向量

归并排序：二路归并

02-F2

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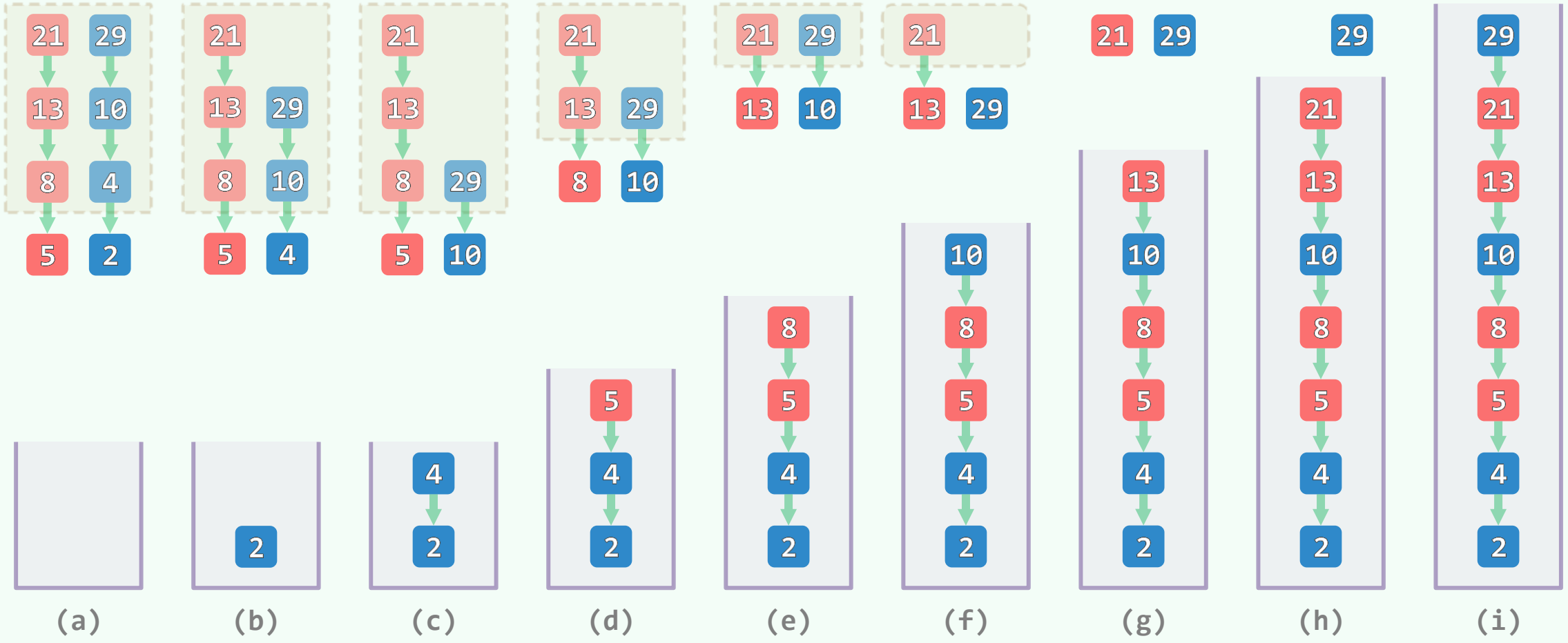
天下大势，分久必合，合久必分

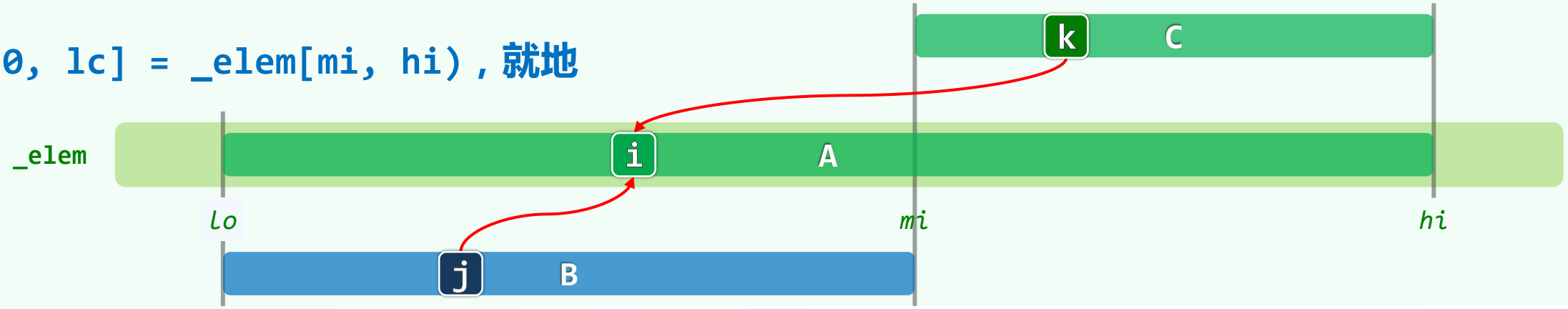
二路归并

❖ 2-way merge：有序序列，合二为一，保持有序：$S[lo, hi) = S[lo, mi) + S[mi, hi)$



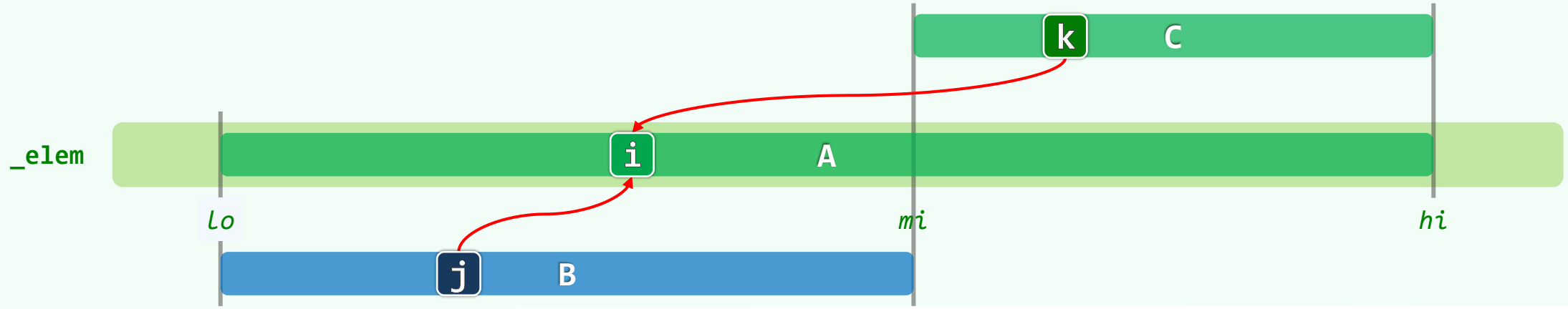
实现（1/2）：预备

```
template <typename T> //[lo, mi)和[mi, hi)各自有序
void Vector<T>::merge( Rank lo, Rank mi, Rank hi ) { //lo < mi < hi
   Rank i = 0; T* A = _elem + lo; //A = _elem[lo, hi)，就地
   Rank j = 0, lb = mi - lo; T* B = new T[lb]; //B[0, lb) <-- _elem[lo, mi)
   for ( Rank i = 0; i < lb; i++ ) B[i] = A[i]; //复制自A的前缀
   Rank k = 0, lc = hi - mi; T* C = _elem + mi;
   //C[0, lc] = _elem[mi, hi)，就地
```



实现（2/2）：归并

```
   while ( ( j < lb ) && ( k < lc ) ) //反复地比较B、C的首元素
      A[i++] = ( B[j] <= C[k] ) ? B[j++] : C[k++]; //将更小者归入A中
   while ( j < lb ) //若C先耗尽，则
      A[i++] = B[j++]; //将B残余的后缀归入A中——若B先耗尽呢？
   delete [] B; //new和delete非常耗时，如何减少？
}
```



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