# System Analysis and Design

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## Class Rules

- You can do anything except:
  - Make noises (chatting, singing…)
- Feel free to interrupt me if you have questions .
- According to the university policy, taking attendance is needed.
  - **Important: you are required to have an 80% attendance to be able to seat for the final exam.**

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## Course Assessment

- Temporary according to the situation:
  - Final exam: 50%
  - Assignment: 20%, individually
  - Project: 30%, 2-3 members per group, report and presentation are required.
- **Important: cheating and plagiarism will get no marks.**

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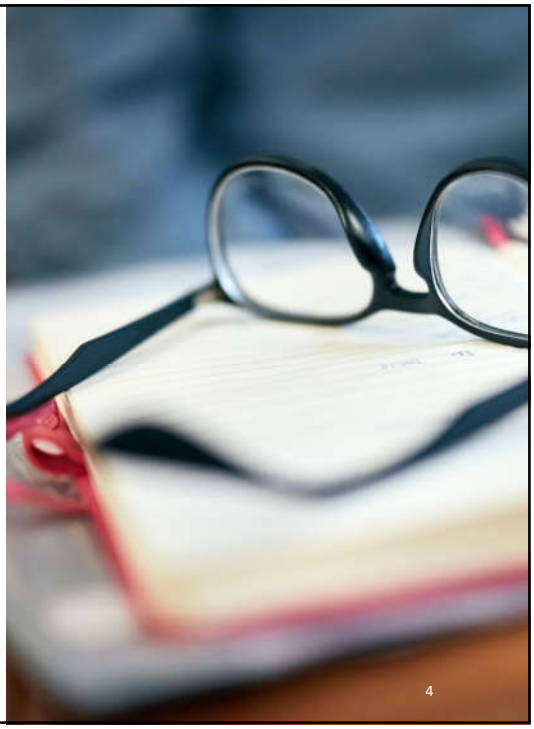
## A few suggestions….

- Your final grade is based on points – not on an accumulation of grades.
- You start the class with zero points and earn your way to your final grade
- If you have an issue or problem, communicate – send me an email
- If you know you're not going to meet the deadline for a quiz or assignment – email me BEFORE the deadline

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## System

- An organization may also be described as a system where all staff interact with each other to become as a functional unit.
- The organization also communicate with their clients to make a complete business system.
- All businesses system have varied objectives to be achieved.
- These systems have data and information to maintain.

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## System (Cont.)

- A system consist of components working together to make its objective achieve.
- Basic components of the system are:
  a. Resources
  b. Procedures/Rules
  c. Data/ Information
  d. Processes/Function

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## Resources

- System can be executed but its need resources.
- Resources such as hardware, software and manpower.
- We also need time and money to ensure the project can be completed.
- All resources must available when needed during project duration.
- Some resources might be shared with other ongoing project .

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## Procedures

- System must function according to procedures, or a set of rules define by the organization.
- By following the right standard of procedures, the system can achieve targeted objectives.
- Procedures will ensure that the system is in full compliance with the legislative requirements in the organization.

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## Data/Information

- Every system must have inputs and useful outputs.
- All these are data or information such as students' name, students' grade or result.

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## Processes

- Processes or functions are the operational component of the system.
- Feedback also important component in a system as it shall be used to improve the system

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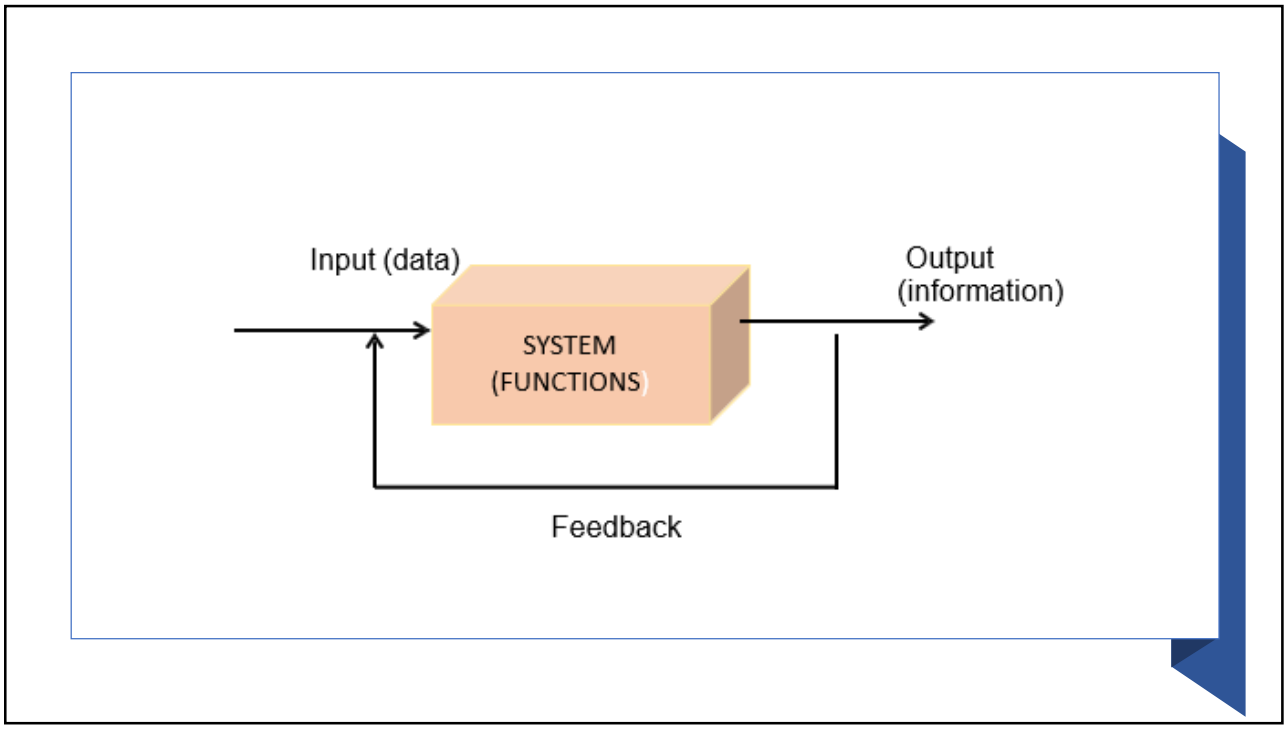


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## What Is An Information System?

- An information system is a collection of interrelated components that **collect, process and store**, and provide as **output** the information needed to complete a business task.

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## Examples of Information Systems

- Course registration system
- Online order system
- Online banking system

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## What Is System Analysis About?

- Understanding the goals and strategies of the business.
- Defining the information requirements that support those goals and strategies.
- It is not about programming.

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## System Analysis vs. System Design

| System Analysis: | System Design: |
| --- | --- |
| • Investigation of the problem and requirement rather than solution. | • A conceptual solution that fulfills the requirements, rather than implementation. |

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## System Analyst

- A business professional who uses analysis and design techniques to solve business problems using information technology.

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## Systems Analyst Responsibility

- Interact with many groups of people
  - Customers/ client
  - Technical people( network admins, programmers)
  - Businesspeople (steering committee, stakeholders)
  - Vendors  Consultants
- Variety of specialized roles
  - Dealing with people throughout  project management
  - Business-oriented
  - Knowledgeable in technical skill

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## Systems Analyst Attributes

- Problem solver
- Like challenge
- Must be knowledgeable of technology.
- The system analyst must be able to communicate in writing and orally.
- Must be a good listener and be able to react to what people say.
- Must be knowledgeable of business.

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# Systems Development Life Cycle (SDLC)

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## Software Development Life Cycle (SDLC)

- Software Development Life Cycle (SDLC) Model is a concept on standard and procedural to be followed when developing a system.
- Waterfall Model is among the first been introduced.
- Nowadays many SDLC model can be referred to.

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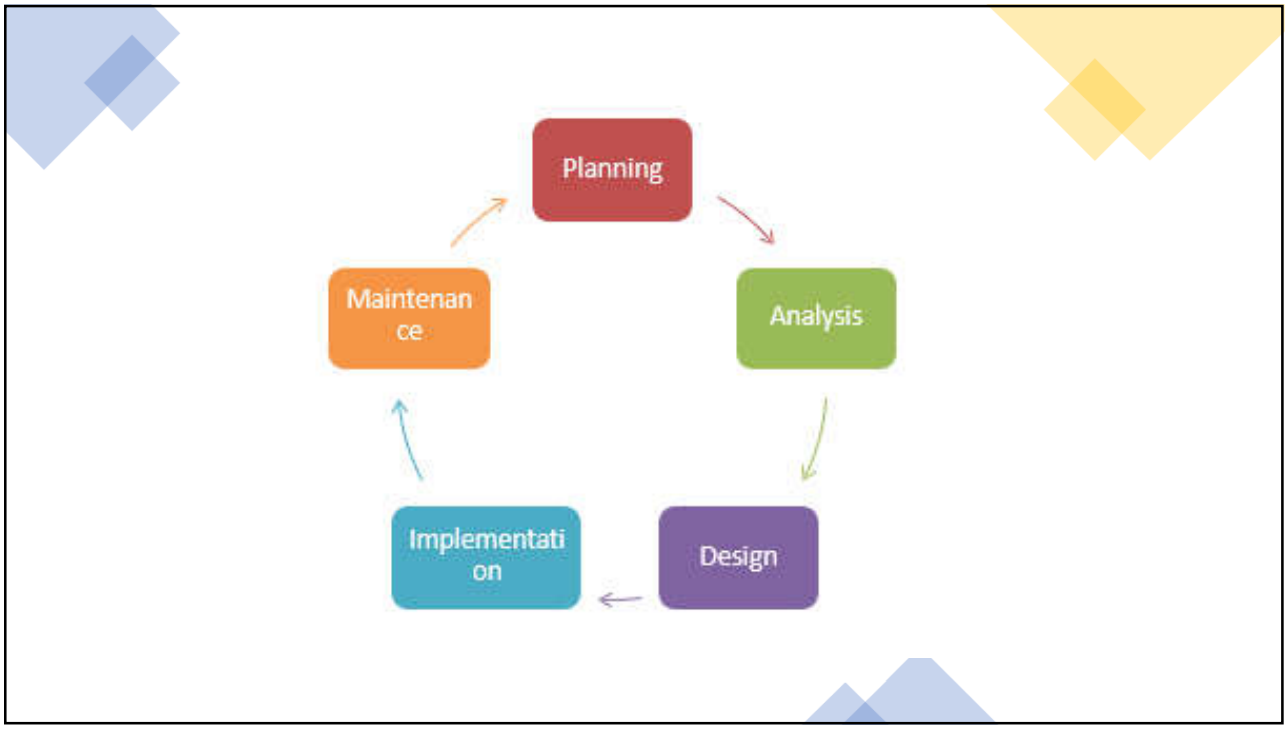


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## Traditional System Development life Cycle (SDLC)

- Project planning – initiate, ensure feasibility, plan schedule, obtain approval for project
- Analysis – understand business needs and processing requirements
- Design – define solution system based on requirements and analysis decisions
- Implementation – construct, test, train users, and install new system
- Maintenance – keep system running and improve it

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## Planning

- This phase is the fundamental process of understanding why an information system should be built.
- The Planning phase will also determine how the project team will go about building the information system.
- The Planning phase is composed of two planning steps.
  - **Project initiation**
  - **Project management**

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## Analysis

- The analysis phase answers the questions of **who will use the system, what the system will do, and where and when it will be used.**
- During this phase the project team investigates any current system(s), identifies improvement opportunities, and develops a concept for the new system.
- This phase has three analysis steps.
  - **Analysis strategy**
  - **Requirements gathering**
  - **System proposal**

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## Analysis strategy

- This is developed to guide the projects team's efforts.
- This includes an analysis of the current system.

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## Requirements gathering

- The analysis of this information leads to the development of a concept for a new system.
- This concept is used to build a set of analysis models.

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## System proposal

- The proposal is presented to the project sponsor and other key individuals who decide whether the project should continue to move forward.

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## Analysis

- The system proposal is the initial deliverable that describes what business requirements the new system should meet.
- The deliverable from this phase is both an analysis and a high-level initial design for the new system.

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## Design

- In this phases it is decided how the system will operate, in terms of the hardware, software, and network infrastructure; the user interface, forms, and reports that will be used; and the specific programs, databases, and files that will be needed.

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## Implementation

- During this phase, the system is either developed or purchased.
- This phase is usually the longest and most expensive part of the process.
- The phase has three steps.
  - **System Construction**
  - **Installation**
  - **Maintenance Plan**

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## System Construction

- The system is built and tested to make sure it performs as designed.

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## Installation & Support Plan

- **Installation:**
  - Prepare to support the installed system.
- **Support Plan**:
  - Includes a post-implementation review.

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## Maintenance

- System also needs maintenance over period of time.
- Maintenance can be on hardware and software.
- The system need to be maintained specially to debug errors.
- It may also need to be upgraded such as new functionality or demand from user.

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## SDLC Model

- There are numbers of development models, which follow SDLC phases.
- Traditional SDLC model is Waterfall Model.
- It was developed in late 1960s in an attempt to introduce a more systematic engineering approach to software development.

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# Waterfall Model

- The **waterfall model** is a sequential design **process** in which progress is seen as flowing steadily downwards (like a **waterfall**) through the phases of SDLC.
- **Waterfall model** is an **example** of a Sequential **model**. In this **model**, the software **development** activity is divided into different phases and each phase consists of a series of tasks and has different objectives.
- **Waterfall model** is the pioneer of the SDLC processes.
- **Characterized by:**
  - Feedback loops
  - Documentation-driven

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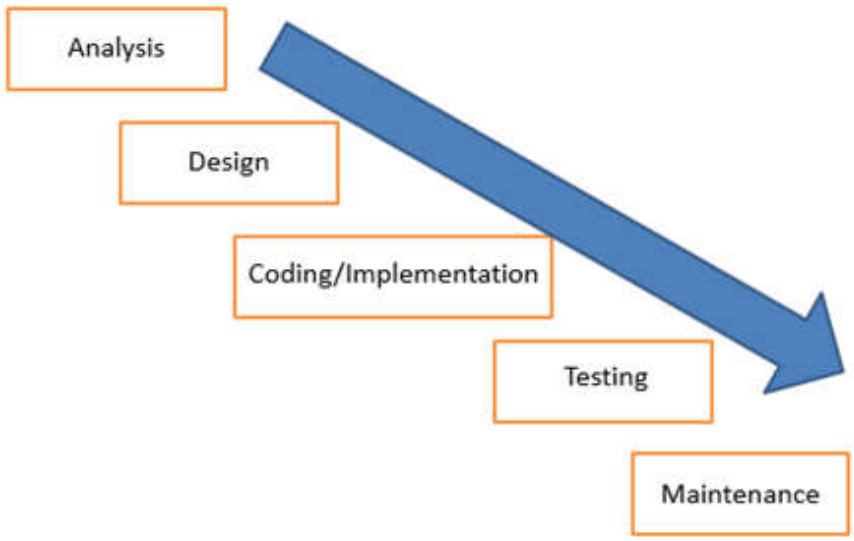


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## Waterfall Model Advantages

- Provides structure approach to new developer
- Sets requirements early
- Easy to understand
- Milestones are better understood

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## Waterfall Model Disadvantages

- Working version of the software will not be available until late in the project time-span
- Specifications are long, detailed, written in a style unfamiliar to the client
- “Blocking states” –some project team members must wait for other team members to complete dependent tasks

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