The wonderful working world of computers

Since 1951 when the first computer was installed for commercial use, computer systems have become an increasingly important part of everyday life.

Today these machines bill customers, pay employees, record airline and hotel reservations, help forecast weather, and monitor factory production processes.

Scientific and engineering researchers rely on computer systems to solve complex equations as well as to collect, store, and sort vast amounts of data.

Microcomputers are used at home for business and pleasure.

Workers in computer and related occupations design systems for processing information, write instructions and translate them into machine readable language, and operate computers and peripheral equipment such as remote terminals.

Most computer careers require some type of specialized training.

A college degree is becoming increasingly important for systems analysts and programmers — especially for those working in scientific and engineering research operations.

Computer operators usually need a high school diploma, and specialized training and experience may be considered more important than formal education beyond high school.

For all computer occupations, employers stress the importance of learning on the job.

In addition to technical knowledge and skills, computer personnel must be able to concentrate and should enjoy working with details.

Those who operate equipment — data entry or console operators, for example — must have manual dexterity and some mechanical aptitude.

Programmers and systems analysts must be able to think logically and should enjoy solving problems.

Nature of the Work

All data systems require specialized workers to enter data and instructions, operate the computer, and retrieve the results.

The data to be processed and the instructions for the computer are called "input;" the results are called "output."

Information is entered into a computer system by data entry personnel in a variety of ways. In some systems, keypunch operators prepare input by punching patterns of holes in computer cards to represent specific letters, numbers, and special characters, using a machine similar to a typewriter.

In others, data typists use special machines that convert the information they type to holes in cards or magnetic impulses on tapes or disks.

Most newer systems are capable of remote data entry. The user sits at a machine equipped with a typewriter keyboard and an electronic screen that displays the data as it is entered directly into the computer.

In some newer systems, data enters the computer at the source of creation, for example, at the loading dock or at a supermarket checkout line.

Once the input is coded — prepared in a form the computer can read — it is ready to be processed. Console operators, who monitor and control the computer, decide what equipment should be set up for each job by examining the special instructions that the programmer has written out.

To process the input, they make sure the computer has been loaded with the correct cards, magnetic tapes, or disks, and then start the computer.

While it is running, they watch the computer console paying special attention to signals, such as error lights, that could indicate a malfunction.

If the computer stops or an error is signalled, operators must locate the problem and solve it or terminate the program.

In some systems, devices directly connected to the computer provide output in the form desired by the programmer.

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In the laboratory with medical lab workers

Laboratory tests play an important part in the detection, diagnosis, and treatment of many diseases.

Medical laboratory workers, often called clinical laboratory workers, include three levels: Medical technologists, technicians, and assistants.

They perform tests under the general direction of pathologists (physicians who diagnose the causes and nature of disease) and other physicians, or scientists who specialize in clinical chemistry, microbiology, or the other biological sciences.

Medical laboratory workers analyze blood, tissues, and fluids in the human body by using precision instruments such as microscopes and automatic analyzers.

Medical technologists, who usually have 4 years of postsecondary school training, perform complicated chemical, biological, microscopic, and bacteriological tests.

These may include chemical tests to determine, for example, the blood cholesterol level or microscopic examination of the blood to detect the presence of diseases such as leukemia.

Technologists microscopically examine other body fluids; make cultures of body fluid or tissue samples to determine the presence of bacteria, parasites, or other microorganisms; and analyze the samples for chemical content or reaction. They also type and cross match blood samples.

Technologists in small laboratories often perform many types of tests. Those in large laboratories usually specialize in one area such as microbiology (the study of blood cells).

Most medical technologists conduct tests related to the examination and treatment of patients. Others do research, develop laboratory techniques, teach, or perform administrative duties.

Medical laboratory assistants, who generally have a year of formal training, assist medical technologists and technicians in routine tests and related work that can be learned in a relatively short time.

Medical laboratory workers conduct a wide range of tests and analysis.

In large laboratories, they may specialize in one area of work.

For example, they may identify abnormal blood cells on slides.

In addition to performing routine tests, assistants may store and label plasma; clean and sterilize laboratory equipment, glassware, and instruments; prepare solutions following standard laboratory formulas and procedures; keep records of tests; and identify specimens.

Working Conditions

Medical laboratory personnel generally work a 40 - hour week. Those working in a hospital can expect some evening and weekend duty.

Laboratory workers may spend a great deal of time on their feet.

Laboratories generally are well lighted and clean. Although unpleasant odors and specimens of diseased tissue often are present, few hazards exist if proper methods of sterilization and handling of specimens, materials, and equipment are used.

Places of Employment

About 210,000 persons worked as medical laboratory workers in 1978. Most medical laboratory personnel work in hospitals.

Others work in independent laboratories, physicians' offices, clinics, public health agencies, pharmaceutical firms, and research institutions.

Laboratory facilities generally are concentrated in metropolitan areas.

In 1978, Veterans Administration hospitals and laboratories employed about 2,800 medical technologists and about 2,000 medical laboratory technicians. Others worked for the Armed Forces and the U.S. Public Health Service.

Grants further research

The Committee on Educational Aid, Du Pont Company, has awarded a total of $22,000 for the academic year 1981 - 82, according to Dr. Luna I. Mishoe president, Delaware State College.

Mr. R. N. Noisette, college relations representative for chemistry and engineering, Du Pont Company, made the presentation.

The Du Pont Science and Engineering grant to chemistry is $12,000. Science education and the department of business administration received $5,000 each.

The science and engineering grant is to enhance the College's teaching and research in science and engineering by helping the department to satisfy needs and to engage in activities that would not otherwise be possible.

Some suggested uses for monies is to:

— Purchase of equipment beyond the normal financial resources of the department.

Cornell University is inviting black applicants with at least completed or soon to be completed BS & BA degrees to apply to any of 84 graduate specializations in virtually all occupations. Liberal Arts & Science advance degree holders are favored. Cornell University is offering fellows consisting of full tuition plus at least a $4,000 living stipend. Cornell funded on campus admission interviews are possible. For Information write to:

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