

6.851 ADVANCED DATA STRUCTURES (SPRING'10)

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Problem 9 Sample Solutions

Dynamic partition of $[n]$ into intervals. If we choose $\mathbf{name}(x)$ to be the largest number in the interval, we can easily solve this problem using a vEB tree. To answer $\mathbf{name}(x)$ we query vEB for $\mathbf{succ}(x)$, to perform $\mathbf{merge}(x)$ we delete $\mathbf{name}(x)$ from the vEB, and we perform $\mathbf{divide}(x)$ by inserting x to the vEB.

This way, all operations work on $O(\log \log n)$ time.

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