



## **INDUSTRY OVERVIEW: TECHNOLOGY**

### **Overview**

There are a wide range of careers that involve using technology. This guide will touch on the more traditional paths for those with an aptitude and interest in this area. It is also important to note that many positions involving computers and information systems can be found in almost any industry. For example, in addition to technology companies, IT professionals are needed in organizations in the education, nonprofit, government, and financial sectors as well. Overall, computer professionals are in high demand and can generally find employment easily if they have the right skills.

### **Career Tracks**

Software Engineer/Developer: One of the occupations projected to grow the fastest and add the most new jobs over the next decade. Software Engineers might develop apps, design computer software, databases and games, or they could be systems-focused developers, who are responsible for building operating systems. They must constantly learn new skills in conjunction with changes in technology. They apply principles of mathematical analysis and computer science to the design, development, testing, and evaluation of the software and systems that make computers work. They analyze user needs and develop software solutions including creating software or modifying existing software. Software engineers are involved in the design and development of computer games, word processing and business applications, operating systems, and networks. Within an organization, software engineers work with the various departments to analyze and facilitate their computer hardware and software needs.

Computer Programmer: Programmers write, test, and maintain the detailed instructions that make computer programs run. Also called “coders”, and sometimes “hackers” (particularly in startups) they implement the designs of software engineers by converting them into a computer language, such as Java or C++. They also develop instructions which enable computers to solve problems and perform tasks. There are two broad types of programmers, application programmers and system programmers. Application programmers write programs to handle a specific job such as tracking inventory. System programmers write programs to maintain and control existing software for operating, network, and database systems. Computer programmers not only need classroom experience in programming, but also practical work experience as well. Programming requires patience, persistence, and attention to detail.

Information Systems: (Analyst, Help Desk, Manager, MIS Director, Information Technology Director, Chief Technology Officer): These positions play an important role in the implementation of technology within organizations. They oversee all technology-related operations and manage computing resources within their organizations. They plan and coordinate software and hardware installation and upgrades, develop and maintain networks, and implement Internet and intranet sites. Information Systems personnel also run the Help Desk, where other employees can get assistance with hardware and software operations. They direct the work of Computer Programmers, System Engineers, and Support Specialists. More senior positions work with senior management to plan and implement how technology can facilitate the organization meeting its goals.

Database Administrator: Database administrators (or DBAs) set up databases according to a company's needs and make sure they operate efficiently, fine-tuning, upgrading and testing modifications as needed. Attention to detail and a passion for problem-solving are essential traits in this profession, as the job involves resolving complex issues. Communication skills are also important since DBAs often work as part of a team with computer programmers and managers. Ongoing maintenance of a database requires being on call, and a quarter of DBAs work more than 40 hours a week. These professionals are employed in a wide range of settings in the public and private sectors, and some DBAs work as consultants to organizations.

Website Developer: Developers use programming language such as HTML and software to create and maintain sites on the Internet. Web producers translate the organization's mission and goals into web content and utilize graphics to make the site visually appealing. They are responsible for updating content and for quality control. Within this category includes UI (user interface) and UX (user experience), who optimize websites to get the user to navigate as the company desires (such as making sure a "join" button is in the optimal place for users to click on it). There are many new graduate programs and certificate programs arising focused on these areas of web development.

Graphic Designer: Their role is to determine the most effective way of getting across a message using text, color, animation, layout, and other means of communicating through visual representations. Graphic designers work on the overall look and layout of magazines, newspapers, corporate reports, and brochures, as well as developing packaging for products and logos.

Computer Trainer: Trainers provide both individual and group instruction on computer software and hardware use. Trainers can be employed by corporations to work on site and train other employees or work for the software company. Trainers also work on developing educational materials and curricula to best suit the population they are training.

## **Requirements / Skills**

Technology is a constantly changing field, requiring workers to continually learn new skills. In addition to technical and quantitative abilities, analytical skills and attention to detail are very important for careers in computers. Many of the above positions also involve a significant amount of problem solving. In addition, excellent interpersonal skills are increasingly important, as many professionals will need to explain their ideas, rationale, and programs to nontechnical people.

## **Salary**

In general jobs in computers pay well. The starting salary for most entry level positions ranges from \$45,000-\$70,000 depending on the position and type of organization. With more experience and more responsibility salaries go well into the six figure range.

## **Professional Associations**

American Statistical Association, [www.amstat.org](http://www.amstat.org)

American Society for Information Science and Technology, [www.asis.org](http://www.asis.org)

Association for Computing Machinery, [www.acm.org](http://www.acm.org)

Association of Information Technology Professionals, [www.aitp.org](http://www.aitp.org)

Association of Software Professionals, [www.asp-software.org](http://www.asp-software.org)

Educational Software Cooperative, [www.edu-soft.org](http://www.edu-soft.org)

International Actuarial Association, [www.actuaries.org](http://www.actuaries.org)

Society for Industrial and Applied Mathematics, [www.siam.org](http://www.siam.org)

Society for Information Management, [www.simnet.org](http://www.simnet.org)

Software & Information Industry Association, [www.siiia.net](http://www.siiia.net)

## **Websites**

[www.AMS.org/careers](http://www.AMS.org/careers)

[www.beanactuary.com](http://www.beanactuary.com)

[www.computerjobs.com](http://www.computerjobs.com)

[www.computerwork.com](http://www.computerwork.com)

[www.dice.com](http://www.dice.com)

[www.angel.co](http://www.angel.co)

[www.israelimappedinny.com](http://www.israelimappedinny.com)