

What Can I Do With A Major In... Computer Science/MIS?

You've probably heard about how many great job opportunities there are in the high tech field, especially for computer science and Management and Information Systems majors. But are these majors for you? This booklet is designed to help you explore computer science and MIS as careers. It is divided into the following sections:

The following resources were used in the development of this booklet:

Eberts, M. & Gisler, M. (1994). Careers for computer buffs and other technological types. Chicago: VGM Career Horizons.

Eberts, M & Kelsey, R. (1998). Careers for cybersurfers and other online types. Chicago: VGM Career Horizons.

Goldberg, J. (1998). Great jobs for computer science majors. Chicago: VGM Career Horizons.

Stair, L. (1996). Careers in computers. Chicago: VGM Career Horizons.

Contents:

Systems Development Systems Analyst

Programming

Service

Information Systems Management

Internet

Other

For more information on these careers, use the Career Exploration Center library. See the University of Texas Department of Computer Sciences or the Department of Management Science and Information Systems for more information about majoring in computer science or MSIS.

Systems Development

Systems development refers to developing a computer system, configuration, or network to meet the needs of a specific business or user. This task typically requires both systems analysts (SAs) and programmers. This section will highlight systems analysts, while the next describes programming careers.

SYSTEMS ANALYSTS (SAs)

SAs are problem solvers who specialize in how information flows from information sources to computers. SAs perform three main functions in their job:

- 1) finding out what information users want their computers to generate
- 2) researching existing computer systems and analyzing their effectiveness
- 3) designing new systems and planning and implementing changes to existing systems

Since they work with managers, accountants, and other users within a company, SAs often have a business background or degree such as MIS.

Examples of Projects

Create new registration process for a college

Improve regulation of air temperature within the space shuttle

Design inventory control system for a business

Manage tax input system for an Army finance center

Stages of a Typical Project

preliminary investigation & shy; brief study of the problem

systems analysis & shy; gather and analyze data

systems design & shy; plan operation of system

systems development & shy; make design specs for programmers and test resulting programs

systems implementation and evaluation & shy; oversee changeover to new system

systems maintenance & shy; make changes or improve system

Career Ladder

Most SAs start as programmers and then progress to junior SAs, where they spend much of their time learning. SAs can then move from senior SA to lead SA to manager of systems analysis, gaining technical and management responsibilities as they progress.

COMPUTER PROGRAMMERS

Computer programmers tell a computer what to do by writing a program, a set of detailed instructions that is specified by an SA. There often tends to be a blur between programming and SAs since some employees fill both roles. Here are some job titles related to programming:

APPLICATIONS PROGRAMMER

Writes, debugs, and tests computer programs that perform specific tasks required by SAs. Can specialize in scientific applications or business/commercial applications.

MAINTENANCE PROGRAMMER

Improves or repairs existing programs.

OPERATING SYSTEM PROGRAMMER

Writes instructions to make it easier to program computers (ex. handling multitasking). May work with applications programmer to debug their programs. Works for computer manufacturers, computer service firms, and management consulting firms.

QUALITY ASSURANCE SPECIALIST

Tests programmers' code for errors.

SOFTWARE DEVELOPER

Coordinates production of computer-based products for corporations and individual consumers. Selects content providers, recruits graphic creators, and interacts with programmers.

SOFTWARE ENGINEER

Produces programs in one of the following areas: new computer languages, systems analysis/development, diagnostics, reliability testing, research, and simulations.

COMPUTER SERVICES

These job titles all relate to helping users use their computers efficiently and understand and choose their systems.

COMPCIERGE

Helps guests with all computer problems. Maintains hotel's computer services such as printing and Internet connections. Teaches computer skills to guests. Helps foreign guests work on American equipment. Works for hotels or resorts.

COMPUTER EQUIPMENT ANALYST

Writes up specifications for new computer equipment desired by a company and acts as liaison between SAs, users, and manufacturers.

COMPUTER INSTRUCTOR

Teaches classes on how to use computers and their software packages. Develops course materials and coordinates use of training facilities and equipment.

COMPUTER SUPPORT ANALYST

Provides technical assistance to users, analyzes problems, and acts as support person for hardware, software, and systems.

FIELD ENGINEER

Installs systems, diagnoses problems, and makes repairs. Performs preventative maintenance on computer equipment.

MANAGEMENT ANALYST/CONSULTANT

Uses problem solving skills and computer knowledge to solve management problems for organizations. Defines and analyzes problem interviews employees, develops possible solutions, and presents options to client.

OPERATIONS RESEARCH ANALYST

Uses computer expertise and analytical skills to promote the efficient operations of companies. Uses mathematical modeling to predict implications of possible solutions and chooses best alternative.

SYSTEMS INTEGRATOR

Identifies and merges different technologies so as to minimize impact on a company's operations.

TURNKEY CONTRACTOR

Buys, tests, and installs software and hardware for a client. Negotiates with vendors and may develop required software.

INFORMATION SYSTEMS MANAGEMENT

Like all managers, Information Systems managers help a company achieve its goals by overseeing its day to day operations. Many of the following positions require professionals who can understand complex technical information yet still communicate it to employees in all areas of an organization.

ASSET MANAGER

Decides what computer equipment a company should buy, integrates new equipment with technology standards and configurations, ensures that all equipment is up to date and compatible, and provides information to CFO about how equipment is making company more competitive.

CLIENT-SERVER SYSTEMS MANAGER

Oversees systems that connect the computers of users to one or more host servers.

COMPUTER STORE OWNER

Coordinates all operations of computer retail store, including hiring, purchasing, budgeting, training, marketing, and customer service.

COMPUTER SUPPORT SERVICES MANAGER

Sets protocol standards, selects hardware/software, and supervises support representatives.

DATABASE MANAGER/ADMINISTRATOR

Manages database systems to maximize ease of data retrieval and oversees all modifications.

DEVELOPMENT MANAGER

Coordinates hardware or software projects. Schedules work, writes status reports, and acts as link between project team and other departments.

EDP MANAGER

Supervises the assessment of computer systems and procedures.

INFORMATION SYSTEMS DIRECTOR

Hires and supervises programmers, SAs, and others. Assesses information technology needs and oversees budget. Often requires an MBA.

OPERATIONS MANAGER

Oversees operation of all computer equipment for an organization. Handles equipment breakdowns, monitors computing capacity, and staffs operations department.

PRODUCT MANAGER

Assumes final responsibility for software or hardware product, including development and marketing. Supervises development manager, marketing manager, and documentation staff.

PROGRAMMING MANAGER

Assigns work to programmers, prioritizes assignments, and ensures timely completion of projects.

RETAIL MANAGER FOR COMPUTER STORE

Hires and trains staff, solves customer problems, orders and sells software/hardware.

TECHNICAL SUPPORT MANAGER

Finds improved ways to utilize equipment and fulfills users needs.

TELECOMMUNICATIONS MANAGER

Oversees efficient transmission of information for companies with branches in many locations.

INTERNET

Due to the Internet's explosive growth, there is a real shortage of workers with technical backgrounds in computer science and engineering. Also, many new positions have been created such as webmasters and web editors. These lists highlight some of the current options; however, this career field changes rapidly so keep in mind this is not an exhaustive listing.

AUTOMATION LIBRARIAN

Oversees library's computer network and purchasing/planning of automated services. Requires a master's degree in library and information science.

ENTREPRENEUR

Sells products or services via the Internet

GAME DESIGNER

Creates online computer games.

GAME TESTER

Tries out new online computer games to find possible programming errors.

INFORMATION BROKER

Gathers information for clients by using commercial databases, Internet resources, emails, listservs, and newsgroups.

INTERNATIONAL PLANNER

Ensures high quality services are provided to ISP's international ventures or to US customers traveling overseas. Manages tech support training, customer care and billing.

INTERNET CONSULTANT

Helps businesses gain a presence on the Web by advising, teaching, and recommending service providers or designers.

INTERNET INSTRUCTOR

Teaches classes on using the Internet and designing web sites. May work for community colleges, university extension programs, schools, training companies, computer stores, or libraries.

ONLINE LIAISON

Responds to email requests from users for a web site.

SOFTWARE ENGINEER

Builds an Internet system pertaining to a specific topic, such as all sports content on Yahoo or an advertising system for a web site.

SOFTWARE PROGRAMMER

Writes, tests, debugs, and maintains programs related to the Internet.

TECHNICAL SUPPORT STAFF

Solves technical problems and maintains positive relations between Internet company and customers.

WEB CATALOG SPECIALIST

Creates or converts existing catalogs to online format.

WEB EVANGELIST (or INTERNET STRATEGIST)

Defines and promotes a company's e-commerce and Internet strategy. Sets up partnering relationships with outside companies, evaluates and recommends technology solutions, and predicts trends in the world of technology.

WEB PROGRAMMER

Writes scripts to process forms, converts files to HTML, designs, maintains, and improves web sites.

WEBMASTER

Coordinates day to day operations of web sites. Plans new products, develops web site's image, works with graphic artists, evaluates tolls and technology, and monitors web traffic.

OTHER COMPUTER JOBS

ANIMATOR

Uses computers to create animation sequences for film, video, and TV.

ARTIFICIAL INTELLIGENCE SPECIALIST

Programs computers to imitate the human brain's thought processes in specific areas, such as recognizing voices and making decisions.

AUDITOR

Inspects a company's computer program documentation to be sure work is being conducted according to design. Evaluates test data to expose possible fraud. Requires business experience as well as CS background.

COMPUTER DESIGNER

Researches and creates new computer hardware products. Conducts feasibility studies and works with other researchers to create product description. Runs experiments to test designs.

COMPUTER HACKER

Specializes in attacking computer systems electronically to test security systems.

COMPUTER LIBRARIAN

Organizes, catalogs, and maintains data that is stored on electronic media. Maintains back-up files for an organization. Helps users retrieve data from master computer files.

COMPUTER MARKETING COMMUNICATIONS SPECIALIST

Writes brochures, data sheets, and other marketing materials to promote a computer product. May include video scripting. Works for hardware or software manufacturers.

COMPUTER PRODUCT DESIGN ENGINEER

Works with designers to create new hardware products by developing specifications and mock-ups from designs.

COMPUTER SECURITY SPECIALIST

Protects data and computer resources. Sets up and evaluates security systems. Conducts raids to expose security loopholes.

DATABASE SPECIALIST

Creates and writes database systems to gather, organize, and categorize information to be stored and retrieved by computers.

GRAPHIC DESIGNER

Uses computer to create graphics for print ads, logos, brochures, and other design products.

KNOWLEDGE ENGINEER

Designs expert systems (those that contain most of the knowledge an expert in a field such as medicine would use to make a decision).

MARKETING SUPPORT SPECIALIST

Assists sales representatives with the technical part of presentations and provides instruction on system installation.

NETWORK ADMINISTRATOR

Coordinates use of local area networks (LANs) and wide area networks (WANs) within an organization.

NETWORK ANALYST

Performs specific systems analysis as requested by network administrator.

NETWORK ENGINEER

Designs transmission systems and networks and conducts traffic studies. Works for companies with large communications systems or in telecommunications industries.

SALES REPRESENTATIVE

Maintains contact with established accounts, generates new accounts, works with field engineers, and develops marketing plans.

TECHNICAL RECRUITER

Finds and interviews candidates for technical positions. Attends job fairs and college recruiting seminars. Screens resumes and matches applicants with existing job vacancies.

TECHNICAL WRITER

Writes documents describing computer systems or programs as well as user manuals and reference manuals for programmers. Requires strong writing skills in addition to technical background.

TELECOMMUNICATIONS ANALYST

Functions as technical advisors to applications programmers. Designs, tests, documents, and evaluates telecommunications software.

TRADE SHOW COORDINATOR

Directs the display of exhibits in trade shows, promoting specialized sales within an industry. Employers include trade show service companies and high tech manufacturers.

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