Assignment #F: All-Killed 满分

Updated 1844 GMT+8 May 20, 2024

2024 spring, Complied by ==张坤 信科学院==

1. 题目

22485: 升空的焰火，从侧面看

http://cs101.openjudge.cn/practice/22485/

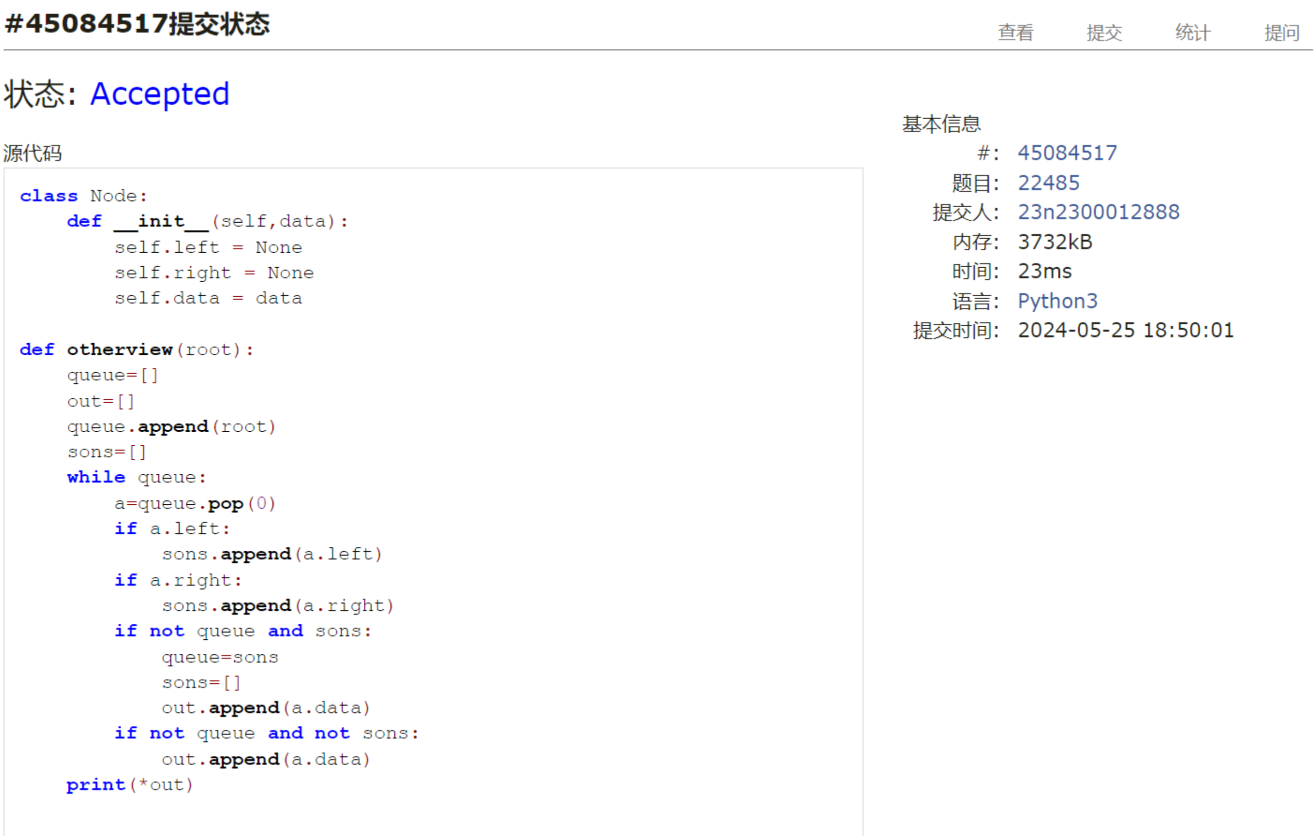
思路：bfs留下每一层最后一个节点

代码

```
class Node:
    def __init__(self, data):
        self.left = None
        self.right = None
        self.data = data


def otherview(root):
    queue = []
    out = []
    queue.append(root)
    sons = []
    while queue:
        a = queue.pop(0)
        if a.left:
            sons.append(a.left)
        if a.right:
            sons.append(a.right)
        if not queue and sons:
            queue = sons
            sons = []
            out.append(a.data)
        if not queue and not sons:
            out.append(a.data)
    print(*out)


N = int(input())
Nodelist = []
for i in range(N):
    Nodelist.append(Node(i + 1))
for i in range(N):
    left, right = map(int, input().split())
    if left != -1:
        Nodelist[i].left = Nodelist[left - 1]
    if right != -1:
        Nodelist[i].right = Nodelist[right - 1]
otherview(Nodelist[0])
```



#45084517提交状态

状态: Accepted

源代码

```
class Node:
    def __init__(self,data):
        self.left = None
        self.right = None
        self.data = data

def otherview(root):
    queue=[]
    out=[]
    queue.append(root)
    sons=[]
    while queue:
        a=queue.pop(0)
        if a.left:
            sons.append(a.left)
        if a.right:
            sons.append(a.right)
        if not queue and sons:
            queue=sons
            sons=[]
            out.append(a.data)
        if not queue and not sons:
            out.append(a.data)
    print(*out)
```

基本信息

#:	45084517
题目:	22485
提交人:	23n2300012888
内存:	3732kB
时间:	23ms
语言:	Python3
提交时间:	2024-05-25 18:50:01

代码运行截图 ==（至少包含有"Accepted"）==

28203:【模板】单调栈

http://cs101.openjudge.cn/practice/28203/

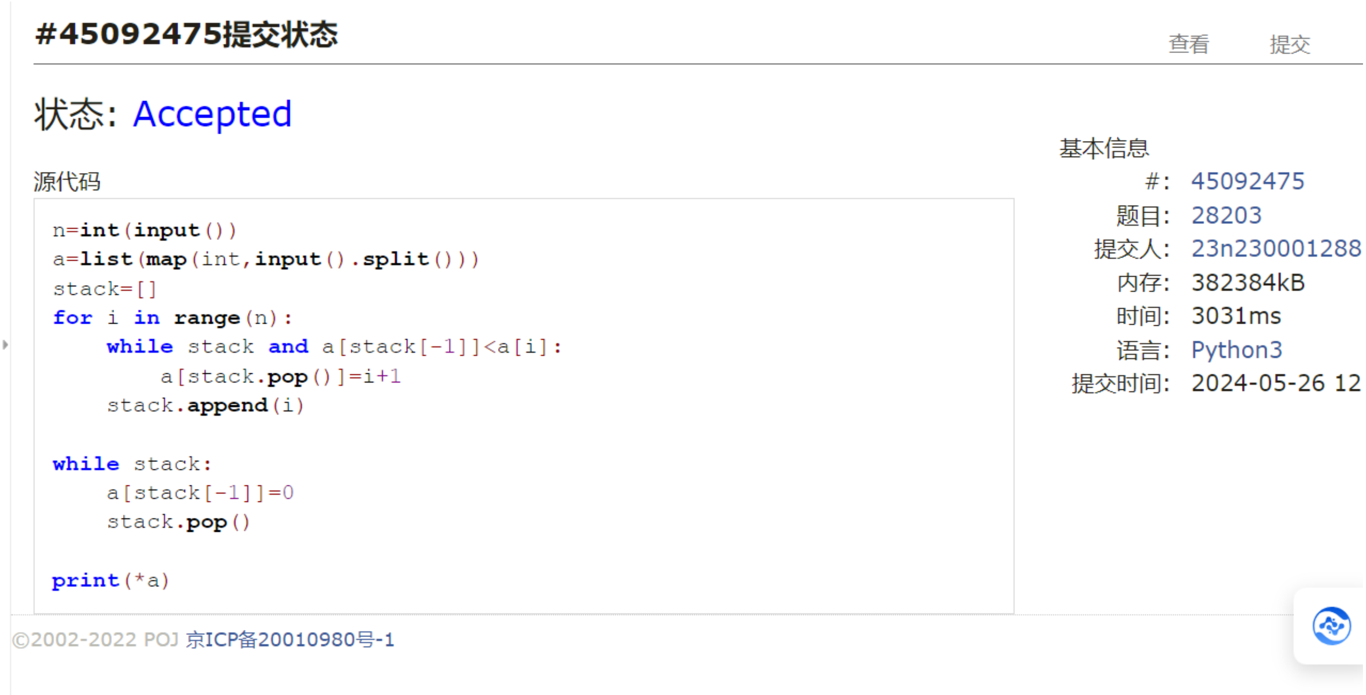
思路：结合下标的顺序性而产生的栈，先进先出且有单调性

代码

```
n = int(input())
a = list(map(int, input().split()))
stack = []
for i in range(n):
    while stack and a[stack[-1]] < a[i]:
        a[stack.pop()] = i + 1
    stack.append(i)

while stack:
    a[stack[-1]] = 0
    stack.pop()
```

```
print(*a)
```



#45092475提交状态

状态: Accepted

源代码

```
n=int(input())
a=list(map(int,input().split()))
stack=[]
for i in range(n):
    while stack and a[stack[-1]]<a[i]:
        a[stack.pop()]=i+1
    stack.append(i)

while stack:
    a[stack[-1]]=0
    stack.pop()

print(*a)
```

基本信息

#:	45092475
题目:	28203
提交人:	23n230001288
内存:	382384kB
时间:	3031ms
语言:	Python3
提交时间:	2024-05-26 12

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代码运行截图 ==（至少包含有"Accepted"）==

09202: 舰队、海域出击！

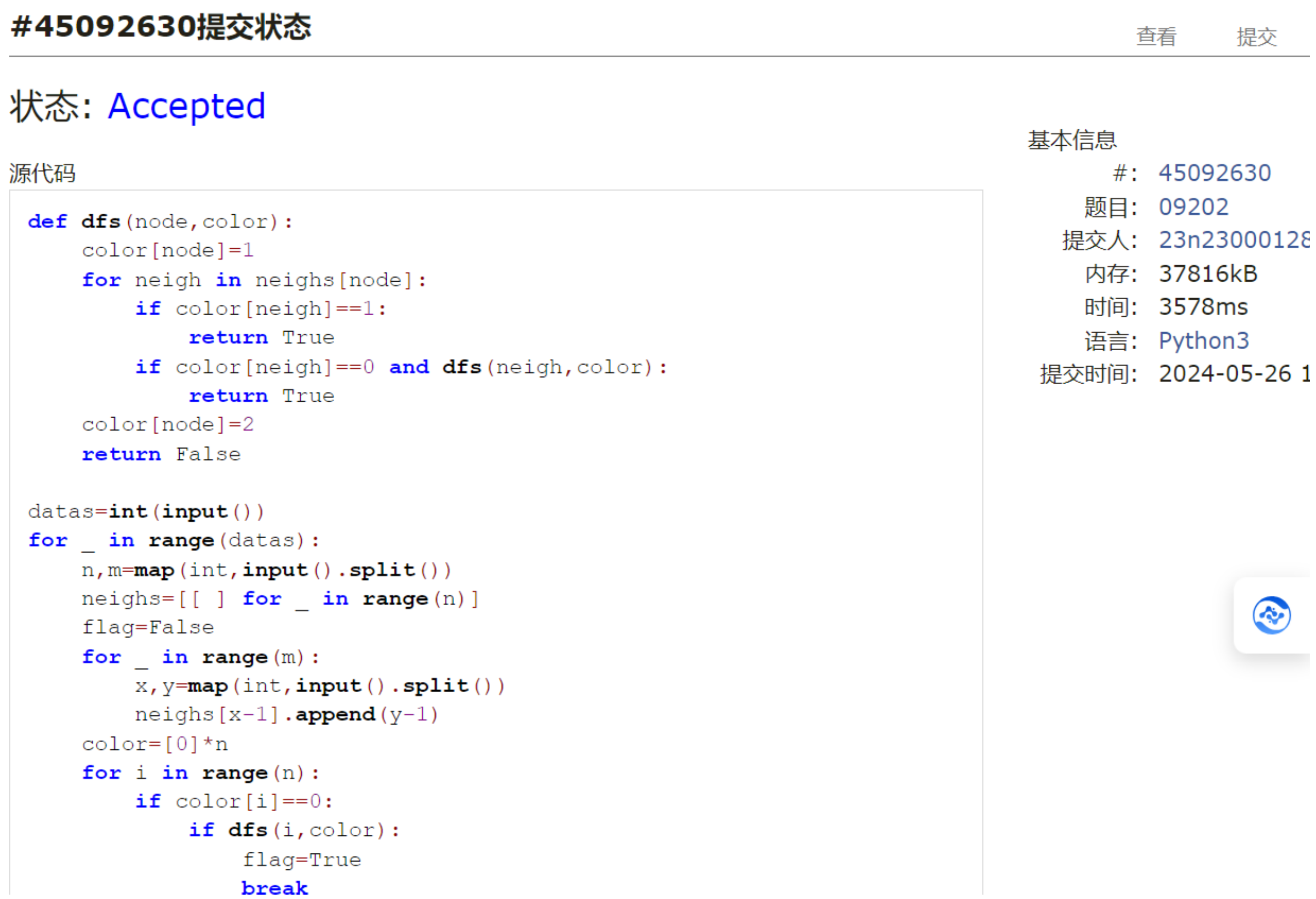
http://cs101.openjudge.cn/practice/09202/

思路：dfs结合color函数保证单向图中的单向性不会干扰结构

代码

```
def dfs(node, color):
    color[node] = 1
    for neigh in neighs[node]:
        if color[neigh] == 1:
            return True
        if color[neigh] == 0 and dfs(neigh, color):
            return True
    color[node] = 2
    return False


datas = int(input())
for _ in range(datas):
    n, m = map(int, input().split())
    neighs = [[] for _ in range(n)]
    flag = False
    for _ in range(m):
        x, y = map(int, input().split())
        neighs[x - 1].append(y - 1)
    color = [0] * n
    for i in range(n):
        if color[i] == 0:
            if dfs(i, color):
                flag = True
                break
    print('Yes' if flag else 'No')
```



#45092630提交状态

状态: Accepted

源代码

```
def dfs(node,color):
    color[node]=1
    for neigh in neighs[node]:
        if color[neigh]==1:
            return True
        if color[neigh]==0 and dfs(neigh,color):
            return True
    color[node]=2
    return False

datas=int(input())
for _ in range(datas):
    n,m=map(int,input().split())
    neighs=[[ ] for _ in range(n)]
    flag=False
    for _ in range(m):
        x,y=map(int,input().split())
        neighs[x-1].append(y-1)
    color=[0]*n
    for i in range(n):
        if color[i]==0:
            if dfs(i,color):
                flag=True
                break
```

基本信息

#:	45092630
题目:	09202
提交人:	23n2300012
内存:	37816kB
时间:	3578ms
语言:	Python3
提交时间:	2024-05-26 1

代码运行截图 ==（AC代码截图，至少包含有"Accepted"）==

04135: 月度开销

http://cs101.openjudge.cn/practice/04135/

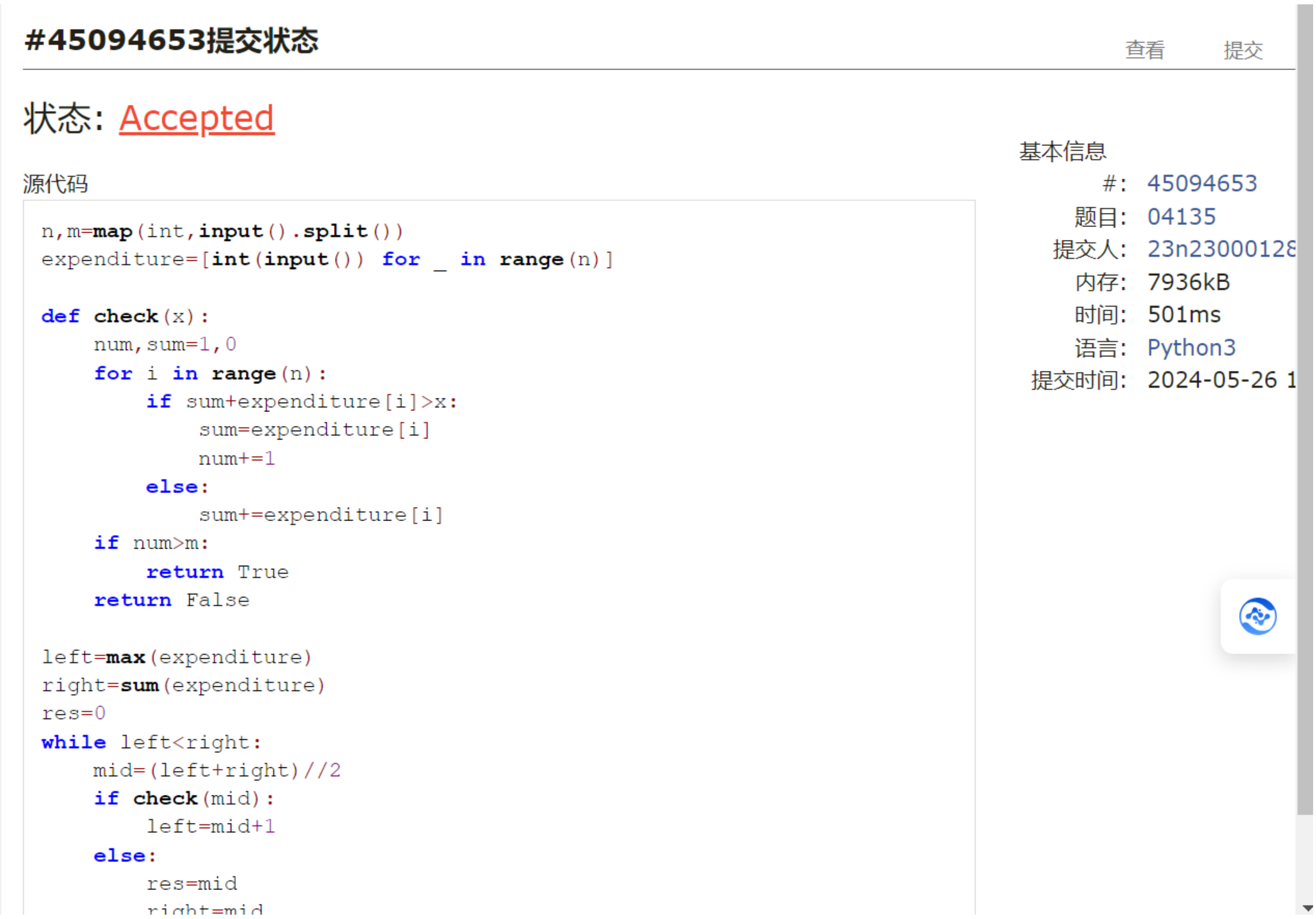
思路：二分法的思路

代码

```
n, m = map(int, input().split())
expenditure = [int(input()) for _ in range(n)]
```

```python
def check(x):
    num, sum = 1, 0
    for i in range(n):
        if sum + expenditure[i] > x:
            sum = expenditure[i]
            num += 1
        else:
            sum += expenditure[i]
    if num > m:
        return True
    return False


left = max(expenditure)
right = sum(expenditure)
res = 0
while left < right:
    mid = (left + right) // 2
    if check(mid):
        left = mid + 1
    else:
        res = mid
        right = mid
print(res)
```



#45094653提交状态

状态: Accepted

源代码

```python
n,m=map(int,input().split())
expenditure=[int(input()) for _ in range(n)]

def check(x):
    num,sum=1,0
    for i in range(n):
        if sum+expenditure[i]>x:
            sum=expenditure[i]
            num+=1
        else:
            sum+=expenditure[i]
    if num>m:
        return True
    return False

left=max(expenditure)
right=sum(expenditure)
res=0
while left<right:
    mid=(left+right)//2
    if check(mid):
        left=mid+1
    else:
        res=mid
        right=mid
```

基本信息

#: 45094653
题目: 04135
提交人: 23n2300012
内存: 7936kB
时间: 501ms
语言: Python3
提交时间: 2024-05-26 1

代码运行截图 == （AC代码截图，至少包含有"Accepted"） ==

07735: 道路

http://cs101.openjudge.cn/practice/07735/

思路：dijkstra

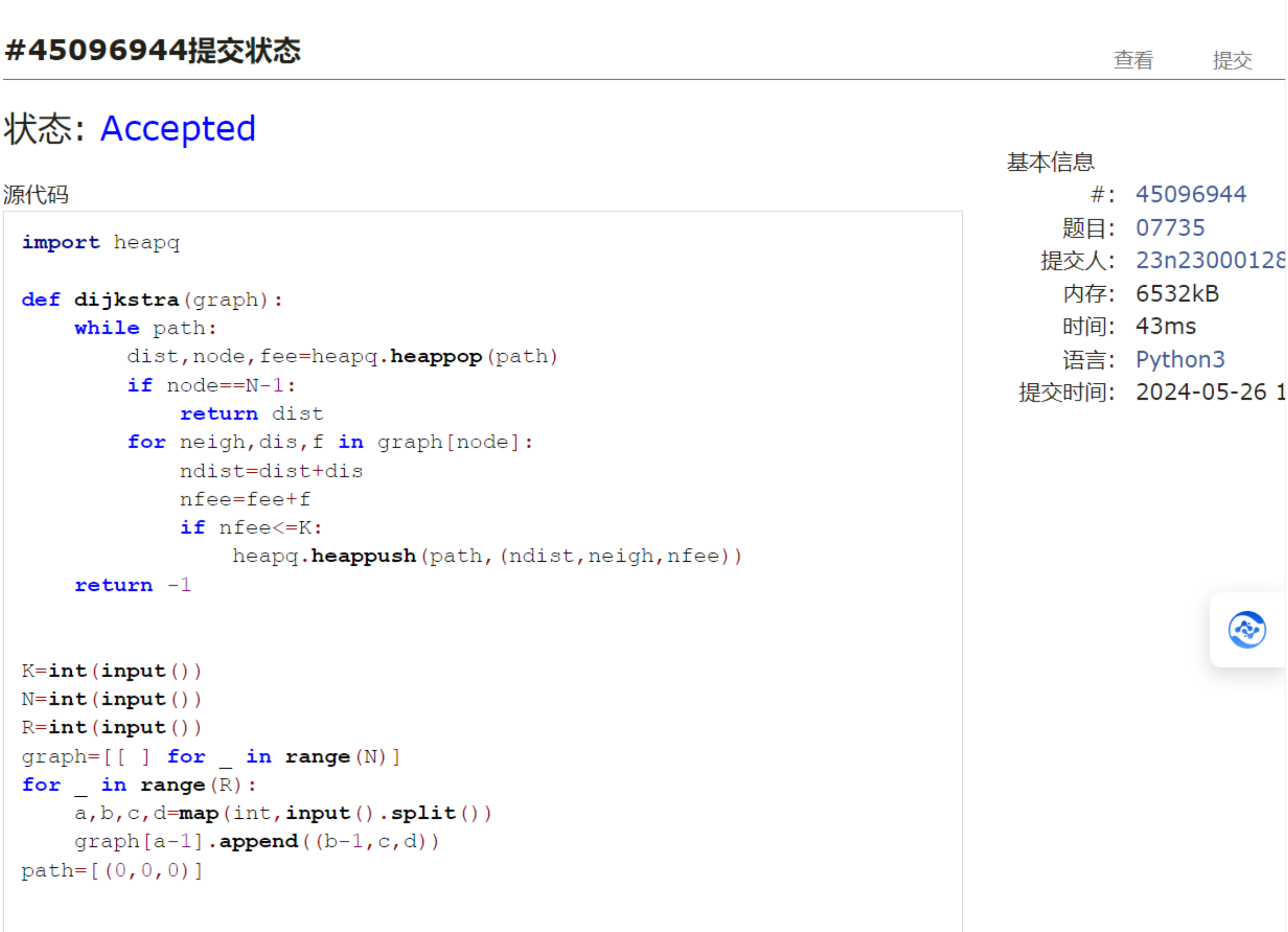
代码

```
import heapq


def dijkstra(graph):
    while path:
        dist, node, fee = heapq.heappop(path)
        if node == N - 1:
            return dist
        for neigh, dis, f in graph[node]:
            ndist = dist + dis
            nfee = fee + f
            if nfee <= K:
                heapq.heappush(path, (ndist, neigh, nfee))
    return -1


K = int(input())
N = int(input())
R = int(input())
graph = [[] for _ in range(N)]
for _ in range(R):
    a, b, c, d = map(int, input().split())
    graph[a - 1].append((b - 1, c, d))
path = [(0, 0, 0)]

res = dijkstra(graph)
print(res)
```



#45096944提交状态

状态: Accepted

源代码

```
import heapq

def dijkstra(graph):
    while path:
        dist,node,fee=heapq.heappop(path)
        if node==N-1:
            return dist
        for neigh,dis,f in graph[node]:
            ndist=dist+dis
            nfee=fee+f
            if nfee<=K:
                heapq.heappush(path,(ndist,neigh,nfee))
    return -1


K=int(input())
N=int(input())
R=int(input())
graph=[[ ] for _ in range(N)]
for _ in range(R):
    a,b,c,d=map(int,input().split())
    graph[a-1].append((b-1,c,d))
path=[(0,0,0)]
```

基本信息

#: 45096944
题目: 07735
提交人: 23n23000128
内存: 6532kB
时间: 43ms
语言: Python3
提交时间: 2024-05-26 1

代码运行截图 ==（AC代码截图，至少包含有"Accepted"）==

01182: 食物链

http://cs101.openjudge.cn/practice/01182/

思路：并查集，需要注意的是其中的数学逻辑，比如 a吃b且a吃c 那么b与c是同类

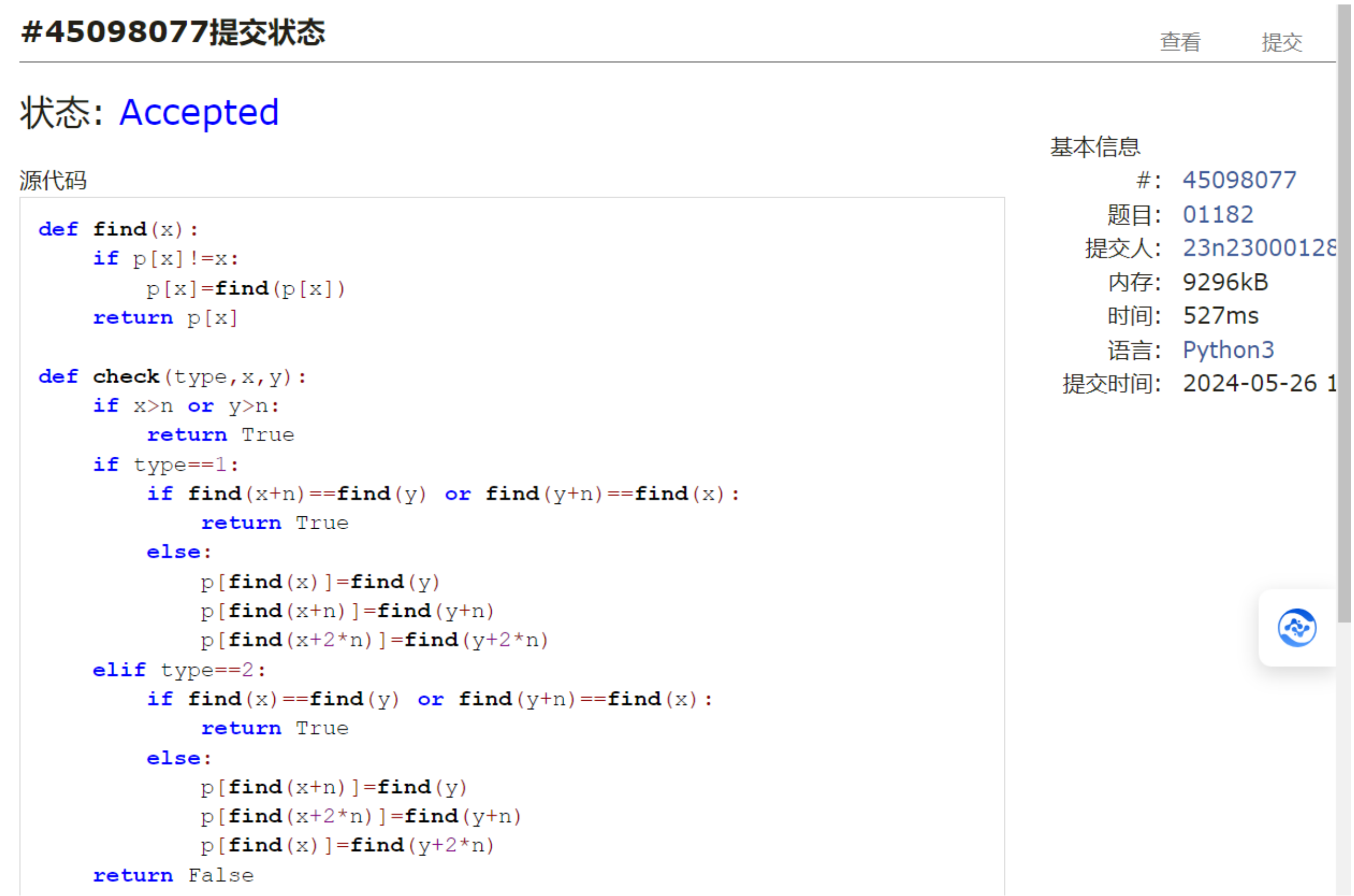
代码

```
def find(x):
    if p[x]!=x:
        p[x]=find(p[x])
    return p[x]

def check(type,x,y):
    if x>n or y>n:
        return True
    if type==1:
        if find(x+n)==find(y) or find(y+n)==find(x):
            return True
        else:
            p[find(x)]=find(y)
            p[find(x+n)]=find(y+n)
            p[find(x+2*n)]=find(y+2*n)
    elif type==2:
        if find(x)==find(y) or find(y+n)==find(x):
            return True
        else:
            p[find(x+n)]=find(y)
            p[find(x+2*n)]=find(y+n)
            p[find(x)]=find(y+2*n)
    return False



n,k=map(int,input().split())
p=[0]*(3*n+1)
for i in range(3*n+1):
    p[i]=i
num=0
for i in range(k):
    type,x,y=map(int,input().split())
    if check(type,x,y):
        num+=1
print(num)
```



#45098077提交状态

状态: Accepted

源代码

```
def find(x):
    if p[x]!=x:
        p[x]=find(p[x])
    return p[x]

def check(type,x,y):
    if x>n or y>n:
        return True
    if type==1:
        if find(x+n)==find(y) or find(y+n)==find(x):
            return True
        else:
            p[find(x)]=find(y)
            p[find(x+n)]=find(y+n)
            p[find(x+2*n)]=find(y+2*n)
    elif type==2:
        if find(x)==find(y) or find(y+n)==find(x):
            return True
        else:
            p[find(x+n)]=find(y)
            p[find(x+2*n)]=find(y+n)
            p[find(x)]=find(y+2*n)
    return False
```

基本信息

#:	45098077
题目:	01182
提交人:	23n23000128
内存:	9296kB
时间:	527ms
语言:	Python3
提交时间:	2024-05-26 1

代码运行截图 ==（AC代码截图，至少包含有"Accepted"）==

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“2024spring每日选做”、CF、LeetCode、洛谷等网站题目。== 做了一些选做题，dijkstra掌握的还是不够好 二分查找这道题的思路感觉太完美了，max与sum正好是答案所处的左边界与右边界，再进行二分查找，思路太好了