

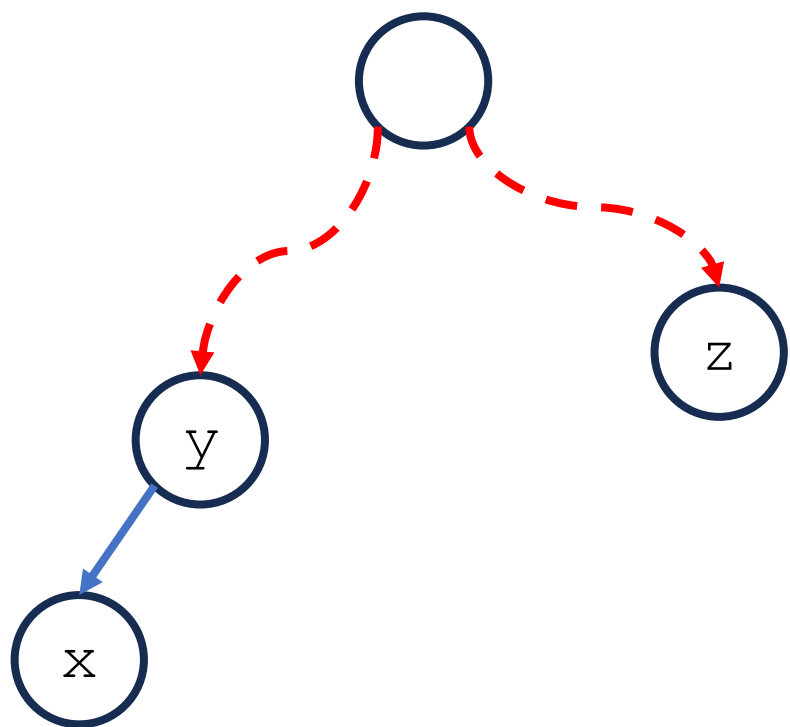
第十讲：树的颜色-HZOJ-257

胡船长

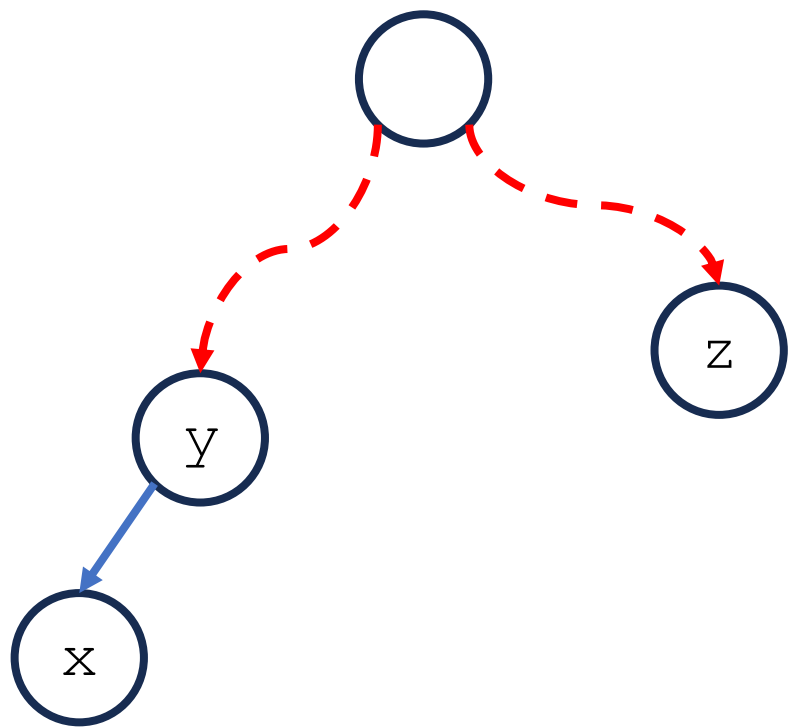
初航我带你，远航靠自己

一、结论1：染色最大值节点

结论1：x 是最大值节点，一旦 y 被染色，下一个染色的一定是 x 节点



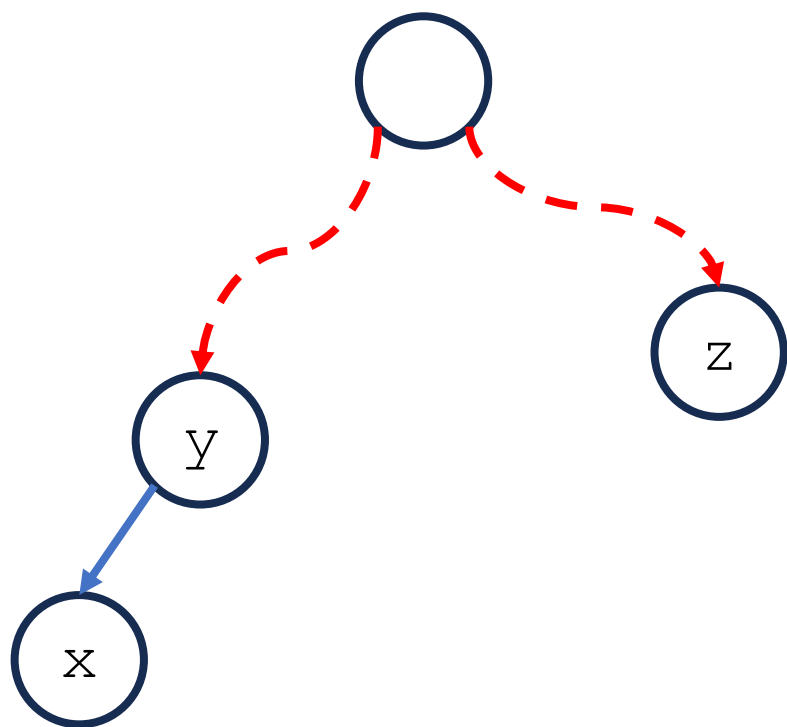
二、观察权值



先染色 z : $T * z + (T+1) * y + (T+2) * x$

先染色 y : $T * y + (T+1) * x + (T+2) * z$

三、设置目标：先染色 y



$$\textcircled{1} : T^*z + (T+1)^*y + (T+2)^*x$$

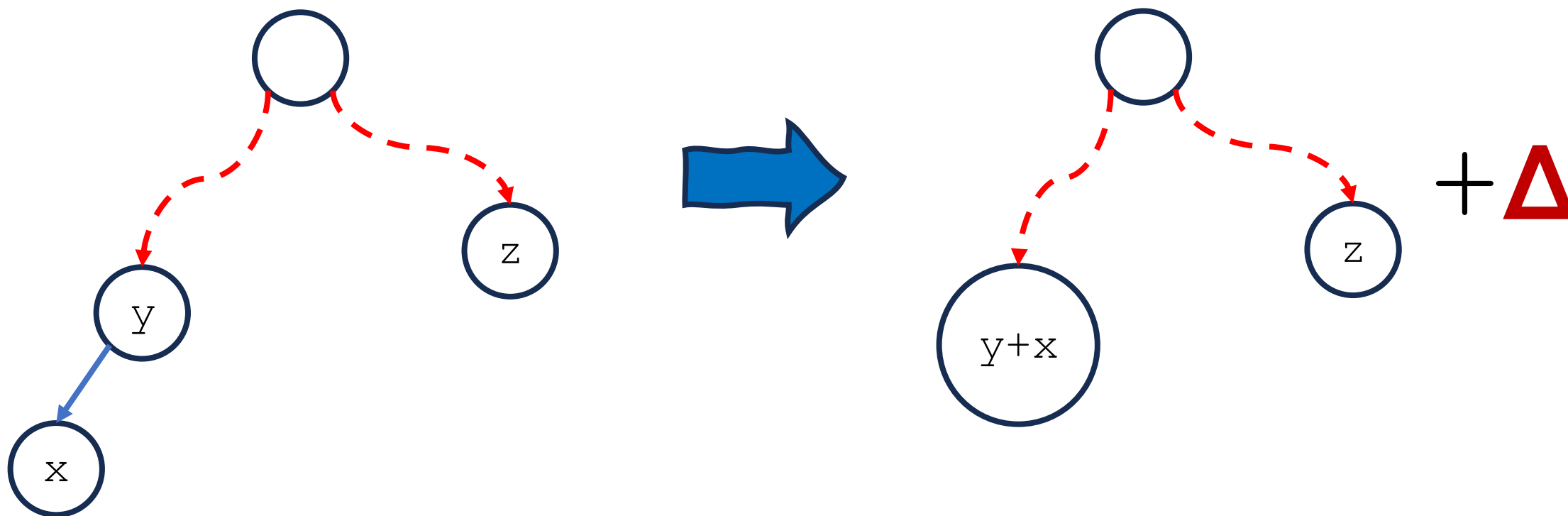
$$\textcircled{2} : T^*y + (T+1)^*x + (T+2)^*z$$

想要先染色 y , 则必须满足 $\textcircled{2} < \textcircled{1}$

$$\text{则} : z < (y + x)/2$$

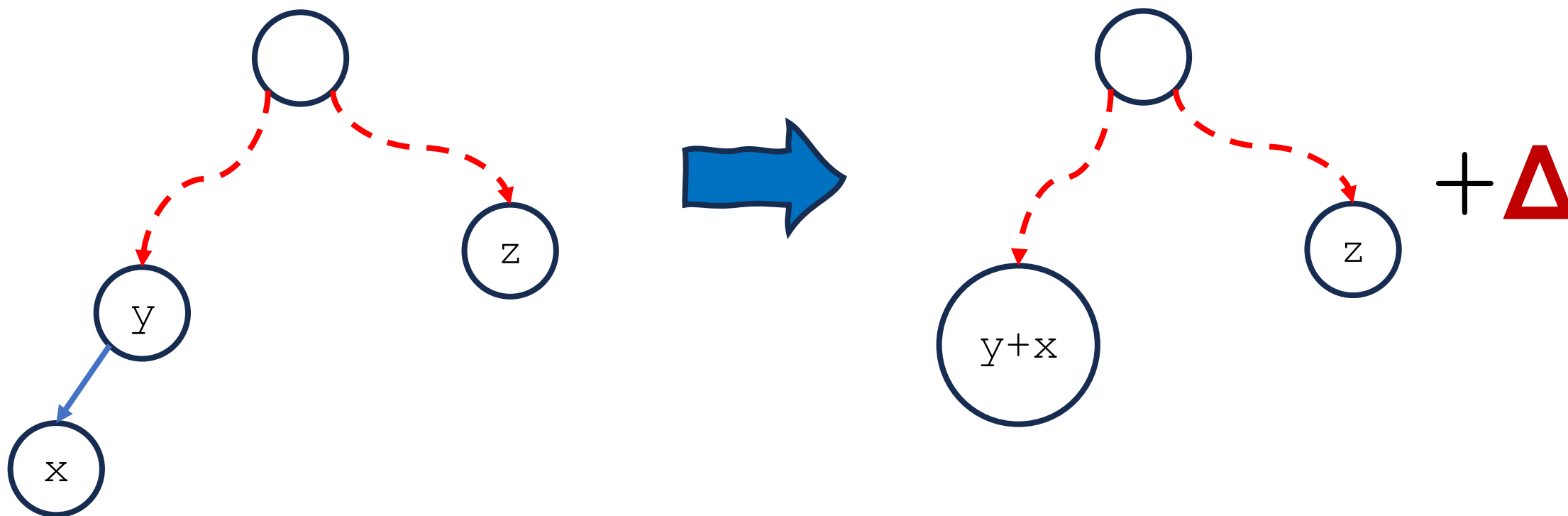
四、等价树形结构

$$T^*y + (T+1)^*x = T^*(y+x) + \textcolor{red}{x}$$



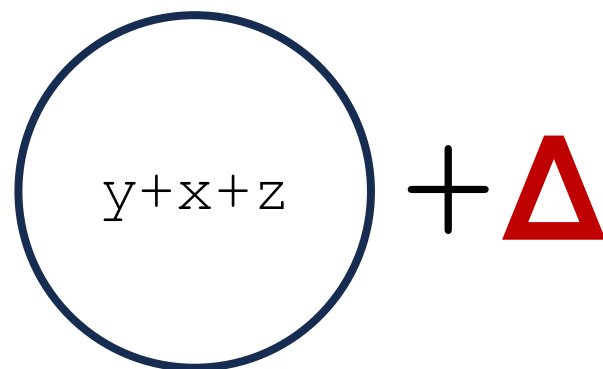
五、等价树形结构

$$T^*y + (T+n)^*x = T^*(y+x) + \textcolor{red}{n}^*\textcolor{red}{x}$$



六、最后的计算

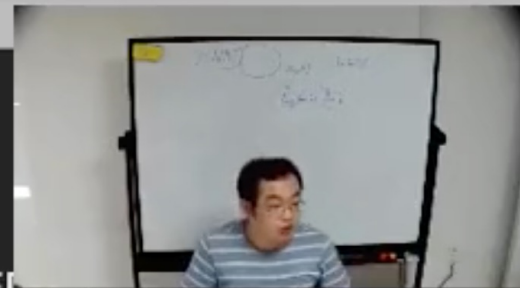
$$1 * \text{根权值} + \Delta$$



A diagram illustrating a calculation. It features a dark blue circle containing the expression $y+x+z$. To the right of the circle is a black plus sign, followed by a red triangle symbol Δ .

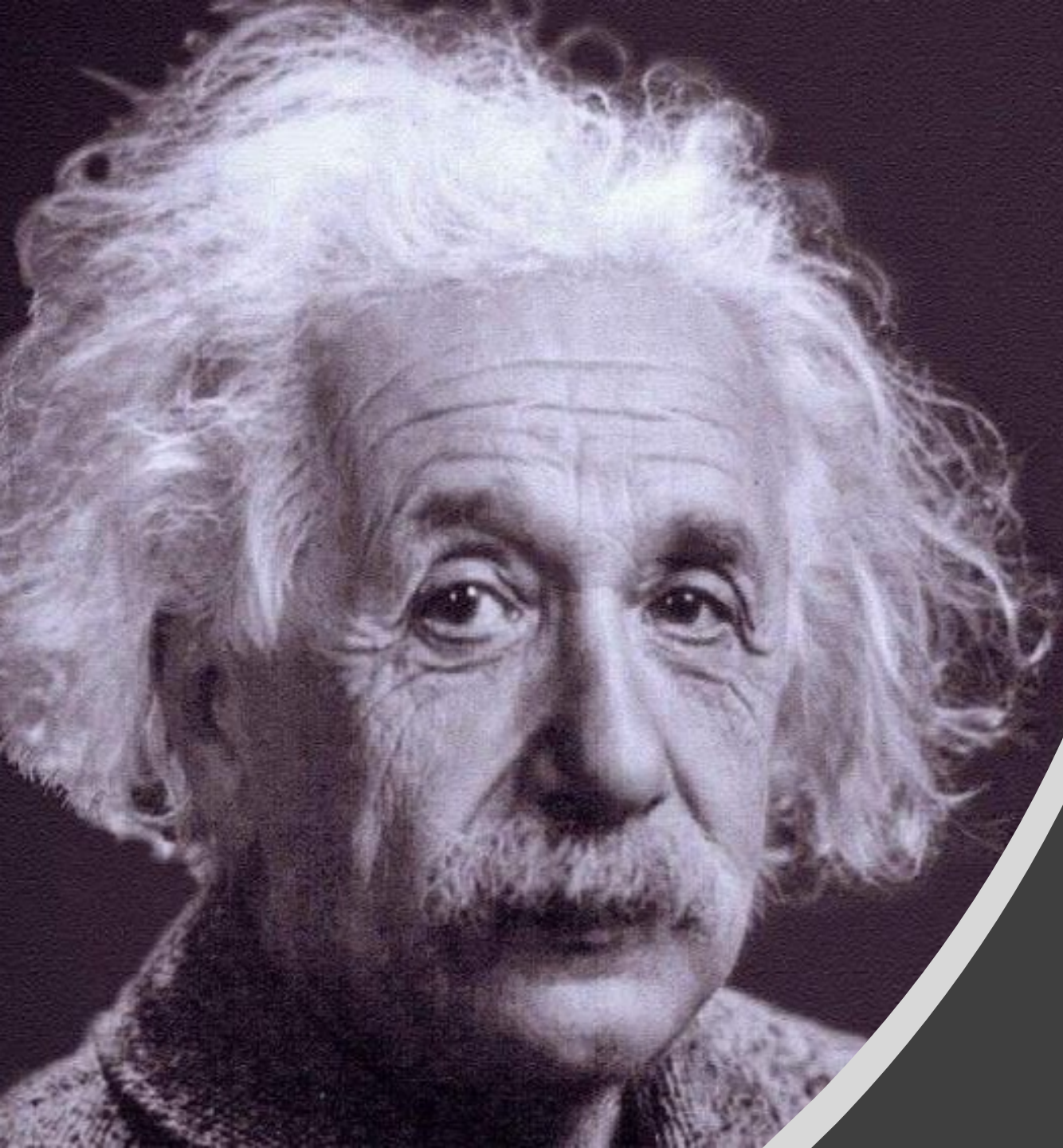
$$y+x+z + \Delta$$

```
vim %1 bash %2 bash %3
39 }
40
41 Node *insert_maintain(Node *root) {
42     if (!hasRedChild(root)) return root;
43     if (root->lchild->color == RED && root->rchild->color == RED, {
44         if (!hasRedChild(root->lchild) && !hasRedChild(root->rchild)) return root;
45         root->color = RED;
46         root->lchild->color = root->rchild->color = BLACK;
47         return root;
48     }
49     if (root->lchild->color == RED) {
50         if (!hasRedChild(root->lchild)) return root;
51     }
52
53     } else {
54         if (!hasRedChild(root->rchild)) return root;
55     }
56 }
57
58
```



树的颜色-HZOJ-257: 代码演示

```
61 Node *__insert(Node *root, int key) {
62     if (root == NIL) return getNewNode(key);
```

为什么
会出一样的题目？