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DEPARTMENT OF BUSINESS ADMINISTRATION

SUBJECT NAME: MANAGEMENT INFORMATION SYSTEM

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CORE PAPER – XII
MANAGEMENT INFORMATION SYSTEM

UNIT I

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UNIT II

Concept of System - Characteristics of System - Systems classification - Categories of Information Systems - Strategic information system and competitive advantage

UNIT III

Computers and Information Processing - Classification of computer - Input Devices – Output devices - Storage devices, - Batch and online processing. Hardware - Software. Database management Systems.

UNIT IV

System Analysis and design - SDLC - Role of System Analyst - Functional Information system - Personnel, production, material, marketing.

UNIT V

Decision Support Systems - Definition. Group Decision Support Systems - Business Process Outsourcing - Definition and function

Recommended Books:

1. Mudrick & Ross , "Management Information Systems", Prentice - Hall of India .
2. Sadagopan , "Management Information Systems" - Prentice- Hall of India
3. CSV Murthy -"Management Information Systems" Himalaya publishing House .
4. Dr. S.P. Rajagopalan , "Management Information Systems and EDP " , Margham Publications , Chennai.

MANAGEMENT INFORMATION SYSTEM

UNIT-1

Definition of MIS:

Management information system ,or MIS,broadly refers to a computer based system that provides managers with the tools to organize, evaluate and efficiently manage departments within an organization

-SUBHALAKSHMI JOSHI

Information Technology

By definition, information technology (IT) is the technology that involves the development, maintenance and use of computer systems, software, and networks for the processing and distribution of data.

Put more simply, the most encompassing interpretation of information technology would be anything related to computers or computing technology. Computing technology includes hardware, software, networking, and internet interactions.

Management Information Technology.

A management information system (**MIS**) is a computer system consisting of hardware and software that serves as the backbone of an organization's operations. An **MIS** gathers data from multiple online systems, analyzes the information, and reports data to aid in management decision-making.

A management information system, of a company or institution, is a computerized system consisting of hardware and software that serves as the backbone of information for the company. The computerized database consists of all the company's financial information and is used to organize it in such a way that it can be accessed to generate reports on operations at different levels of the company.

MIS: A SUPPORT TO MANAGEMENT

PLANNING:

A selection to various alternatives-strategy ,resources and methods etc.

ORGANIZATION:

A selection of combination out of several combination of the goals, people, resources, methods and authority.

STAFFING:

Providing proper manpower complement.

DIRECTING:

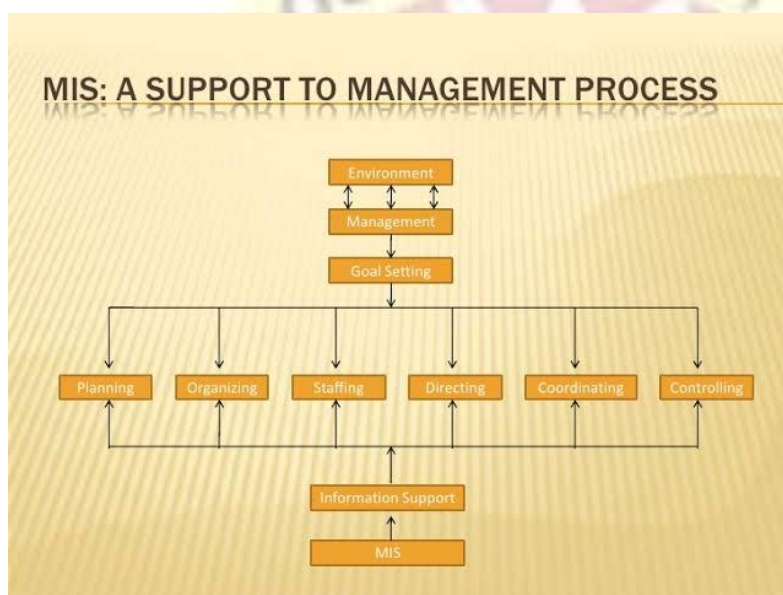
Choosing a method from the various methods of directing the efforts in the organization.

COORDINATING:

Choice of the tools and the techniques for coordinating the efforts for optimum results

CONTROLLING:

A selection of the exception conditions and providing the decision guidance to deal with them.

**STRUCTURE OF MIS**

Physical Structure of Management Information Systems. A MIS is an organized system which consists of people, hardware, and communication networks and data sources that collects, transforms and distributes information in an organization. It is a tool which helps managers in making decisions by providing regular flow of accurate information in an organization.



INFORMATION SYSTEM

Information system (IS) is a formal, sociotechnical, organizational system designed to collect, process, store, and distribute information. In a sociotechnical perspective, information systems are composed by four components: task, people, structure, and technology. Information systems can be defined as an integration of components for collection, storage and processing of data of which the data is used to provide information, contribute to knowledge as well as digital products



Functions of MIS

To improve decision-making:

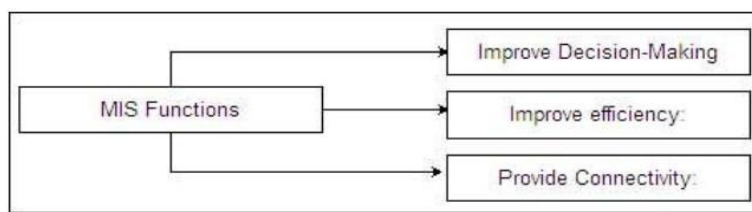
MIS helps management by providing background information on a variety of issues and helps to improve the decision-making quality of management. The fast and accurate information supplied by MIS is leveraged by the managers to take quicker and better decisions thereby improving the decision-making quality and adding to the bottom line of the company.

To improve efficiency:

MIS helps managers to conduct their tasks with greater ease and with better efficiency. This reflects in better productivity for the company.

To provide connectivity:

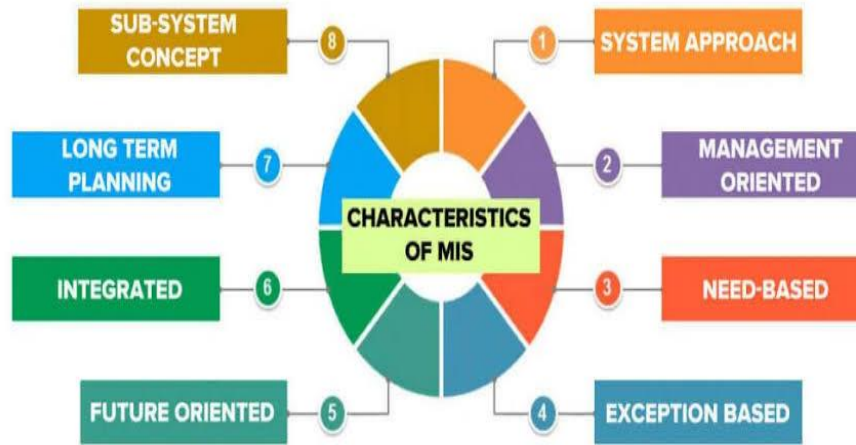
MIS provides managers with better connectivity with the rest of the organization



Characteristics of MIS

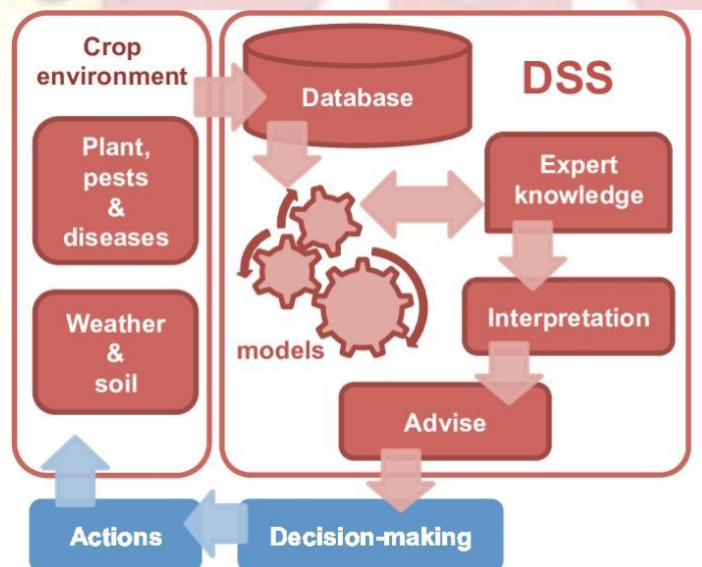
The most important characteristics of an MIS are those that give decision-makers confidence that their actions will have the desired consequences , and among this characteristics we can mention:

1. It should be based on a long-term planning .
2. It should provide a holistic view of the dynamics and the structure of the organization .
3. It should be planned in a top-down way .
4. It should be based on need of strategic, operational and tactical information of managers of an enterprise .
5. It should be able to make forecasts and estimates, and generate advanced information .
6. It should create linkage between all sub-systems within the organization .
7. It should have a central database



Decision Support System

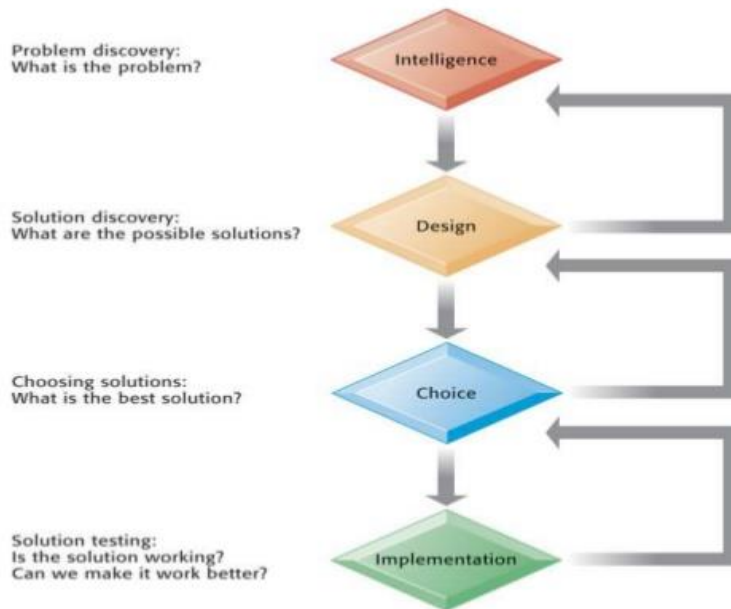
Decision support system (DSS) is a computerized program used to support determinations, judgments, and courses of action in an organization or a business. A DSS sifts through and analyzes massive amounts of data, compiling comprehensive information that can be used to solve problems and in decision-making.



DECISION MAKING IN MIS

Decision-making is a cognitive process that results in the selection of a course of action among several alternative scenarios. ... Therefore, corporate decision-making is the most critical process in any organization. In a decision-making process, we choose one course of action from a few possible alternative

STAGES IN DECISION MAKING



UNIT-2

CONCEPT OF SYSTEM

Simply put, a system is an organized collection of parts (or subsystems) that are highly integrated to accomplish an overall goal. The system has various inputs, which go through certain processes to produce certain outputs, which together, accomplish the overall desired goal for the system. So a system is usually made up of many smaller systems, or subsystems. For example, an organization is made up of many administrative and management functions, products, services, groups and individuals. If one part of the system is changed, the nature of the overall system is changed, as well. Systems range from simple to complex. There are numerous types of systems. For example, there are biological systems (for example, the heart), mechanical systems (for example, a thermostat), human/mechanical systems (for example, riding a bicycle), ecological systems (for example, predator/prey) and social systems (for example, groups, supply and demand and also friendship). Complex systems, such as social systems, are comprised of numerous subsystems, as well. These subsystems are arranged in hierarchies, and integrated to accomplish the overall goal of the overall system. Each subsystem has its own boundaries of sorts, and includes various inputs, processes, outputs and outcomes geared to accomplish an overall goal for the subsystem. Complex systems usually interact with their environments and are, thus, open systems. A high-functioning system continually exchanges feedback among its various parts to ensure that they remain closely aligned and focused on achieving the goal of the system. If any of the parts or activities in the system seems weakened or misaligned, the system makes necessary adjustments to more effectively achieve its goals. Consequently, a system is systematic. A pile of sand is not a system. If you remove a sand particle, you have still got a pile of sand. However, a functioning car is a system. Remove the carburetor and you have no longer got a working car.

CHARACTERISTICS OF SYSTEM

- **Organization:**It implies structure and order. It is the arrangement of components that helps to achieve objectives.
- **Interaction:**It refers to the manner in which each component functions with other components of the system.
- **Interdependence:**It means that parts of the organization or computer system depend on one another. They are coordinated and linked together according to a plan. One subsystem depends on the output of another subsystem for proper functioning.

- **Integration:** It refers to the holism of systems. It is concerned with how a system is tied together.
- **Central Objective:** A system should have a central objective. Objectives may be real or stated. Although a stated objective may be the real objective, it is not uncommon for an organization to state one objective and operate to achieve another. The important point is that users must know the central objective of a computer application early in the analysis for a successful design and conversion

SYSTEM CLASSIFICATION

- MIS is an information system, which processes data and converts it into information. A management information system uses TPS for its data inputs. The information generated by the information system may be used for control of operations, strategic and long-range planning. Short-range planning, management control, and other managerial problem solving. It encompasses processing in support of a wide range of organizational functions & management processes. MIS is capable of providing analysis, planning & decision making support. The functional areas of a business may be marketing, production, human resource, finance and accounting.

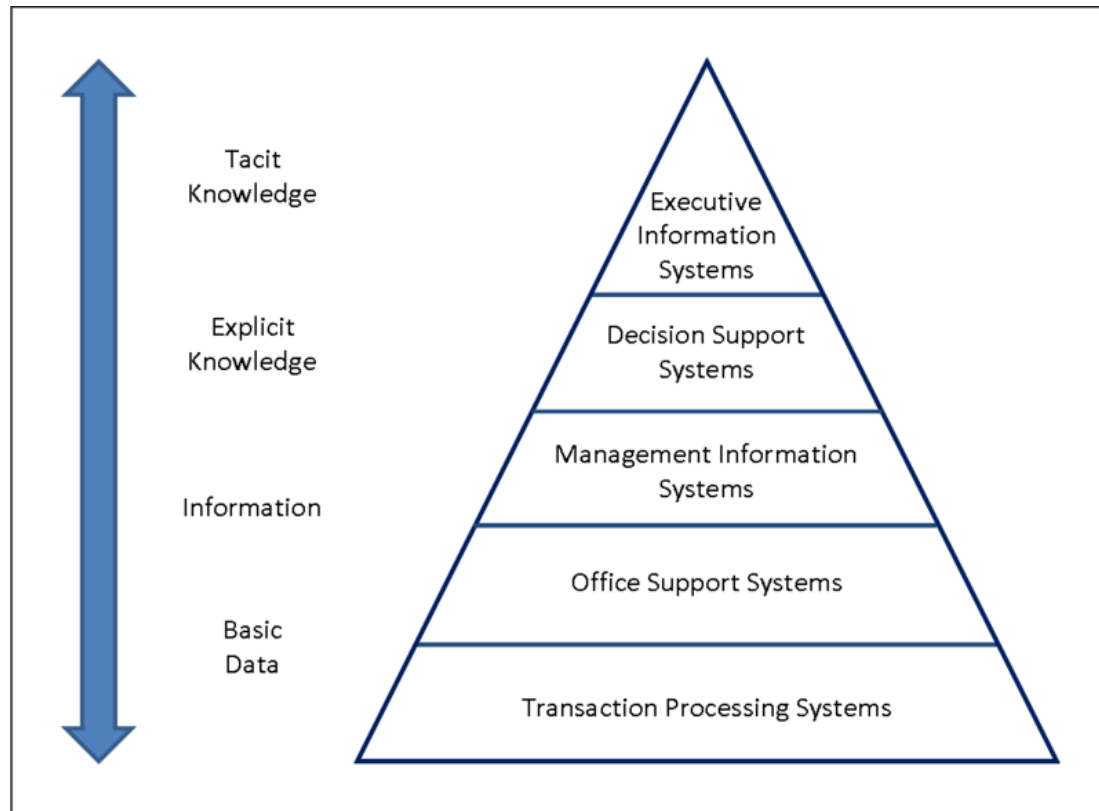
STRATEGIC INFORMATION SYSTEM AND COMPETITIVE ADVANTAGE

Strategic Information System involves having a long-term vision, setting goals, and taking steps to reach those goals. Strategic Information System keeps the organization focused on its vision. It is used to provide information about the current situation of an individual, group or organization. It is a conceptual system that helps in understanding the present and the future environment in which an individual or organization operates. A strategic information system (SIS) is a business information system (BIS) with the features Systematic approach to collecting, storing, and retrieving data; Integration with other systems. It is essential for your company to have a clear vision, strategy and organisation structure. It's important that your employees are aligned with these strategies, so that everyone has the same goals in mind.

Competitive advantage refers to factors that allow a company to produce goods or services better or more cheaply than its rivals. These factors allow the productive entity to generate more sales or superior margins compared to its market rivals.

Competitive advantages are attributed to a variety of factors including cost structure, branding, the quality of product offerings, the distribution network, intellectual property, and customer service.

CATEGORIES OF SYSTEM INFORMATION



UNIT – 3

COMPUTER INFORMATION PROCESSING

MEANING:

Information processing is the manipulation of digitized information by computers and other digital electronic equipment, known collectively as information technology.

WHAT IS A COMPUTER?

Computer is a machine that accepts data as input, processes that data using programs, and outputs the processed data as information.

CLASSIFICATION OF COMPUTERS:

Sr.No.	Type	Specifications
1	PC (Personal Computer) or Micro-Computers	It is a single user computer system having a moderately powerful microprocessor. It is termed as a computer that is equipped microprocessor as its CPU.
2	Workstation	It is also a single user computer system, similar to the personal computer, however, has a more powerful microprocessor.
3	Mini-Computer	It is a multi-user computer system, capable of supporting hundreds of users simultaneously.
4	Main Frame	It is a multi-user computer system, capable of supporting hundreds of users simultaneously. Software technology is different from minicomputer.
5	Super-Computer	It is an extremely fast computer, which can execute hundreds of millions of instructions per second.

INPUT DEVICES:**MEANING:**

An input device is a piece of equipment used to provide data and control signals to an information processing system such as a computer or information appliance.

Examples of input devices

- 1) Keyboard - One of the primary input devices used to input data and commands. It has function keys, control keys, arrow keys, keypad and the keyboard itself with the letters, numbers and commands. Keyboards are connected to the computer through USB or Bluetooth

- 2) Mouse - An input device used to control the cursor and coordinates. It can be wired and wireless.
- 3) Microphone - An input device that allows users to input audio into their computers .
- 4) Camera - an input device that takes pictures digitally. Images are stored as data on memory cards. It has an LCD screen that allows users to preview and review images.
- 5) Scanner - – is an input device that reads an image and converts it into a digital file. A scanner is connected to a computer through USB

Types

- Flatbed scanner
 - Shetfed scanner
 - Handheld scanner
 - Card scanner
- 6) Touch screen - is an input device that allows users to interact with a computer using their fingers. It is used widely in laptop monitors, smartphones, tablets, cash registers
 - 7) Barcode reader - also known as barcode scanner or point of sale (POS) scanner, is an input device capable of reading barcodes.
 - 8) Webcam - is an input device connected to the computer and the internet that captures still picture or motion video.

OUTPUT DEVICES

MEANING:

An output device is any piece of computer hardware equipment which converts information into human read able form. It can be text, graphics, tactile, audio, and video.

Examples of output devices

- 1) Monitor - This is the most common computer output device. It creates a visual display by the use of which users can view processed data. Monitors come in various sizes and resolutions.
- 2) Printer - this device generates a hard copy version of processed data, like documents and photographs.

Types:

- Inkjet printer
 - Laser printer
 - Dot matrix
- 3) Speakers - speakers are attached to computers to facilitate the output of sound; sound cards are required in the computer for speakers to function.
 - 4) Headset - this is a combination of speakers and microphone. It is mostly used by gamers, and is also a great tool for communicating with family and friends over the internet
 - 5) Projector - this is a display device that projects a computer-created image onto another surface: usually some sort of whiteboard or wall.

- 6) Plotter - this generates a hard copy of a digitally depicted design. The design is sent to the plotter through a graphics card, and the design is formed by using a pen.

DIFFERENCES BETWEEN INPUT AND OUTPUT DEVICES:

INPUT DEVICE	OUTPUT DEVICE
It accepts data from user.	It reflects processed data to user.
It is directly commanded by user.	It is commanded by processor.
It converts user friendly instruction into machine friendly.	It converts machine's instructions to user intelligible.
It takes the data from the user and sends it to the processor for execution.	It takes the processed data from the processor and sends it back to the user.
It helps the computer is accepting the data.	It helps the computer is displaying the data.
The design of input devices are more complex.	The design of output devices are less complex.
Ex: Keyboard, Image Scanner, Microphone, Pointing device, Graphics tablet, Joystick.	Ex: Monitor, Printers, Plotters, Projector, Speakers.

STORAGE DEVICES:

MEANING:

A storage device for a computer enables its user to store and safely access the data and applications on a computer device.

TYPES OF DATA STORAGE:

1) Primary storage

- This is also known as the main memory and is volatile.
- This is temporary. As soon as the device turns off or is rebooted, the memory is erased
- It is smaller in size
- Primary storage comprises only of Internal memory

- Examples of primary storage include RAM, cache memory, etc.
- 2) Secondary storage
- The input and output channels are used to connect such storage devices to the computer, as they are mainly external
 - It is non-volatile and larger storage capacity in comparison to primary storage
 - This type of storage is permanent until removed by an external factor
 - It comprises of both internal and external memory
 - Examples of secondary storage are USB drives, floppy disks, etc.
- 3) Tertiary storage
- It involves mounting and unmounting of mass storage data which is removable from a computer device
 - This type of storage holds robotic functions
 - It does not always require human intervention and can function automatically

Example's of storage devices:

1. Hard Drive Disks
2. Floppy Disks
3. Tapes
4. Compact Discs (CDs)
5. DVD and Blu-ray Discs
6. USB Flash Drives
7. Secure Digital Cards (SD Card)s
8. Solid-State Drives (SSDs)
9. Cloud Storage
10. Punch Cards

BATCH PROCESSING AND ONLINE PROCESSING:

BATCH PROCESSING:

- An **Batch processing** system handles large amounts of data which **processed** on a routine schedule.

ADVANTAGES:

- Manages large repeated work easily.
- Repeated jobs are done fast
- Batch systems can work offline

DISADVANTAGES:

- Difficult to debug batch systems
- Sometimes costly
- Waits for unknown time if error occurs with any job.

ONLINE PROCESSING:

- An **online processing** system handles transactions in real time and provides the output instantly.

ADVANTAGES:

- Useful for online money transactions
- Useful in online shopping
- Support and stability

DISADVANTAGES:

- Millions of requests sometimes becomes difficult to handle
- lots of staff required to maintain inventory
- Hardware problems create big trouble.

DIFFERENCES BETWEEN BATCH AND ONLINE PROCESSING:

S.No.	BATCH PROCESSING SYSTEM	ONLINE PROCESSING SYSTEM
01.	An Batch processing system handles large amounts of data which processed on a routine schedule.	An online processing system handles transactions in real time and provides the output instantly.
02.	Processing occurs when the after the economic event occurs and recorded.	When the economic event takes place then the processing occurs.
03.	In batch processing system fewer programming, hardware and training resources are required.	In Online processing system more number of dedicated hardware resources, processing elements are required.
04.	To avoid operational delays certain records are processed after the event.	Immediately all the records pertaining to event are processed.
05.	In batch processing system input data is prepared before the execution.	In online processing system data is prepared at time of execution as needed.
06.	In batch processing system the processing sequence is predictable.	In online processing system the processing sequence is unpredictable.

07.	In this the programs and files can not be shared.	In this the program and files can be shared.
08.	In batch processing system programs are scheduled through jobs.	In online processing system programs are initiated through transactions.
09.	In batch processing system recovery and restart is easy.	In online processing system recovery and restart requires additional process.
10.	Batch processing system uses tape storage.	Online processing system uses disk storage.
11.	Examples are Inventory query, website shopping transaction, e-Banking account withdrawal etc.	Examples are month end tax calculation, data transformation, data analysis, data transformation etc.

COMPUTER HARDWARE:

MEANING:

Computer hardware includes the physical, tangible parts or components of a computer, such as the cabinet, central processing unit, monitor, keyboard, computer data storage, graphic card, sound card, speakers and motherboard.

Examples of hardware:

- **Internal hardware:**
 - 1) CPU
 - 2) Drive.
 - 3) Fan
 - 4) Modem
 - 5) Motherboard
 - 6) Network card
 - 7) Power supply
 - 8) RAM
 - 9) Sound card
 - 10) Video card
- **External hardware:**
 1. Monitor
 2. Gamepad

3. Joystick
4. Keyboard
5. Microphone
6. Mouse
7. Printer
8. Projector
9. Scanners
10. Speakers.

COMPUTER SOFTWARE:

MEANING:

Software comprises the entire set of **programs**, procedures, and routines associated with the operation of a computer system. ... A set of instructions that directs a computer's hardware to perform a task is called a program, or **software** program.

Examples of software:

- Windows, MacOS, Linux – Operating Systems.
- Windows Media Player, iTunes, VLC media player – Playing rich media.
- LambdaTest, Salesforce, Slack – SaaS – **Software** as a Service.
- Avast, Kaspersky, Quickheal – Antivirus.
- Every game you play from Candy Crush to GTA is also a **software**.

DIFFERENCE BETWEEN HARDWARE AND SOFTWARE:.

Hardware	Software
Hardware is further divided into four main categories: <ul style="list-style-type: none"> • Input Devices • Output Devices • Secondary Storage Devices • Internal Components 	Software is further divided into two main categories: <ul style="list-style-type: none"> • Application Software • System Software
Developed using electronic and other materials	Developed writing using instructions using a programming language
When damaged, it can be replaced with a	When damaged it can be installed once more

new component	using a backup copy
Hardware is physical in nature and hence one can touch and see hardware	The software cannot be physically touched but still can be used and seen
Hardware cannot be infected by Viruses	The software can be infected by Viruses
Hardware will physically wear out over time	Software does not wear out but it can be affected by bugs and glitches
An example of Hardware is hard drives, monitors, CPU, scanners, printers etc.	An example of software is Windows 10, Adobe Photoshop, Google Chrome etc.

WHAT IS A DATABASE MANAGEMENT SYSTEM?

MEANING:

A **database management system (DBMS)** is a software package designed to **define**, manipulate, retrieve and manage data in a **database**. A **DBMS** generally manipulates the data itself, the data format, field names, record structure and file structure. It also defines rules to validate and manipulate this data.

CHARACTERISTICS / FEATURES OF DBMS:

- Provides security and removes redundancy
- Self-describing nature of a database system
- Insulation between programs and data abstraction
- Support of multiple views of the data
- Sharing of data and multiuser transaction processing
- DBMS allows entities and relations among them to form tables.
- It follows the ACID concept (Atomicity, Consistency, Isolation, and Durability).
- DBMS supports multi-user environment that allows users to access and manipulate data in parallel.

TYPES OF DBMS:



Types of DBMS

Typ

Hierarchical DBMS:

In a Hierarchical database, model data is organized in a tree-like structure. Data is Stored Hierarchically (top down or bottom up) format. Data is represented using a parent-child relationship.

Network Model:

The network database model allows each child to have multiple parents. It helps you to address the need to model more complex relationships like as the orders/parts many-to-many relationship. In this model, entities are organized in a graph which can be accessed through several paths.

Relational model :

Relational DBMS is the most widely used DBMS model because it is one of the easiest. This model is based on normalizing data in the rows and columns of the tables. Relational model stored in fixed structures and manipulated using SQL.

Object-Oriented Model:

In Object-oriented Model data stored in the form of objects. The structure which is called classes which display data within it. It defines a database as a collection of objects which stores both data members values and operations.

ADVANTAGES AND DISADVANTAGES OF DBMS:

ADVANTAGES:

- DBMS offers a variety of techniques to store & retrieve data
- DBMS serves as an efficient handler to balance the needs of multiple applications using the same data
- Uniform administration procedures for data
- Application programmers never exposed to details of data representation and storage.
- A DBMS uses various powerful functions to store and retrieve data efficiently.
- Offers Data Integrity and Security
- The DBMS implies integrity constraints to get a high level of protection against prohibited access to data.
- A DBMS schedules concurrent access to the data in such a manner that only one user can access the same data at a time
- Reduced Application Development Time

DISADVANTAGES:

- Cost of Hardware and Software of a DBMS is quite high which increases the budget of your organization.
- Most database management systems are often complex systems, so the training for users to use the DBMS is required.
- In some organizations, all data is integrated into a single database which can be damaged because of electric failure or database is corrupted on the storage media

- Use of the same program at a time by many users sometimes lead to the loss of some data.
- DBMS can't perform sophisticated calculations

IMPORTANT QUESTIONS

- 1) What is a computer?
- 2) Classification of computer?
- 3) What is hardware?
- 4) What is software?
- 5) What are input devices ? Give examples?
- 6) What are output devices ? Give examples?
- 7) What is DBMS?
- 8) Advantages and disadvantages of DBMS?
- 9) Difference between software and hardware?
- 10) Difference between input and output devices?

UNIT – 4

SDLC

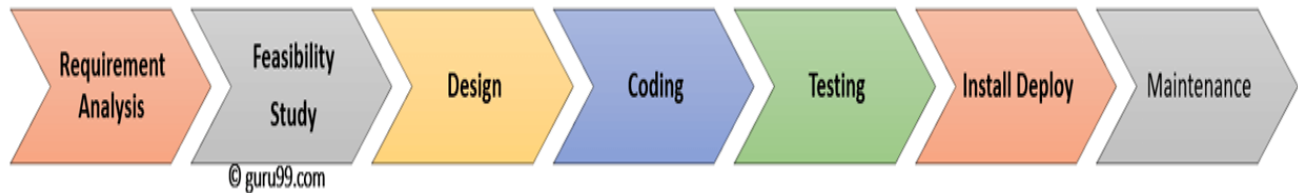
- The Software Development Life Cycle (SDLC) is a systematic process for building software that ensures the quality and correctness of the software built
- The full form SDLC is Software Development Life Cycle or Systems Development Life Cycle.
- SDLC in software engineering provides a framework for a standard set of activities and deliverables
- The senior team members conduct the requirement analysis phase
- SDLC in software testing consists of a detailed plan which explains how to plan, build, and maintain specific software

Importance of SDLC

- It offers a basis for project planning, scheduling, and estimating
- Provides a framework for a standard set of activities and deliverables
- It is a mechanism for project tracking and control
- Increases visibility of project planning to all involved stakeholders of the development process
- Increased and enhance development speed
- Improved client relations
- Helps you to decrease project risk and project management plan overhead

SDLC Phases

The entire SDLC process divided into the following stages:



- Phase 1: Requirement collection and analysis
- Phase 2: Feasibility study:
- Phase 3: Design:
- Phase 4: Coding:
- Phase 5: Testing:
- Phase 6: Installation/Deployment:
- Phase 7: Maintenance:

Phase 1: Requirement collection and analysis:

The requirement is the first stage in the SDLC process. It is conducted by the senior team members with inputs from all the stakeholders and domain experts in the industry. Planning for the quality assurance requirements and recognition of the risks involved is also done at this stage.

This stage gives a clearer picture of the scope of the entire project and the anticipated issues, opportunities, and directives which triggered the project.

Requirements Gathering stage need teams to get detailed and precise requirements. This helps companies to finalize the necessary timeline to finish the work of that system.

Phase 2: Feasibility study:

Once the requirement analysis phase is completed the next sdlc step is to define and document software needs. This process conducted with the help of 'Software Requirement Specification' document also known as 'SRS' document. It includes everything which should be designed and developed during the project life cycle.

There are mainly five types of feasibilities checks:

- **Economic:** Can we complete the project within the budget or not?
- **Legal:** Can we handle this project as cyber law and other regulatory framework/compliances.
- **Operation feasibility:** Can we create operations which is expected by the client?
- **Technical:** Need to check whether the current computer system can support the software
- **Schedule:** Decide that the project can be completed within the given schedule or not.

Phase 3: Design:

In this third phase, the system and software design documents are prepared as per the requirement specification document. This helps define overall system architecture.

This design phase serves as input for the next phase of the model.

There are two kinds of design documents developed in this phase:

High-Level Design (HLD)

- Brief description and name of each module
- An outline about the functionality of every module
- Interface relationship and dependencies between modules
- Database tables identified along with their key elements
- Complete architecture diagrams along with technology details

Low-Level Design(LLD)

- Functional logic of the modules
- Database tables, which include type and size
- Complete detail of the interface
- Addresses all types of dependency issues
- Listing of error messages
- Complete input and outputs for every module

Phase 4: Coding:

Once the system design phase is over, the next phase is coding. In this phase, developers start build the entire system by writing code using the chosen programming language. In the coding phase, tasks are divided into units or modules and assigned to the various developers. It is the longest phase of the Software Development Life Cycle process.

In this phase, Developer needs to follow certain predefined coding guidelines. They also need to use programming tools like compiler, interpreters, debugger to generate and implement the code.

Phase 5: Testing:

Once the software is complete, and it is deployed in the testing environment. The testing team starts testing the functionality of the entire system. This is done to verify that the entire application works according to the customer requirement.

During this phase, QA and testing team may find some bugs/defects which they communicate to developers. The development team fixes the bug and send back to QA for a re-test. This process continues until the software is bug-free, stable, and working according to the business needs of that system.

Phase 6: Installation/Deployment:

Once the software testing phase is over and no bugs or errors left in the system then the final deployment process starts. Based on the feedback given by the project manager, the final software is released and checked for deployment issues if any.

Phase 7: Maintenance:

Once the system is deployed, and customers start using the developed system, following 3 activities occur

- Bug fixing - bugs are reported because of some scenarios which are not tested at all
- Upgrade - Upgrading the application to the newer versions of the Software
- Enhancement - Adding some new features into the existing software

The main focus of this SDLC phase is to ensure that needs continue to be met and that the system continues to perform as per the specification mentioned in the first phase.

Popular SDLC models

Here, are some most important phases of Software Development Life Cycle (SDLC):

Waterfall model in SDLC

The waterfall is a widely accepted SDLC model. In this approach, the whole process of the software development is divided into various phases of SDLC. In this SDLC model, the outcome of one phase acts as the input for the next phase.

This SDLC model is documentation-intensive, with earlier phases documenting what need be performed in the subsequent phases.

Incremental Model in SDLC

The incremental model is not a separate model. It is essentially a series of waterfall cycles. The requirements are divided into groups at the start of the project. For each group, the SDLC model is followed to develop software. The SDLC process is repeated, with each release adding more functionality until all requirements are met. In this method, every cycle act as the maintenance phase for the previous software release. Modification to the incremental model allows development cycles to overlap. After that subsequent cycle may begin before the previous cycle is complete.

V-Model in SDLC

In this type of SDLC model testing and the development, the phase is planned in parallel. So, there are verification phases of sdlc on the side and the validation phase on the other side. V-Model joins by Coding phase.

Agile Model in SDLC

Agile methodology is a practice which promotes continue interaction of development and testing during the SDLC process of any project. In the Agile method, the entire project is divided into small incremental builds. All of these builds are provided in iterations, and each iteration lasts from one to three weeks.

Spiral Model

The spiral model is a risk-driven process model. This SDLC model helps the team to adopt elements of one or more process models like a waterfall, incremental, waterfall, etc.

This model adopts the best features of the prototyping model and the waterfall model. The spiral methodology is a combination of rapid prototyping and concurrency in design and development activities.

Big bang model

Big bang model is focusing on all types of resources in software development and coding, with no or very little planning. The requirements are understood and implemented when they come.

This model works best for small projects with smaller size development team which are working together. It is also useful for academic software development projects. It is an ideal model where requirements are either unknown or final release date is not given.

Different Functional Information Systems

Functional Information System is based on the various business functions such as Production, Marketing, Finance and Personnel etc. These departments or functions are known as functional areas of business. Each functional area requires applications to perform all information processing related to the function. The popular functional areas of the business organization are:

- Financial Information System
- Marketing Information System
- Production/Marketing Information System
- Human Resource Information System

Financial Information System

Financial information system is a sub-system of organizational management information system. This sub-system supports the decision-making process of financial functions at the level of an organization.

Marketing Information System

This sub-system of management information system provides information about various functions of the marketing system of an organization. Marketing is another functional area of the business organization, which is engaged in marketing (selling) of its products to its customers.

Important functions of the marketing process include the following.

- The marketing identification function
- The purchase motivation function.
- The product adjustment function
- The physical distribution function

- The communication function
- The transaction function
- The post-transaction function

Production /manufacturing Information System

Manufacturing or production information system provides information on production /operation activities of an organization and thus facilitates the decision-making process of production managers of an organization. The main decisions to be taken in manufacturing system are:

- Product Design

Human Resources Information System

This functional information system supports the functions of human resource management of an organization. The human resource management function, in its narrow sense, it also known as personnel management .The function involves:

- Manpower planning.
- Staffing
- Training and development
- Performance evaluation, and
- Separation activities

Executive information system

An Executive information system (EIS), also known as an Executive support system (ESS), is a type of management support system that facilitates and supports senior executive information and decision-making needs. It provides easy access to internal and external information relevant to organizational goals. It is commonly considered a specialized form of decision support system (DSS).

Materials management information system (MMIS)

Materials management information system (MMIS) is a software suite packaged as an integrated offering to meet materials management, human-resources and back-office needs. At a minimum, MMISs should be designed to interface readily with other mission-critical information systems in the enterprise.

UNIT -5

DECISION SUPPORT SYSTEM

Meaning: a decision support system (dss) is a computer based applications that collects , organizes and analyses business data to facilitate quality business decision- making for management, operations and planning.

Definition: according to scott morton , dss are interactive computer- based system's, which help decision makers utilize data and models to solve unstructured problem's.

CHARACTERISTICS / FEATURES OF DSS:

- Support for managers at various managerial levels, ranging from top executive to line managers.
- Support for individuals and groups. Less structured problems often requires the involvement of several individuals from different departments and organization level.
- Support for interdependent or sequential decisions.
- Support for intelligence, design, choice, and implementation.
- Support for variety of decision processes and styles.

COMPONENTS OF DSS:

1) MODEL MANAGEMENT SYSTEM:

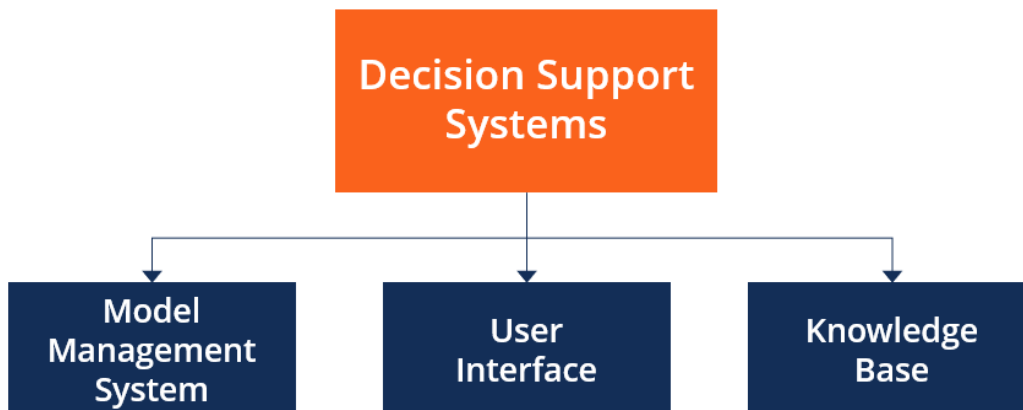
The model management system stores models that managers can use in decision-making. The models are used in decision-making regarding the financial health of the organization and forecasting demand for a good or service

2. USER INTERFACE

The user interface includes tools that help the end-user of a dss to navigate through the system.

3. KNOWLEDGE BASE

The knowledge base include information from internal as well as external sources also.



TYPES OF DECISION SUPPORT SYSTEM

1) COMMUNICATION-DRIVEN:

Allows companies to support tasks that require more than one person to work on the task. It includes integrated tools such as microsoft share point workspace and google docs.

2) MODEL-DRIVEN:

Allows access to and the management of financial, organizational, and statistical models. Data is collected and parameters are determined using the information provided by users.

3) KNOWLEDGE-DRIVEN:

Provides factual and specialized solutions to situations by using stored facts, procedures, rules, or interactive decision-making structure like flowcharts.

4) DOCUMENT-DRIVEN:

Manages unstructured information in different electronic formats.

5) DATA-DRIVEN:

Helps companies to store and analyse internal and external data.

ADVANTAGES AND DISADVANTAGES OF DSS:

ADVANTAGES:

- 1) A decision support system increases the speed and efficiency of decision making activities. It is possible, as a dss can collect and analyse real-time data.
- 2) It promotes training within the organization, as specific skills must be developed to implement and run a dss within a organization.
- 3) It automates monotonous managerial process, which means more of the managers time can be spent on decision-making.
- 4) It improves interpersonal communication within the organization.

DISADVANTAGES:

- 1) The cost to develop and implement a dss is a huge capital investment, which makes it less accessible to smaller organization.
- 2) A company can develop a dependence on a dss, as it is integrated into daily decision-making processes to improve efficiency and speed.
- 3) A dss may lead to information overload because an information system tends to consider all aspects of a problem. It creates a dilemma for end-users, as they are left with multiple choices.
- 4) Implementation of a dss can cause fear and backlash from lower-level employee. It is because many of them are not COMFORTABLE WITH NEW TECHNOLOGY AND ARE AFRAID OF LOSING THEIR JOBS TO TECHNOLOGY.

GROUP DECISION SUPPORT SYSTEM:

MEANING:

A group decision support system (gdss) is an interactive computer-based system that facilitates a number of decision-makers (working together in a group) in finding solutions to problems that are unstructured in nature. They are designed in such a way that they take input from multiple users interacting simultaneously with the systems to arrive at a decision as a group.

COMPONENTS OF GROUP DECISION SUPPORT SYSTEM:

1) HARDWARE:

It includes electronic hardware like the computer, equipment used for networking, electronic display boards and audiovisual equipment. It also includes the conference facility, including the physical set up – the room, the tables, and the chairs – laid out in such a manner that they can support group discussion and teamwork.

2) SOFTWARE TOOLS:

It includes various tools and techniques, such as electronic questionnaires, electronic brainstorming tools, idea organizers, tools for setting priority, policy formation tool, etc. The use of these software tools in a group meeting helps the group decision-makers to plan, organize ideas, gather information, establish priorities, take decisions and document the meeting proceedings. As a result, meetings become more productive.

3) PEOPLE:

It comprises the members participating in the meeting, trained facilitator who helps with the proceedings of the meeting, and an expert staff to support the hardware and software. The gdss components together provide a favorable environment for carrying out group meetings.

FEATURES / CHARACTERISTICS OF GDSS:

1) EASE TO USE:

It consists of an interactive interface that makes working with gdss simple and easy.

2) BETTER DECISION MAKING:

It provides the conference room setting and various software tools that facilitates users at different locations to make decisions as a group resulting in better decisions.

3) EMPHASIS ON SEMI- STRUCTURED AND UNSTRUCTURED DECISIONS:

It provides important information that assists middle and higher level management in making semi-structured and unstructured decisions.

4) SPECIFIC AND GENERAL SUPPORT:

The facilitator controls the different phases of the group decision support system meeting (idea generation, discussion, voting, and vote counting etc)

5) SUPPORTS ALL PHRASES OF DECISION MAKING:

It can support all the four phases of decision making, intelligence, design, choice and implementation.

6) SUPPORTS POSITIVE GROUP BEHAVIOR:

In a group meeting, as participants can share their ideas more openly without the fear of being criticized, they display more positive group behavior towards the subject matter of the meeting.

BUSINESS PROCESS OUTSOURCING:

MEANING:

Business process outsourcing (bpo) is a type of outsourcing wherein a third-party service provider is employed to carry out one or more business functions in a company. The third party is responsible for carrying out all operations related to the business function.

DEFINITION:

Bpo may be defined as a practice that implies delegating a part of the company's business processes to an outer third-party contractor.

Advantages and disadvantages of bpo:

ADVANTAGES:

1) FLEXIBILITY

Outsourcing non-core activities to a bpo allows a company to be far more flexible.

2) COST-EFFECTIVE

Outsourcing some of the business processes and activities can be very cost effective for the client company.

3) SPEED

One of the biggest advantages of bpo is that they increase the speed of the business processes outsourced to them. They have a very good response time and the clients can focus on the core activities.

4) SKILLED MANPOWER

If you outsource your supply chain management, rest assured your supply chain will be handled by skilled supply chain managers who are experts in their field.

DISADVANTAGES:

1) COMMUNICATION PROBLEM

There can be communication gaps between client and vendor companies due to various reasons and also misunderstandings and missed messages.

2) DIFFERENT TIME ZONES

The client and the vendor can operate in two different time zones that are far apart. The difference in time can create any problem like online meetings, communication etc

3) LOSS OF CONTROL

Due to communication errors, time differences etc the client company can at times lose control of the project.

IMPORTANT QUESTIONS

- 1) Define dss?
- 2) Explain decision support system with characteristics?
- 3) Components of decision support system?
- 4) Define bpo?

