

Princeton University
COS 217: Introduction to Programming Systems
C Function Declarations and Definitions

Function declaration

A statement that informs the compiler of the function's signature (i.e., its name, return type, number of parameters, types of parameters) and linkage. A function declaration that is not a definition has no "body" and need not specify parameter names, only types.

Function definition

A declaration that causes the compiler to generate executable code. A function definition has a "body" and must specify its parameters' names.

C Code	Decl/Def	Linkage [†]	Comment
<code>int f1(int);</code>	declaration	External	Common
<code>extern int f2(int);</code>	declaration	External	
<code>static int f3(int);</code>	declaration	Internal	
<code>int f4(int i) { ... }</code>	definition	External	Common
<code>extern int f5(int i) { ... }</code>	definition	External	Rare
<code>static int f6(int i) { ... }</code>	definition	Internal	Common

Note: It is rare to use the `extern` keyword with a function definition, because a definition with no storage class specifier behaves identically to a definition with the `extern` storage class specifier.

[†] **f1, f2, f4, f5**: if no prior declaration of this function is visible, this has external linkage; if a prior declaration of this function is visible, this has the same linkage as the prior declaration.
f3 must be defined in the same compilation unit (i.e., file) for this declaration to be effective.