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IBM

International Business Machines Corporation

From

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IBM INTRODUCES POWERFUL SMALL COMPUTER

WITH MONTHLY RENTAL BEGINNING AT $695

WHITE PLAINS, N. Y., Feb. 11 . . . The first IBM computer to rent for less than $1,000 a month was introduced today by International Business Machines Corporation.

Monthly rental of the new IBM 1130 computing system begins at $695. Its internal computing ability, however, is greater than systems costing several times as much.

The desk-sized 1130 is designed for individual use by engineers, scientists and mathematicians. But with its range of peripheral units, the 1130 also will be used in such fields as publishing, construction, finance, manufacturing and distribution.

For ease of use by many individuals, an advanced storage technique is available with the 1130 computer. Data and instructions for computer processing are recorded on a magnetic disk similar in appearance to a phonograph record. Disks are protected by a plastic cartridge. Each IBM 2315 disk cartridge can hold the equivalent of more than one million characters of information.

The cartridge enables an engineer, for example, to store information about his own work on his own disk.

When he wishes to use the computer, he simply slides the disk with its plastic jacket into a slot on the 1130 console. Information from the disk is transferred into the 1130's high-speed core memory for processing. The computer has a memory capacity equivalent to more than 16,000 characters of information.

The 1130 is designed for use in a wide range of scientific, technical and business activities. These include:

- -- solving of complex mathematical and statistical problems;
- -- preparing newspaper, magazine and book copy for automatic typesetting;
- -- developing road, bridge and tunnel designs for civil engineers;
- -- scheduling construction projects using critical path techniques;
- -- analyzing geological findings to assist petroleum exploration teams;
- -- balancing electrical load flow for public utilities, and
- -- accounting for delivery route operations of bakeries, dairies and other distribution companies.

To assist 1130 users in making effective use of their system, IBM will provide more than 50 application programs for use in such fields as civil engineering, publishing, mathematical and statistical problem-solving, and petroleum exploration and engineering.

"Many small companies, research centers and development groups have a need for low-cost computing power. The 1130 can meet this need in the smallest engineering and commercial organization or in separate departments of larger corporations," John R. Opel, vice president-marketing of IBM's Data Processing Division, said. "It provides a high level of capability, but at a cost that makes it practical to bring the computer right to the Individual with a problem which must be solved," Mr. Opel said.

The 1130 computing system employs the microelectronic circuits produced by IBM's Solid Logic Technology. These circuits, similar to those used in the IBM System/360, operate at billionth-of-a-second speeds. They enable the 1130 to perform as many as 120,000 additions in a second -- unprecedented power for a computer in this price range.

Programs written in FORTRAN for the 1130 can be run on the IBM Sysrem/360 if there is the same type of peripheral equipment available in the System/360 configuration.

The application programs provided without charge with the 1130, such as those for the solution of mathematical and statistical problems, will simplify use of the computer for individual engineers, business firms and consultants.

The individual need only indicate which pre-written program he needs, supply data, and he will receive an answer within a few moments. He can communicate with the computer through its keyboard.

Since the user does not have to tell the computer how to solve such complex problems as simultaneous equations or multiple regressions, a good deal of his time is saved.

Information generated by the 1130 can be represented graphically with an IBM 1627 plotter linked to the computer. The plotter can prepare charts, graphs and diagrams from tabular results calculated by the computer. The plotter can thus trace the shape of a cam being designed or draw business graphs depicting trends in sales and manufacturing. A set of programs available with the computer enable it to smooth out point-to-point data and thus represent curves precisely.

To accomplish a variety of applications ranging from research to route accounting, the 1130 can be used

with paper tape punch and reader, card read punch and a low-cost printer as peripheral equipment.

Main memory of the 1130 computing system is a magnetic core storage with capacity of 4,096 or 8,192 16-bit words. Memory cycle time -- the time required to move a word from and restore it to memory -- is 3.6 millionths of a second.

The basic IBM 1130 computing system will rent for $695 a month and sell for $32,280. A typical system with disk storage will rent for $895 a month and will cost $41,230.

First deliveries are scheduled to begin in the fourth quarter of 1965. The 1130 computing system will be manufactured at IBM facilities in San Jose, Calif. It also will be manufactured by the IBM World Trade Corporation in Greenock, Scotland, for customers outside the United States.

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Technical Information

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IBM 1130 COMPUTING SYSTEM ANNOUNCED

WHITE PLAINS, N.Y., Feb. 11 ... The IBM 1130 computing system is a desk-sized, stored program computer for low-budget problem solving.

Its basic configuration, with memory capacity of 4,096 16-bit words, memory cycle time of 3.6 microseconds, and a paper tape reader and punch, has a monthly rental of $695. Memory capacity can be expanded to 8,192 16-bit words.

A single-disk direct access storage cartridge for the 1130 enables individuals to maintain and load into the computer their own special programs and working data. Each disk can store 512,000 words - - the equivalent of more than one million characters.

A new low-cost printer, a graphic output plotter, punched tape and punched card units broaden the application capability of the 1130 computing system.

Users of the new computer will range from scientists and engineers to small manufacturing and distribution firms. Newspapers and others in the graphic arts industry, will use the 1130 for preparation of copy for automatic typesetting and photocomposition. Distribution firms such as bakeries and dairies will use the computer for control and accounting of delivery operations. Public utilities, construction firms, consultants and state and local governments are also expected to employ the 1130 for desk-side problem solving.

More than 50 application programs have been prepared by IBM for industries such as petroleum, publishing and civil engineering. Two packages of programs for research applications will help speed the solution of mathematical and statistical problems.

If an engineer wants to solve a set of simultaneous equations, for example, he loads the mathematical programs into the 1130. The programs may be stored on punched cards, punched tape or a disk cartridge. Using a control card or the 1130 keyboard, he calls out the routine for solving simultaneous equations. Then he enters his data and the computer quickly solves the equation. The solution for simultaneous equations is one of 25 programs available in the mathematical and statistical program package.

The programs prepared by IBM are made available to 1130 users without charge.

DISK STORAGE

A major advance available with the 1130 computer is a direct access storage system. One model of the computer has a built-in disk drive. The IBM 2315 disk cartridge, which fits into the drive mechanism, provides a convenient way for individuals to store their own programs and data.

A single direct access disk is encased within each protective plastic cartridge. The disk can be held by the user in his own desk or office cabinet. When the user needs the program, he merely slips the entire cartridge into a slot in the computer.

When the cartridge is inserted in the 1130, the disk itself is engaged in two ways. A power drive causes the disk to spin at 1500 revolutions a minute. At the same time, a forked arm extends to read and write on both magnetic surfaces of the spinning disk. Programs can be transferred from the disk to the 1130's core memory at the rate of 35,000 16-bit words a second.

PLOTTER

The IBM 1627 plotter, another device for use with the 1130 computing system, receives numerical data from the computer and converts the information to graphic form. This is particularly valuable in applications such as petroleum exploration, in which a graph or map may be more meaningful than a list of numbers.

One model of the 1627 provides an 11-inch wide plotting surface. It plots 300 points a second in increments of 1/100th of an inch. The second model provides 29-1/2 inches of drawing surface, and plots at 200 points a second in increments of 1/100th of an inch.

An IBM program will enable users of the plotter to modify numerical data before it is drawn by the plotter. Contouring, smoothing, approximation and map annotation are four of the nine functions in the numerical surface techniques and contour map plotting program. The program will expedite the use of the plotter since many of these tasks must be performed before meaningful results can actually be drawn.

PRINTER

The new IBM 1132 printer is the lowest-cost on-line computer printer ever announced by IBM. It rents for $275 a month. With a 48 character set, the 1132 printer can produce 80 lines of alphameric copy a minute. If numeric results of computation are desired, a numeric character set will increase printing speed to 110 lines a minute. The 1132 supplements the 15.5 character-a-second console printer and enables the computer to produce business reports comparable in appearance and content to those produced by much larger computers.

PAPER TAPE

Paper tape devices that can be employed with the 1130 are the IBM 1054 paper tape reader and the IBM 1055 paper tape punch. These devices will enable the 1130 user to generate numerical control tapes for machine tools and messages for subsequent transmission to distant points over communications lines. Paper tape can be employed for storage of data produced by the computer. The paper tape reader also will serve as an input unit for entering data which has been recorded at a remote location.

Both the 1054 and 1055 employ the six-bit IBM standard perforated tape and transmission code with odd parity. Punching and reading speeds each are up to 14.8 characters a second.

PUNCHED CARDS

Card input and output is achieved through use of either of two new models of the IBM 1442 card read punch. Model 6 reads at 300 cards a minute and punches at 80 columns a second. The rate at which cards are punched depends on the number of columns punched in each card. For faster processing of cards, Model 7 provides reading at 400 cards a minute and punching at 160 columns a second.

PROGRAMMING

A monitor program will be provided with all 1130 computing systems having disk storage facilities in order to simplify program writing and ensure efficient system use. The monitor will oversee the running of all other programs and supply them with often-used routines such as those which control input and output and those used to handle console inquiries.

The monitor speeds new program preparation by supplying many routines that would otherwise have to be included in each program and by simplifying the testing of new programs.

The monitor helps make the 1130 more efficient by speeding transition from job to job and by permitting it to overlap processing with running of input and output devices.
A FORTRAN compiler also will be provided to users of the 1130. This language speeds solution of mathematical problems since it allows an engineer or scientist to instruct the computer in language familiar to him.

All programs written in FORTRAN for the 1130 can be run on configurations of the IBM System/360 with comparable input and output units. All the user need do is reprocess the program with the FORTRAN compiler supplied with System/360.

A basic IBM 1130 computing system will rent for $695 a month, and sell for $32,280. Typical system prices for the 1130 with disk storage facilities will be $895 a month rental, and $41,280 for purchase.

Deliveries of the 1130 are scheduled to begin in the fourth quarter of 1965. The 1130 computing system will be manufactured at IBM facilities in San Jose, Calif. It also will be manufactured by the IBM World Trade Corporation in Greenock, Scotland, for customers outside the United States.