Systems Analysis and Design

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Section (1)
System Definition, SDLC, and who is the System Analyst

Cyber Security Program

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What is a System?

- It is defined as Interrelated Interconnected Interdependent integrated subsystems (subsystems with specific relationships) which work together to achieve common objective in a defined boundary working in a certain environment. This system receives inputs then do certain processing - transformation process- to convert this input to a desired output under certain regulations. Any system could is preferred to have a feedback system from the output to the inputs.
- Any system interacts with the environment without a feedback is an open loop system.
- Every system output is always compared to the goals and objectives to find system performance.
- Any system has a feedback is a closed loop system.
- Any system is designed to perform specific goals and objectives to an organization or business.
- Any system consists of a number of process that convert input to output.
- A system consist of components working together to make its objective achieve. Basic components of the system are:
  - Resources such as People, Software, Hardware, and Network
  - Procedures/Rules
  - Data/ Information
  - Processes/Function
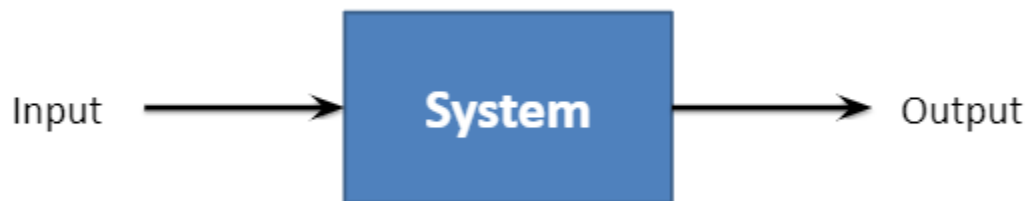
Computer-based Information System

- An arrangement of people, data, processes, communications, and information technology that interacts to support and improve day-to-day operations in a business, as well as support the problem-solving process and decision making process needs of management and users.
- Components of Information Systems:
  - Software
  - Database
  - Procedures
  - Operating Personnel
  - Input and Outputs

- o Medium and Message
- o Hardware
- Types of Information Systems:
    - o Transaction Processing Systems
    - o Decision Support Systems
    - o Expert Support Systems
    - o Management Information Systems
    - o Executive Support Systems
    - o Others

Why System Analysis and Design in Companies?

- System Analysis and Design is mainly a method used by software development companies
- System Analysis and Design purpose is to create and maintain information systems (software)
- This information systems perform basic business functions (keeping track of customer names and addresses, processing orders, and paying employees).


System Development Life Cycle

1. The Systems Development Life Cycle (SDLC)
- SLDC is the process of determining how an information system can support business needs, designing the system, building it, and delivering it to the users.
- SLDC describes the steps of phases needed for designing and building new systems or upgrading an existing systems.
- It consists of four vital phases which shall sequential:
    - o Planning - Why build the system?
    - o Analysis - Who, what, when, where will the system be?
    - o Design - How will the system work?
    - o Implementation - System delivery (Coding!)
- The main focus in this course is System Planning and System Analysis.
- System Planning include the following:
    - o The planning phase is the fundamental process of understanding why the system should be built and describes how the project team will go about developing the system.
    - o The System Planning shall have the following activities:
        - ▪ System Request.

- Feasibility Study
- Project Plan
- Methodology
- Time Estimation
- Task Identification
- Pert Chart
- Gantt Chart
- Scope Management
- System Analysis include the following:
  - Interview
  - JAD Session
  - Questionnaire
  - Use Case
  - Data Flow Diagram
  - Entity Relationship
  - Normalization
- Note: System Design and Implementation are taught in other courses as Software Engineering.
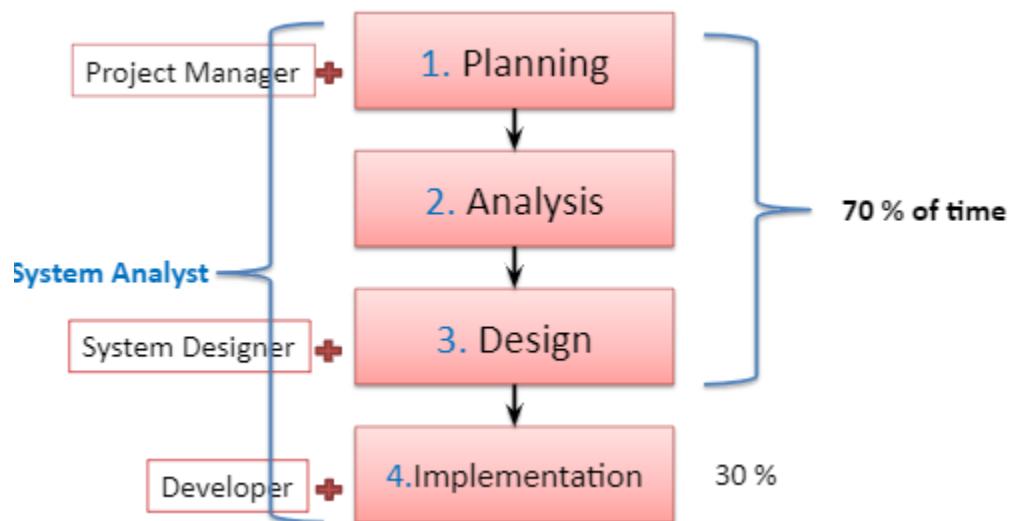
- Each phase in the SDLC has certain output which shall be done in order to be delivered for the next phase following the arranged logic and sequence to achieve proper system performance.
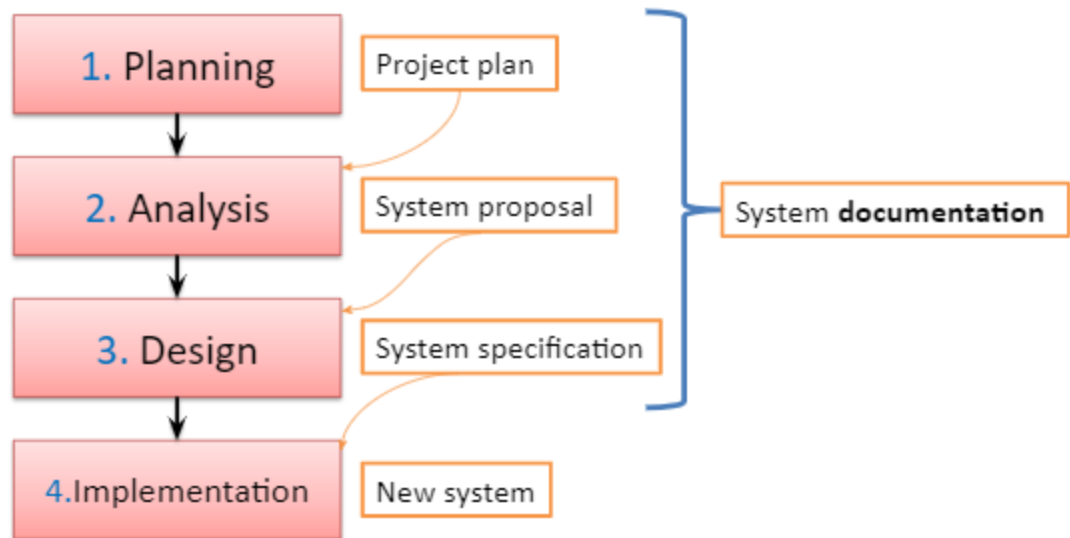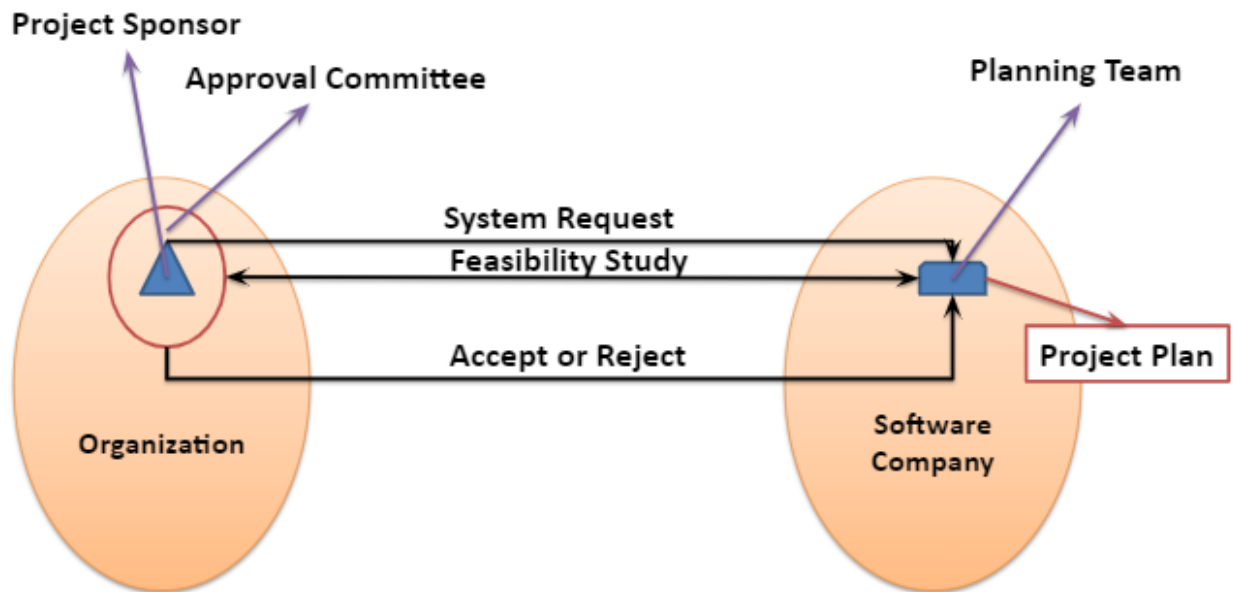
Who is the System Analyst?

- The analyst is the one that works closely with all project team members and in all phases.
- The key person in the SDLC is the systems analyst who analyze the business situation, indefinites the opportunities for improvements, and designs an IS to implement the improvements.
- System Analyst must understand how to apply the technology to solve the problem.
- System Analyst is the Change Agent who identify organizational improvement needed, design systems to implement those changes, and then train and motivate others to use the system.
- Analyst skills:
    - Technical
    - Business
    - Analytical
    - Interpersonal
    - Management
    - Ethical
- Systems Analyst Titles:
    - Project Manager
    - Change Management Analyst
    - Infrastructure Analyst
    - Business Analyst
    - Systems Analyst
    - Infrastructure Analyst

First Task in SDLC: System Request Document:

- A system request is a document that describes organization reasons for building a system value that the system is expected to provide.
- Most system requests include five elements:
  - Project sponsor
  - Business need
  - Business requirements
  - Business value
  - Special issues

Project Sponsor

Approval Committee

Planning Team

System Request

Feasibility Study

Accept or Reject

Organization

Software Company

Project Plan

System Request Example:

Example	Description	Element
• IT Manager • Marketing Manager	The person who **initiates** the project.	Project Sponsor
• Increase sales • Improve access to information • Improve customer service	The business **reasons** for **initiating** the system.	Business Needs
• Provide on-Line access • Capture customer information • Produce management reports	The business **capabilities** that the system will **provide**	Business Requirements
• 3% increase in sales • 1% increase in market share • $200,000 cost savings	The **benefits** that the system will create for the organization	Business Value
• Deadline in May 30 • Top-level security with data	**Constraints** on system	Special Issue

Pop-Quiz

1. What are the various components of a system?

2. Describe two systems in your environment.

3. Main goal of an information system is to process _____

4. Which is NOT true for systems analysts?

a. They create value for an organization
b. enable the organization to perform work better
c. They do things and challenge the current way that an organization works
d. They play a key role in information systems development projects
e. They are the project sponsors for system proposals

5.   5. The _____ is generated by the department or person that has an idea for new information system

a.   Feasibility analysis
b.   Gradual refinement
c.   Project sponsor
d.   System request

6.   6. The functionality of the system or what the information system will do is called as _____ of the system

       a. Business need
       b. Intangibles
       c. Requirements
       d. Sponsors

Assignment (1)

1. Form a team from 1 to 3 members for the project.
2. A form will be sent to register the team.
3. In each section, there will be an assignment that will form a part of the project.
4. In each section, some teams will discuss the progress they made since the previous section.
5. In next section, the system request document is to be delivered. It shall be handed offline paper-based.
6. Each team shall write a full system request till the next section.
7. Define the difference between the Software Engineer and System Analyst.

Deadline: In 7 Days. It shall be delivered in the next section according to the registered slots.