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DATA ENTRY, A VERY IMPORTANT PROCESS

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Data entry process is one of the most important steps in data processing systems and the reliability of the results obtained depends upon the quality of the data entry process. Although computer techniques have changed rapidly in the last few years, many systems designers are still thinking in terms of punched cards. But input designs must be up to the level of current hard- and software.

Conventional data entry process involves information keying, the verification through repetitious keying, and the input to the system through a program which checks the validity of that information. From this validity checking we get a subset of the information which is declared wrong and it must be keyed once more. This process goes on again and again, until the checking program finds no errors.

This process is generally present in most of the data processing systems and it is easy to realize the great length of time spent on it, as well as the amount of non-reutilizable support wasted on data entry by punched cards.

Substitution of electromechanical equipment for data entry is thus necessary because of, among others, the following reasons:

- increase of the amount of data to be processed
- increased price of the data support, which is not reutilizable
- the necessity of increase speed

the necessity to guarantee the quality of primary data, and not only in order to facilitate error detection but also to avoid generation of new errors.

The development of computer techniques itself has determined that data entry on magnetic surfaces becomes a substitute for key-punched data entry.

At present, those systems, have many features and consequently they have extraordinarily increased their potentiality.

Magnetic surfaces for data entry have the following advantages:

- they are re-utilizable
- they become cheaper with each year that passes and have an increased capacity for information
- they can be updated, thus allowing checks - with detection and correction of errors - at the time of data input.

The actual fact at the present time is that in data entry process punched data is not used at all or is almost unused in many countries.

At present, there are different equipments and systems for data entry, depending on the different requirements of the users, and they provide different levels of data entry manipulation.

Data entry in Cuba

In Cuba we have the same problem with the same characteristics. Also, we have been trying to perform the data entry process in the best way. In order to accomplish this, there are two strategies:

a) off-line data entry
b) on-line data entry.

a) Off-line data entry won't be discussed here because it does not constitute a subject in this issue.

b) On-line data entry

Under this strategy the Multi-Terminal Data Entry System (COPDAT) was developed. This is a specific operating system oriented to data entry and its validation on Cuban minicomputer analog to PDP11/20.

This system allows working with up to 16 terminals connected via multiplexor, it being possible to create from 1 up to 16 different files at the same time. This means that each terminal may create on file or several terminals may be associated in order to get information to create the same file.

The temporary or final result may be stored in magnetic tapes, in OS or DOS format. It is possible to verify a file totally or partially and also to verify it from the beginning or from a given record. Besides, it is possible to validate a file from any other input equipment of the configuration. All of these functions may be performed simultaneously.

File creation may be controlled by commands which immediately validate the input information, and also files can be created in several working-days. During interactive input, errors can be detected and also they can be corrected immediately.

When each terminal finishes its labour, some operator statistics are shown in the system console. They are: terminal number, total keystrokes, total records, total errors, beginning time and ending time.

A listing is also supplied with wrong records, each with the terminal number on which the record was typed. In this listing, wrong fields are signalized with asterisks under the wrong characters. These listings are obtained through a spooler, and each listing is identified with the name of the corresponding task.

COPDAT guarantees, in case of system failure, all the information typed up to the moment of the failure.

COPDAT supplies also other auxiliary functions, very useful in the development of the work. These functions are: listing of disk's directories, equipment initialing, truncation of a task, and file deletion.

COPDAT enables checking if a field is numeric, alphabetic, alpha-numeric or symbolic; if it is equal or different from given characters of fixed values. COPDAT can also check that a given string does not appear as a substring of a field. Range checks, arithmetic relationships, sum checks and inter-field dependencies can all be specified. As a result, verification on central computer can be further reduced or even eliminated.

COPDAT implementation

COPDAT is divided into the following main modules:

- task supervisor
- multi-terminal handler
- memory allocator
- command executer
- file control system.

Task supervisor decides which tasks are going to be executed and when. In order to take this decision it uses the roundrobin method with priorities. These priorities are: the

highest one for interactive tasks, the second one for non-interactive tasks, and the lowest one for auxiliary functions.

Multi-terminal handler inquires into the terminals and achieves all treatments about them.

Memory allocator is one of the fundamental modules of COPDAT because it distributes the available memory for the execution of different tasks. Memory allocator uses the FIRST FIT method, and also it tries to group the released memory into greater available space blocks in order to avoid fragmentation. When the available blocks do not satisfy the memory request, this memory allocator checks whether the sum of all blocks together satisfies the request and then it performs a memory condensation.

Command executer does the validity checks, and the *file control system* treats all peripheral equipments in the configuration.

CONCLUSIONS

In order to obtain more efficient data processing systems, it is very important to pay the necessary attention to data entry process.

COPDAT is the implementation of an on-line data entry system for Cuban minicomputers.

Using this kind of systems the data required to run your business is processed sooner - and in data processing it is very useful to save time.

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ÖSSZEFOGLALÁS

ADAT-BEVITEL, EGY NAGYON FONTOS FOLYAMAT

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A cikk indokolja az adat-bevitel fontosságát a számitástechnikai folyamaton belül; áttekinti a Kubában használatos adat-beviteli technikákat; és ismerteti a Kubában kifejlesztett /PDP11/20-al analóg/ mikroszámitógépre megirt adatbeviteli rendszert /COPDAT/.

ВХОД ДАННЫХ, ОЧЕНЬ ВАЖНЫЙ ПРОЦЕСС

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В статье кратко описывается важность процесса входа данных в вычислительной технике и разные методы,использованные на Кубе. Мы познакомимся с системой входа данных /COPDAT/, разработанной для кубинского Микро-помпьютера типа PDP.