

Hands-On - Ch. 17

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1. a. Aggregate Method:

When the table needs space, its size will double, so as a result, if n elements must be inserted for a resize to occur, a resize will not occur after that until $2n$ elements have been added. This pattern continues exponentially, and so the resizing process has little impact on our runtime. Since each individual insertion takes $O(1)$ time, our total runtime for inserting n elements is $O(n)$.

b. Accounting Method:

Actual cost:

Insertion: $O(1)$

Resize: $O(n)$

Using the pseudocode as a reference, the total runtime is $O(n)$.

For each insertion, the cost is $\frac{O(n)}{n}$, or $O(1)$.

Total charge: $2n$, or $O(n)$