

### #customer penalty

```
from typing import List

def compute_penalty(log: str, close: int) -> int:
    penalty = 0
    for i in range(len(log)):
        if i < close and log[i] == 'N':
            penalty += 1
        elif i >= close and log[i] == 'Y':
            penalty += 1
    return penalty

def get_closing_with_min_penalty(log: str) -> int:
    curr = 0
    best = 0    # best penalty value
    time = 0    # best closing time
    n = len(log)
    for i in range(n):
        c = log[i]
        if c == 'Y':
            curr -= 1
        else:    # 'N'
            curr += 1
        if curr < best:
            best = curr
            time = i + 1
    return time

def get_all_closing(log: str) -> List[int]:
    tokens = log.split()
    stack: List[List[str]] = []
    results: List[int] = []
    for tok in tokens:
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        if tok == "B":
            stack.append([])
        elif tok == "E":
            if stack:
                s = "".join(stack.pop())
                results.append(get_closing_with_min_penalty(s))
            else:
                # append Y/N into current top block
                if stack:
                    stack[-1].append(tok)
            return results
import sys
t = int(sys.stdin.readline())
for _ in range(t):
    log = sys.stdin.readline().strip()
    if " " in log:
        print(*get_all_closing(log))
    else:
        print(get_closing_with_min_penalty(log))
```

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```
from collections import defaultdict
import bisect
# ----- PREPROCESS -----
def preprocess(text: str):
    words = text.split()
    index = defaultdict(list)
    for i, w in enumerate(words):
        index[w].append(i)
    return words, index
```

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# ----- UTIL -----
def exists_in_range(lst, lo, hi):

    i = bisect.bisect_left(lst, lo)
    return i < len(lst) and lst[i] <= hi

# ----- QUERY -----
def search_query(query: str, k: int, index):
    words = query.split()
    first = words[0]
    result = []
    if first not in index:
        return result
    anchors = index[first]
    for pos in anchors:
        ok = True
        for w in words[1:]:
            if w not in index or not exists_in_range(index[w], pos, pos + k):
                ok = False
                break
        if ok:
            result.append(pos)

    return result

# ----- DEMO / DRIVER -----
if __name__ == "__main__":
    text = "The quick brown fox is quick something something quick fox"
    words, idx = preprocess(text)
    print("Text:", text)
    print()
    queries = [

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        ("quick fox", 2),
        ("brown fox", 1),
        ("quick something", 3),
        ("notpresent fox", 2),
    ]
    for q, k in queries:
        print(f'Query: '{q}', k={k} ->', search_query(q, k, idx))

```

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### #part 1 http

```

def parse_accept_language(header: str, supported):
    supported = set(supported)    # fast lookup
    result = []

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    for lang in header.split(","):
        tag = lang.strip()
        if tag in supported:
            result.append(tag)

```

```

    return result

```

### #part2 http

```

def parse_accept_language(header: str, supported):
    supported = list(supported)

```

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    prefs = []    # store parsed header: (tag, q, order)
    order = 0

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# ---- parse header ----

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for token in header.split(","):
    token = token.strip()
    if not token:

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        continue

    if ";q=" in token:
        tag, q = token.split(";q=", 1)
        q = float(q)
    else:
        tag, q = token, 1.0

    prefs.append((tag.strip(), q, order))
    order += 1
result = []
used = set()
# helper to evaluate each preference entry
def consider(tag, q, ord_index):
    if q == 0:
        return
    for lang in supported:
        if lang in used:
            continue
        if (
            tag == "*" or
            tag == lang or
            (len(tag) == 2 and lang.startswith(tag + "-"))
        ):
            used.add(lang)
            result.append((q, ord_index, lang))

for tag, q, ord_index in prefs:
    consider(tag, q, ord_index)
# sort: highest q first, earlier header order first

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result.sort(key=lambda x: (-x[0], x[1]))
return [lang for _, _, lang in result]

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```

from itertools import product

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def brace_expansion(s: str):
    groups = []
    i = 0

    while i < len(s):
        if s[i] == '{':
            j = i + 1
            temp = []

            # read until we hit '}'
            token = ""
            while s[j] != '}':
                if s[j] == ',':
                    temp.append(token)
                    token = ""
                else:
                    token += s[j]
                j += 1

            temp.append(token)      # last token
            groups.append(sorted(temp)) # sort alternatives
            i = j + 1

    else:
        # collect consecutive plain characters as one token

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token = ""
while i < len(s) and s[i] != '{':
    token += s[i]
    i += 1
groups.append([token])

return [" ".join(p) for p in product(*groups)]

```

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class Solution:

```

def calcEquation(self, equations: List[List[str]], values: List[float], queries: List[List[str]])
-> List[float]:

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    hashmap = {}
    for i in range(len(equations)):
        x, y = equations[i]
        if x not in hashmap:
            hashmap[x] = {}
        hashmap[x][y] = values[i]
        if y not in hashmap:
            hashmap[y] = {}
        hashmap[y][x] = 1 / values[i]

```

```

def bfs(query):

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    q = deque()
    visited = set()
    val = 1
    startVar, endVar = query
    q.append((startVar, val))
    while q:
        currentVar, currentVal = q.popleft()
        if currentVar not in hashmap:
            return -1

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        elif currentVar == endVar:
            return currentVal
        else:
            visited.add(currentVar)
            for nextVar in hashmap[currentVar].keys():
                if nextVar not in visited:
                    q.append((nextVar, currentVal * hashmap[currentVar][nextVar]))
            return -1

```

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output = []
for query in queries:
    output.append(bfs(query))
return output

```

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class Logger:

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def __init__(self):

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    self.last = {} # message -> last timestamp printed

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def shouldPrintMessage(self, timestamp: int, message: str) -> bool:

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    if message not in self.last:
        self.last[message] = timestamp
        return True

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    if timestamp - self.last[message] >= 10:

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        self.last[message] = timestamp
        return True

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    return False

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```

class Solution:
    def merge(self, intervals):
        # sort intervals by start time
        intervals.sort(key=lambda x: x[0])

        merged = []

        for interval in intervals:
            # if merged is empty OR no overlap, append
            if not merged or merged[-1][1] < interval[0]:
                merged.append(interval)
            else:
                # overlap -> merge by updating the end
                merged[-1][1] = max(merged[-1][1], interval[1])

        return merged

```

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```

from collections import Counter

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```

class Solution:
    def topKFrequent(self, nums, k):
        count = Counter(nums)
        buckets = [[] for _ in range(len(nums) + 1)]

        for num, c in count.items():
            buckets[c].append(num)

        result = []
        for freq in range(len(nums), -1, -1):
            for num in buckets[freq]:

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        result.append(num)
        if len(result) == k:
            return result

```

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```

class Solution:
    def findCheapestPrice(self, n, flights, src, dst, k):
        INF = float("inf")
        dist = [INF] * n
        dist[src] = 0

        # We allow at most k stops => at most k+1 edges
        for _ in range(k + 1):
            new_dist = dist[:]

            for u, v, w in flights:
                if dist[u] != INF and dist[u] + w < new_dist[v]:
                    new_dist[v] = dist[u] + w

            dist = new_dist

        return -1 if dist[dst] == INF else dist[dst]

```

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```

from collections import defaultdict

```

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class Solution:
    def minTransfers(self, transactions):
        balance = defaultdict(int)

        # compute net balance
        for frm, to, amt in transactions:
            balance[frm] -= amt

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balance[to] += amt
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# keep only non-zero balances
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debts = [b for b in balance.values() if b != 0]
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```
def dfs(start):
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    # skip settled debts
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    while start < len(debts) and debts[start] == 0:
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        start += 1
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    if start == len(debts):
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```
        return 0
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```
    ans = float('inf')
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    for i in range(start + 1, len(debts)):
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        # only try pairing opposite signs
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        if debts[start] * debts[i] < 0:
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            debts[i] += debts[start]
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            ans = min(ans, 1 + dfs(start + 1))
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```
            debts[i] -= debts[start]
```

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        # optimization: stop early if perfect match
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        if debts[i] + debts[start] == 0:
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            break
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```
    return ans
```

```
return dfs(0)
```