Types of data processing

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What are different types of data processing

Data processing can be understood as the conversion of raw data to meaningful information through a process and the conversion is called " **data processing**". There are number of methods and techniques which can be adopted for processing of data depending upon the requirements, time availability, software and hardware capability of the technology being used for data processing. There are number of types of data processing methods.

Types of data processing on basis of technology

Types of data processing can be understood on basis of methods and technology adopted. Generally mechanical and electronic data processing is used and at times manual data processing is used.

Manual data processing: In this method data is processed manually without use of machine or electronic device. This method is slow and less reliable, chances of error is high and this method is very old when technical innovations were few and rare. This also makes processing expensive and requires large manpower depending on the data required to be processed. Example includes selling of commodity on shop.

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Mechanical data processing – Data processing is done by use of mechanical device or very simple electronic devices like calculator and type writers. The advantage of this method is more reliability and saving of time as compared to manual data processing but still the output is limited. Any device which facilitates data processing can be considered under this category.

Electronic data processing – This is the fastest and best available method with highest reliability and accuracy. Technology used is latest as this method uses computers. Manpower required is minimal. Processing can be done through various programs and predefined set of rules. Processing of large

amount of data with high accuracy is almost impossible which makes it best among the available types of data processing.

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Types of data processing on basis of process/steps performed

1. Batch Processing
2. Real time processing
3. Online Processing
4. Multiprocessing
5. Time sharing

Understanding types of data processing

Batch Processing – This is one of the widely used type of data processing which is also known as serial/sequential, tacked/queued of offline processing. The fundamental of this type of processing is the that different jobs of different users are processed in the order received. Once the stacking of jobs is complete they are provided/sent for processing while maintaining the same order. This processing of a large volume of data helps in reducing the processing cost thus making it data processing economical.

Examples include: Examination, payroll and billing system.

Real time processing – As the name suggests this method is used for carrying out real-time processing. This is required where the results are displayed immediately or in lowest time possible. The data fed to

the software is used almost instantaneously for processing purpose. The nature of processing of this type of data processing requires use of internet connection and data is stored/used online. No lag is expected/acceptable in this type and receiving and processing of transaction is carried out simultaneously. This method is costly than batch processing as the hardware and software capabilities are better. Example includes banking system, tickets booking for flights, trains, movie tickets, rental agencies etc.

Online processing – This processing method is a part of automatic processing method. This method at times known as direct or random access processing. Under this method the job received by the system is processed at same time of receiving. This can be considered and often mixed with real-time processing. This system features random and rapid input of transaction and user defied/ demanded direct access to data bases/content when needed.

Related: ***Data Processing Cycle***

Multi processing – This type of processing perhaps the most widely used types of data processing. It is used almost everywhere and forms the basic of all computing devices relying on processors. Multi processing makes use of CPUs (more than one CPU). The task or sets of operations are divided between CPUs available simultaneously thus increasing efficiency and throughput. The break down of jobs which needs be performed are sent to different CPUs working parallel within the mainframe. The result and benefit of this type of processing is the reduction in time required and increasing the output . Moreover CPUs work independently as they are not dependent on other CPU, failure of one CPU does not result in halting the complete process as the other CPUs continue to work. Examples include processing of data and instructions in computer, laptops, mobile phones etc.

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Time sharing – Time based used of CPU is the core of this data processing type. The single CPU is used by multiple users. All users share same CPU but the time allocated to all users might differ. The processing takes place at different intervals for different users as per allocated time. Since multiple users can uses this type it is also referred as multi access system. This is done by providing a terminal for their link to main CPU and the time available is calculated by dividing the CPU time between all the available users as scheduled.