1, 7):
    if B[1][i] == 1:
        A[1][i] = abs(A[1][i] - 1)
        A[1][i-1] = abs(A[1][i-1] - 1)
        A[1][i+1] = abs(A[1][i+1] - 1)
        A[2][i] = abs(A[2][i] - 1)
    for i in range(2, 6):
        for j in range(1, 7):
            if A[i-1][j] == 1:
                B[i][j] = 1
                A[i][j] = abs(A[i][j] - 1)
                A[i-1][j] = abs(A[i-1][j] - 1)
                A[i+1][j] = abs(A[i+1][j] - 1)
                A[i][j-1] = abs(A[i][j-1] - 1)
                A[i][j+1] = abs(A[i][j+1] - 1)
            if A[5][1]==0 and A[5][2]==0 and A[5][3]==0 and A[5]
[4]==0 and A[5][5]==0 and A[5][6]==0:
                for i in range(1, 6):
                    print(" ".join(repr(y) for y in [B[i][1],B[i]
[2],B[i][3],B[i][4],B[i][5],B[i][6] ]))

```

代码运行截图 (至少包含有"Accepted")

#4/75415 / 提交记录

状态: Accepted

源代码

08210: 河中跳房子

binary search, greedy, <http://cs101.openjudge.cn/practice/08210/>

思路:

代码:

```

L, n, m = map(int, input().split())
rock = [0]
for i in range(n):
    rock.append(int(input()))
rock.append(L)
def check(x):
    num = 0
    now = 0
    for i in range(1, n + 2):
        if rock[i] - now < x:
            num += 1
        else:
            now = rock[i]

    if num > m:
        return True
    else:
        return False
lo, hi = 0, L + 1
ans = -1
while lo < hi:
    mid = (lo + hi) // 2

    if check(mid):
        hi = mid
    else:
        ans = mid
        lo = mid + 1

print(ans)

```

代码运行截图 (至少包含有"Accepted")

状态: Accepted

源代码

```

L, n, m = map(int, input().split())
rock = [0]

```

2. 学习总结和收获

后面难的题目直接放弃了，希望机考能多做对一点简单和中等的题目（祈祷）。