IBM PC ENHANCES THE WORLD'S FUTURE

Jozelle Cox

Human beings have always been intrigued by the meaning of their existence and enjoy pondering over ideas that will enhance that existence. Having the interest in their past that they do, humans have often used the materials and substances of their surroundings to enhance human existence. The curiosity one has about the past, as well as curiosity about the environment leads one to creativity, and one soon feels a need to accomplish the goal that curiosity has made possible. Fortunately, the curiosity and creativity of the human race has remained prominent in the present day and age. In today's society, man has set and accomplished goals that range from putting men on the moon to a development now in progress--an aircraft that can reach orbit and return to Earth just as easily as it reached outside the atmosphere. The need to attempt to be "all one can be" is a feeling that resides in the human race, and can easily be seen through the continuous achievements in another area of interest. Although the purpose of this research is to illustrate the importance of computers to the public, particularly the IBM PC, present examinations will include computers developed before the IBM PC was brought into use.

The human interest in the use of machines to aid his/her existence began as many as 5,000 years ago, but the first major breakthrough stemmed from the development of the arithmetic machine in 1642 by Blaise Pascal. The machine contained eight wheels having the numbers zero through nine printed on them. These wheels were attached in such a way that dialing a certain amount to be added or subtracted created the world's first computer. With this new development came the curiosity to learn more and improve the present novelty; this is most likely what led Leibnitz to develop what is now called the binary system, and that development gave Charles Babbage the desire to create the Analytical Engine in 1835, or as it is more popularly termed, the keypunch machine. Borrowing punch cards from the Jacquard loom after its revision in 1837, Babbage developed a mechanism that was to become an asset to millions of people, and the grandeur of that machine led to the development of the MARK I Automatic Sequence Controlled Calculator. Financed by the Navy and built by the Computing Tabulating Recording Company (now IBM), the MARK I was similar in operation to Babbage's Analytical Engine. The new machine, which used punch card input/output, was operated by mechanical relays and stored numerical data. Having a design that contained 760,000 wheels, 500 miles of wire, and a panel 8 feet high and 51 feet long, the MARK I could execute 200 steps per minute. The public was fascinated by its mechanical ability, and its ability to perform tasks easily. But as the need grew for tasks to be completed more quickly, so too did new developments in computers evolve, and in the 1930s, when electronic components were successfully employed, the real breakthrough in computers was disclosed. From 1937 to 1945 the ENIAC was designed to aid the public as much as possible. The new computer weighed in at a very heavy thirty tons, but had electromechanical input and could perform 300 multiplications per second. Following the ENIAC was the UNIVAC, which became an industry leader in the early years of computers.

The first generation computers served the public in many different ways, but had many flaws ranging from their large sizes to their ways of often making mistakes,

25

especially with tricky functions such as punch cards and binary codes. The users of these computers saw a need to improve on the first generation machines in a way that allowed the public to understand easily and communicate with them. With this goal in mind, in 1954, the IBM 650 was developed. Using a drum for main storage, it became the workhorse of the industry. This new machine was an asset to many as well as the predecessor of more advanced computers to follow. It allowed for large amounts of information to be put on a small device called a microchip, and it replaced the old punch cards with magnetic storage tape for input and output, thus making the machine more lightweight and easier to operate. The new assets appeared to be a great convenience to all users, but its inability to be compatible with other computers presented a problem, and for this reason, development of operational systems followed. These new systems allowed the user to communicate in one language with all related machines by giving a certain command at a certain time. Eventually the 650 was replaced by new computers which, with the help of operating systems, could perform tasks much faster than their predecessors. These computers are in wide use today, especially in homes and in the business world. One example of the resources gained from the use of the IBM computers is evident at NASA Ames Research Center. To perform their daily tasks, researchers at NASA Ames use many IBM computers, and one in wide use is the IBM Virtual Machine Storage System.

With the development of new operating systems and software to increase computer compatibility, the user has been able to pool the resources of the IBM VM open and closed systems. Some of the features that allow users to manipulate the open systems to their advantage include the UNIX operating system, a multiuser operating system. Developed in 1969 by Bell Laboratories, its many assets have contributed to user production of programs and files. One system using UNIX is TITAN, a networking system that allows one user to talk to another through his/her computer. TITAN allows the users to not only communicate in a "phone" mode with each other, but to send electronic mail to users the world over.

Another multiuser system in wide use at NASA Ames is the VAX system. Primarily using a database management system, this program allows the user in the business world to keep a running file on information that is frequently changing. Since the information kept on a database file is constantly changing, it is an aid to the user to have a system that automatically changes calculations and the like with just a few entries to call up the previous information. One VAX system used by data enterers and systems analysts is SATURN, and this program also has networking abilities.

Finally, the IBM VM Storage System contains its own operating systems for personal or mainframe computer work. One operating system in wide use in business is the Conversational Monitoring System, and it is special because it allows a user to communicate with the mainframe as a personal computer. CMS is a unique mode of operation of the IBM, as it keeps all one's work under a category called FLIST; all the user must do is give all materials a filename, filetype, and filemode, and the information can be recalled at any time by going through the FLIST mode. A user may also create or delete new files at any time he/she wishes, and revisions are also fairly simple with the use of a few commands.

Once the user has recalled the information he/she needs, he/she may choose to XEDIT or XEDIT UPDATE that file. XEDIT mode allows changes to be made to the previous version of information by listing a particular file exactly as it was saved, and the user may scan that file and make changes exactly where needed; the program is then saved again, and the user's time can be spent on other projects. Other changes may be made to files by first sorting them in a certain fashion. SORT-BY-DATE, SORT-BY-NAME, and SORT-BY-TIME quickly bring already-sorted files to the user. One can also delete files to save the file space; this also helps to sort the stored information. Being able to create files and recall them in CMS becomes very helpful, as the Conversational Monitoring System allows the user to open a library system called NATURAL, and the knowledge of this system allows documents and descriptions on file to be edited at any given time.

By using the IBM computer in a PC mode, the user can access the resources of the personal computer. The workings of the IBM PC "bridge the gap" between personal computing and mainframe computing. Some of the PC's most attractive features include the IBM's ability to work on one computer system, and send or punch the results or file to another user; the ability to communicate or "network" with other computers (e.g., IBM connection to VAX); and the IBM's ability to work on one system when another part of the networking group is not functioning properly. Other features for more personal use include a program called LOTUS. This program also contains files in a database management form, but LOTUS is considered "user friendly" in comparison to normal database systems, meaning that LOTUS is easier for the end user to understand. Another program also available for personal use is WORDSTAR. This system is a word-processing data file. A unique program, this system allows the user to store written documents (public and private) and make minor changes before the material is completed. WORDSTAR is much easier to use than a regular typewriter as typewritten work cannot be edited by any other means other than a manual one.

The public has made wide use of the IBM features of computers in a variety of ways. NASA Ames Information Systems Branch has used this machine to help redevelop the PMIS procedures for the Office of Personnel and Management, and the Central Computing facility has used the IBM PC for database management, word-processing, and graphics to aid in the design of computer systems. Home users have become very adapted to LOTUS, for this program is a major part of their home financial management.

IBM, as well as other computing facilities, began serving the public years ago, and is continuing to find ways to "enhance the existence" of man. With new developments in supercomputers like the Cray-2, and the recent advances in "artificial intelligence" (AI) programming, the human race is gaining knowledge at a rapid pace. All have benefited from the developments of computers in the world; not only have they brought new assets to life, but have made life more and more of a challenge everyday. The pride in the old as well as the new creations have led many individuals to believe that only "the sky was the limit" and one could continue to achieve to the best of one's ability. As new computers come into play all over the world, may all individuals continue to seek knowledge, but above all, gain wisdom.

REFERENCES

Kindred, Alton R., Introduction to Computers, 2nd Edition, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1982.

McWilliams, A., The Personal Computer Book. Prelude Press, Los Angeles, CA, 1982.

Rinder, Robert M., A Practical Guide to Small Computers for Business and Professional Use. Monarch Press, 1981.

Book of Familiar Quotations, Webster's Encyclopedia of Dictionaries. Ottenheimer Publishers, Inc., 1958.