

Computers

Computer Programmers

Computer Programmers write programs by converting a design, created by software engineers, into a logical series of instructions that a computer can follow. The programmer codes these instructions in any of a number of programming languages, depending on the need. They use programming languages to create applications and systems software with a wide range of uses which then enable the computer to function. Programs can take varying lengths of time to create, ranging from a couple hours for simple ones to several years for those that are more complex. These long-term projects are usually completed in teams under the supervision of senior programmers.

Computer programmers update, repair, modify, and expand existing programs and applications. Some computer programmers now assist software engineers in identifying user needs in order to target the design of certain parts of computer programs. They may develop and write computer programs to store, locate, and retrieve specific documents, data, and information. Programs coded by computer programmers range from corporate uses to everyday consumer uses, such as word processors, websites or video games.

Over the life span of a program computer programmers will run repeated tests to correct or 'debug' any operational problems. A large part of their job entails keeping abreast of evolving technology in order to recommend changes to improve security and design, adapt to new requirements and to expand existing programs to increase operating efficiency. There are two main categories of computer programmers; applications programmers and systems programmers. Applications programmers are usually responsible for developing or modifying programs for a specific purpose while systems programmers develop computer, networking, and operating systems.

Computer programmers normally work about 40 hours a week in well-lighted, comfortable offices or computer laboratories. Deadlines or technical problems can necessitate longer hours or overtime. They are increasingly able to perform their duties from remote locations as technology allows them to log-in from anywhere thereby reducing or eliminating the need to travel to the customer or client's workplace. Many are thus able to work from home and have flexible schedules. Like other workers who spend long periods in front of a computer terminal typing on a keyboard; these workers are susceptible to eyestrain, back discomfort, and hand and wrist problems such as carpal tunnel syndrome.

Education/Training

How to Obtain:

Computer programming positions will sometimes only require a 2-year degree or certificate. However, more advanced positions require completion of a four year bachelor's degree program (BA/BS), generally in a computer related field.

Employers in a technical or scientific environment may look for applicants who have a degree in a technical field, such as computer science, information science, applied mathematics, engineering, or the physical sciences. For jobs in a business environment, employers often seek applicants with a degree in a business-related field such as management information systems (MIS). A Master's Degree (MA/MS), in one of these fields may be necessary for some more complex jobs or for career advancement (completion time is generally 2 years).

Some employers require specific certifications which are generally offered by product vendors or specialized certification organizations. Major companies offering certifications include but are not limited to Microsoft, SUN, and Oracle.

- Microsoft: Microsoft Certified Professional Developer (MCPD) - This certification requires a candidate to pass an exam for each application or program in which the candidate wishes to be certified.
- Sun: Sun Certified Java Associate - This certification requires a candidate to take and pass one exam.
- Oracle: Oracle PL/SQL Developer Certified Associate - This certification requires a candidate to take and pass two exams.

Certification programs are generally offered by product vendors or software firms, which may require professionals who work with their products to be certified. Voluntary certification also is available through various other organizations, such as the Institute for Certified Computing Professionals (ICCP). The ICCP offers the Certified Computing Professional (CCP) designation. To earn this certification, a candidate must:

- Pass the core exam and
- Pass two specialty exams.

Examples of specialty exams include:

- Information Systems - CORE
- Business Information Systems
- Business Process Management
- Data Management
- Systems Security

- Data and Information Quality

More Information on Certification:

- ICCP Certified Computing Professionals (CCP):
<http://www.iccp.org/iccpnew/ccp.html>
- Microsoft Certified Professional Developer (MCPD):
<http://www.microsoft.com/learning/en/us/certification/mcpd.aspx#tab2>
- Sun Certified Java Associate:
http://education.oracle.com/pls/web_prod-plq-dad/db_pages.getpage?page_id=319
- Oracle PL/SQL Developer Certified Associate:
http://education.oracle.com/pls/web_prod-plq-dad/db_pages.getpage?page_id=155

Average Costs:

Tuition and fees for a master's degree earned at a public university in the following areas average per year* as follows: Computer science, information science, applied mathematics, engineering: \$12,800; Physical Sciences: \$10,200; Management Information Systems: \$11,400; Business Administration (MBA): \$16,000. Completion time is generally two years.

Total Cost of Certification Exams, not including the cost of exam study aids:

- ICCP Certified Computing Professional: \$855
- Microsoft Certified Professional Developer (MCPD): \$125 per certified application or program.
- Sun Certified Java Associate: \$500
- Oracle PL/SQL Developer Certified Associate: \$320 - \$390

*Note: This figure does not include federal, state, or university financial aid resources such as grants, fellowships, scholarships or work study. It also does not include vocational rehabilitation or other state resources available specifically to people with disabilities. Out-of-pocket expense may be significantly less.