SYSTEMS ANALYSIS AND DESIGN

IE 352
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Textbook

Modern Systems Analysis and Design, 3rd Edition

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Course slides and some notes may be obtained from web address

www3.itu.edu.tr/~cetinerg

Evaluation

1.	Design Projects	20%
2.	Quizzes	10%
3.	Mid Term	25%
4.	Final Exam	40%
5.	Attendance	5%

Weekly Course Topics

	Chapter	Week
Foundations for System Development		
Systems Development Environment	1	
Succeeding as a Systems Analyst	2	1-2
Managing Information Systems Project	3	
Automated Tools For Systems Development	4	3-4
Making the Business Case		
Identifying and Selecting Systems Development Projects	5	
Initiating and Planning Systems Development Projects	6	
Analysis		5-8
Determining the System Requirements	7	
Structuring System Requirements: Logic Modeling	9	
Structuring System Requirements: Conceptual Data Modeling	10	
Structuring System Requirements: Process Modeling	8	
Selecting the Best Alternative Design Strategy	11	

Weekly Course Topics

	Chapter	Week
Design		
Designing Databases	12	
Designing Forms and Reports	13	9-10
Designing Interfaces and Dialogues	14	
Finalizing Design Specifications	15	
Designing Distributed and Internet Systems	16	11-12
Implementation and Maintenance		
System Implementation	17	
Maintaining Information Systems	18	
Advanced Analysis and Design Methods		13-14
RAD	19	
Object-oriented Analysis and Design	20	

Systems Development Environment

In early years computing,

Analysis and design was considered to be an art.

Now it is a discipline, or profession.

Systems Development Environment

Central to software engineering processes are

1. Methodologies (comprehensive, multiple-step approaches to systems development)
2. Techniques (particular processes to ensure the work is well-defined and communicated inside the team)
3. Tools (Computer programs to make use of techniques following a methodology)

Systems Development Environment

A Modern Approach To Systems Analysis

Analysis and design of computer-based information systems started In 1950's.

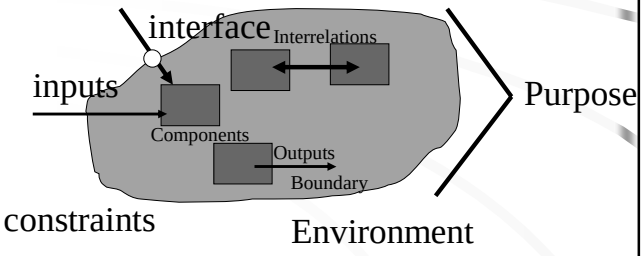
Two approaches for system analysis and development

1. Process Based Approach
   Focus of the development effort was on the processes
2. Database Approach (used nowadays)
   Focus of the development effort is on the data

Engineering and Management

What is a system?

Interrelated components which come together for some purposes.



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4 Types of Information Systems

- Transaction Processing Systems (TPS)
- Management Information Systems (MIS)
- Decision Support Systems (DSS)
- Expert Systems (ES)

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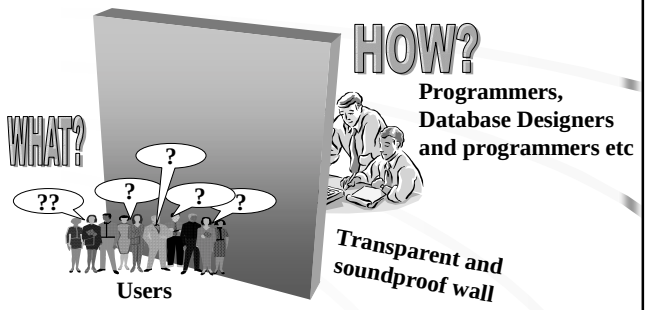
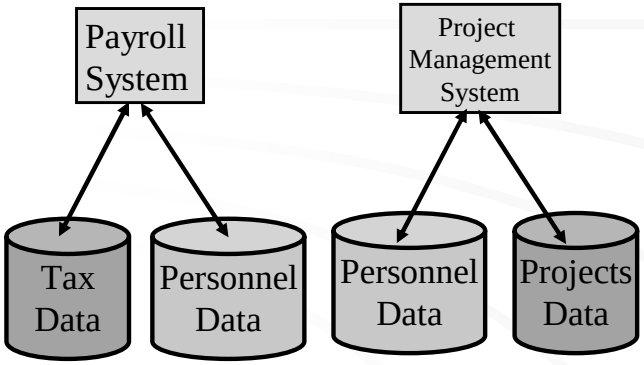
DATA BASE APPROACH

- Data Modeling Answers to the question of WHAT,
- User Interfaces, Database Design and Programming Answers to the question of HOW.



System Development Approaches

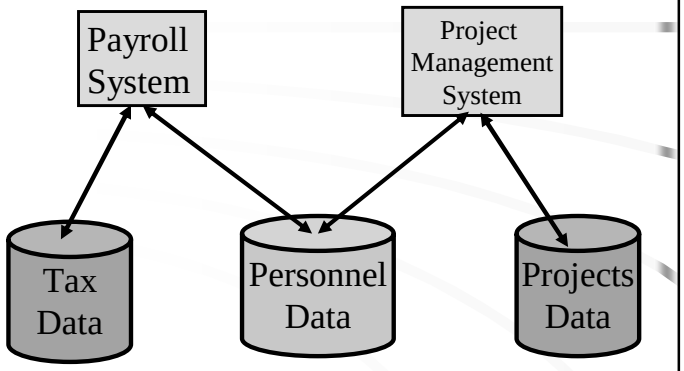
Traditional Approach and Data (User) Oriented Approach



Traditional Approach

System Development Approaches

Traditional Approach and Data (User) Oriented Approach



Database Approach

Types of Information Systems

4 Types of Information Systems

- Transaction Processing Systems (TPS)
  - Automate handling of data about business activities (transactions)
- Management Information Systems (MIS)
  - Converts raw data from transaction processing system into meaningful form
- Decision Support Systems (DSS)
  - Designed to help decision makers
  - Provides interactive environment for decision making

Types of Information Systems

4 Types of Information Systems

- Expert Systems (ES)
  - Replicates decision making process
  - Knowledge representation describes the way an expert would approach the problem

Why Automated Systems Development?

Competition needs very fast decisions and rapid development of information systems.

Concentrate on what to do rather than how to do.

For many companies, information systems cost 40 percent of overall costs.

CASE Tools

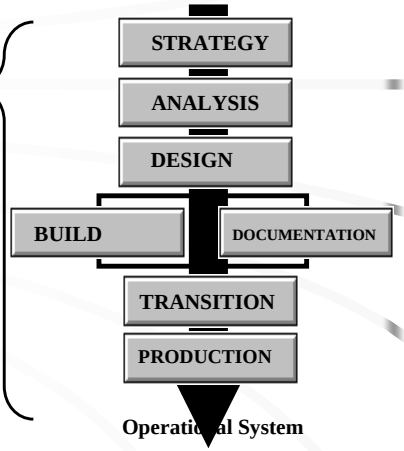
CASE: Computer Aided Software Engineering Tools

Software Tools used to automate Software Development Life Cycle.

Software Development Life Cycle (Waterfall Model)

This type of Software Development Life Cycle is called Waterfall Model. Since it is difficult to swim up to the waterfall stream, it is costly to go back to the previous stages in life cycle.

Therefore, it is essential to finish a good data model before starting database design.

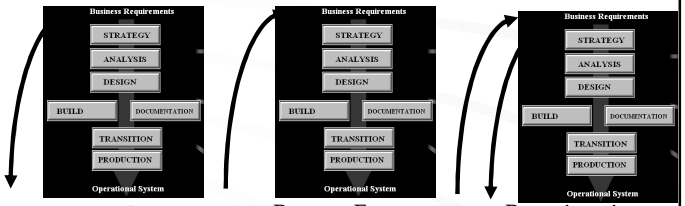


The Use of CASE in Organizations

- Objectives of CASE
  - Improve quality of systems developed
  - Increase speed of development and design
  - Ease and improve testing process through automated checking
  - Improve integration of development activities via common methodologies
  - Improve quality and completeness of documentation
  - Help standardize the development process
  - Improve project management
  - Simply program maintenance
  - Promote reusability
  - Improve software portability

Some Basic Terms

- Forward Engineering
- Reverse Engineering
- Reengineering (Reverse Engineering+Forward Engineering)



Forward Eng.
Go down the SDLC

Reverse Eng.
Go up the SDLC

Reengineering
First Reverse Eng.
then Forward Eng.

** Reengineering=Reverse+Forward*

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