Introduction to Data processing

DEFINITION OF DATA

The term <u>data</u> means any basic fact which may be input to some processing system. A processing system is one where computations, comparisons and general manipulation of <u>data</u> are done. The processing may be people or machine e.g the <u>computer</u>.

Information on the other hand, is the end – result of a processing system. The information is needed by management for decision making. The relationship between <u>data</u> and information is shown in the diagram below:

INPUT —> PROCESSING —> OUTPUT

WHAT IS <u>DATA</u> PROCESSING?

<u>Data</u> processing is the task of using a collection of basic facts to produce information, usually it has no value in itself until it is subjected to analysis, validations and comparisons with other <u>data</u> produce result (information), for example a collection of weights of individuals do not turn useful information for decision making.

However when the set of <u>data</u> is processed such as searching for individual with a maximum or minimum weight or the weight of all concerned in the study, information is produced.

Management can decide on the basis of each information to assign special duties to the fellow with the maximum or minimum weight. Other use could be made on such information depending upon the situation prevailing on the organization and their special needs.

Therefore, <u>data</u> processing is an operation on <u>computer</u> <u>data</u> which involves the entering, sorting, updating and retrieving of information using <u>computer</u>.

PROPERTIES OF DATA

1. Collected/Captured
2. Prepared
3. Presented
4. Precise
5. Complete
6. Accurate
7. Purposeful
8. Assigned

DATA PROCESSING CYCLE

The data processing cycle describes the stages of data processing. It involves the following stages:
• Data gathering
• Data collation
• Input stage
• Processing stage
• Storage stage
• Output stage

Element of data processing;
INPUT —> PROCESSING OUTPUT

Data is often required for various purposes. Even the same item of data may be used in a great variety of ways depending upon the user's objectives.
Most data processing work may be viewed as consisting of data, processor and output. Usually, storage also features since both data and program instructions need to be stored.

DATA PROCESSING ACTIVITIES
Data processing activities involve the following:

1. INPUT: involves three steps; collection, verification/validation and coding
2. PROCESSING : involves classification, sorting, calculating, converting and storing
3. OUTPUT: involve retrieving, converting and communication.
   INPUT ACTIVITY
   a) COLLECTION: involves gathering data from various sources and assembling it at one location.
   b) VERIFICATION/VALIDATION: after data have been gathered, its accuracy and completeness must be checked.
   This is an important step that helps to eliminate the possibility of Garbage-In – Garbage-out(GIGO)
   c) CODE: data must be converted into machine readable form so that it can be entered into the processing system.
   Entering data via a computer terminal and keyboard is one example of coding.

PROCESSING ACTIVITY

a) CLASSIFICATION: Classification involves categorizing data according to certain characteristics to make it meaningful to the user. For example, sales data can be grouped according to salesperson, product type, customer or any other classification useful to management.
b) SORT:This involves arranging the grouped data element into predetermined sequence to facilitate processing. For example, an employee number can be last. Sorting can be done on numbers, letters, special characters or a combination of them.After it hasbeen classified, data may be stored.
c) CALCULATION: The arithmetical or logical manipulation of data is referred to as calculation. Examples include computation of students' grade –point averages, customers' bank balances and employee's wages.
d) SUMMARISE:reducing large amount of data to concise, usable form is called summarizing. The logical reduction of data is necessary to provide information that is useful.
e) STORE: this involves the storing of data not immediately needed;data could be stored on a disk, tape or CD-ROM.

OUTPUT ACTIVITY
This involves retrieving data, printing data and data communication.

IMPORTANCE OF DATA PROCESSING

The art of management is increasing as our society becomes more competitive and more technologically advance. The volume of data being generated is correspondingly increasing and becoming unmanageable. On the other hand, the need to make information available, timely and accurately is becoming more vital in the competitive world in which we have found ourselves. It is when a large volume of data is required to be processed speedily and accurately that Data Processing becomes indispensable.