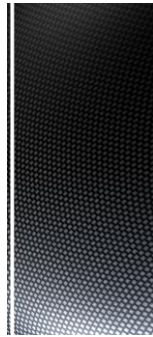*MIS*
(Management Information System)
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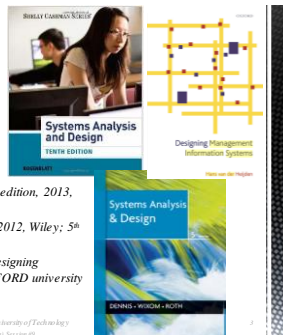
Session #9

Course Description

- *Instructor*
  - *Omid Fatahi Valilai, Ph.D. Industrial Engineering Department, Sharif University of Technology*
    - *Email: Fvalilai@sharif.edu , Tel: 021-6616-5706*
    - *Website: http://sharif.edu/~fvalilai*
- *Class time*
  - *Saturday-Monday   10:30~12:00*
- *Course evaluation*
  - *Mid-term   (20%)*
  - *Final exam   (20%)*
  - *Quiz   (10%)*
  - *Exercise-Projects   (30%)*

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Course Description *(Continued ...)*

- *Mid-term session:*
  - *Saturday, 7th, Azar 1394*
- *Final session:*
  - *Monday, 28th, Dey 1394*
- *Reference:*
  - *Rosenbalt, "System Analysis and Design", 10th edition, 2013, Course Technology*
  - *Dennis, Lan; "Systems Analysis and Design", 2012, Wiley; 5th edition*
  - *Johannes Govardus Maria van der Heijde; "Designing Management Information Systems", 2009, OXFORD university press*

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3

Course Description *(Continued ...)*

- *Reference:*
  - *William S. Davis, David C. Yen, "The information system consultant's handbook: system analysis and design", 2010, Taylor and Francis*
  - *Terence Lucey; "Management Information Systems", 2004, Cengage Learning EMEA*
  - *Gabriele Piccoli; "Information systems for managers: texts & cases ", 2007, John Wiley & Sons Inc*
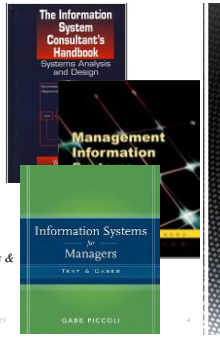
Course Description *(Continued..)*

- *Contents:*
  - *Introduction to Systems Analysis and Design*
  - *Analyzing the Business Case*
  - *Managing Systems Projects*
  - *Requirements Modeling*
  - *Data and Process Modeling*
  - *Object Modeling*
  - *Development Strategies*
  - *User Interface Design*
  - *Data Design*
  - *System Architecture*
  - *Managing Systems Implementation*

Course Description *(Continued..)*

- *Contents:*
  - *Requirements Modeling*
    - *Joint Application Development*
    - *Rapid Application Development*
    - *Agile Methods*
    - *Modeling Tools and Techniques*
    - *System Requirements Checklist*
    - *Fact-Finding*
    - *Interviews*
    - *Documentation*

Requirements Modeling

▪ *Modeling Tools and Techniques*
  ▪ *Models help users, managers, and IT professionals understand the design of a system.*

  ▪ *Modeling involves graphical methods and nontechnical language that represent the system at various stages of development.*

  ▪ *During requirements modeling, various tools to describe business processes, requirements, and user interaction with the system can be used.*

  ▪ *Systems analysts use modeling and fact-finding interactively - first they build fact-finding results into models, then they study the models to determine whether additional fact-finding is needed.*
    ▪ *Functional decomposition diagrams, business process models, data flow diagrams, and Unified Modeling Language diagrams.*

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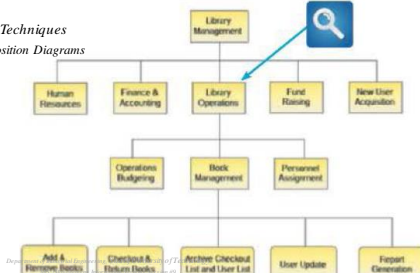

Requirements Modeling

▪ *Modeling Tools and Techniques*
  ▪ *Functional Decomposition Diagrams*
    ▪ *A functional decomposition diagram (FDD) is a top-down representation of a function or process.*

    ▪ *Using an FDD, an analyst can show business functions and break them down into lower-level functions and processes.*

    ▪ *Creating an FDD is similar to drawing an organization chart - you start at the top and work your way down.*

    ▪ *During requirements modeling, analysts use FDDs to model business functions and show how they are organized into lower-level processes. Those processes translate into program modules during application development.*

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Requirements Modeling

▪ *Modeling Tools and Techniques*
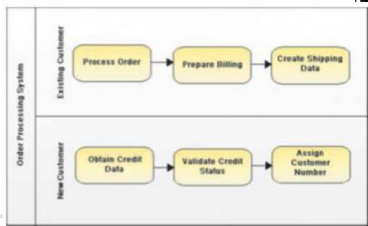 ▪ *Functional Decomposition Diagrams*

Requirements Modeling

- *Modeling Tools and Techniques*
  - *Business Process Modeling*
    - *A business process model (BPM) describes one or more business processes, such as handling an airline reservation, filling a product order, or updating a customer account.*
    - *During requirements modeling, analysts often create models that use a standard language called business process modeling notation (BPMN).*
    - *BPMN includes various shapes and symbols to represent events, processes, and workflows.*
    - *Using BPMN terminology, the overall diagram is called a pool, and the designated customer areas are called swim lanes.*

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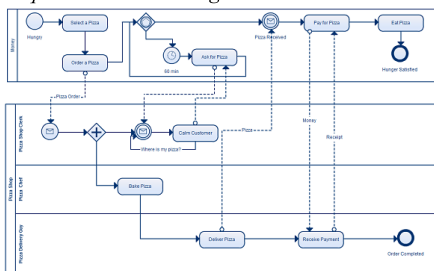*MIS (Management Information Systems), Session #9*

Requirements Modeling

- *Modeling Tools and Techniques*
  - *Business Process Modeling*
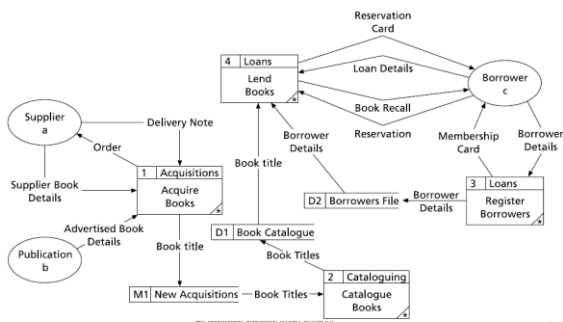

Requirements Modeling
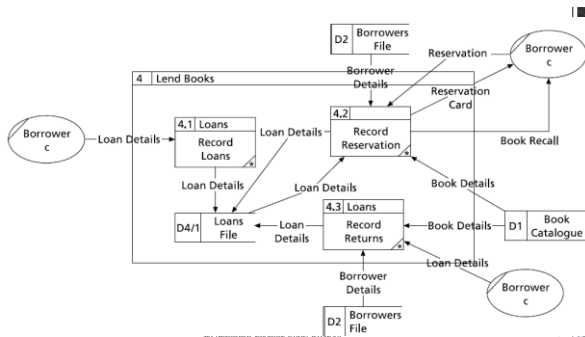
Requirements Modeling

- *Modeling Tools and Techniques*
  - *Data Flow Diagrams*
    - *Working from a functional decomposition diagram, analysts can create data flow diagrams (DFDs) to show how the system stores, processes, and transforms data.*
    - *DFD describes adding and removing books, which is a function shown in the Library Management diagram*
    - *Notice that the two shapes in the DFD represent processes, each with various inputs and outputs.*
    - *Additional levels of information and detail are depicted in other, related DFDs.*
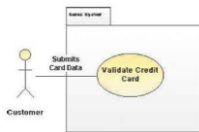
Requirements Modeling

- *Modeling Tools and Techniques*
  - *Unified Modeling Language*
    - *The Unified Modeling Language (UML) is a widely used method of visualizing and documenting software systems design.*
    - *UML uses object-oriented design concepts, but it is independent of any specific programming language and can be used to describe business processes and requirements generally.*
    - *UML provides various graphical tools, such as use case diagrams and sequence diagrams.*
      - *Use case diagrams, sequence diagrams, and other UML concepts*

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Requirements Modeling

- *Modeling Tools and Techniques*
  - *Unified Modeling Language*
    - *Use Case Diagram*
    - *During requirements modeling, systems analysts and users work together to document requirements and model system functions*
    - *A use case diagram visually represents the interaction between users and the information system.*

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* gement Information Systems), Section #9*

Requirements Modeling

- *Modeling Tools and Techniques*
  - *Unified Modeling Language*
    - *Use Case Diagram*

Name of Use Case:	Credit card validation process
Actor:	Customer
Description:	Describes the credit card validation process
Successful Completion:	1. Customer clicks the input selector and enters credit card number and expiration date 2. System verifies card 3. System sends authorization message
Alternative:	1. Customer clicks the input selector and enters credit card number and expiration date 2. System rejects card 3. System sends rejection message
Precondition:	Customer has selected at least one item and has proceeded to checkout area
Postcondition:	Credit card information has been validated Customer can continue with order
Assumptions:	None