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BBA, Semester 2

Analysis and Design of Business System

(ADBS)

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Module -III

System And Data Analysis
(Data Analyzing Modeling)

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AMITY UNIVERSITY   Topics   Amity School of Business

- Determining System Requirements (Traditional Methods, Modern & Radical Methods)
- Structuring System Requirements
    – Process Modeling – DFD
    – Logic Modeling – Structured English & Decision Tables
    – Conceptual Modeling – ER Model
- Data Analysis & Techniques (Interpretive, Coding, Recursive Abstraction and Mechanical Technique),
- Types of Analysis (Descriptive, Exploratory, Confirmatory and Predictive)
- Modeling Methodologies (Bottom Up method & Top Down Method)
- Generic and Schematic Data Modeling

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AMITY UNIVERSITY Determining System   Amity School of Business
Requirements

- In this Analyst gather information on what the system should do from many sources as possible. Such sources include user of the current system, reports, forms, and procedures.
- All of the system requirements are carefully documented and made during requirements determination and ordering them into tables, diagrams, and other formats that make them easier to translate into technical system specification.
- The characteristics you need to enjoy solving the mysteries and puzzles are the same one you need to be a good system analyst during requirement determination.

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Methods of Collecting Requirement

1. **Traditional Method:** Interviews, Questionnaire, Direct Observation.

2. **Modern Method:** JAD, Prototyping

3. **Radical Method:** Business Process Reengineering.

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Requirements Structuring

- Two essential views of the current and replacement information systems. Both are describing the same system, but in a different way.

    – Process view: The sequence of data movement & handling operations within the system
        • Data flow diagrams

    – Data: The inherent structure of data independent of how or when it is processed
        • Entity-relation diagrams

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Remember to...

Question Everything

Assume Anything is Possible

Pay Attention to Details

Don't Jump to Conclusions

Be Impartial

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Traditional Methods for Determination Requirements

- Collection of information is at the core of systems analysis.
- Collect the information about the information system that are currently in use.
- To find out how users would like to improve the current systems and organizational operations with new or replacement information system.
- Best way to get the information is :
  - Talk to the person who are directly or indirectly involved in different part of the organizations.
  - Gather the copies of relevant document required by current systems and business processes
  - Interviews and direct observation

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Traditional Methods for Determination Requirements

- Administering questionnaires
- Interviewing and listening
- Interviewing groups
- Directly observing users
- Analyzing procedures & other documents

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Modern Method

- Joint Application Design
- Prototyping

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Radical Method

- In Some Organizations, Management is looking for new ways to perform the current task. These may be radically different from how things are done now, but the payoffs may be enormous:
- Fewer people may be needed to do same work; relationship with customers may improved dramatically; and process become much more efficient and effective, all of which can result in increased profits. The overall process by which current methods are replaced with radically new methods is referred to as Business Process reengineering (BPR)

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Structuring System Requirements

- **Process Modeling –** DFD (Data Flow Diagram)

- **Logical Modeling –** Structure English & Decision Table

- **Conceptual Modeling –** ER Diagram
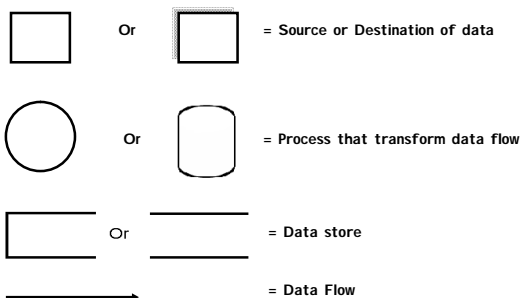
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Process Modeling

- It involves graphical representing the process, or actions, that capture, manipulate, store and distribute data between a system and its environment and among components within a system. A common form of process modeling is DFD (Data Flow Diagram).

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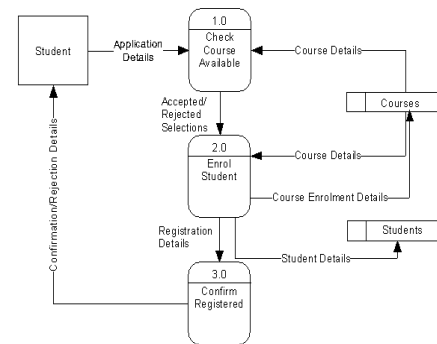
DFD (Data Flow Diagram)

- A data flow diagram is a graphic that illustrates the movement of data between external entities and the processes and data stores within a system.

- It is a **top-down approach**, moves from general requirements to more specific requirements, illustrating process, movement, and storage of data in the system.

- It is a way to **focus on functions** rather than physical implementation.

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Or   = Source or Destination of data

Or   = Process that transform data flow

Or   = Data store

= Data Flow

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DFD Example

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- Although DFD are good for identifying the processes, they do not show the logic inside the processes. Even the processes of the primitive-level DFD do not show the most fundamental processing steps. Just what occurs with in a process?

- Logic modeling involves representing the internal structure and functionality of the process represented on DFD. Processes must be clearly described before they can be translated into a programming language.

- **Decision table** is the common method for modeling system logic, that allow you to represent a set of conditions and the actions that follow from them in a tabular format.

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AMITY UNIVERSITY ## Structure English

- **Structured English** is the use of the English language with the syntax of structured programming. Thus structured English aims at getting the benefits of both the programming logic and natural language. Program logic helps to attain precision while natural language helps in getting the convenience of spoken languages.

- Structured English or "pseudocode" consists of the following elements:
  - Operation statements written as English phrases executed from the top down
  - Conditional blocks indicated by keywords such as IF, THEN, and ELSE
  - Repetition blocks indicated by keywords such as DO, WHILE, and UNTIL

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Example of Structured English

- A bank will grant loan under the following conditions
  1. If a customer has an account with the bank and had no loan outstanding, loan will be granted.
  2. If a customer has an account with the bank but some amount is outstanding from previous loans then loan will be granted if special approval is given.
  3. Reject all loan applications in all other cases.

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Solution

```
IF customer has a Bank Account THEN
    IF Customer has no dues from previous account THEN
Allow loan facility
    ELSE
        IF Management Approval is obtained THEN
        Allow loan facility
    ELSE
        Reject
    ENDIF
  ENDIF
 ELSE
  Reject
ENDIF
```

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Decision Table

- A decision table is a diagram of process logic where the logic is reasonably complicated. All of the possible choices and the conditions the choices depend on are represented tabular form.
- Decision tables have proven to be easier to understand and review than code, and have been used extensively and successfully to produce specifications for complex systems.
- In decision table the three parts to be include the **condition stub**, the **action stub**, and the **rules**.

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Example

- A technical support company writes a decision table to diagnose printer problems based upon symptoms described to them over the phone from their clients.

Printer troubleshooter

		Rules							
Conditions	Printer does not print	Y	Y	Y	Y	N	N	N	N
	A red light is flashing	Y	Y	N	N	Y	Y	N	N
	Printer is unrecognised	Y	N	Y	N	Y	N	Y	N
Actions	Check the power cable				X				
	Check the printer-computer cable	X			X				
	Ensure printer software is installed	X			X		X		X
	Check/replace ink	X	X				X	X	
	Check for paper jam			X		X			

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Conceptual Modeling

- The Conceptual data modeling is a representation of organizational data. The purpose of a conceptual data model is to show as many rules about meaning and interrelationships among data as possible.
- Entity-relationship (E-R) data model are commonly used diagram that show how data are organized in an information system.
- The main goal of conceptual data modeling is to create accurate E-R Diagrams. As a system analyst you do conceptual data modeling at the same time as other requirements analysis and structuring steps during system analysis.

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E/R Diagram

1. Entity sets: diagrams
2. Attributes: oval
3. Relationship sets between entity sets: diamond

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How to Represent E-R Diagram

ENTITY ← ◇ Relationship → ENTITY

E R M O D E L

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AMITY UNIVERSITY Example E/R Diagram

Name, Breed, Age, Weight — **Dog**
Boards
Name, License #, Address, Phone — **Kennel**
Owns, **Pays**
Owner — Name, Phone

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The Three Main Components of ERD

- **Entity :** The *entity* is a person, object, place or event for which data is collected.
- **Relationship :** The *relationship* is the interaction between the entities.
- **Cardinality :** The *cardinality* defines the relationship between the entities in terms of numbers.

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To analys the data we have four techniques
- *Interpretive techniques* : The most common analysis of qualitative data is observer impression. That is, expert examine the data, interpret it via forming an impression and report their impression in a structured and sometimes quantitative form.
- *Coding* : Coding is an interpretive technique that both organizes the data and provides a means to introduce the interpretations of it into certain quantitative methods. Most coding requires the analyst to read the data and demarcate segments within it.
- *Recursive abstraction* : A recursive abstraction, where datasets are summarized, those summaries are then further summarized, and so on.
- *Mechanical techniques* :Some techniques rely on leveraging computers to scan and sort large sets of qualitative data. At their most basic level, mechanical techniques rely on counting words, phrases, or coincidences of tokens within the data.

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Thank You

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