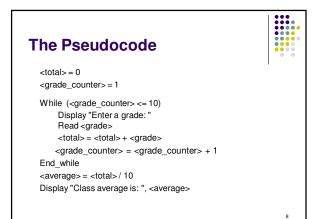
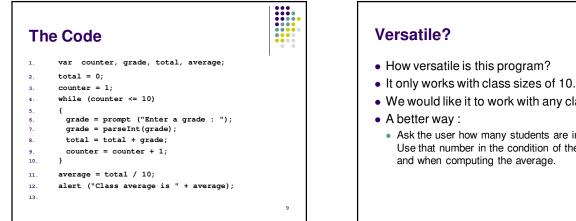


## Another while Loop Example



- Problem: Write a program that calculates the average exam grade for a class of 10 students.
- What are the program inputs?
  - the exam grades
- What are the program outputs?
  - the average exam grade

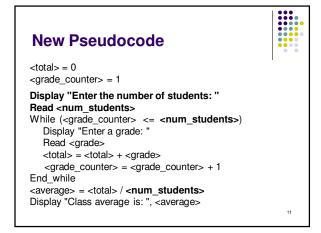


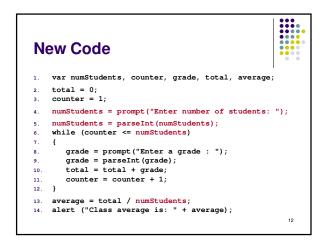




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- We would like it to work with any class size.
  - Ask the user how many students are in the class. Use that number in the condition of the while loop and when computing the average.





## Why Bother to Make It Easier?



- So the user can perform some task
- The more versatile the program, the more difficult it is to write. BUT it is more useable.
- The more complex the task, the more difficult it is to write. But that is often what a user needs.

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• Always consider the user first.

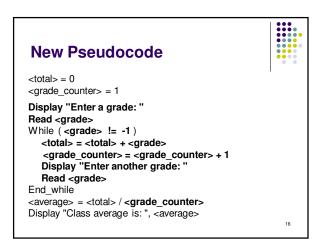
## **Using a Sentinel Value**

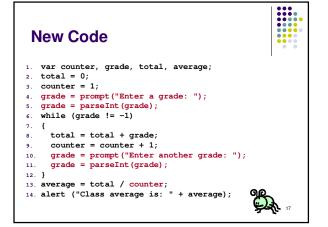
- We could let the user keep entering grades and when he's done enter some special value that signals us that he's done.
- This special signal value is called a **sentinel value**.
- We have to make sure that the value we choose as the sentinel isn't a legal value. For example, we can't use 0 as the sentinel in our example as it is a legal value for an exam score.

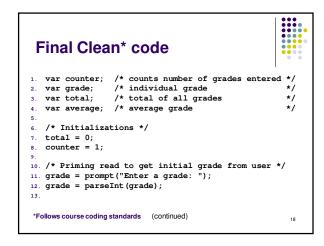
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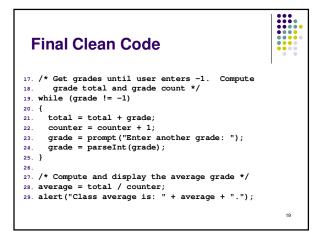
## **The Priming Read**

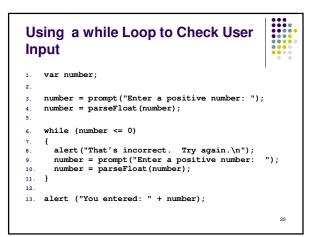
- When we use a sentinel value to control a while loop, we have to get the first value from the user before we encounter the loop so that it will be tested and the loop can be entered.
- This is known as a priming read.
- We have to give significant thought to the initialization of variables, the sentinel value, and getting into the loop.

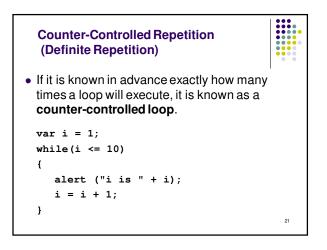


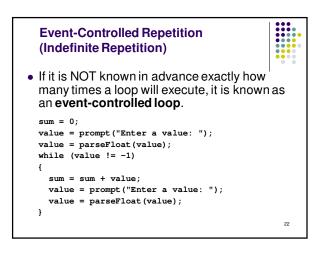


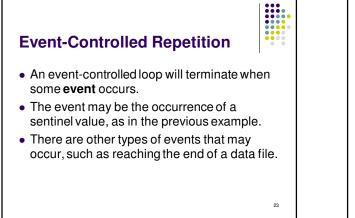


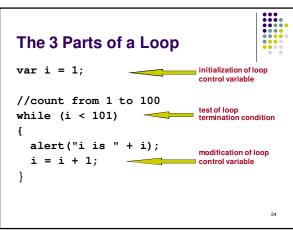


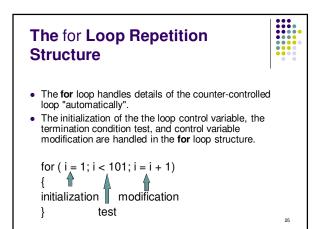


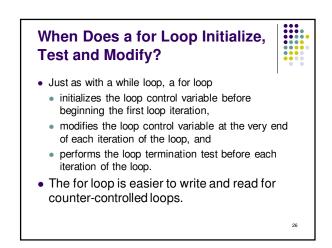


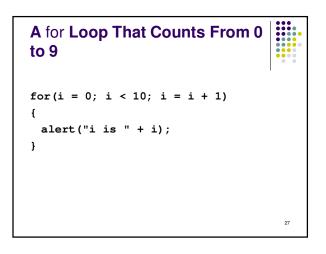


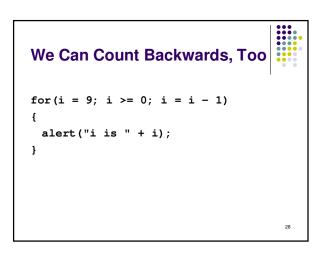


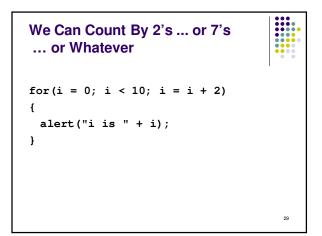


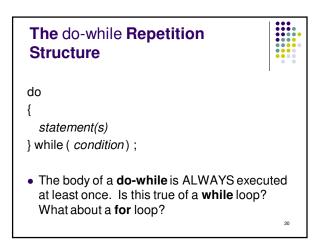


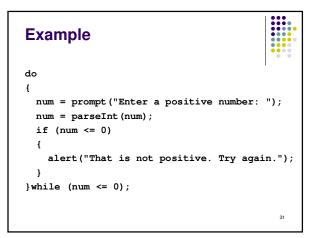


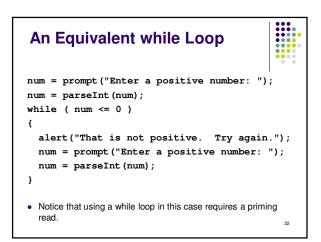


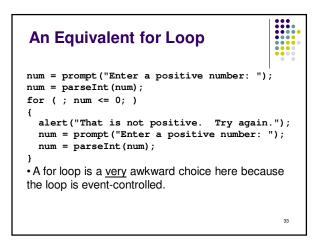


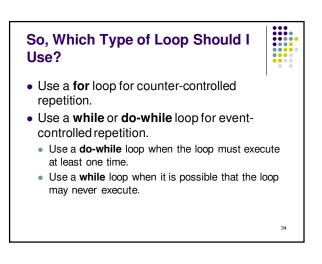


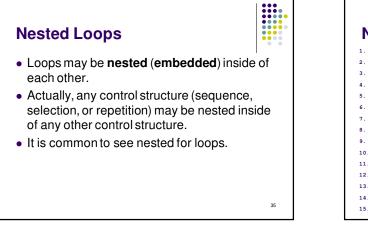


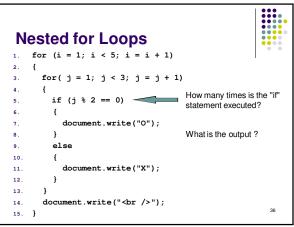














• The **break** statement can be used in **while**, **do-while**, and **for** loops to cause premature exit of the loop.

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• THIS IS **NOT** A RECOMMENDED CODING TECHNIQUE.

