

System Analysis and Design

Presented by

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Lecture 1

computer application

- *A computer application* is a computer software program that executes on a computing device to carry out a specific function or set of related functions. Sometimes, computer application is shortened to app (such as an iPhone app or a Facebook app).

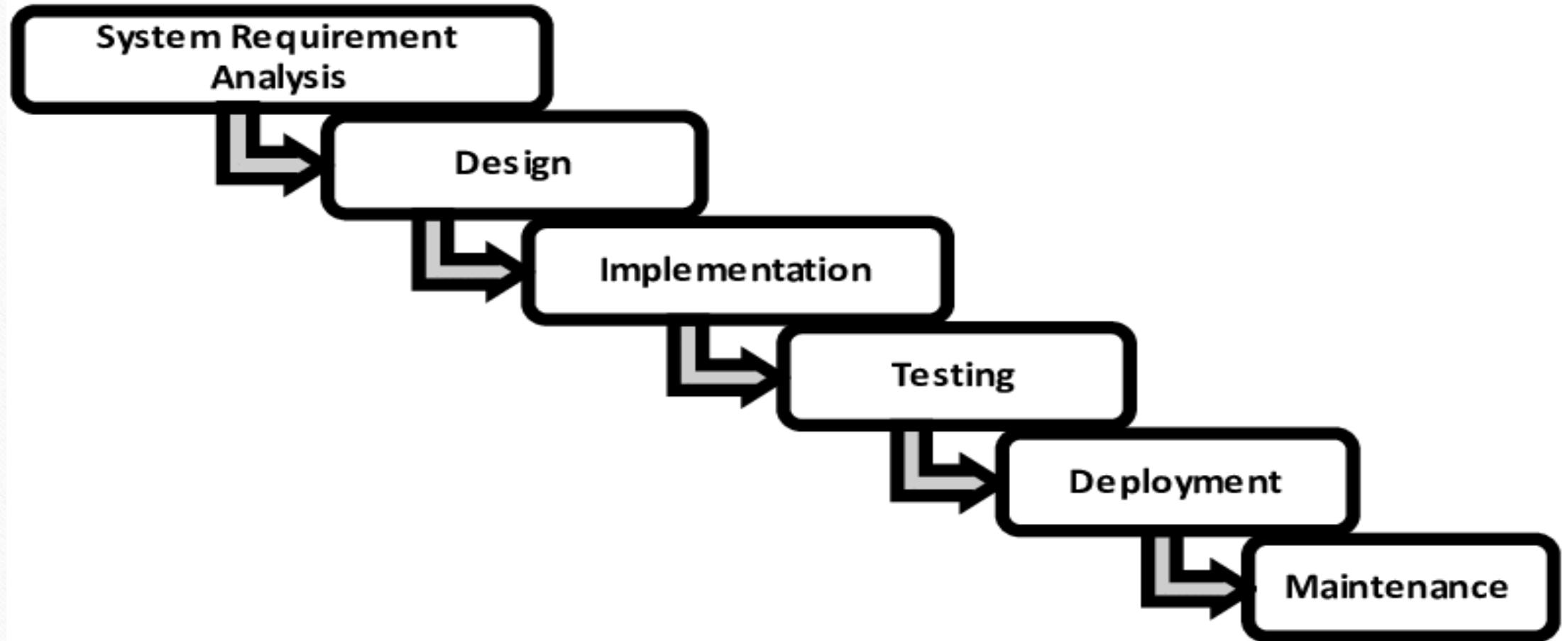
information system

- An *information system* is a set of interrelated computer components that collects, processes, stores (usually in a database), and provides as output the information needed to complete business tasks. Although these terms are sometimes used synonymously, an application usually refers to only the computer software involved, whereas an information system may include the software, the database, and even the related manual processes.

What is the software Development Life Cycle (SDLC)?

- Software Development Life Cycle (SDLC) is a framework that defines the steps involved in the development of software at each phase. It covers the detailed plan for building, deploying and maintaining the software.
- SDLC defines the complete cycle of development i.e. all the tasks involved in planning, creating, testing, and deploying a Software Product.
- The life cycle defines a methodology for improving the quality of software and the overall development process

Phases of SDLC



The importance of software analysis and design

providing the tools and techniques to you, the developer, so you can understand the need (business need), capture the vision, define a solution, communicate the vision and the solution, build the solution and direct others in building the solution, confirm that the solution meets the need, and launch the solution application.

Difference between System analysis and design

- **System analysis:** is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components. It is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

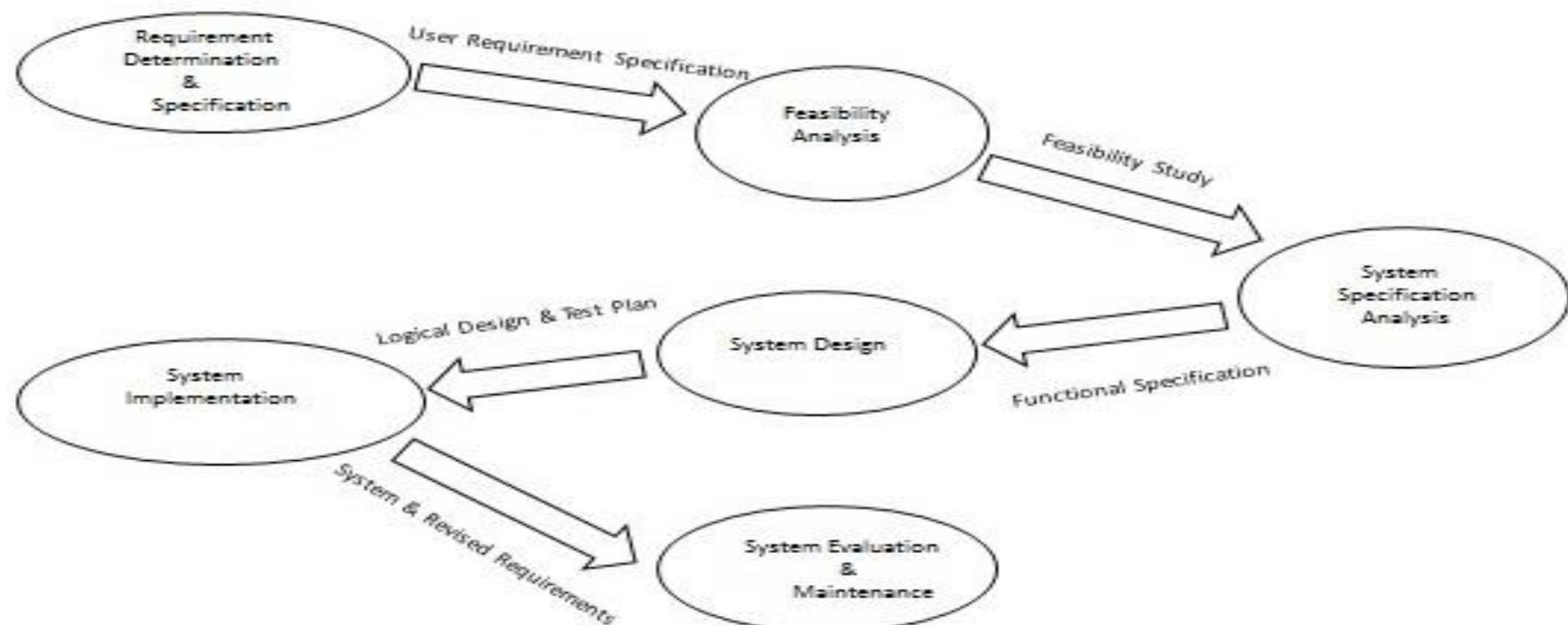
Analysis specifies what the system should do.

Difference between System analysis and design

- **Systems Design:** It is a process of planning a new business system or replacing an existing system by defining its components or modules to satisfy the specific requirements. Before planning, you need to understand the old system thoroughly and determine how computers can best be used in order to operate efficiently.

System Design focuses on how to accomplish the objective of the system

Life Cycle of System Analysis and Design



System Analysis and Specification

activities

- Gather, analyze, and validate the information.
- Define the requirements and prototypes for new system.
- Evaluate the alternatives and prioritize the requirements.
- Examine the information needs of end-user and enhances the system goal.
- A Software Requirement Specification (SRS) document, which specifies the software, hardware, functional, and network requirements of the system is prepared at the end of this phase.

system analysis stakeholders

- The stakeholders whose conducts in system analysis phase is a group of people are identifying before the project begins; grouping them according to their levels of participation, interest, and influence in the project; and determining how best to involve and communicate each of these stakeholder groups throughout.

The system analyst

- The system analyst is a person who is thoroughly aware of the system and guides the system development project by giving proper directions. He is an expert having technical and interpersonal skills to carry out development tasks required at each phase.
- He pursues to match the objectives of information system with the organization goal.

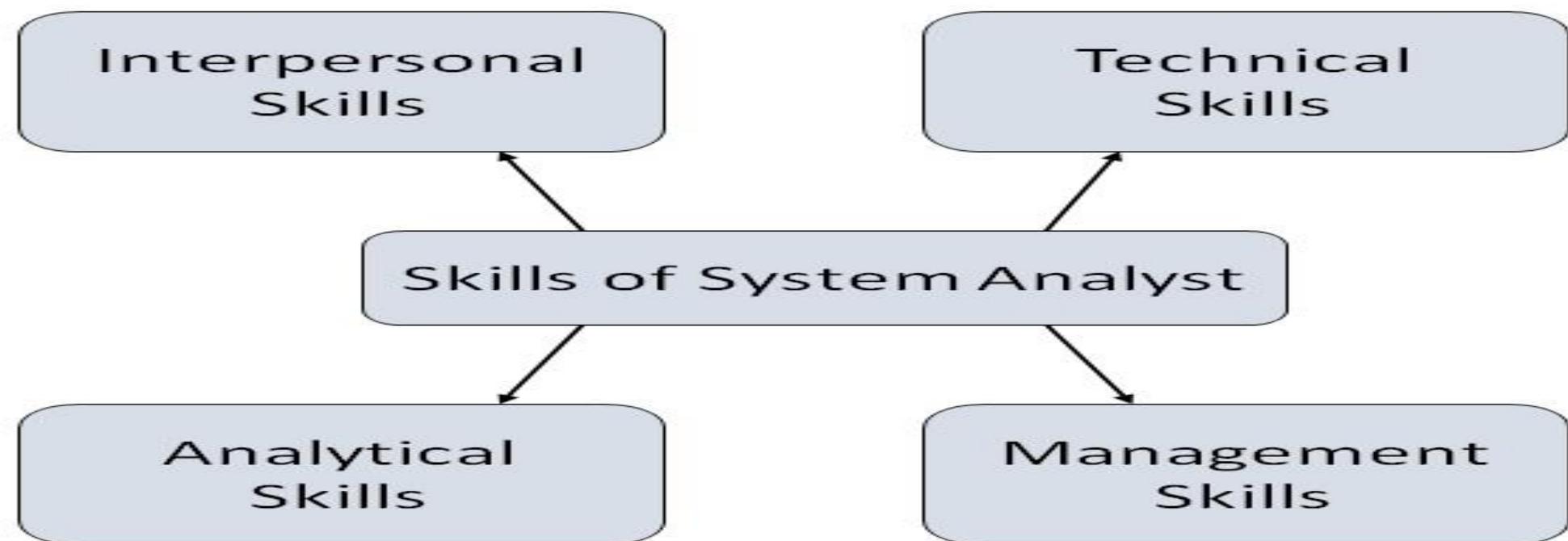
Roles of system analyst

- Defining and understanding the requirement of user through various Fact finding techniques.
- Prioritizing the requirements by obtaining user consensus.
- Gathering the facts or information and acquires the opinions of users.
- Maintains analysis and evaluation to arrive at appropriate system which is more user friendly.

Roles of system analyst

- Suggests many flexible alternative solutions, pick the best solution, and quantify cost and benefits.
- Draw certain specifications which are easily understood by users and programmer in precise and detailed form.
- Implemented the logical design of system which must be modular.
- Plan the periodicity for evaluation after it has been used for some time, and modify the system as needed.

Attributes of a Systems Analyst



Attributes of a Systems Analyst

Interpersonal Skills

- Interface with users and programmer.
- Facilitate groups and lead smaller teams.
- Managing expectations.
- Good understanding, communication, selling and teaching abilities.
- Motivator having the confidence to solve queries.

Attributes of a Systems Analyst

Analytical Skills

- System study and organizational knowledge
- Problem identification, problem analysis, and problem solving
- Sound commonsense
- Ability to access trade-off
- Curiosity to learn about new organization

Attributes of a Systems Analyst

Management Skills

- Understand users jargon and practices.
- Resource & project management.
- Change & risk management.
- Understand the management functions thoroughly.

Attributes of a Systems Analyst

Technical Skills

- Knowledge of computers and software.
- Keep abreast of modern development.
- Know of system design tools.
- Breadth knowledge about new technologies

System Analysis

“Requirement Determination”

- A *requirement* is a vital feature of a new system which may include processing or capturing of data, controlling the activities of business, producing information and supporting the management.
- *Requirements determination* involves studying the existing system and gathering details to find out what are the requirements, how it works, and where improvements should be made.

Types of Requirements

- **Business requirements** describe why the organization is undertaking the project. They state some benefits that the developing organization or its customers expect to receive from the product. Business requirements bring the project owner, stakeholders and the project team on the same objective. we consider the following business requirements.
- Problem Statement
- Project Constraints (Budget, Schedule, and Resources)
- Project Objectives
- Project Scope Statements
- The purpose of the business process analysis is to determine how the business process will work. It is often necessary to resolve deficiencies in the business process before trying to automate it.

Types of Requirements

User requirements: is a planning document that specifies *what* the software or system needs to do. It is written from the point of view of the end user and does not need to be technical or complicated. It is clear, unambiguous, well explained and concise. It helps the systems designer or software engineer fully understand a client's needs, and can be used to plan a timetable, estimate costs.

Types of Requirements

System requirements is a requirement at the system level that describes a function or the functions which the system as a whole should fulfill to satisfy the stakeholder needs and requirements. System requirements are expressed in an appropriate combination of textual statements, views, and non-functional requirements. System requirements express the levels of safety, security, reliability which will be necessary.

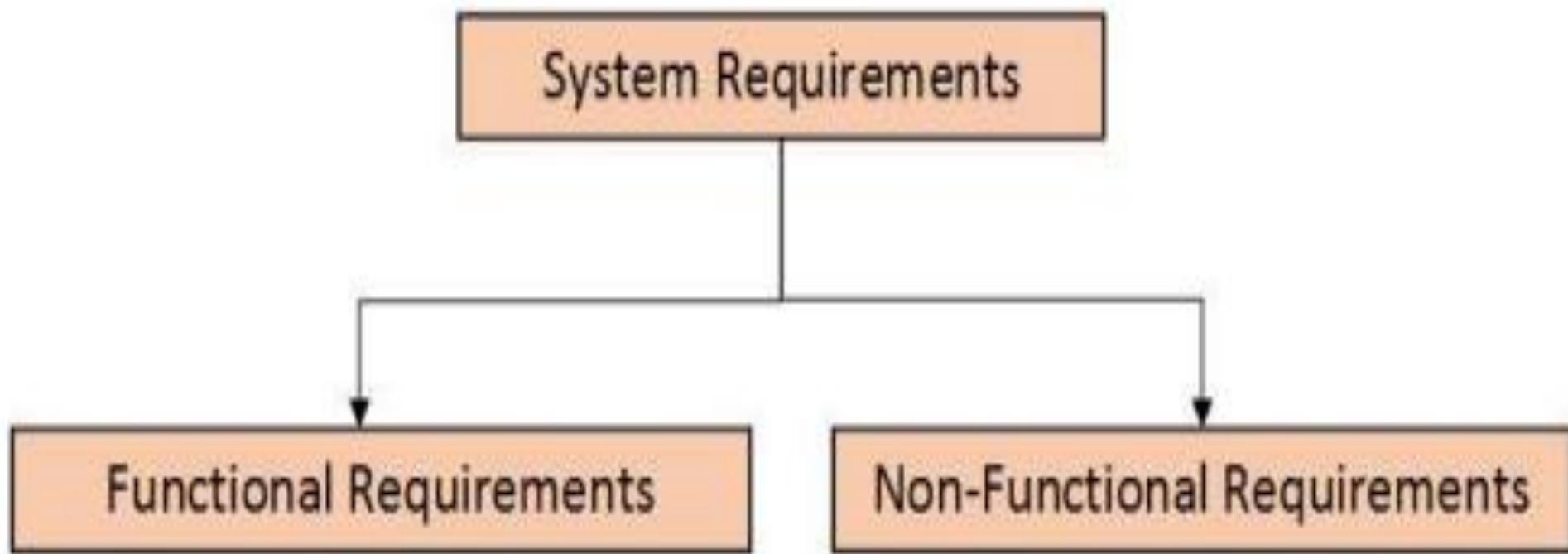
User requirements definition

1. The Mentcare system shall generate monthly management reports showing the cost of drugs prescribed by each clinic during that month.

System requirements specification

- 1.1 On the last working day of each month, a summary of the drugs prescribed, their cost and the prescribing clinics shall be generated.
- 1.2 The system shall generate the report for printing after 17.30 on the last working day of the month.
- 1.3 A report shall be created for each clinic and shall list the individual drug names, the total number of prescriptions, the number of doses prescribed and the total cost of the prescribed drugs.
- 1.4 If drugs are available in different dose units (e.g. 10mg, 20mg, etc.) separate reports shall be created for each dose unit.
- 1.5 Access to drug cost reports shall be restricted to authorized users as listed on a management access control list.

System Requirements



Functional and Non-Functional requirements

- **Functional requirements** are the activities that the system must perform (i.e., the business uses to which the system will be applied). Functional requirements are based on the procedures and rules that the organization uses to run its business. Sometimes, they are well documented and easy to identify and describe.
- **Non-functional requirements** are characteristics or constraints of the system other than those activities it must perform or support. It is not always easy to distinguish functional from nonfunctional requirements.

Major Activities in Requirement Determination

Requirements Anticipation

- It predicts the characteristics of system based on previous experience which include certain problems or features and requirements for a new system.
- It can lead to analysis of areas that would otherwise go unnoticed by inexperienced analyst. But if shortcuts are taken and bias is introduced in conducting the investigation, then requirement Anticipation can be half-baked.

Major Activities in Requirement Determination

- **Requirements Investigation**
- It is studying the current system and documenting its features for further analysis.
- It is at the heart of system analysis where analyst documenting and describing system features using fact-finding techniques, prototyping, and computer assisted tools.

Major Activities in Requirement Determination

- **Requirements Specifications**
- It includes the analysis of data which determine the requirement specification, description of features for new system, and specifying what information requirements will be provided.
- It includes analysis of factual data, identification of essential requirements, and selection of Requirement-fulfillment strategies.

Time for
Questions

Thank you!

