

Appending Elements

When you don't know how large an array should be when you write the code, then you should **plan for the "worst case"**, and declare an array that you know is larger than you could **ever possibly need**. Then, only use part of it.

Go ahead and modify the example on the previous page. We want to **allow the user to input any number of values**, (or at least a very large number), instead of automatically filling the array with **10** values.

1. Define a constant that indicates **the maximum number of elements** used, (like **100**), and use that constant in the declaration of the array.
2. Create a **separate variable** to track the **effective size** of the array. The names **size** and **capacity** are typically used for these variables.



3. Write an input loop using while that checks the **necessary bounds** condition, **while(size < capacity)...** This ensures that the loop **never** overfills the array.
4. Use the **loop-and-a-half idiom** to leave the loop whenever the **sentinel** value (**0**) is entered, or, when **cin enters the failed state** from invalid input.
5. Store the value into the array, and update the **size** variable so that the next number entered will be placed **in the next element** of the array.



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