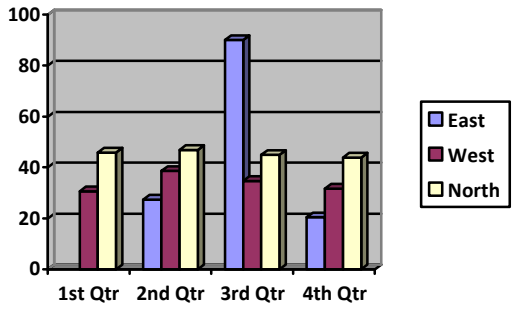
UNESCO-NIGERIA TECHNICAL & VOCATIONAL EDUCATION REVITALISATION PROJECT-PHASE II

NATIONAL DIPLOMA IN COMPUTER SCIENCE

MANAGEMENT INFORMATION SYSTEM

COURSE CODE: COM 224



YEAR 2- SEMESTER 2

THEORY

Version 1: December 2008

Week1 : Different Systems

This week learning outcomes:

- Understand a system , subsystem , supersystem and its characteristics
- Understand the taxonomy of systems: Deterministic, Probabilistic Probabilities, Static, Dynamic etc
- Understand organization and business education as made up of systems or subsystems

GENERAL SYSTEM THEORY

SYSTEM, SUBSYSTEM, AND SUPERSYSTEM

1 SYSTEM

A system can be describe

d as a group of interrelated elements that are integrated with the common purpose of achieving a particular objective by accepting inputs and producing outputs in an organized transformation process. By this definition, an oranisation such as a firm or a functional area is a system . The organisation consists of the physical resources like; Manpower, Material, Machines, Money, and conceptual Information (including data) and they work towards achieving particular objectives that are specified by the owners or management. Other examples of system are biological system, business system, electrical system, data system ,education system, operating system, mathematical system, sound system, waste disposal system , computer system,queuing system, etc.

The *general system theory* states that a system is a totality where the whole is greater than the algebraic sum of all the individual elemental parts of the system.

Therefore, it is professionally correct for a manager to consider his or her organisation as a system. Such a manager would have made problem solving process easier and more effective.

SUBSYSTEM

A Subsystem is simply a system within a system . This means that systems exist on more than one level that is, Systems can be composed of subsystems or elemental parts. For example, the system of the firm includes subsystems of the bank may be such departments as savings, demand deposit (checking accounts), and installment loan.

SUPERSYSTEM

When a system is part of a larger system, the larger system is the super system. For example, the system of the firm exist in one or more larger environmental systems or super systems. If the firm is a bank, for example, it is part of the financial community. It is also part of the business community, the local community, and the global community.

The manager's major responsibility is to ensure that the firm meets its objectives, by ensuring that the various. parts of the firm work together as they should.

These definitions are illustrated in the following diagram:

Firm being a subsystem within super systems and systems:

Basic Elements of System

A basic configuration of system consists of following elements;

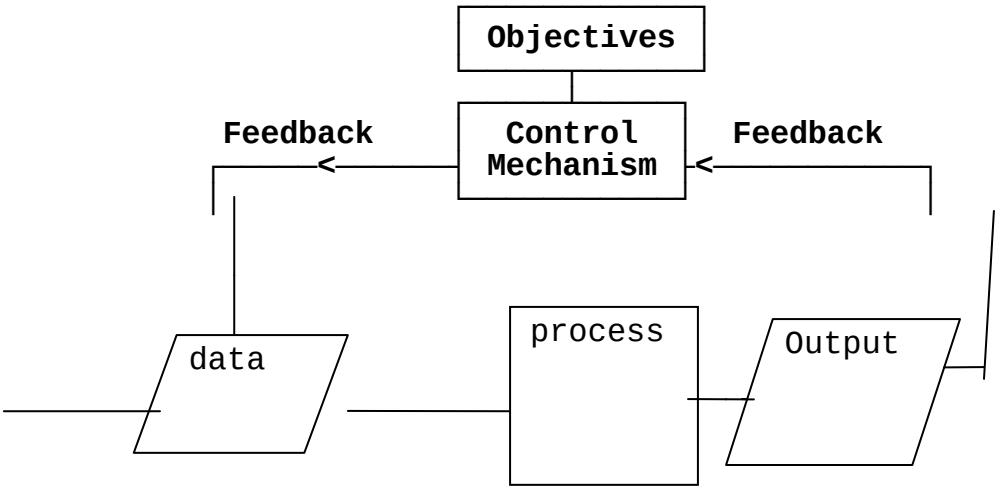
Input element , Transformation process, and Output element. Additionally, some systems have feedback loop , Control mechanism , and Objectives.

Input resources are transformed into output resources. The resources flow from the input element, through the transformation element , and to the output element . A control

mechanism monitors the transformation process to ensure that the system meets its objectives. The control mechanism is connected to the resource flow by means of a feedback loop, which obtains information from the system output and makes it available to the control mechanism.

The control mechanism compares the feedback signals to the objectives and directs signals to the input element when it is necessary to change the system operation.

Diagrammatic relationship of system Elements



A feedback is data about performance of a system.

Control system or mechanism basic elements are as follows:

i. **Specification Planning : A standard specifying the expected performance must be set.**
ii. **Collecting facts: A measurement of the actual performance to check for accuracy, speed, and anticipated results.**
iii. **Comparison: This attempts to isolate the reason for any variation**
iv. **Corrective Action: This may be achieved through feedback.**

Not all systems are able to control their own operations .A System without the control mechanism, feedback loop , and objective elements is called *dynamic system.*

1. Input **involves capturing and assembling elements that are used for feeding the data to be processed. Example are raw materials, clerical data about business and people.**

2. **Processing involves transformation processes that convert input into meaningful output. Examples are mathematical calculations, and a manufacturing process.**

3. **Output involves the elements that communicate the results of processing to the outside world or ultimate destination for the benefit of the users. Examples of these include management information, finished products , and human services.**

4. **Feedback is defined as data about the performance of a system. For example, data about exams performance is feedback to a an exams officer.**

5. **Control involves monitoring and evaluating feedback to determine whether a system is moving towards the achievement of goals.. The control function then makes necessary adjustments to a system's input and processing components to ensure that it produces the set objectives.**

Taxonomy of Systems

There are three categories of systems ;Probabilistic system cybernetic system and deterministic system.

Probabilistic system and Deterministic System

Probabilistic system is also called stochastic system is the one whose outcome can not be predicted with precision. That is, not certain what outputs will be achieved from specific input because these systems are subjected to random influences from the internal and external environment . Therefore, it can not be predicted precisely . Examples include the business system , economic system and particularly agricultural system.

Deterministic System

A deterministic system also called mechanistic system is one whose behavioral patterns can be predicted if its present state and operation characteristics are known. Such a system operates according to a predetermined set of rules. A good example of a deterministic system is a computer program. The computer programmer knows in advance the output his program will produce, if the program is error free.

Cybernetic System

The scientific approach to the study of the way information is moved and controlled in a specified system is known as cybernetics. A cybernetic System is one that automatically adapts to its environments. A system with feedback and control components is sometimes called a cybernetic system, that is , a self-monitoring , self-regulating system. The behavior of the cybernetic system is a subject of rigorous scientific investigation.

Adaptive Systems:

These are dynamic system which responds to changing circumstances by adjusting its behavior on a self-organizing basis.

The system alters its parameters as a result of measuring output .

Example includes organizational systems such as human beings. The degree to which a business is a adaptive depends to a great extent on the caliber of its management.

Week 2 : System theory

This week learning outcomes:

- Undestand closed and open loop system
- Understand feedback control in a system
- Understand how to represent a system

OPEN and CLOSED SYSTEMS

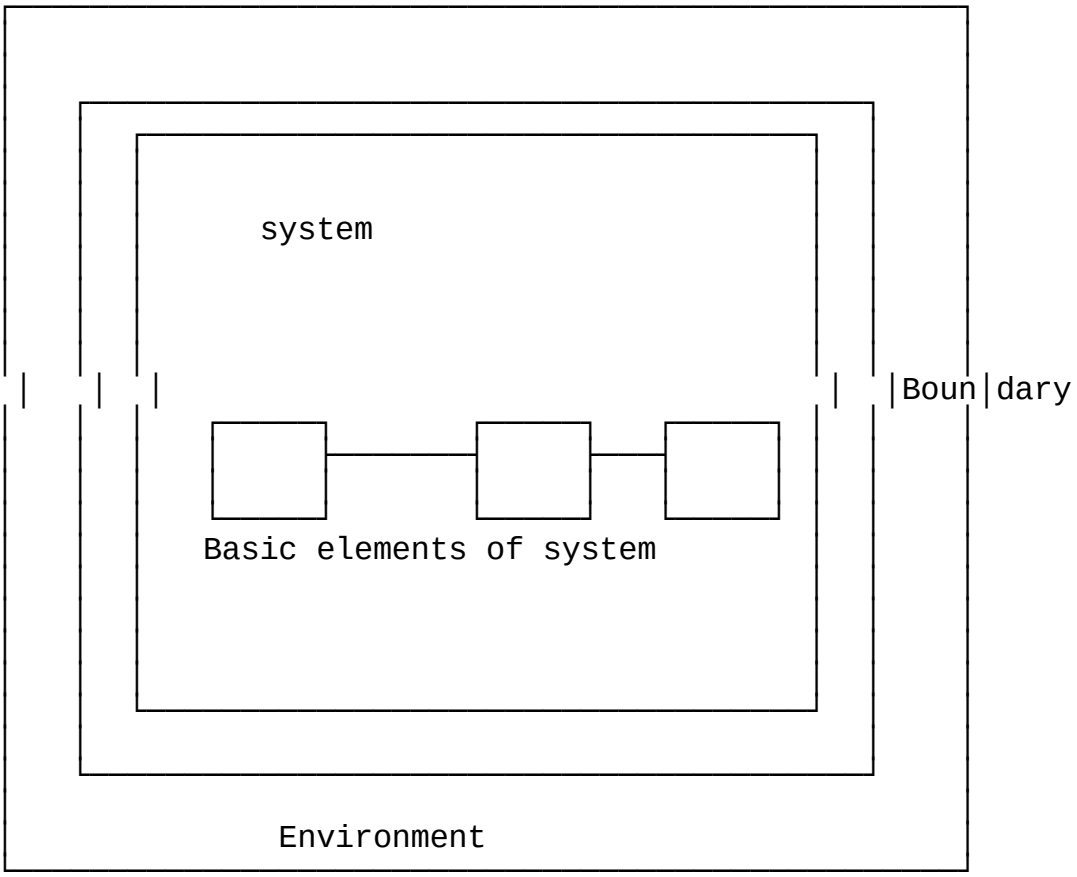
Regardless of its category , a system is either closed or open. It is important to note that a system does not exist in a vacuum; rather, it exists and functions in an environment containing other systems.

OPEN SYSTEM

A system that interacts with other systems by exchanging input and output components with its environmental elements such as customers, suppliers, competitors, the labour force, government and global community is called *open system*. A firm and most systems that occur naturally in business are examples of open system. It has to adapt to its changing environments where necessary in order to ensure its continued existence. Also, a business system must be capable of reorganization in order to cope with the changing market situations. An information system must also be able to adapt to changing demands for information.

CLOSED SYSTEM

A system whose function and behavior not affected by its environment is a closed system. That is, it is self-contained and the input/output elements do not interface with environmental elements outside it. Example includes chemical reactions in a controlled laboratory.



Nature of asystem

There are essentially four (4) views that support the General System Concept. These include the following attributes:

a.) Synergy :All systems are made up of subsystems and for a meaningful Management Information System, the subsystems must act as one body where the whole is the greater than sum of all the subsystems.

b.) Hierarchy: The system when viewed as a whole, is made up of subsystems in which control flows in an ordered sequence from the top to the bottom.

c.) Interdependency: All the parts of a system constitute an indissoluble whole so that no part can be altered without affecting the other parts.

d.) Sub-optimality: This is a situation in which the sub-systems become selfish and self-centered and pursuing their own objectives independently . The overall effect may be detrimental to the existence of the whole organization.

Week 3 : Concept of Management information

This week learning outcomes :

- Management and its functions.
- Categories of information and characteristics.
- Different information needs of management levels.

Management

Management is an integral part of any organization. The survival of any organization is dependent largely on the quality of management or administration services available . Management can be simply defined as the organization and mobilization of all human and material resources in a particular system for the achievement of identified objectives in the system. The two key words are 'human' and materials . It is the business of management that both human and material resources within a system should be organized and mobilized so that the objectives of the system can be achieved to the fullest . Then administration or management therefore influences the results to be achieved , the direction to be pursued and the priorities to be regognised. Duker (1994) sees management as denoting a function as well as the people who discharge it. He further regards management as:

- Taking place within a structured organizational setting and with prescribed roles.
- Directed towards the attainment of aims and objectives.
- Achieved through efforts of other people; and
- Using systems and procedure.

Management functions

The Management functions include the following:

Fayol developed some universal principles that characterized successful administration and management. These can be applied to organization , be it industry, education or government. These elements are:

P=Planning
O=Organising
D=Directing
C=Co-coordinating
C=Controlling

Planning

This is the first step in any administrative function. It involves making arrangements for the future. It deals on how to use time, personnel and equipment in future. The future may begin with days, weeks, month or year. Plans are made after or goals and objectives are set .Planning is usually regarded as a search for the best method of achieving these goals.

Organising

The manager decides What jobs would have to be filled and the duties and responsibilities attached to each one.

Effective organization implies that the right people are assigned to the correct jobs at the appropriate time. Activities should be assigned to individuals on the basis of their ascertained qualification, experience and interests. On the part of the manager , a lot of wisdom , maturity and objectivity are required.

Directing

Directing involves giving staff details on how to go about their jobs. It is not once for - all-activity but an on-going one. Officers have to be continually put on the right path.

Co-ordinating

This relates to the activities of different units to one another to ensure that the different activities are met, to achieve the set objectives. Coordination occurs when the organisation's

numerous activities are planned, organized, directed and controlled.

Controlling
It is the measuring and correcting of activities are contributing to the achiement of planned goals. Some authors have pointed out that appraisal, evaluating and supervision are the administrators tools for controlling, directing and leading.

These elements of management could be seen as a cyclical event
Fayol went further to identify a list of fourteen principle upon which the soundness and good working order of an organization depend:

- Division
- Authority
- Disciple
- Unity of command
- Unity of direction
- Subordination of individual interest to general interest
- Remuneration of personnel
- Centralization of authority
- Chain of command
- Order
- Equity
- Stability of tenure of personnel
- Initiative
- Espirit de corps

CATEGORIES OF INFORMATION

There are three main categories of information and these are related to the purpose for which the information is utilized. The three categories of information are: Strategic, Tactical and Operational information.

i)STRATEGIC INFORMATION (top management): This is used by senior managers to plan the objectives of their organization, and to assess whether the objectives are being met in practice. Example is Board of Directors whose duties include to plan product range , plan expression into new markets and to establish at least 5-year plan and annual plans for the corporation. Information needed includes highly summarized information regarding corporation activities to-date e.g sales, transactions, Forecasts, awareness of competitor activities, and awareness of overall economic climate.

ii) TACTICAL INFORMATION (middle management): This is used by middle management to decide how the resources of the business should be employed and to monitor how they are being and have been employed.
Example, Sales Managers whose duties include ensuring that sales target are met, determining monthly sales plan, and correcting variances from plan. Examples of information needed -monthly sales analysis, market conditions, competitors' activity.

iii)OPERATIONAL INFORMATION (low-level management): This is used at the lower level management for daily or hourly running of their section. Users of operational information includes foremen, sectional

heads,sales clerk etc, to ensure that specific tasks are planned and carried out properly within the factory or office. Information needed includes prices of items , customers credit rating , stock availability etc.

CHARACTERISTICS OF OPERATIONAL INFORMATION

i) derived almost entirely from internal sources

ii) is highly detailed

iii) relates to the immediate term

iv) is task-specific

v) is prepared constantly or very frequently

vi) is largely quantitative

CHARACTERISTICS OF TACTICAL INFORMATION

i) it is relevant to short and medium term

ii) describes or analyses activities or departments

iii) it is prepared routinely and regularly

iv) it is based on quantitative measures (cash flow forecasts, budgetary control or variance analysis reports, short-term purchasing requirment).

CHARACTERISTICS OF STRATEGIC INFORMATION

i) derived from both internal and external sources

ii) summarised iii) relevant to the long term

iv) deals with the whole organisation

v) it is both quantitative and qualitative (eg overall profitability, future market prospects, total cash needs capital equipment needs).

Week 4 : The features on management information system (MIS)

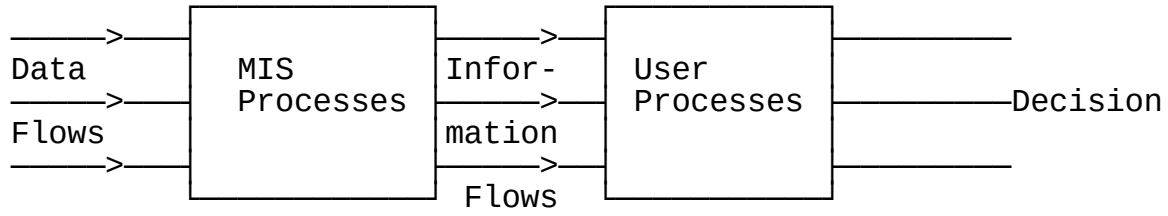
During this week you will learn :

- Management Information System
- Structure of a Management Information System
- Importance of MIS to business organizations
- Characteristic features of management information system
- Growing interest in MIS

MANAGEMENT INFORMATION SYSTEM (MIS)

A Management Information System (MIS) can be defined as an assemblage of data (e.g. facts and opinions) that are processed (e.g summarized, categorized, or projected) in such a way that they result in intelligent information that management can use to make decisions, and that the organization can use to attain its goals.

MIS can also be defined as the combination of human and computer based resources that results in the collection, storage, retrieval, communication and use of data for the purpose of efficient management of operations and for the business planning.



The main objectives of MIS is to use formalized procedures to provide management with appropriate information from all relevant sources, which would enable the manager make timely and effective decisions. The information must be provided at an acceptable level of accuracy and at an economical cost.

Management Information Systems generally fall within different types of activities. MIS activities may be described or defined in terms of what the information generated from it can be used for: These activities include the following :

i. Transaction processing,
ii. Operational control,
iii. Management control,
iv. Strategic planning.

As firm gained experience in implementing company wide MIS designs, managers in certain area began applying the concept to their own needs. These fraction of information systems, or subsets of the MIS are tailored to meet users' needs for information concerning functional area.

Organizational information systems could include the following:

i. Marketing Information System,
ii. Manufacturing Information System,
iii. Financial Information System,
iv. Human Resources Information System,
v. Information Resources Information System.
vi. Executive Information System.

STRUCTURE OF MANAGEMENT INFORMATION SYSTEM (MIS)

1. Strategic Planning and control: "strategic planning is the process of deciding on objectives of the organization, on changes in these objectives, on the resources used to attain these objectives, and on the policies that are to govern the acquisition, use, and disposition of these resources." Certain things can be said about strategic planning generally. First, is focuses on the choice of objectives for the organization and on the activities and means required to achieve these objectives. As a result, a major problem in this area is predicting the future

of the organization and its environment. Second, the strategic process typically involves a small number of high – level people who operate in a non repetitive and often very creative way. The complexity of the problem that arise and the non routine manner in which they are handled make it quite difficult to appraise the quality of this planning process.

2. Management control: The second category defined by Anthony is management control : m" the process by which managers assures that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives." He stresses three keys aspects of this area. First , the activity involves interpersonal interaction. Second, it takes place within the context of the policies and objectives developed in the strategic planning process. Third, the paramount goal of management control is the assurance of effective and efficient performance.
3. Operational control and Planning: Anthony's third category is operational control, by which he means "the process of assuring that specific tasks are carried out effectively and efficiently." The basic distinction between management control and operational control is that operational control is concerned with tasks (such as manufacturing a specific part) whereas management control is most often concerned with people . There is much less judgment to be exercised in the operational control area because the task, goals, and resources have been carefully delineated through the management control activity.

The importance of MIS to business organisations

The importance derived from implementing a management information system includes the following :

- Provision of improved services to customers.
- It facilitates decision making process of managers.
- The routine processing of business transactions is faster and cheaper than manual method.
- It fasten the planning and control functions of management.
- The information contents of MIS can be used by many managers for their varied needs.
- It can be used to achieve competitive advantage in the marketplace.
- Expected cost savings/reductions
- Increase in output volumes and Increase in profit
- Increase in accuracy level
- Improvement in working environment
- Improvement in turnaround time
- Tangible benefits, e.g customer relations and achievement of set goals.

Characteristic features of MIS

a) MIS supports structured decision at the operational and management control levels. However, they are also useful for planning purposes of senior management staff.
b) MIS are generally reporting and control oriented . They are designed to report on existing operations and therefore to help to provide day-to-day control of operations.

c) MIS rely on existing corporate data and data flows.
d) MIS have little analytical capability.
e) MIS generally used in decision making using past and present data.
f) MIS is relatively inflexible.
g) MIS has an internal rather than an external orientation.

Growing Interest in MIS

Reason why management has growing interest in information System:

1. Today, less time is available between the moment when a problem is presented to management, and the moment when a solution is needed. The complexity of organisations, as well as the sheer volume and size of the problems, requires information systems that can facilitate sound and finely decision making.
2. Change public attitudes towards organisation and authority create need for information systems. The executive must be able to responds more sensitively to the inquiries and requests of serious active members of the public- for instance, government, consumer groups, stockholders, researchers, and investigatory units.
3. Increasingly, organisations are staffed with sophisticated, better- educated poeple whose work is related to higher- technology processes (eg. research and development, science-oriented organisations, automation and computer systems, and market research). Executives must be able to provide leadership for such human resources, including assessing their activities and information.
4. Many organisations have gained experience with computers, and to some extent have estabilised the basic data-processing elements that permit advancement towards MIS.
5. The computer hardware and software that are needed to handle MIS- level approaches are available now, in contrast with just several years ago.

Week 5 : The concept of transaction processing

During this week you will learn :

- The concept of data and information
- Attributes of good information
- Data processing stages
- Methods of data / information processing.

THE CONCEPT OF DATA AND INFORMATION :

The terms data and information are often used synonymously .

To computer professionals they are different . Data consists of factS and figures that are relatively meaningless to the user. It is a piece or collection of raw facts representing people, objects, and the day-to-day activities of an enterprise. An enterprise in this case can be a church, a hospital, a school, a government ministry, a business organisation, etc.

Data is a valuable resource in any organisation .

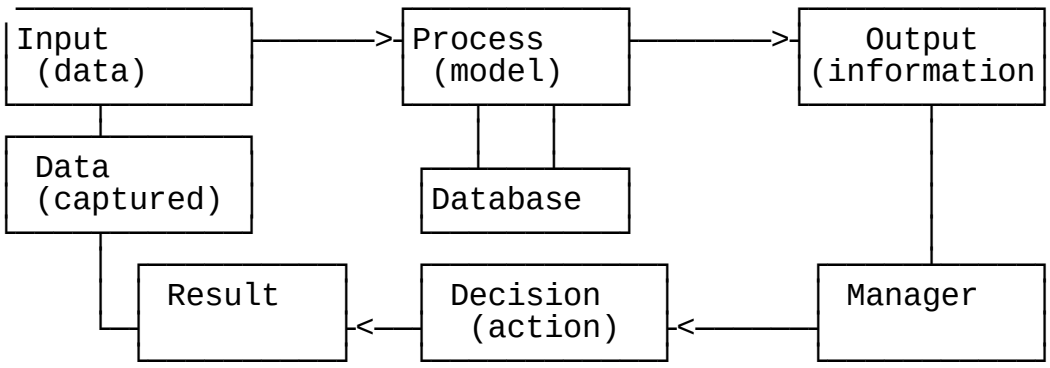
Information is data that have been put into a meaningful and useful context and communicated to a recipient who uses it to make decisions. Information involves the communication and reception of intelligence or knowledge. It notifies, surprises and stimulates, reduces uncertainty, reveals additional alternatives or helps eliminates irrelevant or poor ones, and influences individuals and stimulates them to action Especially in business, information should give early warning signals and portend the future.

Information consists of data, Images, text, documents, and voice, often inextricably intertwined, but always organized in a meaningful context. Information does not always travels directly from the physical system to the manager. Many managers are located some distance from the physical activity. These managers must obtain information from a system or procedure that produces the information from gathered data . We call the information-producing mechanism the information processor.

Information is one of the main types of resources that are available to the manager. Information can be managed just as any other resources. The information output of computers is used by managers, non-managers, and persons and organisations within the firm's environment.

Information is the bonding agent that holds an organisation together for better operation and coordination and survival and growth in an unfriendly competitive environment. Indeed, today's industries run on information.

A simple schematic that represents how we will think of information is shown in following figure.



The Information Cycle

The Figure below shows quality information in the hands of those who can effectively use it, will support good decision, good decision will lead to effective managerial performance, which leads to successful attainment of organisational goals.

QUALITIES/ATTRIBUTES OF INFORMTAION

1)Accessibility:This refers to the ease and speed with which information can be obtained.

2)Comprehensiveness:This refers to the completeness of the information. Incomplete information affects management decisions that is, it leads to incomplete management action.

3)Accuracy:This pertains to the degree of freedom from error of the information, especially when large volumes of data are involved. Transcription, transposition and computation error are examples.

4)Appropriateness: This refers to how well the information relates to user's request. This information must be relevant to the matter at hand.

5)Timeliness: This relates to the elapsed time of the cycle ie input, processing and reporting of output to users. For the timeliness of information to increase, the duration of this cycle must be reduced.

6)Clarity: This refers to the degree to which information is free from ambiguity.

7)Flexibility: This refers to the adaptability for use by more than one user.

DATA PROCESSING STAGES

Data Processing (DP): Activities applied in the transformation of data into useful information. Techniques for collecting, assigning meaning to, communicating, and retaining data for later use. Traditionally, computers have used for basic data processing jobs, which, while they affected the organisations' operations, were largely not directly significant to management. Such applications included preparing payroll cheques, and billing customers. Although these basic data processing applications are important, and although in many organizations they have heen computerized, increasingly the focus is on applications that do have direct managerial implications. Very small organisations may function well with an informal infornation system; in this type of system, the information may be stored in the mind of the owner and on scraps of paper. As an organisation grows in size and diversity, informal information systems no longer suffice. Lack of organised information and improper communication can cause organisation breakdowns. Larger organisations must have same kind of formal information system, which provides a basis for making decisions related to planning, organising, controlling, and actuating the enterprise.

Data Processing activities (Producing Information From Data)

Data processing consists of gathering the raw data input, evaluating and bringing order to it , and placing it in proper perspective so that useful information will be produced. All data processing whether done by hand or by the latest computer system, consists of three basic activities: capturing the input data, manipulating the data , and managing the output results.

1. Capturing : Data must be originated in some form and verified for accuracy prior to further processing. They may initially be recorded on paper source documents and then converted into a machine-usable form for processing, or they may be captured directly in a paperless machine-readable form.
2. Verifying : Refers to the checking or validating of data to ensure that it was captured and recorded correctly. Examples are ; a person reviewing another's work, the use of check digits in coding structures e.t.c.

Manipulating the data. One or more of the following operations may then have to be performed on the gathered data:

3. Classifying: It places data element into specific categories which provide meaning for the user e.g Sales data can be classified as inventory type, size, customer, sales-woman, warehouse shipped from.
4. Arranging (sorting): Places data element in a specified or predetermined sequence, e.g An inventory file can be arranged by product code, activity level, Naira value or by ant other attribute coded in the file and deemed desirable by a user.
5. Summarising: Combines or aggregates data element, e.g reducing data in the logical sense, as in the example where personnel manager wants a list of names of employees assigned to a department in a form.
6. Calculating: Entails the arithmetic and/or logical manipulation of data e.g computation to derive employees pay, customer's bill, students grade point averages. sophisticated calculations include linear programming, fore-casting e.t.c.

Managing the output results. Once data have been captured and manipulated, one or more of the following operations may be needed:

7. Storing: Places data onto some storage media such as magnetic tape, disk e.t.c whers it can be retrived when needed.
8. Retrieving: Entails searching out and gaining access to specific data elements from the medium where it is stored.
9. Communicating. Transferring data from one location or operation to another for use or for further processing is data communication- a process that continues until information, in a usable form, reaches the final user.

10. Reproducing: Duplicates data from one medium to another or into another position in the same medium e.g. a file of data stored on a magnetic disk may be reproduced onto another magnetic disk or onto a magnetic tape for further processing or for security reasons.

METHODS OF INFORMATION/DATA PROCESSING

1. Manual Method : Involves operations performed by a clerk assisted, if defined, by specific aids such as a pocket calculator or adding machine etc. This method of processing is only suitable in cases where there is no emphasis on the specific period of time the work must be completed. The processing is simple and in most cases, the employment of more hands will solve the problem of time constraint. Example is the updating of handwritten ledger records.

2. Mechanical Method: Involves operations that are performed by machine consisting of a keyboard but which are actuated by depressing appropriate keys by an operator. Example is the posting of lodgements and withdrawals on the personal customer's ledger using an accounting machine.

3. Electronic Method: Is more or less like the mechanical method except that in this case the machine being used is electronic and may have optional peripheral devices that are attached to it. It can be used for many accounting procedures including payroll, stock schedules and ledger updating. These days computers are being used. Data for input are entered through keyboard, card reader, optical character/mark reader, tape reader etc, while processed data are printed or displayed or stored on auxiliary storage. Its processing speed is high and can therefore handle quite a large amount of data. Very suitable for processing tasks that are repetitive in nature.

Advantages of Manual system

1. Initial cost of setting up is cheaper.
2. Major training is not needed.
3. Economical for small business.

Advantages of computerised system

1. Speedy operation.
2. Automatic operation.
3. Accurate information.
4. Varied management information
5. Random enquiries on stored data can be easily performed.
6. High productivity and improved service.

Week 6 : The concept of office automation

During this week you will learn :

- Office automation and its components: e-mail, voice mail ,fax machine and teleconferencing
- Introduction to computer networking and internet.
- Types of network topology.
- Application needs of computer programs.

Office Automation System or office information systems

Office automation refers to a wide variety of computer-based and non-computer-based applications that make office workers more productive at their jobs. Office automation includes all of the formal and informal electronic systems primarily concerned with the communication of information to and from persons both inside and outside the firm. Office automation applications have grown one by one until the extent that exist today. These are:

-Electronic Mail
-Voice mail,
-Audio conferencing
- Vidio conferencing
- Facsimile transmission (FAX)
-Desktop publishing

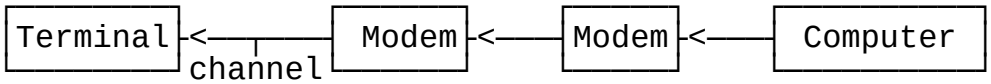
Many organisations and many managers will only embrace what the organisation needs and can afford when incorporating OA.

DATA COMMUNICATION, COMPUTER NETWORKS/INTERNET

DATA COMMUNICATION

Data communication is the movement of coded data and information from one point to another by means of eletrical , or eletromagnetic devices , fibre-optic cables, or microwave signals. iT is equally called teleprocessing , telecommunications. In data communication, there must be the sender, receiver, of communication as the main components of the system. Many technologies are used in the channels, but the most common is the telephone line.

Data communication Schematic



A network is a group of interconnected computer systems sharing services and interacting by means of a share communications link.. In a peer-to-peer environment, it may be described as a group of computers connected to each other (in some cases, with a server) such that can share resources such as document, files and / or printers.

Networking is a way of connecting more than one computer under the same or different operating environment, at different location possibly far distances, using the same or different medium of information exchange and protocols, with the aim of sharing information, data, and other resources. By this illustration computer communications is to do with the transfer of information by:

i.) Direct connection by cable of two computers.

ii.) Connection of two computers via the public telephone system or other telecommunications links.

iii.) Networking of a number of computers.

"Telecommunications" means 'communications at a distance'. Telecommunications technology embraces radio waves travelling through the air or through space, electrical waves flowing along a telephone wire, and laser pulses travelling along optical fibres.

Reasons for computer Communications

There are a number of reasons why you might want to connect your computer with others:

i.)To transfer files between your computer and a different type of computer with incompatible disks. For example, you might wish to transfer a document written on a PC to an Apple Mac running a DPT system.

ii.)To send messages to people with other computers, and to receive messages from them. This is called electronic mail or E-mail for short.

iii.)To join user groups or mailing lists, which is a kind of on-line bulletin board.

iv.)To access information stored on other remote computers, such as sales, inventory, and other internal information in the case of your organization=s computers, or financial and economic information in the case of public system.

v.)To update your organization=s computer files when you are away from base.

vi.)To share files with other users in your office or organization.

Hardware and software requirements for computer communications

i.)To get your computer communicating with another, you need communications Software and a suitable cable.

ii.)If you wish to carry out these communications via the telephone network, you need a modem.

iii.)To network your computer to others in your office, you need a local area network.

Let us look at each of these.

Communications Software. A large number of communications packages are available, especially for the PC, and some of these are in public domain (and therefore free). Notable public domain packages are Kermit and Procomm. And by imploring the appropriate network operating system=s software, users of these machines can share disk storage, printers, programs ,and data.

Modems. The word modem is short for modulator/demodulator, terms used to describe a device, which enables you to send and receive signals via a telephone carrier ware. If you want to communicate with other computers via the telephone line, you have to convert your computer's digital output to an analogue (i.e. wave-like) telephone signal, and convert the incoming analogue signal to digital computer input.. Hence the need for a modem, linking your computer to the telephone socket.

Multiplexor is a device that combines input signals from many computers and sends the comdined signal along the communication channel.

The Channel.

This is the transmission medium that carries data between the sender and the receiver. Channel occassionally comes up in LAN.

Local Area Networks.

LANs are used to link up a number of computers and other peripheral devices on the same site. Under Local Area Network-network within a building or an office apartment, these computers are hardwired. They enables users to share applications software, data files, peripheral such as printers, and common services provided by the network manager such as daily file backup. A LAN consists of a single cable laid around the site, with sockets along its length for connecting the computers, printers, and other devices. Data from the devices is sent round the network in small chunks or packets, each of which includes the address of the destination machine.There In other words LOCAL AREA NETWORK (LAN) is a system of hardware ,Software and Communication Channels that connects devices in close proximity, such as in a building housing an institution such as WAEC or JAMB Head quarter in Lagos and Abuja Respectively. The LAN permits the movement of data (including text, voice and graphics images) between mainframe computers, personal computers, terminals, I/O devices and PBXs.

WIDE AREA NETWORK (WAN) :- This covers a wide geographical area such as a Nation or a Continent or even the whole World.

TELECOMMUNICATION:- telecommunication encompasses not only data communication but any type of remote communication, such as Transmitting a Television signal.

WORKSTATION :A powerful desktop computer designed to meet the computing needs of engineers, architects, and other professionals who need detailed graphic displays; in a LAN, a workstation runs application programs and serves as an access point to the network.

TRANSMISSION METHODS

Transmission modes determine the one-way or two-way traffic flow between devices. There are three methods of transmission, these are listed below:

i.) Simplex, ii.) Half-duplex and,

iii.) Full-duplex method.

i.) Simplex moves data in one direction only. One device sends and one device receives just like radio and televisi n communication.

ii.) Half-duplex in contrast, allows two-way communication, but only one way at a time . devices take turns sending or receiving, similar to CB radio communication.

iii.)Full-duplex :To communicate in both directions simultaneously, we use full-duplex mode. seperate transmission signals prevent simultenous communication from interfering with each other.

Conceptually, a full-duplex line is equivalent to two simplex lines, one in each direction.

Notes: **Your teacher will illustrate this with suitable diagram(s) for each one.**

PROTOCOLS

communication requires a strict set of rules or procedures, called protocols for maintaining communication.

Protocols define the technical details of communication, such as rules for initiating conversations, steps followed for sending and receiving, control characters,dialog procedures, and error detection

techniques. Protocols are sometimes built into the hardware by the manufacturer. If two devices do not use the same protocol, they can not communicate with each other.

Network Topologies

The word topology implies a description of how various elements within a system are related physically to each other. In the context of networking systems, we use several different ways of describing how computers might connect to each other via a cabling system. These different ways of connection relate to the different types of network protocol involved. There are three main types of networking topology, these being the Bus, Star and Ring topologies.

Bus Topology

The bus topology describes system where each computer is linked to another by tapping into a common cable. The network system then shares a common single cable which runs from one computer to another . The bus topology has one distinct advantage over other cabling systems.
Information can be transmitted from one computer directly to another without travelling through every other nodes. The failure of one network computer does not affect the other network computers.
It uses a single cable and does not require additional hardware to implement the network. This makes this system relatively easy and inexpensive to implement.

Star Topology

The star topology describes a system where all computers are connected to a central distribution system (i.e. a host computer). The host can be a mainframe or a smaller computer . Usually, the database and the printer are part of this host computer . The other nodes are attached to the host, and all messages are routed through the host. If the central computer fails , so does the network . This system allows for intelligent control systems to be incorporated into the distribution hub.

Ring Topology

Ring topology is the physical layout of a local network in which all nodes are attached in a circle, without a central host computer. Messages travel around the ring until they reach the computer to which they are addressed. If the ring is broken, the network fails.

Internet

The Internet is a global network of participant connected by computers. Massive amounts of information travels through millions of channels around the world forming the Net. The word Internet literally means network of networks. In itself, the Internet comprised thousands of small regional networks scattered throughout the globe.
Many people may tell you, the "Internet is not owned by anyone". However, this is not entirely correct. Different commercial companies let you connect to the Internet and access the information stored on the Internet. They are called Internet Service Provider (ISP). Just as the Phone Company or Nitel provide you with a telephone line to contact anyone in the world, an ISP provides you with a computer line to connect to anyone in the Internet world. There is no organization responsible for the information stored on the Internet. The suppliers themselves are responsible for the information they provide. No one controls the information; the information is free and you can get as much as you want in expense of your telephone bills and your credit points with your ISP.

How does the Internet works?

Internet exists because people want it too. People have a need to be recognised in the world of computing or to become famous. It is this basic drive that motivated them to keep the Internet fire burning.

Corporations, Institutions, and individuals, according to their means put information into the Internet. Information, they say, is power. The Internet will provide you with as much information as you can handle, once you know how to browse the net.

Connecting to the Internet

Connecting to the Internet requires that you have some basic hardware and software in place:

A personal Computer (PC)

(i.) A modem (with a telephone line)

(ii.) An ISP B an ISP provides access to the Internet. It should also, in many cases, provide all necessary software for connecting your computer to the Net. It also provides an Internet tools software kit such as a Web Browser or an e-mail application.

(iii.) An operating system (most commonly used today is Microsoft Windows 95/98 and Mac O/S)

(iv.) An Internet Browser, e.g. Microsoft Internet Explorer, Nescape, Eudora, Lynx, Mosaic. etc.

Dial-up Network

Windows =95 Dialup Network is responsible for dialing into your ISP and establishing a TCP/IP connection. Dialup Networking does not check your e-mail, or download files, or take you to web site. Other programs under the Internet browser do them. However, these browsers depend on Dialup Network to make the connection to your service provider.

Summarily, to connect to the Internet, you will need a personal computer (preferable Y2K compatible), a telephone line, a modem, and an ISP.

The modem is a hardware device that handles communication between your computer and your ISP. Usually, the faster the modem, the better the Internet performance. There is also the need to have good amount of memory on your PC. The ISP gives you access to the Internet. Some of these ISP we have here in Nigeria includes: Linkserve, Infoweb, MicroCom, Hyperia, Ross Clyton, Skannet, etc.

Tools on the explorer for the Net

WWW-World Wide Web. The WWW or the Web introduces a system for organising, transmitting, and retrieving all types of information stored on the Servers around the world. (The Web was originally conceived and developed at the CERN laboratory in Switzerland).

The WWW or Web is a global system, which stores and organises information on the Internet. Information on the WWW is accessed and displayed through the use of a computer tour guide called a Web browser.

Every site on the Web has its own Uniform Resources Locator (URL: http//www.xxx.yyy.zz/Y), which both identifies the site and helps locate it on the Web.

A Web Site is the place on the WWW where the information we are looking for is stored. A Web Browser is a tool for navigating through the information stored in the World Wide Web.

TELNET

TELNET allows you to log onto another computer on the internet. That computer is known as the remote computer. Once you are logged onto a remote computer, it is as if your keyboard was attached to that computer, which then serves as your host. You can do what the people who regularly use that computer can do. Frequently, if the computer you use to access the internet does not have specific client software with which you want to work, you can use telnet to connect to another computer that does have the right tools.

File Transfer Protocol

As the name implies, it facilitates moving files from one computer to another. It has become the common language for sharing data. Unlike Telnet, in which you often must know a specific password to successfully log onto the remote computer, anonymous FTP HAS BECOME COMMON PLACE. With anonymous FTP, anyone on the internet, may transfer files from (sometimes to) a remote system using the word anonymous as the user identification.

USENET NEWS

USENET is a network of several thousand online bulletin board organisation into topic-oriented "news group" within these news groups, people read and post (as if to a paper bulletin board) messages related to the topic for which the new group site is home. There are already more than 10,000 news groups with participants ranging from computer enthusiast to music composers. Usenet is one of the many networks connected to and accessible through the internet.

Gopher

Gopher was the first program to investigate the information search and retrieval process on the internet. Like other internet applications. Gopher consists of servers and client software. More than 2,000 Gopher servers have been linked. When you find something you want, the Gopher client software retrieves it for you through menu-based commands. With Gopher it does not matter exactly where the information you want is located, it does not matter, what kind of information you want to retrieve. Nor does it matter what tool you need to use to retrieve that information. You use tools from from menu to perform each operation.

How e-mail works?

E-mail works a lot like standard mail, but it is only faster. Internet users call standard mail 'snail mail' because it is so slow. In an e-mail environment, everyone has a mailbox with an address, just like with standard mail. The difference is that an e-mail mailbox is electronic and it=s stored in an ISP server.

Your ISP function in the same way the local post office near our homes does. In addition to your local snail mail post office, there are other post offices all over the world, where mail is delivered and received. The same thing is true for e-mail.

The ISP you are connected to is one of more than a million servers called HOSTS. These Hosts are spread all over the world and are connected. When you send an e-mail message, it is first transferred from your PC to your Host (ISP). According to the recipient=s address, the e-mail message travels through the different Hosts until it reaches the recipient mail box in his/her own Host. Thereafter the recipient gets your e-mail message after connecting to his/her ISP.

E-mail Addressing and Construction

An e-mail address consist of a user name and an ISP computer address, separated by an @ sign; e.g. ottah@infoweb.abs.net. From the e-mail address above;

Ottah B the user name, is the name of the electronic mail box. It=s best to choose a name that makes sense for correspondence.

Infoweb.abs B these represent the name of the computer, which has the Internet account. It is usually named after the organization the ISP belongs to. In some cases, the computer name (Infoweb) is composed of several parts, separated by dots.

. Net B Is the domain name. It represents the type of organisation your ISP belongs to. Below is a list of the most common domain names:

Com/co	=	Commercial Organisation
Int	=	International Organization
Org	=	Non-profitable Organization
Gov	=	Government (non-military) site
Ac	=	Academic Institution
Edu	=	Educational Institution
Net	=	Network
Mil	=	Military

However, in the United States, most e-mail address does not include a country code.

Country Code - In some cases, Country code are added to the e- mail address,e.g.

Letter@quardian.co.uk

au	=	Australia
br	=	Brazil
de	=	Germany
fr	=	France
it	=	Italy
jp	=	Japan
se	=	Sweden
ca	=	Canada
uk	=	United Kingdom
us	=	U.S.A.

APPLICATION NEEDS

MICROCOMPUTER SYSTEMS are used in business to perform a wide variety of tasks, several of which are listed below:

i.) Transaction Processing.

ii.) Analysis and decision making.

iii.) Planning,Coordinating, scheduling, and organising.

iv.) Retrieval and update.

v.) Reporting. vi.) Writing.

vii.) Presentation. viii.) Communications.

ix.) Learning. x.) Program development.

TYPES OF SOFTWARE

There are three main types of software. They are:-

1. The system program
2. The application program (package)
3. The user application program.

THE SYSTEM PROGRAM: The system programs are those programs written by the computer manufacturers. These programs are supplied with the computer system on purchase. The system programs includes the operating system, the language translator and the utility or services program/library program.

The operating system:- The operating system are those system program that interfares between the user of the computer and the computer hardware. The operating system is described as the manager of computer resources. It is the house keepter of the computer resources, and as the housekeeper, it knows the condition and the location of each resources. It allows the computer user to make use of those resources and reclaims them from the user after use the safe keep them again for futer use. LANGUAGE TRANSLATOR

The Assembler:- The assembler is the language translator that converts programs written in assembly language to machine language. It translates the assembly programs contained in the source file to the target or object language which the computer can now execute if it is error free Examples are:

i) Microsoft MACRO ASSEMBLER
ii) Microsoft Quick Assembler
iii) A86 Macro Assembler.The Compiler:- The complier is a language translator that converts programs from high level language to machine language. It picks the high level language contained in the source file, converts all to machine language. It create a file called object file by itself and it is doing the translation where it puts the translated version of the source code which is now object code. In essence, the compiler maintains two files i.e source file and object file. The object file are in executable form. The compiler differs from one type of language to the other i.e each language has its own compiler. The fortran language uses fortran compiler and dit can not be used to compile cobol for instant. The rules and syntax that guide the writting of the langauages differ and so the compiler differ as well. Cobol uses cobol compiler etc.

The Interpreter:- The interpreter is a language translator that translates the high level language to machine language. It pick t he statements line by line and translates them one statements after the other sequentialy. Any line translated, is executed by the computer before the next line is translated. If the interpreter meets a syntax error in any line, it will signal the error and the line number. That syntax error must be debugged before the interpreter can go to the next line. The problem with the interpreter is that any time the program will be executed or run again it must have to be retranslated by the interpreter suite unlike the compiler that keeps the translated version in a file (object file) which is executable any time.

The Utility programs:- The utility programs just like the name sounds is the type of system programs that are utilized by the users of computer to solve one data processing operation or the other. They remain resident in the storage media where they are stored until they are invoiced through a command dto perform.

Examples of these programs are:

1. The copy; which transfers the content of one media to another;
2. The format program which is used to prepare a new diskette before it is accessed by the

computer either by reading or by writting.

3. The sorting program:- the user provides certain parameters and request the computer to arrange a set of records into a certain order using their keys (primary) either in ascendidng;

4. The dumping program:- the dumping program is used to transfer a working program and its data into backing storage at regular intervals from where the dumped program and data are reloaded using a restart program etc.

The Library Programs or Built-in Functions

The library programs are programs used to solve mathematical or statistical functions. They are built into the language interpreter or compiler and then they can be utility programs. Examples of this type of programs are:-

1. SQR:- for finding the square root of a number,
2. SIN:- for finding the sine of a number, a radial
3. ABS:- for the absolute value of a number.
4. INT:- for the integer of a number,
5. EXP:- for finding the integer exponent of a number
6. TAN:- used to find the tangent of a number. This should be in radius,
7. FIX:- for producing the integer portion of a number etc.

THE USER APPLICATION PROGRAM

These are programs written by the computer user as it will suite their own environment. These programs are designed and program to solve the specific problem by a computer specialist who is employed in the company. This type of program is not solved by vendors like the package, rather they are indigenous to an individual or company environment unlike the packages, they are not ready made.

Examples include the following:

- Payroll, - Stock control,
- Sales order processing and sales ledger,
- Purchase order processing and purchase ledger.

Those that are used for a specialized form of business eg.

- Transaction processing banks, - Airline seat reservation
- Theatre seat reservation, -Hotel room reservation,
- Point of sale software.

APPLICATION PACKAGES

This is a specially designed program written by the professional programmers for solving specific data processing needs, either commercial or scientific. A package is a complete suite of ready made programs with its documentation covering a processing routine. It is usually supplied by a software house or manufacturer. The supply might either be on purchase or on lease. It is usually intended to meet the needs of a wide range of user companies. Examples of such applications include: Payrolls,

auditing, Stock control, Network Analysis, Dbase, Spreadsheet, Wordperfect, etc.

1. Wordprocessing : These programs that, more or less, turn a computer system into a powerful typewriting tool and more. It helps us to produce letters, reports, magazines, memos etc. Example of wordprocessing programs are: Wordstar, Wordperfect. PC Write, Multimate, Ten Best and Wordstar 2000.

2. Database Management: . Databases are the backbone of business computing. They store and retrieve information such as customer lists, inventories and notes. They can also sort information, letting users do things like search their customer list for customers in a given STATE. These programs help us to record and maintain information about poeple, places, things and management reports of all types. Examples are Dbase III & IV, Foxbase , Oracle , Foxpro and Clipper, MICROSOFT ACCESS ,Paradox, Professional File, WindowsFile and Q&A etc.

3. ACCOUNTING. Accounting programs keep track of business income and expenditures including accounts receivable, accounts payable, operating expenses, cash flow and payroll. Popular accounting programs include QuickBooks, DacEasy Accounting, Peachtree Accounting, Profit, One-Write, Paciolli 2000, and the ACCPAC series of programs.

4. Spreadsheet- Spreadsheets are software packages that, more or less, turn a computer system into a sophisticated electronic calculator. Many speadsheet packages also have presentation graphics generators , which take data and painlessly convert them into bar charts, line charts, and the like, for management presentations at meetings.These programs help us to produce financial reports and reports. Examples are Lotus 1-2-3, Quatopro, SuperCalc, Multiplan, VP Planner, Planning Assitant and Microsoft Excel.

5. GRAPHICS PROGRAMS. Graphics programs create graphs and drawings that can be used in newsletters, posters, advertisements and other documents. Some allow users to import photographs into documents or create animated pictures for use in "multimedia" presentations. Popular graphics programs include PC Paintbrush, Professional Drave, IntelliDraw, illustrator, Persuasion ,Cricket Draw, Corel Draw, Print Master, Print Shop, Microsoft Powerpoint, Harvard Graphics.

6. DESKSTOP PUBLISHING. Deskstop publishing programs are extremely sophisticated word processors that can incorporate word processing and graphics files to create newsletters, manuals, files, advertisements, magazing and newspapaers. Popular DTPs include Microsoft Express Publisher, Aldus PageMaker, Ventura Publisher and Quark XPress.

7. INTEGRATED Packages/ALL IN ONE. Integrated programs are a program that combines the ability to do several general-purpose applications including three or four different functions , usually word processing, database, graphics and spreadsheet in one program. Some include communications software that, combined with a modem, will enable you to look up and dial telephone numbers easily. The most popular integrated packages include Microsoft office, WordPerfect Works, ClarisWork, GeoWorks Pro and Lotus Symphony.

8. COMPUTER AIDED DESIGN. Computer Aided Design is a package that can be

used to poroduce drawings of professional quality on paper as large as your printer or plotter can handle. Such drawings like engineering plans, models, maps, electrical circuit diagrams, planning diagrams, architectural and more are made possible by the use of computer. CAD is widely used in Industry, Commerce , and Education.

Popular CAD Packages which can perform all these functions include like Autocad, Auto-Sketch etc..

GUIDELINE FOR ACQUISTION OF APPLICATION SOFTWARE

1. The software to be Acquired must be one whose use will improve the particular operating function of that business.
2. It must be of high performance.
3. The software to be acquired must be one with enough ease in learning. Time spent in learning by employees is unproductive time and must be reduced therefore the ease with which a new software can be learned should be considered.
4. The software to be acquired must be available when needed.
5. If a software package is complex then training is required.
6. Good documentation: - The package to be used must be properly Documented. This should include how the package is to be installed, how to use the package and other necessary technical details.
7. Users friendliness:- The package must be easy to use even by non computer specialists
8. Compatibility of the package:-Before a package program can be adopted, it must be compatible with the user system requirements as well as with the users hardware

MODES OF ACQUISITION OF APPLICATION SOFTWARE

i.) PURCHASE, ii.) IN-HOUSE DEVELOPMENT,
iii.) CONTRACTING OUT FOR CUSTOM SOFTWARE.

1.) PURCHASE . This where organisations acquire application software through the purchase of prewritten packages that are made and marketed by more professional coporations.

ADVANTAGES OF GENERIC APPLICATION SOFTWARE/APPLICATION PACKAGES

1. Availability is immediate as only installation process is necessary before it can start being productive.
2. Cost is less as it is spread among a number of users who purchase the product.
3. Reliability maybe greater as it is thoroughly tested before it is marketed.
4. Portable, 5. Proper documentation - manual

DISADVANTAGES:-

1. It may not be an exact match for needs.
2. It may require more system resources. Programs are frequently longer, thereby, requiring more memory and disk space.
3. It is not adapted to changing needs.
4. It may execute more slowly.
5. It prevents programmer from having relevant level of exposure.

2.) IN-HOUSE DEVELOPMENT or custom programming. IN-HOUSE Custom

programming is where the organisation commissions its own information specialists to develop programs for its use . No organisation today, relies only on custom programs. They are supplemented with pre-written pakages. It is always advisable to use prewritten packages where there avaliable.

ADVANTAGES OF CUSTOM APPLICATION SOFTWARE

1. The needs of the organization are precisely met.
2. The method of inputting/outputting data may be designed to suit users taste.
3. They provide facilities for developing areas where Automation is needed in place of manual method.
4. They are very efficient in their use of system resources. It may require less memory and less disk space.
5. Program may execute faster.
6. Programs can be changed to meet changing conditions.

DISADVANTAGES

1. Development time may be lengthy.
2. Human resources needed for development may not be available
3. Since the organization for which it is developed may be the only user, cost of development may be very high.
4. Cost of maintenance/ upgrading may be high.

3.) CONTRACTING OUT FOR CUSTOM SOFTWARE:- THIS is a good option instead of of building one in-house , even though it may be costlier than standard software . This software is usually costlier than standard ones but they are likely to be better suited to the use of the customer. Copyright ownership may be shared between the developers and users.

THE MOST COMMON APPLICATION PACKAGES

The most common applications are Word processors, Databases, Spreadsheets and Graphic programs. Accounting and Desktop Publishing programs are also common business applications.

WORD PROCESSORS. Word processors create and store documents, allowing users to insert and delete words, sentences and paragraphs at will. Nearly all include spelling checkers. Some come with electronic thesauruses and grammar checkers.

Word processors reduce the time it takes to create and edit documents, everything from contracts to letters to invitations. Popular word processors include Professional Write, PC-Write, Ami Pro, MacWrite, DeScribe, Textor, WordPerfect, Microsoft Word and WordStar.

DATABASES. Databases are the backbone of business computing. They store and retrieve information such as customer lists, inventories and notes. They can also sort information, letting users do things like search their customer list for customers in a given STATE. Popular databases include dBASE, Paradox, FoxPro, Professional File, Access, WindowsFile and Q&A.

ACCOUNTING. Accounting programs keep track of business income and expenditures including accounts receivable, accounts payable, operating expenses, cash flow and payroll. Popular accounting programs include QuickBooks, DacEasy Accounting, Peachtree Accounting, Profit, One-Write, Paciolli 2000, and the ACCPAC series of programs.

SPREADSHEETS. Spreadsheets keep tract of financial information, inventories and other quantifiable information. Spreadsheets are particularly useful for business forecasting. For

instance, you can use a spreadsheet to calculate how a change in material costs will affect your bottom line. The most popular spsreadsheets include lotus 1-2-3, Quattro Pro, Microsoft Excel and SuperCalc.

GRAPHICS PROGRAMS. Graphics programs create graphs and drawings that can be used in newsletters, posters, advertisements and other documents. Some allow users to import photographs into documents or create animated pictures for use in "multimedia" presentations. Popular graphics programs include PC Paintbrush, Professional Drave, IntelliDraw, illustrator, Persuasion ,Cricket Draw, Corel Draw, Print Master, Print Shop, Microsoft Powerpoint, Harvard Graphics.

DESKSTOP PUBLISHING. Deskstop publishing programs are extremely sophisticated word processors that can incorporate word processing and graphics files to create newsletters, manuals, files, advertisements, magazing and newspapaers. Popular DTPs include Microsoft Express Publisher, Aldus PageMaker, Ventura Publisher and Quark XPress.

ALL IN ONE. Integrated programs include three or four different functions in a single package, usually word processing database and spreadsheet. Some include communications software that, combined with a modem, will enable you to look up and dial telephone numbers easily. The most popular integrated packages include Microsoft Works, WordPerfect Works, ClarisWork, GeoWorks Pro and Lotus Symphony.

FACTORS TO CONSIDER WHEN SELECTING APPLICATION PACKAGES

1) The operating system requirement of the package.
2) The hardware requirement of the package.
3) Whether the package satisfies users requirement
4) User friendliness of the package.
5) The cost of the package.
6) The integration of the package with other packages.
7) The reliability of the package.
8) The flexibility of the package.

Week 7 : The different applications management information system

During this week you will learn :

- Various types of information systems
- Recognise the elements required for any information system
- Sources of data for each type of information system and characteristics of each..
- The information needs , strategic technical and operational advantages of MIS

VARIOUS TYPES INFORMATION SYSTEMS

In early day of business computing, computers were usually used to replace the existing manual systems . But , in this modern day ,managers make decisions to solve problems, and information is used in making the decisions . Information is presented in both oral and written forms by an information processor. The computer portion of the information processor contains each of the following computer-based application areas:

i.) Transaction processing Systems otherwise known as or Accounting Information System, Electronic Data Processing System.

(ii.) Information Reporting Systems

(iii.) Decision Support Systems

(iv) Office Automation System or office information systems or virtual office. This has been discussed in details in the previous week.

(v) Executive information systems

(vi) Artificial Intelligence or Expert Systems.

1.) Transaction processing systems (TPS)

This is a system that processes data arising from the occurrence of a firm's business transactions such as Accounts receivable, Payroll, Inventory Control, Hotel reservation system, Sales order entry, Accounts payable and others. Transaction processing systems are computerized systems that perform and record the daily transactions necessary to the conduct of business. They serve the operational level of business organization hierarchy .These systems include both the accurate recording of transactions as well as the control procedures used in issuing such documents as invoices, customer statements etc.

TPSs are traditionally carried out manually. Computerisation in many organisations started with TPS and some still remain there.: Transaction processing operation are very easily structured and ideal for processing by computer by using programming languages like COBOL, BASIC, etc

2. Information Reporting Systems (IRS) is an information system that provides predefined types of information to management for relatively structured types of decisions. As opposed to focusing purely on data and efficiency which characterise Transaction Processing Systems, IRS focus on information and , and occassionally, on effectiveness.

Reports are the mainstay of IRS. The main output of the IRS has been hard-copy reports , it equally produces display output on screens either in continous scrolled form. These include summary and exception reports that were distributed by the MIS DEPARTMENT to line department at periodic intervals or on demand. IRS are used for both management planning and management control functions. Because IRS reports are assiciated with managerial decision-making and not with the operations functions of a TPS , most of them have almost a purely intangible value.

Data Processing and Information Systems

Below, we contrast the routine data-processing characteristics that prevail in many organisations with the emerging MIS approach.

Data processing frequently has the characteristics	MIS frequently has the following characteristics
1.Routine	Non routine and Novel
2. Procedurized	Difficult to procedurize
3.Accounting Oriented	Extends Beyond accounting
4. Internal Data	External as well as internal
5.Mechanistic	Require Human judgement
6.Basic Computations	Complex computations
7.Historical or current data	Predictive
8.Precision Recording	Estimates
e.g Payroll, Man-Job matching, Labour Cost Accounting.	e.g. Collective Bargaining Strategy, Manpower forecasing, Human Resource Accounting.

3. Decision Support Systems

A decision support system is a form of information system that provides tools that help managers make decisions with both internal and information in the manner that best suits the decision they are currently trying to make. The DSS provides the manager with computing and communications capabilities to develop his or her own decision models and information banks. A DSS is not intended to make decisions for managers, but rather to provide them with a set of capabilities to enable them to generate the information they feel they need to make decisions that are semi structured , unique or rigidly changing and not easily specified in advance unlike TPS. DSS often include query languages to enable managers to make spontaneous requests from internal database, spreadsheet models which enables "What If" calculations to be made and graphics to provide a clear representation if all the relevant information are available . Hardware resources personal computer workstation, software resources, data resources and people resources all are the components of a DSS.

PROPERTIES OF DSS:

DSS are characterised by three properties:

i.) They get information both from internal and external sources of information.

ii.) they are flexible to changing needs;

iii.) they are easy to use even with little or no assistance from IT Professionals.

iv.} Decision support system use sophisticated data analysis and modeling tools.

v.) DSS provides support for problems and decisions that are semi structured , unique or rigidly changing and not easily specified in advance.

vi.) They provide quick responses to various queries made by managers.

Structured , Semistructured and unstructured Decision

Structured decisions are those that can be easily made from a given set of inputs. These types of decisions can be programmed relatively easily.

Semistructured and unstructured Decisions

These are decisions for which information obtained from a computer system is at most only a portion of the total needed to make the decision. DSS is particularly used to assist semistructured and unstructured decisions.

4.) Executive information systems

The term executive is often used to describe a manager on the strategic planning level. An executive support systems (ESS) is also known as an executive information system (EIS). It is a decision support system that is designed to meet the special needs of executives. It is a system that provides information to the executive on the overall performance of the firm.

5.) Artificial Intelligence or Expert Systems.

Artificial Intelligence is the activity of providing such machines as computers with the ability to display behaviour that would be regarded as intelligent if it were observed in human; that is the ability that can be imparted to computers to enable them diplay intelligent, humanlike behaviour.

Artificial Intelligence has been developed in different areas namely - Expert Systems also known as knowledge- based systems- Natural language - Robotics -Learning etc.

Week 8 : Database Management System (DBMS)

During this week you will learn :

- The concept on database management system (DBMS), including insertion, deletion and update operation.
- Classification of database.
- Features of database.
- Parts of database system.
- Responsibilities of database administrator.

The concept of Database

In general, a database system is a computer-based record keeping system i.e. a system whose overall purpose is to record and maintain information and make that information available to user on demand. As a matter of fact, the information concerned can be anything that is deemed to be of significance to the organization system is serving i.e. anything that may be necessary to the decision making processes involved in the management of that organization.

Databases are useful at both the managerial and clerical levels in an organization. At the managerial level are a decision-support tool, for reports can be produced from them which summarise what is going on and give pointers for the future. At the clerical level they provide an easy way of entering and retrieving data, and dealing with inquires.

So in many situations a clerk will require access to a database to carry out the latter type of task, and a manager will require access to it to get out a report.

Typical business database applications include:

(i.) Stock records (ii.) Personnel records.

(iii.) Customer records (iv.) Accounts, and (v.) Mailing lists.

Classification of Database

Database are classified according to the approaches taken to database organisation. The classes are:-

(a) Relational (b) Network(c) Hierarchical

Relational database is a sequential representation of the files inform of a table having rows and columns where each row represents a record and the columns corresponding to the fields.

The hierarchical database is a tree like representation of the database files. The records of a file are represented in a tree like structure with the fields subordinate to the records in the hierarchy.

The Network database is the representation of the database files. The records relationships are shown by linking.

Features of Database

1.Create and maintain (add, delete, and revise records) a database.
2.Extract and list all records or only those records that meet certain conditions.
3.Make an inquiry.
4.Sort record in ascending or descending order by primary, secondary and tertiary fields.
5.Generated formatted reports with sub-totals and total.

Managing a database

Managing a data base primarily involves the following six tasks

1.ADD new data to the database
2.SORT the database into some meaningful order
3.SEARCH the database for types of information
4.PRINT data from our database onto formatted reports
5.EDIT data on the database
6.DELETE data from the database.

Advantages of database

(1)Reduces the amount of data duplication which occurs using conventional file structures.
(2)Provides fast and flexible access to information.
(3)Improves consistency of data stored.
(4)Provides both data and program independence.
(5)Encourages integration of functional areas in an organisation.
(6)Avoids duplicating input data to update multiple functionally independent files holding

the same data.

(7)Reduces processing for retrospective changes.

Disadvantages of database

(1)Takes a long time to design and implement.

(2)Cost more than conventional systems.

(3)Require high calibre, experienced and specialised personnel.

(4) Require expense hardware and software.

(5) Recovery is more difficult in case of damage.

The figure below intended to show that a database system involves four major components: data, hardware, software, and users. We shall consider each of these briefly below.

i.) Data: - A database is a repository for stored data. In general, it is both integrated and shared.
By "integrated" we mean that the database may be thought of as a unification of several otherwise distinct data files, with any redundancy among files partially or wholly eliminated.
By"shared" we mean that individual pieces of data in the database may be shared among several different users, in the sense that each of those users may have access to the same piece of data (and may use it for different purposes). Such sharing is really a consequence of the fact that the database is integrated.

ii.) Hardware: - The hardware consists of the secondary storage volumes-disks, drums etc.-on which the data resides, together with the associated devices, control units, channels, and so forth.

iii.) Software: - Database Management System (DBMS) is a collection of software products that is designed to provide a systematic , integrated and flexible approach to organising and accessing data.
Between the physical database itself (i.e., the data as actually stored) and the users of the system is a layer of software, usually called the database management system or DBMS. Requests from users for access to the database are handled by the DBMS. One general function provided by the DBMS is thus the shielding of database users from hardware-level detail. Examples of DBMS include MS-Access, FOXPRO,Dbase IV, ORACLE,
SQL Server etc.

PARTS OF DBMS SOFTWARE AND SOME TERMINOLOGIES

(i)Data Description Language or Data Definition Languade (DDL).

Data Description is the process of describing formats and relationships among data elements , as well as how those data elements are to be used. The language used for the data description is called DDL.The result of the DDL is called schema.

A schema is not the data itself but the description of the data . The schema usually specifies the attributes or characteristics of the data such as :

- The data element name
-Other names used for the same data element
-The type of data
-The number of positions
-Various integrity rules.

(ii)Data Manipulation Language

The processing of database data is called data manipulation .

DML is a set of commands that is used to manipulate data . There are generally

two ways to manipulate data in DBMS.

-Using a 4GL written database language generally known as query language.

-Using a programming language otherwise called data manipulation language (DML) . Both DML and QL statements are emdedded in application program at the points where they are needed.

iv.) Report Generator

The report generator helps the user to design and generate reports and graphs in printed form. Report headings, column headings, Page numbers, and totals are just some of the features that are easy to include with the report generator.

(iii) Data Sublanguage (DSL)

The combination of a DDL and DML is often referred to as a DSL. The most common DSL in use today is SQL (Structured Query Language).

(iv)Data Dictionary

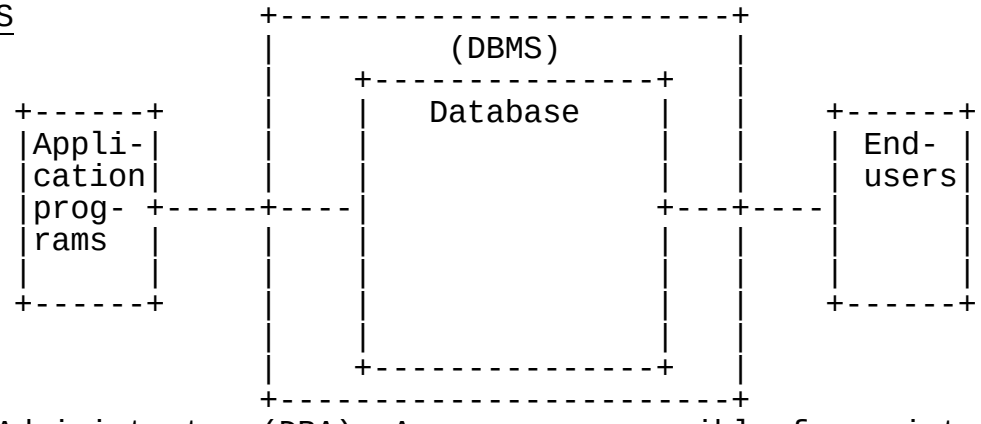
The DBMS makes use of descriptions of data items provided by DDL. This "data about data" is called a data dictionary. It is a complete description of all data elements in a system.

iv.) Users: We consider three broad classes of user. First, there is the application programmer, responsible for writing application programs that use the database.

The second class of user, then, is the end-user, accessing the database from a terminal. An end-user may employ a query language provided as an integral part of the system, or he or she may invoke a user-written application program that accepts commands from the terminal and in turn issue requests to the DBMS on the end-user's behalf.

The third class of user is the database administrator, or DBA (not shown in the following figure).

Relationship Between a Database Application (or Application programs) and a DBMS



Database Administrator (DBA): A person responsible for maintenance and organization of all data in a firm's database.

He must have a sound knowledge of the structure of the database and of the DBMS. He must also be thoroughly conversant with the organization, its systems, and the information needs of the managers.

Responsibilities of DBA

(1) DECIDING THE INFORMATION CONTENT OF THE DATABASE

It is the DBA's job to decide what information is to be held in a database

(2) DECIDING THE STORAGE STRUCTURE AND ACCESS STRATEGY

The DBA most also decide how the data is to be

represented in the database and must specify the representation by writing the storage structure definition.

(3) LIAISING WITH USERS

It is the business of the DBA to liaise with users, to ensure that the data they require is available.

(4) DEFINING A STRATEGY FOR BACKING AND RECOVERING

Once an enterprise is committed to a database system, it becomes critically dependent on the successful operation of that system. In the event of damages to any portion of the database caused by human error or failure in the hardware or supporting operating system, it is essential to be able to repair the data concerned with a minimum of delay and with as little effect as possible on the rest of the system. The DBA must define and implement and appropriate recovery strategy, periodic dumping of the database to a backing tape and produces for reloading from the latest tape.

(5) MONITORING PERFORMANCE AND RESPONDING TO CHANGES IN REQUIREMENTS

The DBA is responsible for so organizing the system as to get the performance that is best for the enterprise and from making the appropriate adjustments as requirements change.

Week 9 : Computerization Strategies

During this week you will learn :

- The various type of computerization strategies.
- The phases and importance in the development cycle of MIS.
- Types of resistance to system changes.
- Reasons for resentment.
- Steps to reduce resistance.

COMPUTERIZATION STRATEGIES

Companies Information System can be organised in many ways. However, the basic computerization strategies employed or the most widely used techniques include the following:

-centralised processing,-decentralised processing
-distributed processing,-batch processing
-remote batch processing,-real-time processing
-time-sharing (multi-access) processing
-integrated processing,-interactive processing.

- Multi Programming, - Multiprocessing.

OFFLINE: means not connected to and controlled by the processor (C.P.U).

OFFLINE DEVICES: are not directly connected to the computer (processor) but are part of a data processing system. Example are data recording machine (for keying holes onto punch cards.) Folders and Inserters, schredline machines, decollaters, etc.

OFFLINE STORAGE DEVICES is a storage that is not directly accessible to the processor (CPU). That is, not directly connected to and controlled by the C.P.U. offline storage are backing or auxilliary storage. E.g. punch card, magnetic tape, magnetic disk, floppy disk, cassette tape, etc. Such storage is outside the processor.

OFFLINE PROCESSING: uses offline devices to get data input ready for processing by the computer. E.g. payroll system, inventory system. Its data entry system is not by the processor.

OFFLINE DATA COMMUNICATION: systems whose communication lines are not connected directly to the CPU.

ONLINE: Means connected to and controlled e.g. Normal mail service by the processor.

ONLINE DEVICES: are directly connected to the processor. E.g. Good reader, visual display unit, magnetic tape drive, magnetic disk drive, MICR reader, OCR reader, voice recognition reader, etc. All hardware or peripherals are online devices.

ON-LINE STORAGE DEVICES a storage that is immediately accessible to the CPU and controlled by it. Such storage is contained in the C.P.U. Example is primary storage or main storage (CORE).

ONLINE PROCESSING: has its data entry system connected to the C.P.U. It uses online devices and allows direct communication with the computer. It is a technique of processing by the computer by means of terminals or V.D.Us linked directly to the CPU. Online processing offers access to files by terminals and enables updating to be done the transactions. E.g. Real-time, timesharing, distributed and interactive systems.

ONLINE DATA COMMUNICATION: system has its communicating lines connected directly to the C.P.U. E.g. Electronic bulletin board, distributed system, etc.

CENTRALISED PROCESSING: Is a technique of processing where all processing

functions or activities are done at a single or central location. If a business organisation is widely dispersed with various units, under centralised processing, the processing equipments (computers) will be at the head office or central location. It is often desirable for batch processing application. It can be offline or online.

ADVANTAGES OF CENTRALISED PROCESSING:

-Economy on capital expenditure on one CPU instead of several CPUs at the various units of the organisation.

-Less operating costs since there is no duplication of resources at the units.

-Facilitates the standardisation of application.

-Economic use of hardware- single system implementation.

-total number of data preparation staff likely to be feiver.

DISADVANTAGES OF CENTRALISED PROCESSING:

-Distance of other locations will lead to delay in obtaining data and returning output.

-concentration of specialist data processing in one location.

-corrections and interpretation of input are more difficult because of remoteness of point of origin.

-Large investment at risk if system fails to perform satisfactorily.

DECENTRALISED PROCESSING: Is a technique where each location or branch has its data processing equipments and staff. Thus, processing activities are allowed to be carried out at each location or branch. Quite distinct from the centre / central office / headquarters. It is desirable for an application in a multi-location organisation that can not be easily linked telecommunicating lines.

ADVANTAGES OF DECENTRALISED PROCESSING:

-no delay in obtaining data and returning results.

-corrections and interpretation of input easier.

-one small system can be developed proved in isolation.

DISADVANTATAGES OF DECENTRALISED SYSTEM:

-Total cost of hardware and system implementation probably greater.

-specialist staff duplicate at each location.

DISTRIBUTED SYSTEM: Is a special form of decentralised processing that uses data communicating facilities to connect input/output devices positioned at locations remote from the central processor. It is in which processing to some degree, is done at a site independent of the central computer system. Each of its sites has its own processing requirements. Distributed system gives the ability to process data independent of the central computer, as well as communicate data required by the entire organisation to the central computer for organisation-wide planning and control. Distributed system is not centrally controlled as centralised processing. Each of the remote uses has control over his or her own data. A user in distributed system can access his own computer as well as the database in the head office. the remote processor are interconnected to form a communicating

network. The processing time is reduced, this technique is ideal for situations where remote locations can be connected by telecommunicating lines.

ADVATAGES OF DITRIBUTED PROCESSING:

-more economical to instal.
-can be operated by user staff with very little training.
-Any break down those not affect the company activities.
-Data can be processed at a number of locations independently.
-enhance the security of data/information since the number of people that has access to information can be controlled.

DISADVANTAGES OF DISTRIBUTED PROCESSING:

-no central control of access to the system because authority is decentralised.
-microcomputers are used in distributed system and not macrocomputers, hence lower capabilities.
-problem of ensuring that standards are strictly adhered.

BATCH PROCESSING: Involves regular processing of large amount of data. In batch processing, data is amased over a specific period of time. At the end of this period, the entire batch is sent to the data processing department for processing. Delay normally occurs between the time a transaction actually takes place and the time it is processed. Batch processing can be online or offline. When it is online, it means data is collected and transmitted through terminal via telecommunication line connected to the C.P.U. The reliability of batch processing is quite high. E.g. payroll, inventory systems etc.

REMOTE BATCH PROCESSING: A system that uses input/output devices positioned at locations remote from their CPUs. Remote batch processing uses data communications facilities to connect this remote I/O devices to the computer.

REAL-TIME PROCESSING: Is a system which can through the use of a remote terminal (e.g. V.D.U) access a file on a direct access storage device (DASD) e.g. DISC and with the same terminal update data in that file on DISC and provide an immediate response for decision making. It a form of processing where processing of data input is instantaneous and the output released to effect the functioning of the environment. It involves updating of files on DISC.

Application of real-time include:-
-Airseats reservation.
-Hotel reservation.
-Banking system using data communicating facilities.
-Industrial processing control.
-Manufacturing status of production order.

Disadvantages of real-time processing:-

-Expensive to design.
-Greater time to develop (real-time requires integrated database support and communicating software).

TIME-SHARING PROCESSING (MULTI-ACCESS): Is a technique where one single C.P.U interacts with many independent users (TERMINALS) given each of them individual attention on a time-slice basis. It is concurrent use of a single computer by many users. each of the users in time sharing system is given a time-slice (a fraction of the processing time) during which CPU attends to a request from that user (terminal). The CPU can partition itself and run several different request at a the same time.

CHARACTERISTICS OF TIME-SHARING

(a)Concurrency:- a number of users at the same time.

(b)Independence:- each user acts independently, .i.e unaware that there are other users.

(c)Immediacy:- all request for the C.P.U receive response immediately.

(d)spatial unlimitability:- unlimited terminals at very remote locations.

ADVANTAGES (time-sharing)

-C.P.U memory is economically used. It gives room for multiprogramming.

-computer time is economically used.

-No terminal can monopolise the CPU time because there is time-slice for each job.

INTEGRATED PROCESSING: system is one in which two or more applications are merge into one single application. That is, several master files can be incorporated into a single file. Output from one or more systems/applications may provide input to another system. Integrated data processing often uses database concept.

INTERACTIVE PROCESSING: Is a processing technique whereby the user and the computer communicate with each other in a conversational manner by means of terminals, V.D.Us and keyboards. A data processing method where the users enters input via a keyboard during processing.

Multi programming:

is the concurrent execution of two or more program simultaneously residing in the main storage. The basic principle of multiprogramming is that the programs in main storage share the available CPU time and input/output units. While input/output operations of one program are being handled, the CPU is essentially idle and can handle some non-I/O processing of another program at the same time.

Multiprocessing: A multiprocessing computer system is a system that contains two or more interconnected CPUs, each with its own arithmetic and logic units, and each capable of independent operation. A computer system operating in a multiprocessing configuration must be able to interpret and execute its own programmed instructions. In addition, facilities must be available to transfer data from one CPU to another, to transfer data and instructions to and from internal storage, and to transfer data and instructions to and from a common auxiliary storage device. Multiprocessing offers

computer processing capabilities that are not available when only one CPU is used. Many complex operations can be performed at the same time.

Types of resistance to system changes

There are three (3) type of resistance to system changes, namely:-

(i) Aggression:

Aggressive behaviour towards the system may come as an attack upon the system to make the system physically in-operative or ineffective. Foe example, dumping liquids into hardware inputting wrong data delibrately, etc.

(ii.) Progression

Projecting resistance to the introduction of an information system. For example, contineuosly findind faults with system.

(iii) Avoidance

Caused by frustration. Users avoid interactions with the system.

Problem posed by resistance to change for system Analyst

(a) Change of any kind makes people feel uncomfortable as they do not know how they will be able to cope with it. But when change has threatened the user, the employees will be trying to block the change.

(b) Unless the system analyst gets full cooperation from the employees during system investigation, system analyst gets only a partial or even a distrorted view of the old system. If based on these findings, the new system will prove disastrous.

(c) Something should be done on the demoralised state of the users, it may lead to mass resignation, absenteeism, lateness and poor performance.

(d) When the new system is installed, they (staff) may feel that it is imposed on them by top management or data processing department. The new system can be used in half-hearted fashion,using every problem that occurs with its operations to indicate that it is unworkable, and should never have been developed. Incorrect data may be accidentally entered into the system to try to crash it.
Such behaviour does not happen with every system, but analyst should do whatever he can do to prevent such situation developing.

REMEDY

The followings will give the staff confidence and make them face the changeover.

a.) alleviate fear by keeping the staff informed all the time about computer development

b.) fear is caused by ignorance of the computer and what it must be used for. Therefore

background education for staff likely to be affected by the computer

c.) Organize brief session introducing the idea of computer and later detail training before changeover occurs.

d.) analyst to develop training materials.

e.) open the channel of communication between management and staff concerned.

f.) Inform and involve staff from the early stage of the plans and projects (use notice board, house magasine, etc.)

g.) discuss with staff association.

h.) initiate manpower planning where redundancy and job changes are anticipated

i.) during investigation, this analyst should inspire confidence in the users

j.) be sensitive to their fears/make attempt to alleviate their fears

k..) analyst public relation job starts by informing the staff that the new system is in their own interests.

l.) once the users are convinced that the analyst is there to help them do their job better they will be willing to co-operate with him in his investigation.

m.) involving experienced managers in the development team. This will make them feel that they have contributed to the design and that the system is theirs rather than being imposed from the above. They will no more complain during implementation when problem occurs, rather they will sort them out.

n.) essentially user's acceptability is very crucial.

Reason for resenment. Opposition/Resistance/ During System Analysis/Design

Analyst and designers involved in the introduction of computerised system often encounter resentment and opposition from the existing employees.

Reasons why employees react in this manner\way include:-

a.) rear of redundancy

b.) the feeling that the management is criticizing the old system and by implication criticizing their role in it.

c.) threaten job security

d.) threaten self-esteem of the staff

e.) the feeling that they may be incapable of understanding the new system

f.) disruption caused by lack of understand on the technology

g.) disruption or change

h.) afraid that they will be unable to cope with the new methods

i.) fear that prospects (promotions) may be altered.

j.) Fear that their position and personal commitment to work may be devalued if it can be done by a machine (computer).

k.) because the benefits are unknown, it leads to lack of confidence in the computer.

l.) fear that the job will become more boring

m.) fear of loss of control , etc.

Steps to reduce Resistance:

These include the following.

a.) Consider the past history of the company's operating.

b.) Consider how the previous changes were process.

c.) discuss the systems and managers implemented affected.

d.) involving/including existing employees in the implementation team.

e.) dispel redundancy by defining definite job description for employees after computerization.

f.) designer/analyst must show respect for existing employees

g.) Commencing retraining as early as possible.

h.) explaining the objectives and benefits of the new system to them at the onset.

i.) Design system that is easy to use

j.) Design a reliable system.

Week 10 : The principles of project management

During this week you will learn :

- Project management and its characteristics
- Project management and other management
- The project life cycle
- Computer in project management
- Some tools used in project Management and their applications.
- The major features of Microsoft Project.

PROJECT MANAGEMENT

A project is a well-defined sequence of events with a beginning and an end, directed toward achieving a clear goal, and conducted by people within such established parameters as time, cost, resources, and quality. A project is different from what you do every day, because a project goal is a specific, nonroutine event. Being nonroutine, a project requires some planning. How much planning you need depends on the complexity of the project. The more complex the project, the more you have to plan. Planning is necessary to avoid wasting time, resources and effort. For example, if your job is to train employees on a regular basis to use a new spreadsheet application, for you the process requires little project management because the activities are familiar to you . On the other hand, it would be a significant project to develop a completely new course for a new financial reporting system. Similarly, if you spend your days developing financial reports, training even a few employees to use a new spreadsheet might require some project management on your part.

It is important to note the key elements of project management are planning and control. Deciding and specifying what to do is the function of project plan. Making sure it is done right is the function of project control.

A project is characterized by :

i.) Must have a definite beginning and a definite ending meaning the a project is time-bound.
ii.) Non- repetitive.
iii.) Utilization of scarce resources.
vi.) Inability to predict with absolute confidence its final outcome.

HOW DOES PROJECT MANAGEMENT DIFFER FROM OTHER MANAGEMENT PRINCIPLES?

PROJECT Management differs in two significant ways as follows:

Firstly, it concentrates on a project with a FINITE life span, whereas departments or other organizational units expect to exist indefinitely. Secondly, projects frequently need resources on a part time basis, whereas permanent organizations try to use resources full time.

The sharing of the resources frequently leads to conflict and requires skillful negotiation to see that the projects get the necessary resources to meet objectives throughout their project life

THE PROJECT LIFE CYCLE

Each project moves through a predictable life cycle of four basic phases with each phase calling for different skills from the protect manager. The phases of a project's cycle are:

- Defining the project;
- Planning the project;
- Implementing the plan; and

- Completing and reviewing the project.

This will be discussed later in this chapter under system development life cyle.

Project Planning and control

The key elements of project management are planning and control. Deciding and specifying what to do is a function of project plan. Making sure that it is done right is the function of project control. Planning is vital if control is required at later stage. The following are main steps in planning a project:

- Identify purpose of project
- Set objectives ,that is, define deliverables
- Gather information on resources, timescales
- Construct a plan- list tasks, timescales and dependencies , allocate task
- Decide on the tools to be used and identify control systems

COMPUTER IN PROJECT MANAGEMENT

The complex nature of modern project makes the use of computers inevitable. The areas of applicability include among others: Project formulation; Project feasibility studies; Appraisal Techniques; Work Breakdown Structures; Network Analysis; Costing and Finance; Material Management; Monitoring and Evaluation; Report Writing. Since Project Management involves these three basic phases: Creating a project; Managing a project; and communicating progress, the applicability of computer to such areas enumerated above can be highly appreciated.

WHAT IS MS-PROJECT (Project management software Package)

MS-Protect is Project management software Package that has capabilities that makes it a necessary tool for project Management. MS-project is a Menu driven program i.e. a program that allows you to interact with the computer by enabling you to select from a group of alternatives, with an highlight of the consequences of selecting any of the various alternatives.

Since the essence of project Management is managing information, MS-project's views and features make is easy to enter organize and present project information. MS-project helps plan projects manage and upgrade information and communicate status once a project is underway. For a menu driven package such as MS-project, the use of a 'mouse'- a device for pointing at things on the screen normally used instead of the keyboard-becomes inevitable.

Type of PROJECT MANAGEMENT TOOLS

A project manager has a range of project management tools available to assist with the planning and control of individual systems projects. These tools are designed to improve the effectiveness of the project management process.

The project management tools available include:

- Work breakdown structure
- Critical path analysis
- Gantt chart
- Resource histogram
- Budget.

Work breakdown structure is a tool or method used for breaking down work into manageable units , and then allocating those units to members of the project team .

The basic idea of creating a (WBS) is to take the work involved in the project and break it down into smaller and smaller parts, until the project consists of series of work packages . These can then be put into the project plan as activities. Having completed the WBS , it will be possible to construct a project network.

Critical path Analysis (CPA) or Network Analysis:

This is a diagram showing the various activities in a project. The aim of the CPA is to identify how those activities link together and to show the critical path or the sequence of activities where delay will result in the overall project.

Understanding Critical Tasks: A critical task is one that, if delayed, would also cause the completion of the project to be delayed. Critical tasks are said to be on the critical path. Changes to tasks not on the critical path will not have an effect on the completion date of the project. With Microsoft Project you can quickly identify the critical path, so you can focus on the tasks that require the closest management. Knowing tasks are critical also helps you assess priories, effectively assign resources, and determine the effect of changes on the project.

The Critical Path Method (CPM) is a standard Project management technique for determining which tasks are critical. Based on a mathematical model that takes into account the relationships

between tasks, their duration, and any constraints regarding the availability of resources, CPM is also used to critical path in a large or complicated project was a significant challenge for the project manager. Today, Microsoft Project brings the proven power of CPM to your project planning being delayed.

Gantt Chart: A Gantt chart , named after the inventor , shows the activities of a project , the same as CPA. However, these activities are presented as a bar chart with the same start and finishing time clearly identified .

Resource Histogram: This is a stacked bar chart showing the number and mix of staff required over the duration of a project.

Budget : The project budget shows for each month of the project, the proposed expenditure . This will be updated as the project progresses with the actual expenditure and the reason for any variances.

Note:- Almost all of these tools can be in some form of computer software, for example, a budget or Gantt chart can be presented on a spreadsheet. Also, Project management software package can produce CPA and Gantt charts from data entered into the software. e linked to each other in the project.

MAJOR FEATURE OF MS-PROJECT

1 Creating a project by entering Tasks in the Gantt Chart

A task is an individual step that must be completed to complete the project.

2 Outlining tasks: Outlining gives the project a hierarchical detail or "subordinate"

tasks fit within the broader groupings or "summary tasks". It can be used for creating summaries, reports, and work breakdown structure ((W.B.S).

3. Assigning task relationship by linking tasks in a project by drawing a line

connecting tasks in the default Gantt Chart view. .

4. Entering resources and assigning them to task in the task entry view .

5. Checking resources usage in the resource pool, as way to manage resources .

6. Resolving resources over allocation ,as way for managing resources.

7. Producing a report: It is possible to carry out the following activities under this heading: change text format, change Gantt Charts, change field displayed in PERT

nodes , and print views and reports.

8. Create a template that contains only the features you want in a project file.

9. Work with the critical path and identify critical tasks.

10. Display project information in the new calendar view.

11. Create recurring tasks that are placed at regular intervals in a schedule.

12. Use new filtering options and apply filters with a button.

13. Use the tracking toolbar to get quick access to the commands you need when updating the project.

Week 11 : System Development

During this week you will learn :

- The need for information system development
- System Development
- Different approaches to system development
- Factors influencing each approach and CASE.

The need for information STEMS DEVELOPMENT

Many business organizations require systems to perform their operations in other ensure tangible and intangible benefits such as increased operational efficiency and improved customer service.

These systems do not exclude MIS and some of is subsets like Payroll , inventory systems and others. The need for information system development is itemized below under objectives of systems.

SYSTEMS DEVELOPMENT

Systems Development is a process that explores both the modification of old systems and the creation of new ones from the discoveries of a problems or opportunities to the implementation of a suitable information products that is maintainable over the period of time as a result of change in information needs, business conditions and technologies.

Approaches to System Development

There are a number of approaches to Systems Development process depending on the type of problem at hand , either one of these approaches or combination of the approaches may be used, namely:

i.) Traditional Systems Development Life Cycle,

ii.) Prototyping approaches, and

iii.) End-User Development approaches.

Factor influencing application of SDLC

- There is significant experiment with the type of systems to be designed.
- Many important systems features can be readily identified before development begins.
- Data requirement can be identified in advance.
- Management requires a comprehensive picture of the system before giving approval.
- The development staff is not experienced with prototyping tools .

i.) Prototyping approach of system development is sometimes called Rapid Application Design (RAD) is building a working model of a new system in order to evaluate it , test it or have it approved before building the final product. It can be used by both

analyst and end users where the end user requirements are hard to formulate or define.

Some development tools used in prototyping include :

- Integrated data dictionaries
- Very high-level languages
- End-user query languages
- Report writer.

Factor influencing application of prototyping

i.) users do not have a feel for the information or system capabilities they require.

ii.) User needs are changing rapidly

iii.) There is little experience with the type of system under development

iv.) The risk associated with delivering the wrong system is high.

v.) Many alternative design strategies must be tested.

vi.) The system must be developed quickly and at the lowest possible cost.

iii.) End-User Development approach of systems development is where end users can develop new or improved ways to perform their jobs without the direct involvement of IT professionals. It involves use of modeling packages to achieve result. It carries out its activities either seeing the development from traditional SDLS or prototyping approaches. The application development capabilities built into a variety of end user software packages have made it easier for many users to develop their own computer-bases solutions. For example; you can use an electronic spreadsheet package as a tool to develop a way to easily analyze weekly sales results for sales manager in a company or database management package to design data-entry displays to help sales clerks enter sales data and others.

COMPUTER – AIDED SOFTWARE ENGENEERING

This is a software that provides tools to help with every phase in systems development and enables developers to create data flow diagrams , data dictionary entries, and structure charts ; also methodology that uses microcomputers and software, as well as procedures to aid the system developer.

Special CASE software ‘toolkits’ can be purchased and would normally contain the following:

A graphics tool specifically designed to aid the drawing of data flow diagrams, system flowcharts and entity-relationship models.

An interface generator to allow the speedy prototyping on screen dialogues, menus and reports.

A source code generator which will generate the source code from a system specification into the source code of the chosen computer language.

A data dictionary development tool; this is particularly important in the development of database system.

A Project Management tool to allow the scheduling of all activities such as analysis , design , design, programming and testing, and the allocation of resources such as people and equipment to the project.

Week 12 : Development cycle of an MIS

During this week you will learn :

- Identify the phases in the development cycle of MIS
- State the importance of each phase
- Describe each of the phases of the development cycle of an MIS
- Change over to new system.
- System testing.

System Development cycle

Traditional Systems Development Life Cycle is . It is a sequence of activities required to develop, implement, and install a new or revised system. That is, an organized way of creating a system whereby the system under study is professionally developed in stages , each of which must be relatively completed before the next stage is began.

If a system is to succeed, all parties must be actively in determining what a system is to do and how. For successful development and implementation of new systems, this organized study of the current system is needed. Standard activity phases are considered bellow.

There are many versions or variations of systems development life cycle. However, a relatively standard series of developmental phases can be identified. These include: the following.

1. System Objective
2. System Investigation
3. System Analysis
4. System Design and Development
5. Implementation.
6. Review and Maintenance.

Objective of a System

Every System is designed to solve some particular problems being encountered by management. For instance, personnel in a functional area may fill that an existing system is out of date, a manager might desire certain new information which he requires for better decisions. The moment the problems are articulated , a set of system objectives are developed by the management to satisfy the users. Objectives are usually set to:

i.) alleviate the worker's workload,

ii.) Increase in sales and profit,

iii.)Increase operational efficiency,

iv.) improve customer service,

v.) improve employee morale.

vi.) Satisfy government requirement.

2. Systems Investigation :This is the point at which the proposed new system gains its first exposure and scrutiny. Before a new design and development effort takes place, a problem is identified.

The main purposes of the investigation are to determine:

- If there is a problem

-the extent, or seriousness, of the problem

-Whether to proceed with a full-scale study of the problem and alternative solutions.

Systems Investigation is conducted through fact-finding exercise using a number of methods to investigate current systems requirements, and problems volume of data processed, etc. System investigation involves two stages: initial investigation or feasibility study and detailed investigation or system study. The result of the investigation is a feasibility report as stated above. Therefore, projected accomplishments of the investigation phase include the following activities.

a.) Identify the real problem.

b.) Determine the scope and depth of the problem.

c.) Define the objectives of the problem solution.

d.) Develop tentative costs for a new or replacement system.

e.) Establish a tentative schedule and budget

f.) Decide whether to proceed with a full-scale system study

System Investigation

1.) Feasibility Study

It takes a brief look at present system and identify alternative solutions one of which is recommended to management on the basis of its cost and benefits. Also, examines the major factors that will influence the ability of the system to achieve the desired objectives . That is, this study is an investigation of the technical , operational, economic, social, political, legal, and psychological effects of developing and implementing a system.

The alternative aim of feasibility study is to determine whether or not a new system or modified system is feasible.

A formal report, (Feasibility study report sometime called a system proposal) which may include system investigation and system s analysis .

Therefore, feasibility report is an extensive presentations for the consideration of the management, operational personnel ,and users of the proposed system. It proposes to change things. It always includes a summary of the reasons and objectives of the system analysis itself. OR

It is a document that gives the description of the current system, an explanation of why the system does or does not succeed in meeting its objectives, and a determination of how those objectives should change.

A detailed investigation or system study will provide the detailed basis for the design of what it should do and it should do it . The systems study will determine : user needs, study the application areas in depth , the strengths and weakness of the present method of doing the work ad make report to management

Outline of a system study / feasibility report is as follows:

- executive summary
- Introduction
- System objective and constrains
- Possible system alternatives
- The recommended system project which includes : task to be performed, human resource requirements, Schedule of work, Estimate cost.
- Expected impact of the system

  -impact on the firm's operation

  -impact on the firm's organization structure

  -impact on the firm's resources
- General development plan
- Summary.

USES OF FEASIBILITY REPORT

(i) To meet the stipulated requirements of financial institutions.

(ii) To provide the basic information for effective decision making with respect to the proposed investment.

(iii)To assist the entrepreneur in developing future plans for the organisation.

(iv) To serve as the basis for measuring the performance of the proposed business.

3. Systems Analysis

Having investigated all facts about the current system the current system must be analyzed in terms of its problems, working methods, bottlenecks, inefficiencies and information needs of the end user and organizational environment for the purpose of developing a new or improved system / functional requirements of a system that can meet the needs of end users. Also substantial analysis work may be conducted during feasibility study. In organizations a study team comprised of information system users and one or more data processing specialists often collaborate to gather and analyze data about current data processing operations they also determine what the new system should accomplish . System analysis process involves the use drawings of both the existing system and proposed systems to represent information gathered during the investigation stage . These include use of Data Flow , System Flowchart and Structured Analysis and Design Technique (SADT) diagrams.

The stages of System analysis are:

i.) Define the problem.

ii.) plan the project.

iii.) Collect the facts through facts collection techniques.

iv.) Record the facts using such documents like; grid or x chart, document analysis form-output, File analysis form, output analysis form , clerical procedure flowchart, procedure narrative.

v.) Analyse.

4. System Design and Development:-The next step is design and development of any new systems or applications that are required to satisfy the need. The systems specification must describe how the new system will work . Screen layouts and report formats or outputs must be designed , hardware, software , people , network ,including the input data needed, and the general processing procedures required to convert data into information products that will satisfy the functional requirements of the proposed system by means of program specifications, structure charts , pseudo code or flowcharts. Then, the programmers must code , test and debug all the programs in the systems. The output of systems design is system specification.

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4. System Design

Systems Design is the determination of the processes and data that are required by a new system. Organisational

study teams often prepare design specifications that include the output desired, the input data needed, and the general processing procedures required to convert data into output results. i.e. is bases onn what was suggested during the feasibility study. but will go into considerable detail on INPUT,OUTPUT, FILES, SECUTITY (CONTROLS) , etc. The input of systems design is system specification. The systems design normally consists of three activities namely:

i.) Reviewing the systems informational and functional requirements.

ii.) Developing a new system model which consists of the sequence of the functions:

- Output Specification,
- input specification,
- processing specification,
- storage Specification,
- procedures specification,
- personnel specification.

iii.) Report must be packaged and submitted to management

5. SYSTEM IMPLEMNTATION:-This is the phase of the system development when the new system become operational . It is acquisition and integration of the physical and conceptual resources that produce a working system.. That is, the stage when people actually begin to use a new system. It is a critical phase of the project development that involves the following activities :

- office preparation, space for the computer is created, wiring is done , rugs, air conditioners and more are provided.
- hardware & software acquisition and installation,
- file creation, or conversion,
- Programming: this is the act of writing and debugging needed programs for the system.
- system testing,
- training the users and staff,
- changeover/conversion to the new system,
- post-implementation review.

to operate and use it and conversion to the new system. The product of this phase of system design is an Operational System . The system should be flexible to take into consideration any changes that may occur through unforeseen circumstances during the development of the project.

6.Review and Maintenance:- The use this process is to monitor, evaluate , and modify the system as needed . Maintenance involves keeping the system up to the date and the system could be subjected to review to ensure that it conforms to the requirements identified in the feasibility study in order to get an improved system.

CHANGEOVER TO THE NEW SYSTEM

Conversion procedure concludes the development and implementation of the new system. After the conversion process, the system is put to use.

1.) Direct changeover is a sudden changeover method. It involves discarding with the old system and setting into operation of the new system.

Features of direct changeover are as follows:

i.) There must be assurance in the new system's reliability before it can be employed.

ii.) It is used when the two system are totally different or incompatible with each other.

2.) Parallel changeover involve running both the old and the system concurrently, using the same data. This method is characterized by the following :

i.) The method requires employing extra staff to cope with possible increase in the word load.

ii.) It provides management with an opportunity and facility of testing of the new system while the old system is still in operation.

3.) Phase changeover, the new system is put into use one part at a time. When one part of the system is working well, the next piece is made operational. The conversion can be phased in modules of the system or phased running the whole module department by department for or different geographical areas. Phase conversion is very popular for large-scale system.

4.) Pilot conversion is a trial system implemented in a subset of the overall operation . If It is successful then it is brought into other areas.

System Testing

Often it is not immediately obvious that there are logical errors in a program, indeed some programs nay function correctly for months or even years before a particular circumstance, or piece of input data, causes a problem or error to surface.

It is responsibility of a programmer to test, as far as possible , that all parts of the program work correctly.

Types of testing:

a.) Functional testing : the system is tested to make sure all parts of it perform correctly using test data.

b.) Recovery testing: The purpose of recovery testing is to ensure that the system can recover from various types of failure. Recovery testing may involve simulating hardware failures and power failures .

c.) Performance testing: The purpose of this kind of testing is to ensure that the system can handle the volume of data that it will have to cope with, under the conditions that will prevail in the user environment. Response time to database queries may , for example , be only a fraction of a second using a test data file of 50 records; what happens when 100,000 records are loaded onto the system? The test environment may be a stand –alone computer; what will happen to performance when it is used on a busy network.

Week 13 : Information resource

During this week you will learn :

- Information as conceptual resource
- Competitive advantage with IT
- Information system resource.

Information as critical conceptual resource-

Recall that Data provides a basis from which information is It derived and for quantitative analysis; information assembled by compiling, manipulating and massaging data provides a basis for decision-making. qualitative value like money, raw Management resources have been often described as the three manpower, money, and materials. Information can be considered as fourth resource because it has the attributes of a resource: physical M's materials or manpower.

i.) It has value like money, raw materials or manpower.

ii.) It has characteristics which make it measurable in terms of use, life and effect on other resources.

iii.) It can be valued in terms of collecting, storing, retrieving.

iv.) It can be budgeted and controlled.

v.) It can be related in terms of cost and use value to management objectives

COMPETITIVE ADVANTAGE WITH IT

In information technology field , competitive advantage refers to the use of information to gain leverage in the marketplace. The idea is that the firm does not have to rely entirely on superior Physical resources when engaged in competition. Rather, superior conceptual resources-data and information- can be used as well. The firm's managers use conceptual as well as physical resources in meeting the strategic objectives of the firm. These strategic information systems use information technology to develop products, services, processes , and capabilities that give a business a strategic advantage over the competitive forces in the faces in its industry. Information technology can play a major role in implementing competitive strategies.

Competitive strategies:

Cost strategies: using information technology to lower production cost thereby making your organization being a low-cost producer . For example, using computer-aided manufacturing systems to lower costs, or creating internet web sites for electronic commerce to lower marketing costs.

Differentiation strategies: using IT to differentiate your products or services from other competitors so that customers perceive your products or services as having unique features or benefits.

Innovative strategies: Using IT to make radical changes in your business processes that cause fundamental changes in the way business is conducted in your industry.

Information System Resources

Information system consists of four major resources: People ,hardware, software, software and data.

i.) People resource: this includes the end users and information system specialist. End users are people who make use of the information system and information it produces. These are the people that are involved in the procured information.

ii.) Hardware resource :this includes all physical devices and materials used in information processing, computer peripherals , communication networks, communication processors, and other devices interconnected by variety of telecommunication media.

iii.) Software Resources include all sets of instructions, otherwise called procedure. Software can come in

form of application software and system iv.) Data resources: Data is a valuable resource in any organisation .

Data consists of factS and figures that are relatively meaningless to the user. It is a piece or collection of raw facts representing people, objects, and the day-to-day activities of an enterprise. An enterprise in this case can be a church, a hospital, a school, a government ministry, a business organisation, etc.

Week 14 : System Models

During this week you will learn :

- System models.
- Different types of models.
- Uses of each of models.

MODELS

A model is an abstraction of something known in real life situation. It represents real world element or group of elements (some objects or activity) which is called entity. Managers use models to represent problems to be solved. The objects or activities that cause problems are the entities.

Types of models.

There are four basic types of models, namely;

i.) Physical models,
ii.) Narrative models,
iii.) Graphic models, and
iv.) Mathematical models.

Physical model

A physical model is a 3-dimensional representation of its entity. Physical models used in the business world include scale models of shopping centre and prototypes of new automobiles.

The physical model serves a purpose that can not be fulfilled by the real thing. For , example, it is much less expensive for shopping centre investors and automakers to make changes in the design of their physical models that to be final products themselves.

Narrative Models.

Narrative model describes its entity with spoken or written words, where both the listener and reader can understand the entity from the narrative. It is a type of model that managers use daily. All business communications are narrative models , which makes the narrative model the most popular model.

Graphic Model

A graphic model represents its entity with an abstraction of lines, symbols , or shapes . This is another type model in constant use in business to communicate information to managers.

Graphic model are used also in the design of information system . Many of the tools used by the system analyst and programmer are graphic in nature.

Mathematical Model

Any mathematical formula or equation is a mathematical model. The mathematical model accounts for most of the current interest in business modeling. A big advantage of mathematical model is the precision with which it can describe the relationships among the parts of an object. Mathematics can handle relationships expressed in more than two dimensions of the graphic model or the three dimensions of the physical model.

Uses of Models

i. Facilitate understanding.

ii. Facilitates communication.

iii. Predict the future.

Week15 : Introduction to programming

During this week you will learn :

- Concept of programming
- Systems Development Cycle
- How windows work
- The Visual Basic environment
- Starting Visual Basic
- Stopping Visual Basic
- Getting online help
- Opening Application
- Creating Simple application (Wizard)
- Running your application
- Creating Executable File
- Saving your application

Concept of programming

A program is a set of detailed instructions that tells the computer what to do.
VISUAL BASIC is a high level programming language evolved from the earlier DOS version called BASIC. BASIC means Beginners' All-purpose Symbolic Instruction Code. It is a fairly easy programming language to learn. The codes look a bit like English Language.
Visual Basic falls into a category of programming referred to as event-driven programming. Event-driven programs respond to events from the computer, such as the mouse button being pressed. The designer uses ready-made objects such as CommandButtons and TextBoxes, to build user interfaces that make up the application. This approach to programming drastically reduces the amount of code required to develop a Windows application.

Systems Development Cycle

Most IT projects work in cycles. First, the needs of the computer users must be analyzed. This task is often performed by a professional Systems Analysts who will ask the users exactly what they would like the system to do, and then draw up plans on how this can be implemented on a real computer based system.
The programmer will take the specifications from the Systems Analyst and then convert the broad brushstrokes into actual computer programs. Ideally at this point there should be testing and input from the users so that what is produced by the programmers is actually what they asked for.
Finally, there is the implementation process during which all users are introduced to the new systems, which often involves an element of training.

Once the users start using the new system, they will often suggest new improvements and the whole process is started all over again.
These are methodologies for defining a systems development cycle and often you will see four key stages, as listed below.

- Feasibility Study
- Design
- Programming
- Implementation

How windows work

Windows is an GUI operating system. With GUI it easily recognized graphic icons be selected using the mouse and commands chosen from menus, This is much easier for the user than typing in the specific lines of code that were required by MSDos in order to perform basic operations.
In GUI operating system, more than one application can be open at the same time. Processor time is shared between computing tasks and this called multitasking.

The Visual Basic environment

The Visual Basic environment is made up of several windows. The initial appearance of the windows on your screen will depend on the way your environment has been set up.
The tool bar The Visual Basic tool bar functions like the tool bar in any other Microsoft application. It provides shortcuts for many of the common operating

commands. It also shows you the dimensions and location of the form currently

being designed.
The tool box The tool box gives you access to the controls that you use on a form.
A control is an object such as a button, label or grid.
Controls are used on forms to display output or get input.
Each control appears as a button in the tool box. If the control you are looking for is not in the toolbox, select Components from the Project menu.
If the tool box is not displayed on your screen, or if at any time during the exercises you close it, choose Toolbox from the View menu.

The form designer window

This window is where you design the forms that make up your user interface.
If the form designer window is not displayed on your screen, or if at any time during the exercises you close it, choose Object from the View menu.

The properties window :

A form, and each control on it, has a set of properties which control its characteristics such as size, position and color.
The properties window lists all the properties a control has and their value. The default value of a property can be changed by setting the property value using the properties window when you design your application or changed by assigning a new value in code while your application is running.

If the properties window is not displayed on your screen, or if at any time during the exercises you close it, choose Properties Window from the View menu.

The project explorer window

A project is a collection of the forms and code that make up an application. Each form in your application is represented by a file in the project explorer window.
A form file contains both the description of the screen layout for the form and the program code associated with it. If the project explorer window is not displayed on your screen, or if at any time during the exercises you close it, choose Project Explorer from the View menu.

The form layout window

Move the form in the screen in this window to set the position of your form when your application is running.
You may wish to close the form layout window to allow more space for the properties window. To open the window again, select Form Layout Window from the View menu.

Starting Visual Basic

• From the Windows Start menu, choose Programs, Microsoft Visual Studio 6.0, and then Microsoft Visual Basic 6.0.
• Visual Basic 6.0 will display the following dialog box as shown in this figure

Stopping Visual Basic

• From the File menu, choose Exit and then Microsoft Visual Basic 6.0. ask you to
• save changes in your project.

Getting online help

If you've used online help before, you may not think you need to read this section. Although you might be able to figure out Visual Basic's online help yourself, the help is fairly advanced and varies from most other online help you may be used to. This topic section

describes some of the help tools available from within Visual Basic.
The content-sensitive nature of Visual Basic's help system extends to almost every menu option, screen element, control, window, and language command. When you want help and aren't sure exactly where to turn first, press F1 and let Visual Basic give it a try. For example, if you think you need to use the Picture Box control but want to read a description first to make sure that you have the right control, click the Toolbox's Picture Box control and then press F1. Visual Basic sees that you've clicked the Picture Box and returns with the help screen shown in this figure

Click any screen element and press F1 for help
Throughout the help screens, Microsoft has scattered numerous links to related topics. When you click any underlined word or phrase inside a help window, Visual Basic responds with a pop-up definition or an additional help screen. Often, so may related topics appear throughout the help system that when you click a link, Visual Basic displays a scrolling Topics Found list, from which you can choose the description that most closely matches the topic you need.

Help links often provide several alternatives.
When you click an Example hypertext link, Visual Basic displays a window similar to the one shown in Figure. Although the help might look ambiguous at this point, you'll grow to appreciate the helpful suggestion when you begin learn the Visual Basic language. The Example help link shows you real Visual Basic language code that uses the item you've requested help for. As a programmer, you'll therefore see how to implement the item inside your own Visual Basic code by looking at the sample Visual Basic provides.
Visual Basic shows you sample code that uses the property or control.

The Help Menu
When you choose the first topic on the Help menu, Microsoft Visual Basic Topics, Visual Basic displays a help dialog box . This dialog box contains the usual Windows-like help tools. You can open and close the book icons on the Contents page to read about different Visual Basic topics. You can search for a particular topic in the index by clicking the Index tab. To locate every occurrence of a particular help reference word or phrase, you can click the Find tab to build a comprehensive help database that returns multiple occurrences of topics.
Example :
Get an instant definition for help links with a dotted underline.
Pop-up definition, Hyperlinks
Close the help window by clicking the window's Close button.

Opening Application

To open a project, you can do one of two things:
• Click File menu , Open project…
• Click the tool and specify the project you want to open.
Then select Hello project and press Open.
The project window will display the file “Hello.frm” from your project.

Creating Simple application (Wizard)

You start the application wizard from the New Project dialog box or by choosing New Project from the File menu. Click the VB Application Wizard icon to start the wizard. This Figure shows the application wizard's opening screen.

Example

Assuming that you started the application wizard in the previous section, follow these steps to build your first application:

1- Click the Next button to display the Interface Type dialog box. The wizard can generate one of three types of user interfaces for the application you're generating:

− MDI (Multiple Document Interface) lets you create a program window that contains embedded windows called child windows.

− SDI (Single Document Interface) lets you create a program with one or more windows that exist at the same level (not windows within windows).

− Explorer Style lets you create programs that somewhat take on the Books Online appearance, with a summary of topics or windows in a left pane and the matching program details in the right pane.

2- The MDI option should already be selected. If not, click the MDI option.

3- Click Next to display the menu selection dialog box. You can select certain menu options that will appear on your application's menu bar. By using the dialog box's options, you can help ensure that your application retains the standard Windows program look and feel. (You can add your own menu options after the wizard generates the program's initial shell.) For now, leave these options selected: File, Edit, Window, and Help.

4- Click Next to display the wizard's Resources dialog box. A resource might be a menu, a text string, a control, a mouse cursor, or just about any item that appears in a program.

5- Click Next, you'll bypass the Internet connectivity dialog box because you don't need to add such connectivity to your first application shell.

6- Determines which forms appear in your application:

• A splash form is an opening title form that your users see when they first run your application.

• A login form requests the user's ID and password, in case you want to add security features to your application.

• The options dialog box gives users the ability to modify certain application traits.

• The About box is accessed from most Windows Help menus and provides your program description and version.

8. Check the About Box but leave the other options unchecked.

9. Click the Next button twice to display the final application wizard dialog box. (You'll bypass the database access dialog box because you won't be retrieving database data in this first application.)

10. Click the Finish button. The wizard generates the application before your eyes. You'll see the wizard generating forms and titles; without the wizard, you would have to perform these steps yourself. When finished, the application wizard displays a dialog box to tell you that the application is completed.

11. Click OK to close the final application wizard dialog box. A summary report appears, to describe the generated program.

Running your application

Now that the form is complete you can see it in action by running it.
When you have written code for the buttons, running the application will allow you to activate the code. For now your buttons will not do anything.

Your form will appear like a window from any other Microsoft application.

Creating Executable File

- Click File, Then Make Project1.exe…
- Specify the location and the name of the project, then click OK.

Saving your application

The last step in this chapter is to save your application so that you can use it for the exercises later in the book.
Visual Basic first asks you to save the form and then the project file. Remember that each represents a separate file.
Specify the filename for the form as hello.frm. The file extension “frm” indicates that the file is a form file.