

The background is a soft-focus illustration of a classroom. On the left, a girl with long brown hair, wearing a white sailor-style school uniform with a red neckerchief, sits at a wooden desk with her chin resting on her hand, looking thoughtfully towards the right. On the right, a boy with dark, spiky hair, wearing a dark blue school uniform jacket, sits at a desk with his arms crossed, looking down with a slightly grumpy or tired expression. Behind them are wooden bookshelves filled with various books. The overall lighting is warm and gentle.

# 普转提day3 题解

仓鼠

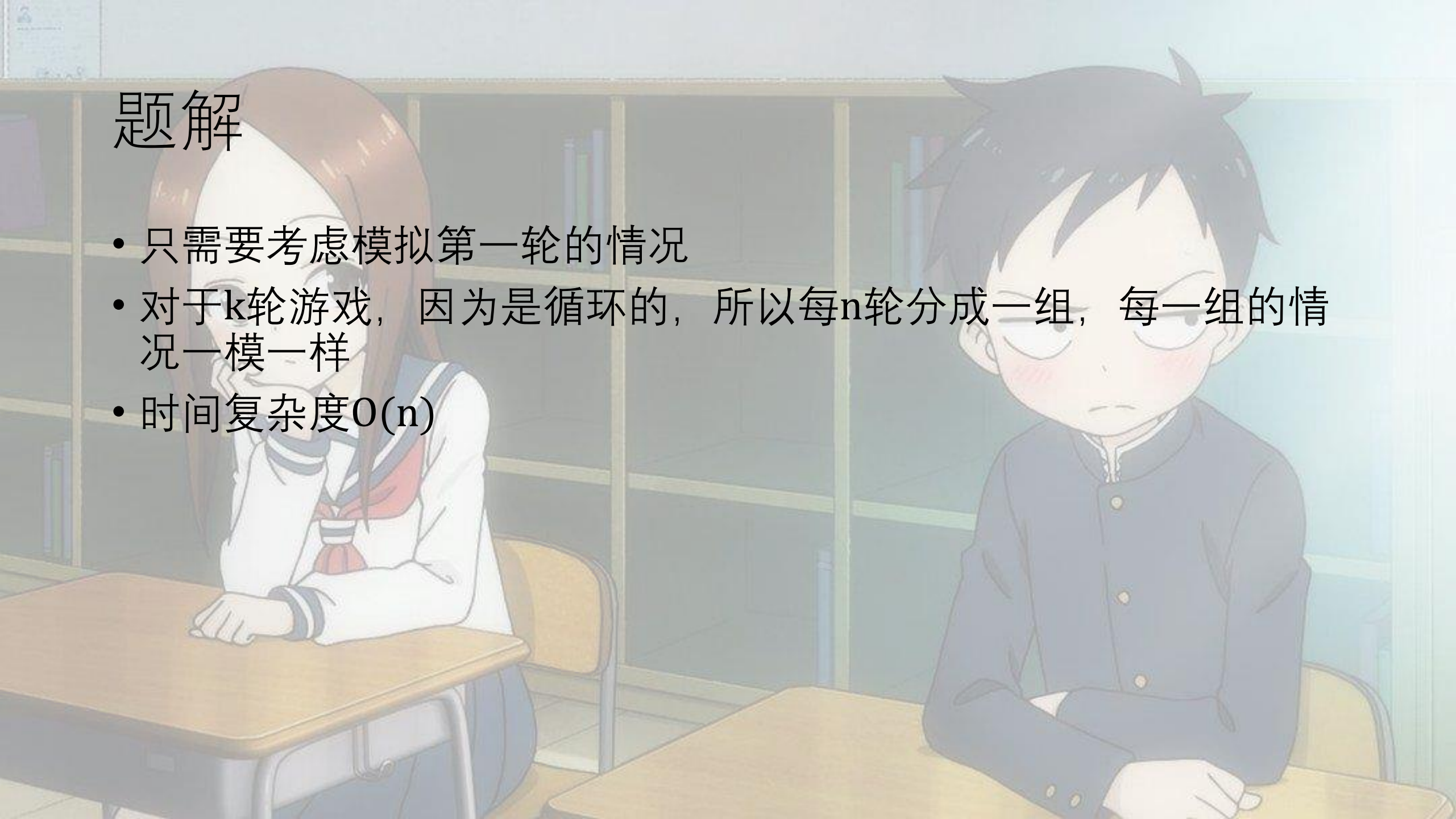
游戏 A



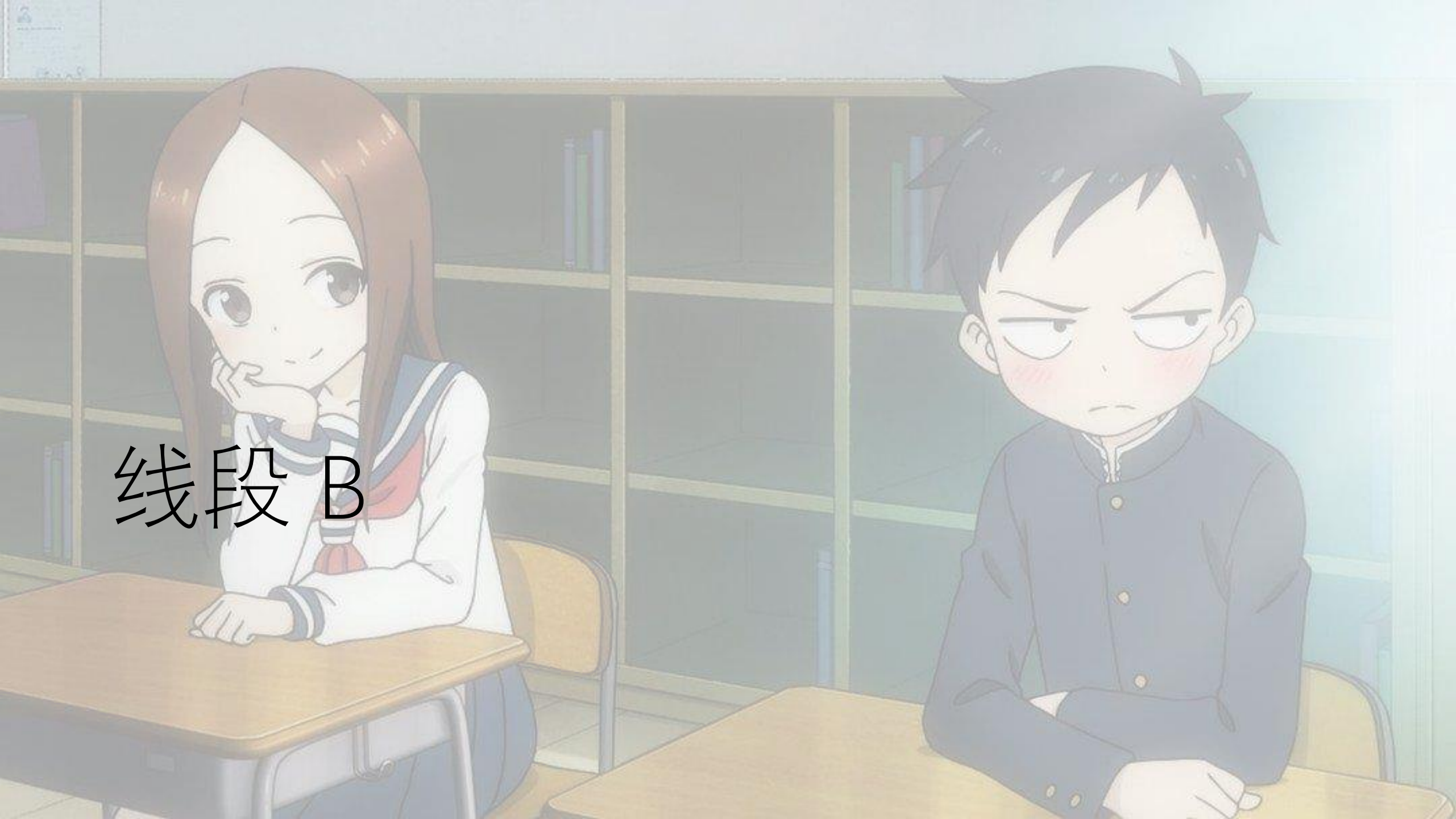


# 题解

- 只需要考虑模拟第一轮的情况
- 对于k轮游戏，因为是循环的，所以每n轮分成一组，每一组的情况一模一样
- 时间复杂度 $O(n)$



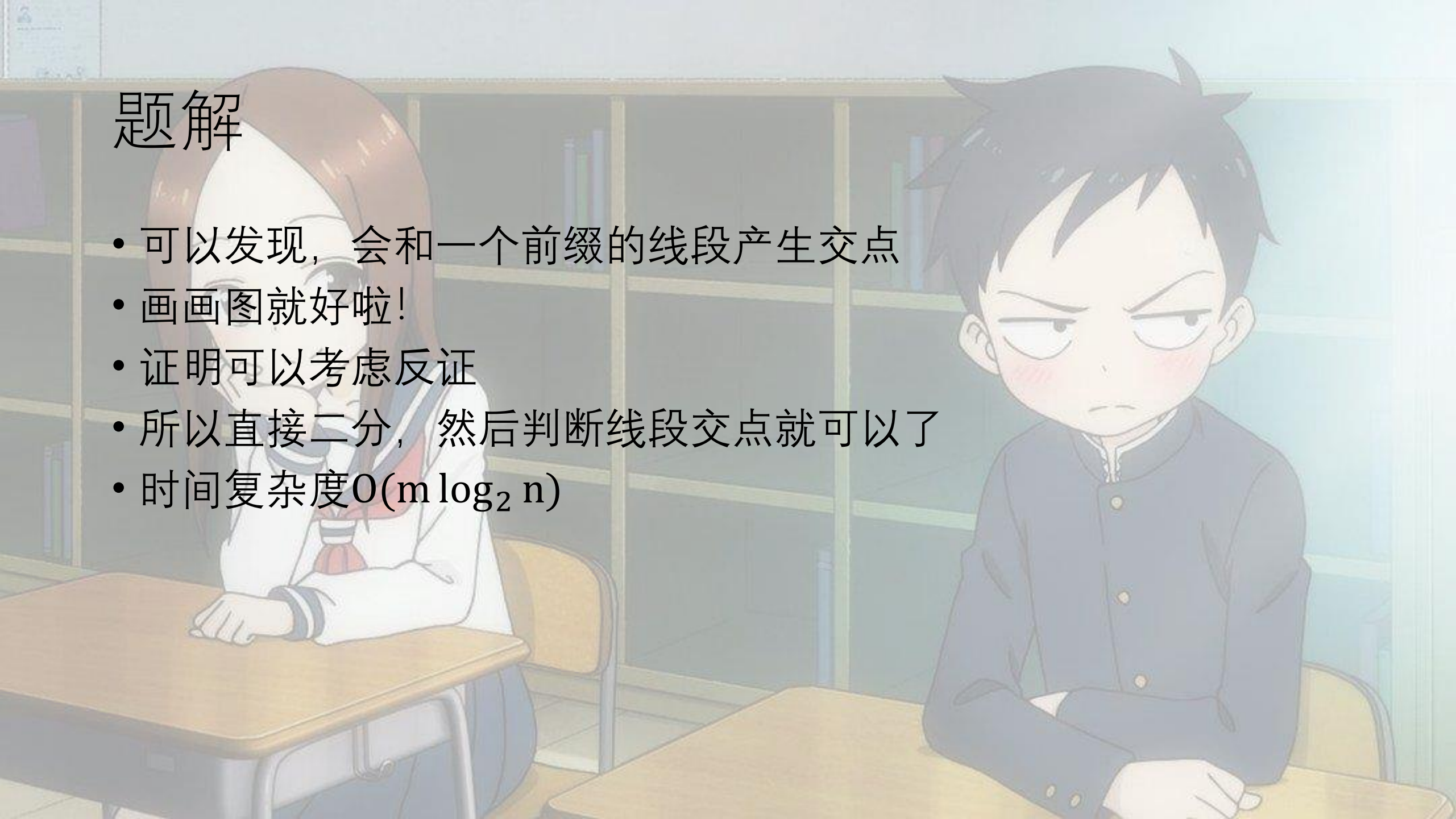
线段 B





# 题解

- 可以发现，会和一个前缀的线段产生交点
- 画画图就好啦！
- 证明可以考虑反证
- 所以直接二分，然后判断线段交点就可以了
- 时间复杂度 $O(m \log_2 n)$



# 题解

- 判断两条线段是否有交：用叉积判断，每条线段的两个点都要在另一条线段的两侧
- 下面这个板子是不包括端点的严格相交

```
int dcmp(double x) {  
    if (fabs(x) < eps) return 0; else return x < 0 ? -1 : 1;  
}  
  
bool segmentIntersection(Point a1, Point a2, Point b1, Point b2) {  
    double c1 = cross(a2 - a1, b1 - a1), c2 = cross(a2 - a1, b2 - a1),  
           c3 = cross(b2 - b1, a1 - b1), c4 = cross(b2 - b1, a2 - b1);  
    return dcmp(c1) * dcmp(c2) < 0 && dcmp(c3) * dcmp(c4) < 0;  
}
```



编辑 C



# 题解

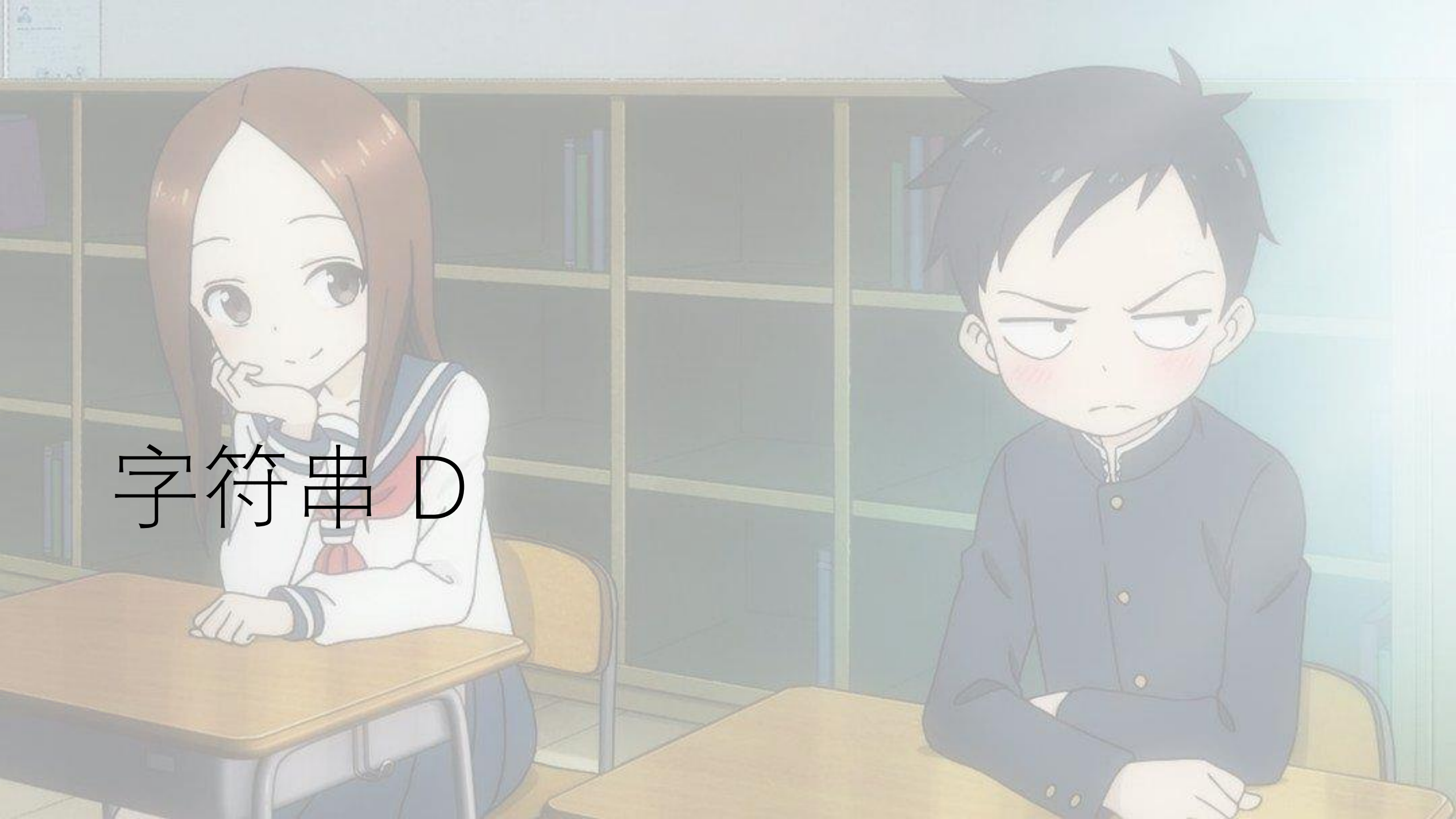
- 定义 $F[i][j]$ 表示通过A串的前 $i$ 个字符变为B串的前 $j$ 个字符的最小代价
- 那么我们可以写出这样的状态转移方程：
- 删除A串的第 $i$ 个字符：  $\text{update}(F[i][j], F[i - 1][j] + 1)$
- 插入B串的第 $j$ 个字符：  $\text{update}(F[i][j], F[i][j - 1] + 1)$
- 如果 $A[i] = B[j]$ ， 那么 $\text{update}(F[i][j], F[i - 1][j - 1])$



# 题解

- 考虑到答案最多为 $k$ ，否则输出 $-1$ ，所以对于一个 $i$ ，我们只需要考虑 $j$ 在 $[i - k, i + k]$ 中的情况，否则这个状态的答案一定大于 $k$
- 因为 $k \leq 100$ ，可以使用short或者char来存，起到压缩空间的目的
- 时间复杂度和空间复杂度都是 $O(nk)$


字符串 D





# 题解

- 这道题本来放到T4是因为想要考察一下大家 $O(N)$ 做法，后来感觉还是难了些，所以放略高复杂度的过了。所以现在本题很简单
- 考虑最小的满足 $2^c > |S1|$ 的 $c$ ，根据抽屉原理， $|S2| \leq c$
- 因此直接从小到大枚举答案的长度，然后用一个桶存所有出现的字符串（用二进制的形式）
- 当桶不是满的时候，直接找最小的二进制数就是字典序最小的字符串了
- 答案的长度根据前面的分析是 $O(\log_2 N)$ 级别的，每次做都是 $O(N)$ 。如果暴力枚举复杂度就是 $O(N \log_2 N)$ 的，如果二分复杂度就是 $O(N \log_2 \log_2 N)$ 的，可以通过本题

An anime-style illustration of a classroom scene. On the left, a girl with long brown hair, wearing a white sailor-style school uniform with a red collar and blue skirt, sits at a wooden desk. She is resting her chin on her hand and looking towards the right. On the right, a boy with short black hair, wearing a dark blue school uniform jacket, sits at another desk. He has a grumpy expression with his eyes half-closed and red blush marks on his cheeks. The background features a bookshelf filled with books and a window on the right side. The text "谢谢大家" is centered in the middle of the image.

谢谢大家