The list increases the length by half if there is not enough space, if you add it, then the list length will be:

$2^{\lceil log_2 n \rceil}$. Let exponent be k.

'Cause adding will be k, complexity of adding will be: $O(2^q + C)$, where $q = 1, 2, \ldots, k$

Sum of operations: $\frac{1-2^k}{1-2} = 2^k - 1$

$2^k - 1 = n - 1$, so, complexity: $O(n)$

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