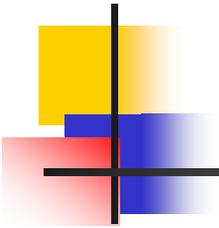
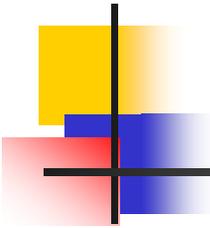


Information Systems



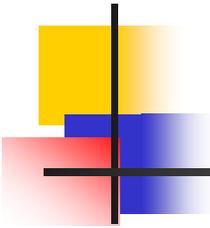
Objectives

- What is an Information System (IS) +
- Classification of Information Systems +
- Evolution of Information Systems +
- Information System Management +
- Performance Requirements of ISs +



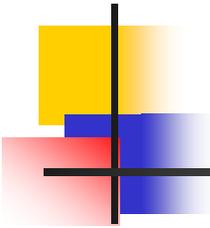
- What is an Information System

- An information system is a collection of components that collect, process, store, analyze, and disseminate information for a specific purpose.
- An information system can be
 - Manual
 - Computer based
 - Partially manual and partially computer based
- Information systems are composed of:
 - Hardware
 - Software
 - Databases
 - Network
 - Procedures
 - People



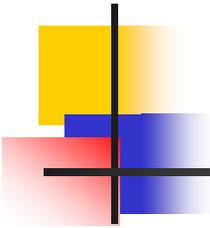
- Classification of Information Systems

- Various types of ISs exist around us. These can be classified in several ways. The classification may help in identifying different systems, planning new systems, and planning integration of existing systems
- Classification of IS can be according to:
 - **Organizational levels:** E.g. Departmental IS, enterprise IS
 - **Functional areas:** E.g. Manufacturing IS, accounting IS
 - **Support provided by the system:** E.g. Transaction Processing system, decision support system
 - **Architecture:** Mainframe-based IS, stand-alone PC-based IS, client-server based IS, distributed IS



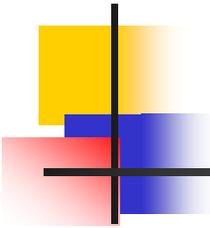
- Evolution of Information Systems

- **1950s:** Transaction processing systems.
- **1960s:** Management information systems. Office automation systems.
- **1970s:** Decision support systems.
- **1980s:** Executive information systems. Expert Systems.
- **1990s:** Integration of computer-based Information Systems.



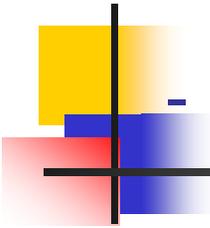
- Information Systems Management ...

- The most important roles of an information system in an organization are to:
 - Increase productivity
 - Improve quality
 - Improve decision making process
- Some examples of Information systems around us are:
 - Student information system at KFUPM
 - Motor vehicle registration system
 - Air line reservation system
- Trend in information systems technology is **Globalization**.
- The infrastructure, application, personnel, and information system related resources need to be managed. Managing these resources is referred to as **information management**.



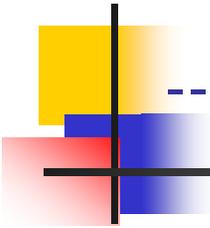
... - Information Systems Management

- The functions of the unit responsible for the information management of an organization (like ITC at KFUPM) include:
 - Strategic information planning
 - System building and maintenance
 - Change management
 - Managing day-to-day computer and communication operations.
 - Information management advisory service



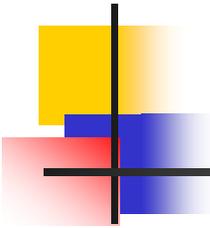
- Performance Requirements of Information Systems

- Normally when the developing of an information system is complete, system performance tests are carried out to ensure that the developed system meets the performance requirements.
- It expected that a developed information system should meet the defined
 - efficiency requirement and
 - effectiveness requirement.



-- Efficiency Requirements of Information Systems

- Efficiency requirements of an information system are defined using time-based criteria such as:
 - **Response time** requirements specify desired or maximum allowable time limits for software responses to queries and updates.
 - **Throughput** requirements specify the desired or minimum number of queries and transactions that must be processed per minute or hour.



-- Effectiveness requirements of an information system

- Effectiveness requirements of an information system are defined using relevance criteria such as:
 - **Precision:** which is the percentage of retrieved information that is relevant to the query.
 - **Recall:** which is the percentage of the relevant data in the database that are retrieved in response to a query.
- Precision and recall for database that contain numerical and character data should be 100%. That is all the data relevant to the query must be retrieved every time when the query is executed. But these measures for textual database like the ones used in the library can be less than 100%.