Chapter 1 : Information System

1. What is an Information System? How is it different from Information technology? Discuss different components of information system?(**2069 Bhadra,2070 Bhadra,2071 Bhadra,2074 Bhadra**)

Solution: An information system is an organized set of components for collecting, transmitting, storing and processing data in order to deliver information for action/decision.

Information System	Information Technology
It is a software and hardware used to organize and analyze data.	It is a sub-system of information system.
It is generally composed of four components i.e. task, people, structure and technology.	It is generally composed of three components i.e. hardware, software and Networks and data.
It works as a bridge between technology and people.	It helps people to utilize and make sense of that system.
It simply incorporates technology, people and processes involved with information.	It designs , implement, maintain and support information or data within information system.
It mainly focuses on providing support to operations, management and decision-making.	It mainly focuses on improving productivity and efficiency using technology.

Generally, there are 4 major componenets of any information system. They are:

1. Hardware
2. Software
3. Databases
4. Telecommunications

Other than the above 4, sometimes **human resources** and **procedures** are also included as major componenets of an Information System.

Hardware:
An information system needs various hardwares such as: microcomputers,minicomputers, mainframes, central processors, memory hierarchy, input and output devices and many more. An information system, as per its processing and memory needs, will require several processing units, backup devices, storage devices and so on.

Software:
An information system also needs systems softwares that can manage the resources of the computer systems. It will require operating system to manage every operations and provide an interface through which system's users can deploy and interact with the resources. Similarly, it will need many different types of application softwares that can assist the user of the system in their work.

Databases:
Data is very important for an information system as data is soul for any information system. The system uses the data it collects to process it and create information which is use for different actions. Databases are the organized collections of interrelated data used by application softwares which are managed by Database Management Systems(DBMS) and shared by multiple applications.

Telecommunications:
Telecommunications are the means of electronic transmission of information over distances. In today's modern world, every thing and every devices are connected with each other and for that many sytems are made of computer networks that allows an information system to have access to resources all over the network.

2. Define Information System. Explain the types of IS used in an organization.(**2070 Bhadra**)

Solution: The definition of Information System is already answered.
In an organization there are different types Information System(IS) that can be used, some of them are as follows:

- Transaction Processing Systems(TPS)
- Management Information Systems(MIS)
- Decision Support Systems(DSS)
- Executive Information Systems(EIS)
- Office Information Systems(OIS)
- Professional Support Systems

Transaction Processing Systems:
A transaction is an elementary activity conducted during business operations. A Transaction Processing Systems(TPS) is an information system that collects data related to such transactions, processes such transaction, manages them, overlook them, secure them and so on to make smooth operating of the organization. A TPS may work either in batch mode, processing accumulated transactions at a single time later on, or in on-line mode, processing incoming transactions immediately. Today, TPS work mainly in on0line mode.

Management Information Systems
Management Information System as name suggests has an objective to provide routine information to managers. MIS are used to control and manage the flow of information inside an organization. Managers recieve performance reports within their specific areas of responsibility. These reports provide internal information ragher than spanning corporate boundaries. Such system produce reports on the past and present rather than projecting the future which helps in decision making process.

Decision Support Systems
Another major part of an Information System is to help an organization to make certain decisions. A decision support systems directly support a decision-making session. Such systems facilitate a dialog between the user, who is considering alternative problem solutions and the system that provides built-in models and access to databases.

Executive Information Systems
This Executive Information System(EIS) is mainly to support the top level management by conveniently displayed summarized information, customized for them. Such system make a variety of internal and external information readily available in a highly summarized and convenient form. It is used to monitor performance of the organization, access business environment and develop strategic directions for the company's future.

Office Information Systems
The Office Information System(OIS) facilitate communication between the members of an organization and between the organization and its environment. It is used to help manage documents represented in an electronic format,handle messages, such as e-mail, facsimile and voice mail, handle teleconferencing and electronic meetings and so on.

Professional Support Systems
Profession Support Systems help in tasks specific to various professsions. As both organization and individual experience with information systems grow, more and more specialized categories of professional support systems emerge.

3. What are different quality requirements that an information system should possess?(**2071 Bhadra**)

Solution: An information system should possess various quality requirements to ensure that it is reliable, effiecient, secure and meets the needs of its users.Some of the key requirements that an information system should possess:

- Functionality: The system should be able to perfoem all the required functions accurately and effiicciently and should meet user's requirements and expectations.
- Reliability : The system should be able to operate consistently and reliably over time, with minimal downtime or errors. It should also be able to recover from any failures or errors that do occur.
- Usability : The system should be easy to use and understand, with an intuitive user interface and clear instructions. It should also be accessible to people with disabilities.
- Efficiency : The system should be able to operate efficiently and use resources (e.g., memory, processing power, storage) effectively, with minimal waste or inefficiency.
- Maintainability : The system should be easy to maintain and update, with clear documentation and well-organized code.
- Scalability : The system should be able to accommodate increasing amounts of data or users, without sacrificing performance or stability.
- Security : The system should be designed with security in mind, with strong access controls, encryption, and other measures to protect sensitive data and prevent unauthorized access or attacks.
- Compatibility : The system should be able to work with other systems and applications, and should be designed with interoperability in mind.

4. Discuss difrerent classification of information system with regard to different level of management? Provide suitable examples to support your answer.

Solution: Information System can be classified into different types based on level of management they serve; mainly there are three levels of management they are: operational, tactical and strategic. Each level of management requires different types of information system to suppoert decision-making and management activities. The Information System for three levels of corporate management are:

- Operational Information System : These systems are used by lower level management like supervisors of small working units that perform day-to-day operations and activities. The systems are used to plan and control short-term budgets and schedules. For example: Transaction Processing Systems(TPS),Manufacturing Execution Systems(MES) etc.
- Tactical Information Systems : These systems are used by middle managers responsible for acquisition and allocation of resources for projects according to tactical plans. They are used to analyze data, identify trends and make forecasts. For example : Management Information System(MIS), Decision Support System(DSS) etc.
- Strategic Information Systems : These systems are for top corporate executives and corporate boards responsible for setting and monitoring long-term directions for the firm. These systems are used to analyza market trends, identify competitive threats and develop new business models. For Example: Executive Support Systems(ESS), Enterprise Resource Planning(ERP) etc.

5. Why do we need Inforrnation Systems? Explain the relationship between balanced scorecard and Information System.(**2073 Bhadra**)

Solution: In today's digital world, information systems are very much essential for the operation and success of an organization. Some of the main reasons for the need of information systems are as follows:

- The informations systems provide accurate, relevent and timely data that can be used in decision-making process thus improving the decision taken by the organization.
- Using information system can help in enhancing efficiency and productivity of the work by automating many routine tasks and can also decrease the margin of error.
- Information system can provide tools for collaboration and communication inside the organization as well outside the organization.
- Customer service is a major part for any organization and information system helps them in providing the better customer services and establish better communication between customers and organization.
- Information system provide tools and infrastructure needed for organizations to operate globally by using global supply chain management systems and international communication networks.

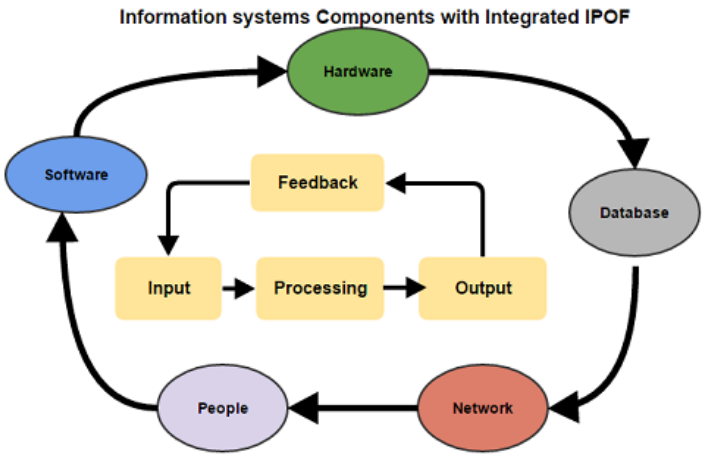
The balanced scorecard is a management framework that helps organizations and companies align their strategic objectives with their operational activities. It helps companies in identifying and improving their internal operations which eventually effect their external outcomes. It provides a way to measure and manage performance of the company across four key perspectives : financial, customer, internal business and processes, and learning and growth. For implementing and supporting such framework, Information System(IS) play a very important role.

As by their definition, information systems are used to collect, transmit and process data. So, for a balanced scorecard information systems are used to collect data and process them across all four persectives. For example, financial data such as revenues, costs and losses can be collected from accounting systems, customer data such as satisfactions and feedbacks can be collected from CRMs, ERPs can be used for internal business process data collections and so on. Information systems are not only used to collect such data but also play an important role in analyzing and reporting on the collected data for each perspective of the Balanced Scorecard. It also helps in visual representation and user interface with the data. Furthermore, the information systems like Decision Support Systems(DSS) helps managers to draw informed decisions and conclusions and adjust their strategies. The information systems also help companies to align their operations with their objectives by providing real-time data on key performance indicators(KPI) and progress reports.

In nutshell, the balanced scorecards and Information Systems share a very inclusive realtionship. The balanced scorecard haveily relies on Information systems to collect, process, analyzr and report on various performance data across multiple perspectives.

6. Explain Information System Architecture. List different types of Information System.(**2073 Magh, 2074 Bhadra**)

Solution: An information systems architecture provides a unifying framework into which various people with different perspectives can organize and view the fundamental building blocks of information systems. It includes hardware, softwae, databases and networks that are used to collect, store, process and distribute inforamtion within an organization. The information system architecture provides a framework for designing and implementing an organization's information system about what the IS must achieve and how IS must be used. It helps to ensure that all components of the system work together seamlessly to achieve the organization's goals and objectives and make the system reliable, secure and efficient.



Different types of Information Systems has already been listed down previously.

7. Some people say,'Information is always costlier than hardware'. Do you agree or disagree? In any case justiff your argument, providing some relevant example too.(**2075 Bhadra**)

Solution: The above statement that "Information is always costlier than hardware", in my opinion, may not always be true but most of the time is. Information, based on its importance and the effect it can have on the decision making level, can easily be costlier than any hardware for an organization. The value of an information is often derived from the insights and analysis that can be gained from it and in modern day's highly competitive world, any information, any data that can give a business, an organization, an edge in the competition will fetch a lot of value. Let us imagine a scenario, a business wants to improve its sales performance. It goes to the market and buy every latest hardware such as servers, computers, networking devices, storage devices and even hire people and everything in order to store and process sales data. However, the value of data is limited if the business does not have the right information to make informed decision based on the sales data.

To extract value from this data, the business needs to invest in information systems that can analyze the data and provide insights into sales performance. This may include software for data mining, business intelligence, and predictive analytics. While the cost of the hardware may be significant, the value of the information derived from it can be even higher, making the information costlier than the hardware.

8. "Balanced Scorecard is the management system that focuses on big-picture strategic goals and helps organizations to choose the right things to measure so that they can reach those goals". How balanced scorecard benefits organization to reach their goal? Explain this by taking examples of any organization. Also explain the four perspective of balanced scorecard.

Solution: The balanced scorecard is a management system that aims to help organizations to align their strategic goals with their operational activities by measuring performances of the organization across 4 major perspectives: financial, customer, internal business processes and learning and growth. The Balanced Scorecards help the top level management to focus on big-picture strategic goals and drive better decision making, improve performance and ultimately, achieve goals set by the organization.

In order to explain the benefits of balanced scorecard to an organization to rach their goals let us take an example of Coca-Cola. Coca-Cola, one of the largest beverages comapnay in the world, uses balanced scorecard to align its global business strategy with its local operational activities, track prgoress towards its strategic goals and make effective decisions. The company oversees many key perfomance indices(KPIs) to measure performance across all four perspectives of balanced scorecard.

Form financial perspective the Coca-Cola company measures financial performance by looking at various data such as annual revenues, operating costs, returns on investments and so on. Similarly from customer perspectives, Coca-cola measures customer's satisfaction from customer loyalty data. It uses supply chain efficiency data to look perfomance of internal business processes and uses employee enegagement and training hours data to measure learning and growth perspective of the organizaiton. By looking at such perfoemance indices the company track its financial performance ensuring it meets its financial targets for that week,month or year, undestand its customers' needs annd identify areas for improvement, optimizes its internal operations to improve efficiency and finally, invest in its employees so that they are up to date with skills and knowledge. This way balanced score card benefits an organization to rach their goal.