The New Penguin Dictionary of Computing

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compile To convert the SOURCE CODE of a program into MACHINE CODE that can be executed on a particular computer, by using a COMPILER. See also LINK, COMPILE/LINK.

compiled Any programming language, scripting language or page description language, in which a program is translated in a single operation into a different, executable form. Contrast this with INTERPRETED.

compile/link To COMPILE and LINK a program into an executable file: the combination of terms reflecting the fact that these operations are combined in practice, either via a BATCH FILE or SCRIPT, or as a menu option in an INTEGRATED DEVELOPMENT ENVIRONMENT. Since a program cannot be executed or debugged (see DEBUGGING) before linking in any required libraries and other modules, the term is more pedantically correct than 'compile' on its own. See also COMPILER, LINKER, LIBRARY.

compile-once, run-anywhere A slogan coined by the JAVA community to emphasize the PLATFORM-INDEPENDENT quality of the language.

compile on demand A facility introduced into VISUAL BASIC from version 4.0 onward which compiles parts of a project only when they are required to be loaded.

compiler A program that converts the SOURCE CODE of a new program written in a HIGH-LEVEL PROGRAMMING LANGUAGE into EXECUTABLE code (which may be MACHINE CODE for a particular type of PROCESSOR or some form of INTERMEDIATE CODE. A compiler that produces machine code directly is called a NATIVE CODE compiler. Unlike an INTERPRETER, which executes each language construct immediately after converting it, a compiler converts a whole source code file at one time into a file of compiled code, which may then need to be fed into a LINKER to add any libraries that are called by the program. Most compilers are highly specific in two ways: they compile only one particular language (maybe only one version of one language) and they produce machine code for a single type of processor. Hence one may speak of a C++ compiler for the PENTIUM family of processors.

A compiler is the software developer's principal tool, the 'hammer and chisel' of programming, and consequently much research is devoted to the science of language compilation and the improvement of compiler technology. For the language designer there is a strong sense in which the compiler *is* the language – which exists otherwise only as an abstract specification – since only what can be compiled can be executed. See also COMPILATION, LINKER, LIBRARY, INTEGRATED DEVELOPMENT ENVIRONMENT.

compiler compiler A COMPILER that generates a compiler for a programming language, given a description of the language's syntax in some formal notation, typically BNF.

compiler directive A programming language statement that is merely an instruction to the COMPILER to change its mode of operation, and which therefore does not lead to the generation of any OBJECT CODE. Examples from C include the #if and #ifdef directives which state that the enclosed section of code is only to be compiled if a certain condition is met.

compiler error An error that occurs during the COMPILATION of a program, which may indicate that the program fails to comply with the definition of the language it is written in, or that it exhibits certains kinds of logical error. The most commonly encountered compiler error is the SYNTAX ERROR, caused by misspelling or other misplacement of language statements. Precisely which kinds of logical error can be caught as compiler errors constitutes an important issue for language designers. The ideal is that as many kinds of error as possible should be caught by the compiler (and hence corrected by the programmer), rather than inconveniencing the user as a RUN-TIME ERROR.

compiler/linker A program that combines the action of a COMPILER and a LINKER into one operation.

compiler optimization Any technique employed within a programming language COMPILER to make the final compiled code run faster or more efficiently.

compiler option An alternative mode of COMPILATION or resource allocation that the programmer can specify when compiling a program. Options offered by most compilers include alternative language versions, turning on or off certain language features, what MEMORY MODEL to employ, the amount of