

SOFTWARE DEVELOPMENT

One of Linux's most impressive strengths is its rich software development environment. Linux supports compilers and interpreters for many computer languages. Besides C and C++, languages available for Linux include Ada, Fortran, Java, Lisp, Pascal, Perl, and Python. The bison utility generates parsing code that makes it easier to write programs to build compilers (tools that parse files containing structured information). The flex utility generates scanners (code that recognizes lexical patterns in text). The make utility and the GNU Configure and Build System make it easier to manage complex development projects. Source code management systems, such as CVS, simplify version control. Several debuggers, including ups and gdb, can help you track down and repair software defects. The GNU C compiler (gcc) works with the gprof profiling utility to help programmers identify potential bottlenecks in a program's performance. The C compiler includes options to perform extensive checking of C code, thereby making the code more portable and reducing debugging time. Under OS X, Apple's Xcode development environment provides a unified graphical front end to most of these tools as well as other options and features.

CHAPTER SUMMARY

The Linux operating system grew out of the UNIX heritage to become a popular alternative to traditional systems (that is, Windows) available for microcomputer (PC) hardware. UNIX users will find a familiar environment in Linux. Distributions of Linux contain the expected complement of UNIX utilities, contributed by programmers around the world, including the set of tools developed as part of the GNU Project. The Linux community is committed to the continued development of this system. Support for new microcomputer devices and features is added soon after the hardware becomes available, and the tools available on Linux continue to be refined. Given the many commercial software packages available to run on Linux platforms and the many hardware manufacturers offering Linux on their systems, it is clear that the system has evolved well beyond its origin as an undergraduate project to become an operating system of choice for academic, commercial, professional, and personal use.

EXERCISES

1. What is free software? List three characteristics of free software.
2. Why is Linux popular? Why is it popular in academia?
3. What are multiuser systems? Why are they successful?