

Computer Programmers write, test, and maintain the detailed instructions, called programs that computers must follow to perform their functions. They also conceive, design, and test logical structures for solving problems by computer. Programmers write programs according to the specifications determined primarily by computer software engineers and system analysts. After the design process is complete, it is the job of the programmer to convert that design into a logical series of instructions that the computer can follow. They then code these instructions in a conventional programming language, such as COBOL; an artificial intelligence language, such as Prolog; or one of the most advanced object-oriented languages (Java, C++, or Smalltalk).

Applications Programmers write programs to handle a specific job, such as a program to track inventory, within an organization. They may also revise existing packaged software. **Systems Programmers**, on the other hand, write programs to maintain and control computer systems software, such as operating systems, networked systems, and database systems. These workers make changes in the sets of instructions that determine how the network, workstations, and central processing unit of the system handle the various jobs they have been given and how they communicate with terminals, printers, and disk drives.

Database Administrators, or **Database Engineers**, create software that controls and maintains massive databases. Large corporations, including online retailers and financial firms, typically use such programs. **Web Programmers** write scripts in HTML. There is an increasing demand for websites that interact with users. Developers of these sites must have extensive knowledge of Perl and other object-oriented languages such as Java. These languages create Web pages that not only interact with users, but tap into information stored in large company databases connected to the website.

Software Engineers are concerned with the overall structure of a project. They typically apply general engineering practices—such as quality assurance and failure analysis—to the process of software production. They work directly with **Quality Assurance** to develop quantitative tests to identify programming shortfalls.

Salary Information:

- Computer Programmer, Bachelor's Degree
\$44,670 Entry Level Salary (Finger Lakes Region, NYS Department of Labor, 2007)
\$67,600 Entry Level Salary (U.S. Bureau of Labor Statistics, 2007)
[*Salary varies based on education/advanced degree, work-experience & setting/location.]

Transfer Information:

A Bachelor's degree is entry-level and a Master's degree or PhD may be required for some in the computer science field.

