- The function may not define a modifiable `static` variable.
- The function may not contain references to variables with internal linkage.

Such a function is allowed to define a variable that is both `static` and `const`, but each inline definition of the function may create its own copy of the variable.

## Using Inline Functions with GCC

Some compilers, including GCC, supported inline functions prior to the C99 standard. As a result, their rules for using inline functions may vary from the standard. In particular, the scheme described earlier (using the `average.h` and `average.c` files) may not work with these compilers. Version 4.3 of GCC (not available at the time this book was written) is expected to support inline functions in the way described in the C99 standard.

Functions that are specified to be both `static` and `inline` should work fine, regardless of the version of GCC. This strategy is legal in C99 as well, so it's the safest bet. A `static inline` function can be used within a single file or placed in a header file and included into any source file that needs to call the function.

There's another way to share an inline function among multiple files that works with older versions of GCC but conflicts with C99. This technique involves putting a definition of the function in a header file, specifying that the function is both `extern` and `inline`, then including the header file into any source file that contains a call of the function. A second copy of the definition—without the words `extern` and `inline`—is placed in one of the source files. (That way, if the compiler is unable to "inline" the function for any reason, it will still have a definition.)

A final note about GCC: Functions are "inlined" only when optimization is requested via the `-O` command-line option.

## Q & A

*Q: C99 **Why are selection statements and iteration statements (and their "inner" statements) considered to be blocks in C99? [p. 459]**

A: This rather surprising rule stems from a problem that can occur when compound literals are used in selection statements and iteration statements. The problem has to do with the storage duration of compound literals, so let's take a moment to discuss that issue first.

compound literals ➤*9.3, 16.2*

The C99 standard states that the object represented by a compound literal has static storage duration if the compound literal occurs outside the body of a function. Otherwise, it has automatic storage duration; as a result, the memory occupied by the object is deallocated at the end of the block in which the compound literal appears. Consider the following function, which returns a `point` structure created using a compound literal: