

排序

快速排序：快速划分：LQU版

14-A7

The Great walks with the Small without fear.

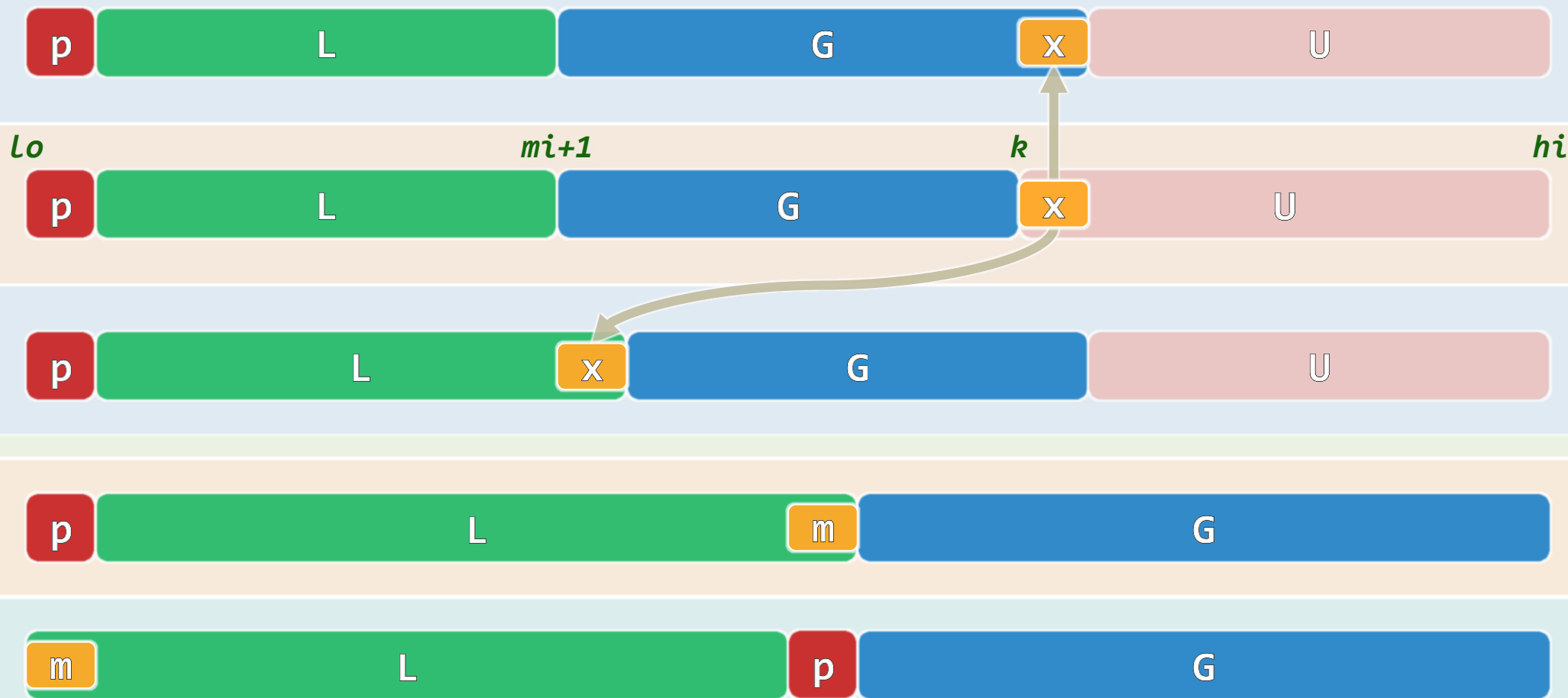
The Middle keeps aloof.

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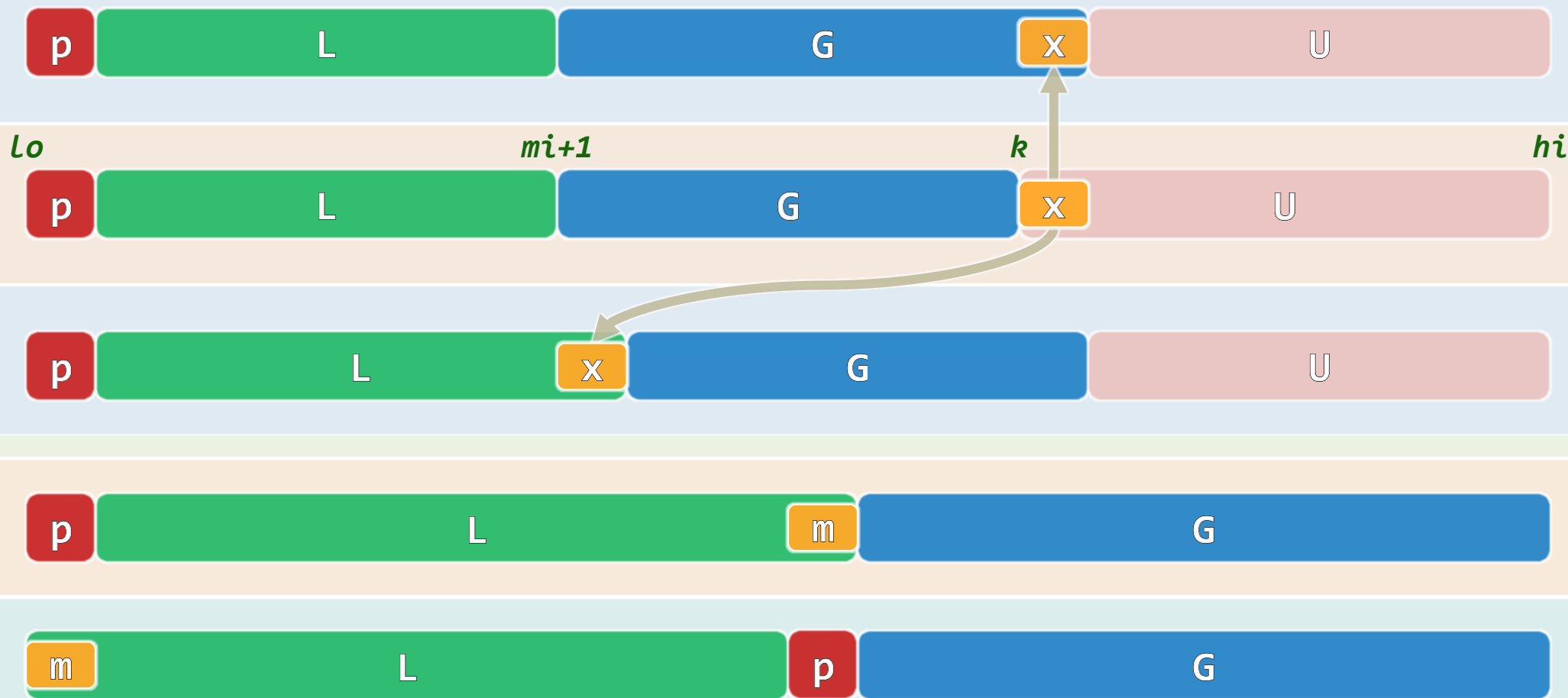
不变性: $S = [lo, hi) = [lo] + (lo, mi] + (mi, k) + [k, hi) = pivot + L + G + U$

$$L < pivot \leq G$$



单调性: $[k]$ 不小于轴点 ? 直接 G 拓展 : G 滚动后移, L 拓展

$\text{pivot} \leq S[k] ? k++ : \text{swap}(S[mi], S[k])$



快速划分：LGU版

```
template <typename T> Rank Vector<T>::partition( Rank lo, Rank hi ) { //[lo, hi)

    swap( _elem[ lo ], _elem[ lo + rand() % ( hi - lo ) ] ); //随机交换

    T pivot = _elem[ lo ]; int mi = lo;

    for ( Rank k = lo + 1; k < hi; k++ ) //自左向右考查每个[k]

        if ( _elem[ k ] < pivot ) //若[k]小于轴点, 则将其

            swap( _elem[ ++mi ], _elem[ k ] ); //与[mi]交换, L向右扩展

    swap( _elem[ lo ], _elem[ mi ] ); //候选轴点归位 (从而名副其实)

    return mi; //返回轴点的秩

}
```

实例

