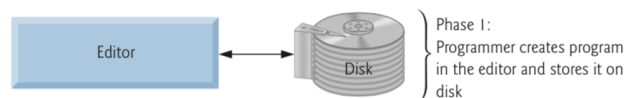




C++ Development Phases

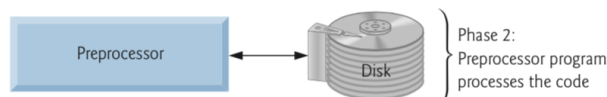
Phase 1: Creating a Program

Phase 1 consists of editing a file with an editor program, normally known simply as an editor. You type a C++ program (typically referred to as source code) using the editor, make any necessary corrections and save the program on a secondary storage device, such as your hard drive. C++ source code filenames often end with the .cpp, .cxx, .cc or .C extensions (note that C is in uppercase) which indicate that a file contains C++ source code.



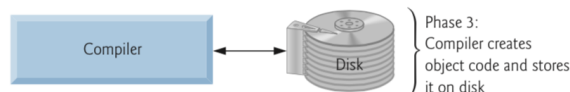
Phase 2: Preprocessing a C++ Program

In Phase 2, you give the command to compile the program. In a C++ system, a preprocessor program executes automatically before the compiler's translation phase begins (so we call preprocessing Phase 2 and compiling Phase 3). The C++ preprocessor obeys commands called preprocessor directives, which indicate that certain manipulations are to be performed on the program before compilation. These manipulations usually include other text files to be compiled, and perform various text replacements.



Phase 3: Compiling a C++ Program

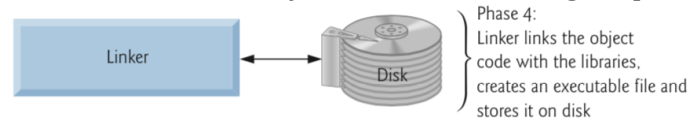
In Phase 3, the compiler translates the C++ program into machine-language code also referred to as object code.



Phase 4: Linking

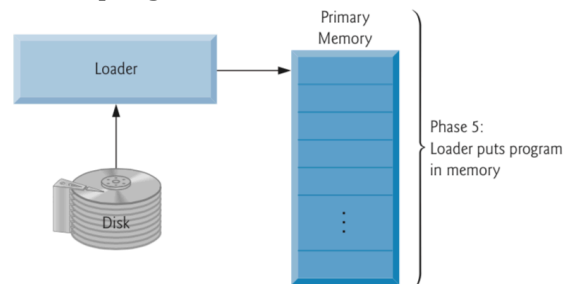
Phase 4 is called linking. C++ programs typically contain references to functions and data defined elsewhere, such as in the standard libraries or in the private libraries of groups of programmers working on a particular project. The object code produced by the C++ compiler typically contains "holes" due to these missing parts. A linker links the object code with the code for the missing

functions to produce an executable program (with no missing pieces). If the program compiles and links correctly, an executable image is produced.



Phase 5: Loading

Phase 5 is called loading. Before a program can be executed, it must first be placed in memory. This is done by the loader, which takes the executable image from disk and transfers it to memory. Additional components from shared libraries that support the program are also loaded.



Phase 6: Execution

Finally, the computer, under the control of its CPU, executes the program one instruction at a time. Some modern computer architectures can execute several instructions in parallel.

