Assignment9

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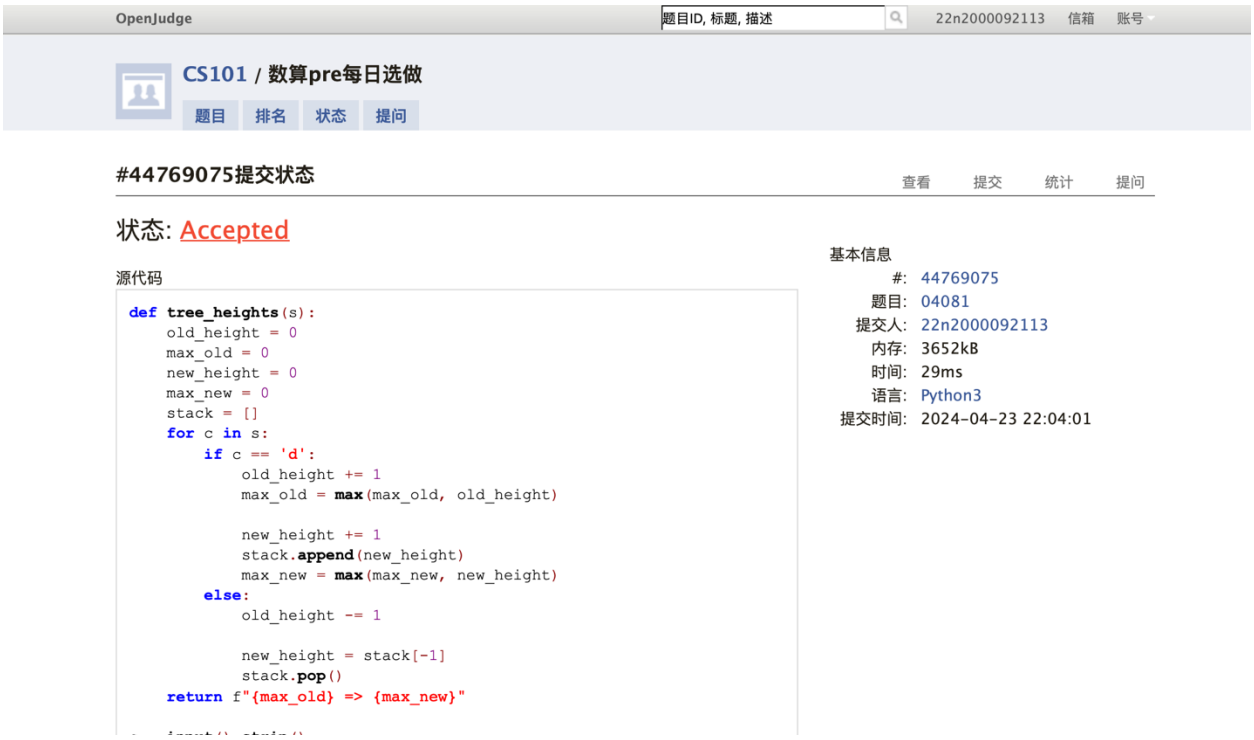
一、 作业题目

1、04081: 树的转换（1h30min）

http://cs101.openjudge.cn/dsapre/04081/

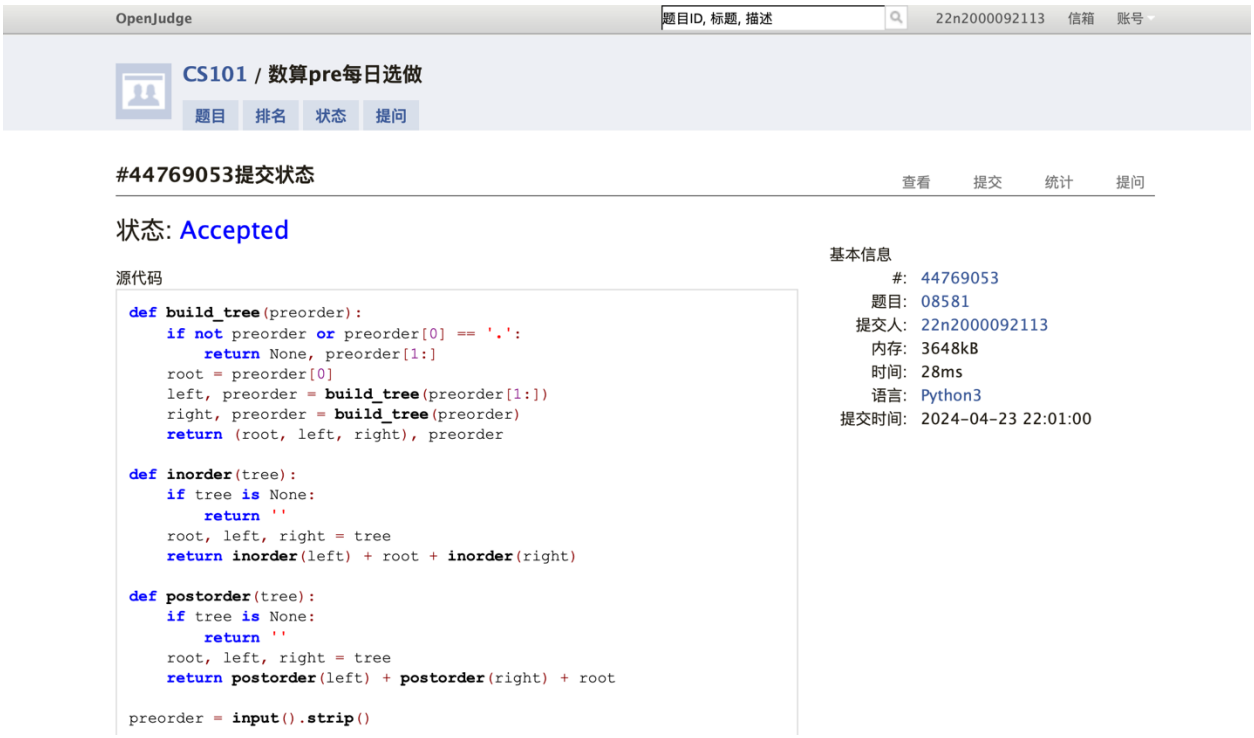
```
def tree_heights(s):
    old_height = 0
    max_old = 0
    new_height = 0
    max_new = 0
    stack = []
    for c in s:
        if c == 'd':
            old_height += 1
            max_old = max(max_old, old_height)

            new_height += 1
            stack.append(new_height)
            max_new = max(max_new, new_height)
        else:
            old_height -= 1

            new_height = stack[-1]
            stack.pop()
    return f"{max_old} => {max_new}"

s = input().strip()
print(tree_heights(s))
```



2、 08581: 扩展二叉树（2h）

http://cs101.openjudge.cn/dsapre/08581/

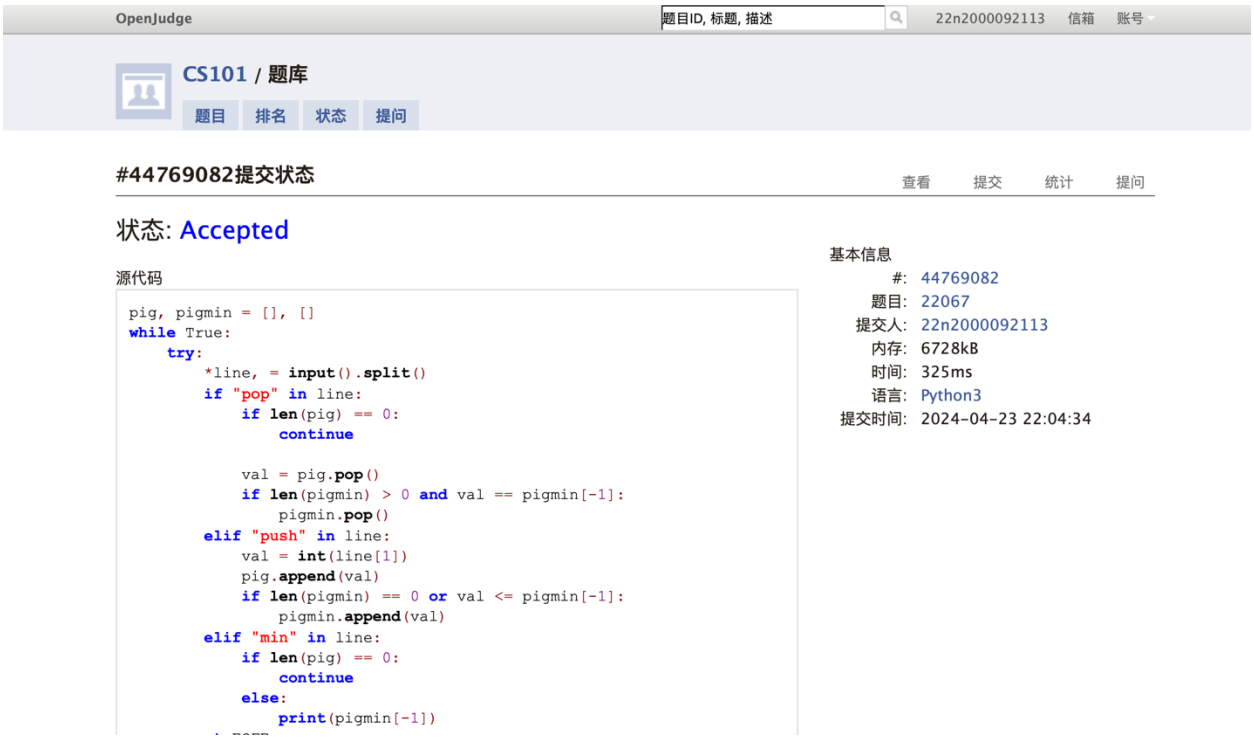
```
def build_tree(preorder):
    if not preorder or preorder[0] == '.':
        return None, preorder[1:]
    root = preorder[0]
    left, preorder = build_tree(preorder[1:])
    right, preorder = build_tree(preorder)
    return (root, left, right), preorder

def inorder(tree):
    if tree is None:
        return ''
    root, left, right = tree
    return inorder(left) + root + inorder(right)

def postorder(tree):
    if tree is None:
        return ''
    root, left, right = tree
    return postorder(left) + postorder(right) + root

preorder = input().strip()

tree, _ = build_tree(preorder)

print(inorder(tree))
print(postorder(tree))
```



3、 22067: 快速堆猪（2h40min）

http://cs101.openjudge.cn/practice/22067/

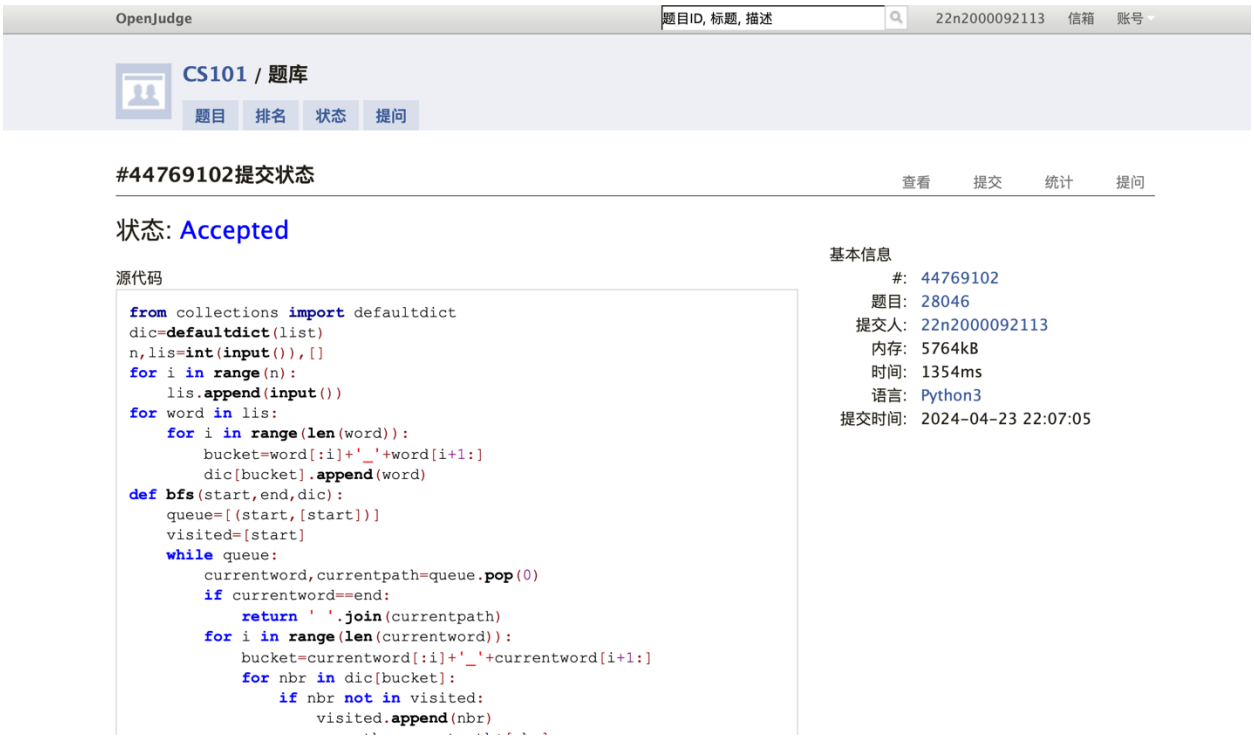
```
pig, pigmin = [], []
while True:
    try:
        *line, = input().split()
        if "pop" in line:
            if len(pig) == 0:
                continue

            val = pig.pop()
            if len(pigmin) > 0 and val == pigmin[-1]:
                pigmin.pop()
        elif "push" in line:
            val = int(line[1])
            pig.append(val)
            if len(pigmin) == 0 or val <= pigmin[-1]:
                pigmin.append(val)
        elif "min" in line:
            if len(pig) == 0:
                continue
            else:
                print(pigmin[-1])
    except EOFError:
        break
```



4、28046: 词梯（不会写，看得题解）

bfs, http://cs101.openjudge.cn/practice/28046/

```
from collections import defaultdict
dic=defaultdict(list)
n,lis=int(input()),[]
for i in range(n):
    lis.append(input())
for word in lis:
    for i in range(len(word)):
        bucket=word[:i]+'_'+word[i+1:]
        dic[bucket].append(word)
def bfs(start,end,dic):
    queue=[(start,[start])]
    visited=[start]
    while queue:
        currentword,currentpath=queue.pop(0)
        if currentword==end:
            return ' '.join(currentpath)
        for i in range(len(currentword)):
            bucket=currentword[:i]+'_'+currentword[i+1:]
            for nbr in dic[bucket]:
                if nbr not in visited:
                    visited.append(nbr)
                    newpath=currentpath+[nbr]
                    queue.append((nbr,newpath))
    return 'NO'
start,end=map(str,input().split())
print(bfs(start,end,dic))
```



二、 学习的收获与感受

作业难度越来越大了，好难啊