Computer Science, Technology, and Database Administration Careers and Jobs

Computer Science and Technology Careers and Job Highlights

- General job pre-requisites are a two-year computer science degree upwards to a graduate degree.
- Technological advancements are likely to boost employment opportunities with more rapid rates than ever before
- Many job opportunities presently exist

Computer Science, Technology and Database Administration Career Overview

A rising demand for skilled employees to develop new software and hardware technologies has resulted from the expansion of computer use. New and specialized job opportunities—including database administrators, computer scientists, and analysts—will increasingly rise out of evolving technologies and employer practices.

Systems analysts work with the individual needs of organizations by helping them solve their computer and technology problems. In this way, the organization is able to maintain optimal efficiency in investment, business, and personnel procedures. Computer scientists devise new ways of developing existing and up-and-coming computer systems. This includes designing new hardware and software systems to maximize a computer's power. Systems analysts generally work within a specified field related determined by the organization they work for. Accounting, business, scientific and engineering systems are but a few of these fields. Systems analysts job titles are often the same as systems architects / developers.

First, analysts determine the problems with the system through discussion with the managers. Goals and solutions are then determined and implemented, using methods such as information engineering, mathematical and data modeling, and cost accounting. Determining the proper inputs and outputs of the system serve to meet the individual users' needs. To assist the management in deciding financial capacity in implementing these new systems, analysts often prepare cost-benefit and return analyses.

After the system is accepted, analysts run tests and observations to determine what hardware and software is needed to set it up. To eliminate the possibility of any future errors in the system analysts will make specification charts and diagrams for programmers to work with. Analysts with heavier experience are often called software quality assurance analysts. This type of analyst performs all of the normal work in addition to finding problems and solutions to computer systems.

Programmer-analysts must be proficient in both programming and systems analysis in order to design and improve computer software. As this becomes process becomes more mainstream, more of these analysts will work with client server applications development, multimedia and Internet technology, and object-oriented programming languages.

The need for different computer systems to communicate with each other poises one problem for expanding computer use. Systems analysts try to make computer systems compatible within an organization for reasons of keeping information accounting records current, as well as maintaining budget projections and sales figures. "Networking" is a common procedure used by analysts to connect computers both internally (in offices or departments) and externally (internet and email). The main objective is to make information accessible from a mainframe computer or server. Thus, analysts have to be able to design the right hardware and software to allow this access.

Network systems and data communications analysts design and evaluate different types of systems. These systems include wide area networks (WAN), local area networks (LAN), Internet and Intranet's, and others. In addition to researching for the necessary products and hardware and software components, analysts do network analysis, modeling, and planning. Telecommunications specialists work with the overlap of computer and communications development. Many design and development occupations have grown out of the rising use of the World Wide Web and computer graphics. Jobs such as webmasters maintain all performance and technical aspects of a website. This includes approving of site content and speed access. Web designers usually maintain day-to-date site design. Many new jobs have been created as a result of emerging web-technologies. Webmasters maintain the performance of a website, while Internet developers create and design websites.

Computer scientists work in the diverse areas of researching, inventing, or theorizing. Their jobs are categorized by the amount of expertise they have in a particular field. Academic institutions will usually have computer scientists work with hardware, language design, and complexity theory. Others develop the use of human-computer interaction, robotics, or virtual reality. Computer scientists in the private sector also work with information technologies, designing language and other programming tools, knowledge-based systems, theory application, and computer games.

There is an increasing demand for organizations to be able to store, manage, and extract data more efficiently as electronic business is creating larger amounts of data every day. Database administrators work with database management systems to ensure performance, understand the database specifications, and add new users. Deciphering the necessary requirements and changes

does this. These administrators usually plan security and back-up systems to ensure the safe keeping of the rapidly growing amount of data that exists.

In 2002, nearly 100,000 jobs were distributed among computer and information-scientists, systems and data analysts, and database administrators. The majority of computer science occupations exist in systems design and service industries. Commercial services include facilities and data-processing management, software installation, integration design, and programming. Service organizations, ISPs, and web search portals often hire analysts, scientists, and administrators. Governments and financial and educational institutions also have heavy concentrations of computer workers.

Many computer programmers work independently as contractors or consultants for companies needing specialized knowledge in areas of computer languages and application. An organization may contract with an independent analyst or an agency to install a computer or software system. Hiring programmers through contractual agreements rather than as permanent employees is an efficient way of harnessing people with the specific skills needed without having to train or re-train newcomers. Contractual agreements range from a few weeks to more than a year.

<u>Computer Science, Technology and Database Administration Training and Qualifications</u>

Employers recognize the requirements for high skill and education levels as technology continues to change. People with both technical and communication skills are now important as companies seek to hire employees that can handle various responsibilities. Most companies prefer that you have formal college experience, whether it is a bachelor's degree or, for placement into more complex jobs, graduate school experience. In some cases all that is needed is a two-year degree or some related experience.

A bachelor's degree in information science, computer science, or management information systems (MIS) is required of systems and programmer-analysts, as well as database administrator positions for a good job in related fields. Most business schools have an MIS program as these programs emphasize management and business computing. As businesses become more internet-oriented, a master's degree in business administration (MBA) with an emphasis in information systems is becoming more desirable of employers. An associate's degree or certificate usually is adequate training for placement as a network or data communication analysts, such as a web-master. A doctorate degree is usually necessary to do the complex work of computer and information science.

It is possible for anyone with a degree to find a job in a computer field despite employer preference for specialized computer science degrees. It all depends on employer's needs, especially as it relates to technological change. Given the demand for Internet skills, workers with the ability to develop cutting edge technology are highly competitive. Also, deadlines for projects can influence an employer's decision.

Many associate degrees offered by community colleges and independent technical institutes are more occupation-oriented than most four-year degree programs. The more focused type of training is more beneficial to certain job areas. Good interpersonal, problem-solving, and

analytical skills are important for employers seeking individuals with computer experience and knowledge. A good form of preparation for job seekers is to enroll in computer science or systems courses. For business oriented systems analysis, employers generally require some form of management experience. Knowledge of physical sciences, engineering, or applied mathematics is important for jobs in the scientific environment. Finally, for webmasters or developers, experience with graphic design is essential.

Internships and co-op programs offer job seekers with ample opportunities to boost their qualifications for jobs. For those who transfer between computer-oriented industries, experience in the relevant industry is very important, whether it be accounting, banking, or financial services. Some have enrolled in courses to increase their knowledge in these and other fields. A computer programmer, to illustrate, might transfer to be a systems analyst. Additionally, A financial analyst with knowledge of computer systems might transfer to be a computer support specialist in a related field. Strong reasoning, problem solving, and interpersonal skills are required of systems analysts, database administrators, and computer scientists who must be able to deal in detail with several tasks at once. Most specialists work in groups and thus must be able to work well with others involved, including programmers, computer personnel, and managers.

Computer scientists employed in academic institutions and other private practices can move upwards to leadership or administrative positions as perhaps the head of a department, lead systems analyst, project manager or chief information officer. To become a chief technology officer depends on ones experience with managing data and ensuring its security. Specialists with emphasis in a particular field may find it advantageous to become independent consultants or start their own business.

Continuing ones studies in the computer field is essential to stay up-to-date with emerging technologies. Many continuing education opportunities are available through colleges and universities and other training institutions, including employers and professional seminars.

To achieve qualifications and work-ability in a particular field, one may seek technical or professional certification. Many product and software companies offer certification to professionals. Certification is essentially a standard process in the industry. To become certified as a database management, for example, is one standard step on the path to becoming a database administrator. Voluntary and professional certification, both offered by product vendors and software firms, has the ability to make a job seeker more competitive.