PART IV

SUPPORTIVE INFORMATION
ENDNOTES


8. ACM Committee on Curriculum for Community and Junior College Education. *Recommendations and Guidelines for an Associate Level Degree Program in Computer Programming*. ACM, 1981.


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CAREER INFORMATION

The following selected job descriptions are possible positions for graduates of a two-year program in informational processing. They describe the functional work to be done, but would vary by level of expertise within the position and by the configuration of the computing environment.

Computer Operator
Computer operators monitor and control computers to process data according to operating instructions. Duties include selecting and loading input and output units with materials such as tapes, or print forms, and observing the machines for stoppage or faulty output.

Business Programmer
Business programmers prepare and maintain a set of instructions, called code, that control the operation of computers that are used in business for applications such as accounting, personnel administration, marketing, and management information systems. When they write detailed computer instructions, business programmers follow specifications, usually developed by systems analysts, designed to meet the needs of the user of the business system. Business programmers also maintain computer programs and make changes as required. They use tools such as flowcharts, data flow diagrams, and decision tables.

Systems Analysts
Systems analysts work with the users of computer information systems in identifying and solving business problems. Often they are part of a team that practices a problem solving methodology, referred to as the systems development life cycle (SDLC). The SDLC has four distinct phases: study, design, development, and operation. Although systems analysts may be involved throughout the entire SDLC, they are particularly skilled in analyzing problems and designing solutions. They create the specifications that guide the programmers who develop the computer instructions. Systems analysts use tools such as prototyping (working with computer-screen models that can be shared with users) in order to customize a system to best meet users' needs. Increasingly, they are using computer aided software/systems engineering (CASE) tools to assist them with the SDLC tasks, including all aspects of documentation. An intermediate position between programmer and systems analyst exists in many organizations. This position is called
analyst/programmer, and it is consistent with many of the tasks that might be assigned to a business programmer and systems analyst.

**Systems Programmer**

Systems programmers maintain the computer system of an organization by installing new equipment, training people to use the system and solving problems when they occur. They may program in assembly-level language to generate the specific step-by-step instructions which enable the computer to perform the desired operations. They fix problems that prevent the system from working smoothly. When equipment is changed, they most often modify the operating system supplied with the computer hardware. They are often responsible for evaluating and selecting new equipment. In most installations, systems programmers spend most of their time doing maintenance work. But systems programmers who work for computer manufacturers (and have many years of experience) may be asked to design new operating systems or new languages for computers which are under development.

**Computer Graphics/Multimedia Specialist**

Computer graphics specialists use a computer to design, redesign, and produce visual images and to present and display data. They may be called an electronic artist or designer. Business computer graphics specialists may create graphic designs for letterheads, brochures, posters, and corporate logos. Media computer graphics specialists create film, television, video, and animated imagery, special effects and background scenery for movie production, and program announcements for television. In publishing they create lettering, layout and production art. In editorial art, they produce graphs, charts and drawings. This is a field in which free lance work is available.

**Network Specialist**

Network specialists design and develop systems for linking computers with one another, and with a variety of peripheral devices ranging from terminals and printers to analog sensing devices and telecommunication switching systems. They may diagnose and troubleshoot problems. They may work directly with systems users to analyze their specific network requirements. They may also oversee the installation of such systems. They also may be responsible for devising procedures to protect computer system security to prevent unauthorized access.
**Data-Entry Operators**
Data-entry operators use special keyboards to enter data from source material (paychecks and bills, records of transactions) into computers. They work at computer terminals or at other locations which are connected to a central computer.

**Data Librarian**
Data librarians are responsible for all data resources, including tape storage in vaults and backup of magnetic disk media. They keep detailed records of the location of all data records. They are responsible for the retention of history files, care of magnetic media, and removal of files no longer needed.

**Database Manager**
Database managers, or administrators, are responsible for the definition, organization, and use of databases. Because the integrity of all programs that share a database depends on the accuracy of the database, this is a critical task. In medium to large computing environments, this job requires individuals who are experienced and well trained.

**Computing/Technical Resource Consultant**
An exceptionally talented individual who, by virtue of education and experience, is able to analyze problems and create solutions. In the realm of microcomputers, this person is sometimes referred to as a Guru. Small businesses that cannot afford a large in-house staff may employ such a consultant.

**Computer Sales Representative**
Computer sales representatives sell computer systems, computer equipment, products, service and supplies to businesses, schools and industries. They represent the manufacturers of the products and often are the primary technical resource. They visit customers in offices in an assigned territory, or display and demonstrate products at trade shows. They market and sell computer software and hardware, set prices, prepare contracts, provide orientation and customer education, arrange delivery and installation, maintain customer contact, and handle customer complaints.
In the future, there will be more emphasis on understanding the organization, data communications, and software development using advanced development platforms such as application generators and tools for software engineering. Future positions may be even more challenging in demanding a broader spectrum of computer-based solutions be available to that organization. Because of the continual rapid change in technology and tools, tomorrow's graduate will have a very broad choice of career path options available and must have the knowledge and ability to adapt to these changes.
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