REQUIRENMENTS ENGINEERING TOOLS

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REQUIREMENTS GATHERING TOOLS

- Software analysis and design is the intermediate stage, which helps human-readable requirements to be transformed into actual code.
- Few tools of Requirements Gathering are
  - Focus Group
  - Brainstorming
  - Interviewing
  - Survey/Questionnaire
  - Workshops
  - Prototyping
  - Observation

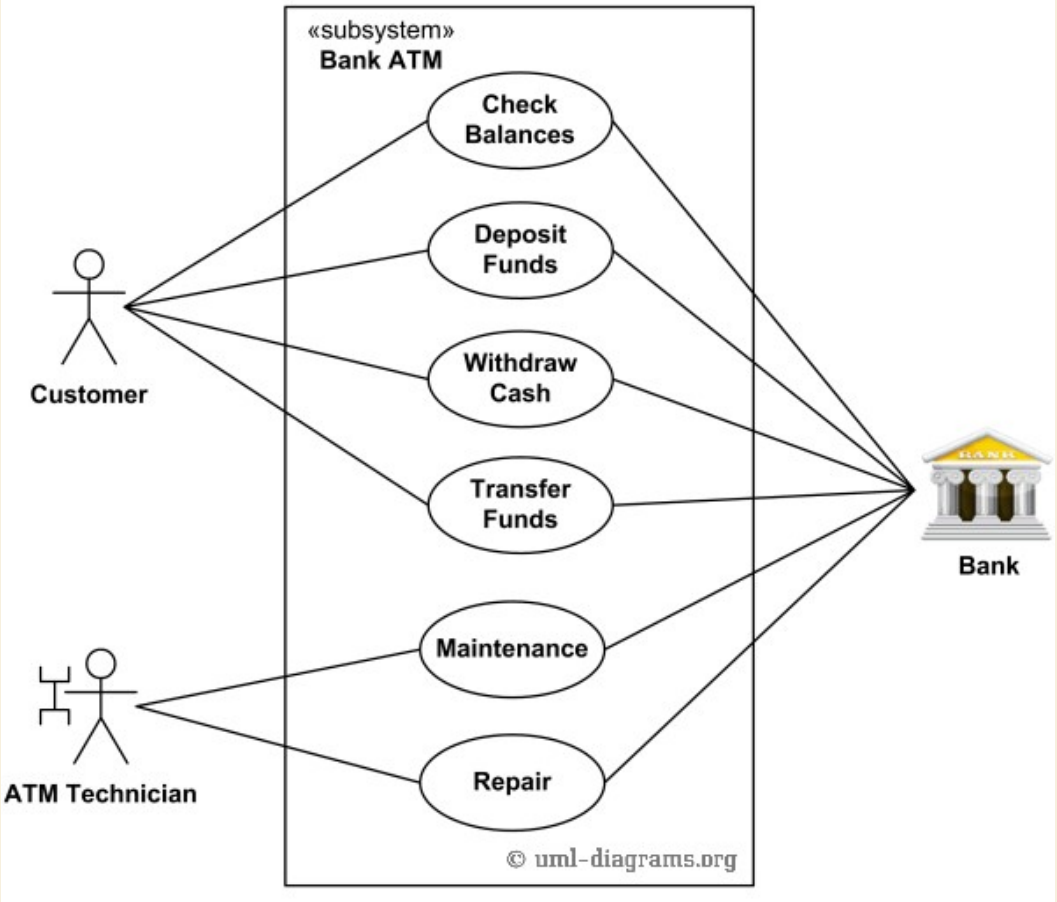
REQUIREMENT ANALYSIS TOOLS

- Requirement analysis techniques are mainly used to map the business workflow so that you can analyze, understand and make required changes to that workflow or process.
- Analysis and Design process use these tools to convey the information.
- Some of the tools are:

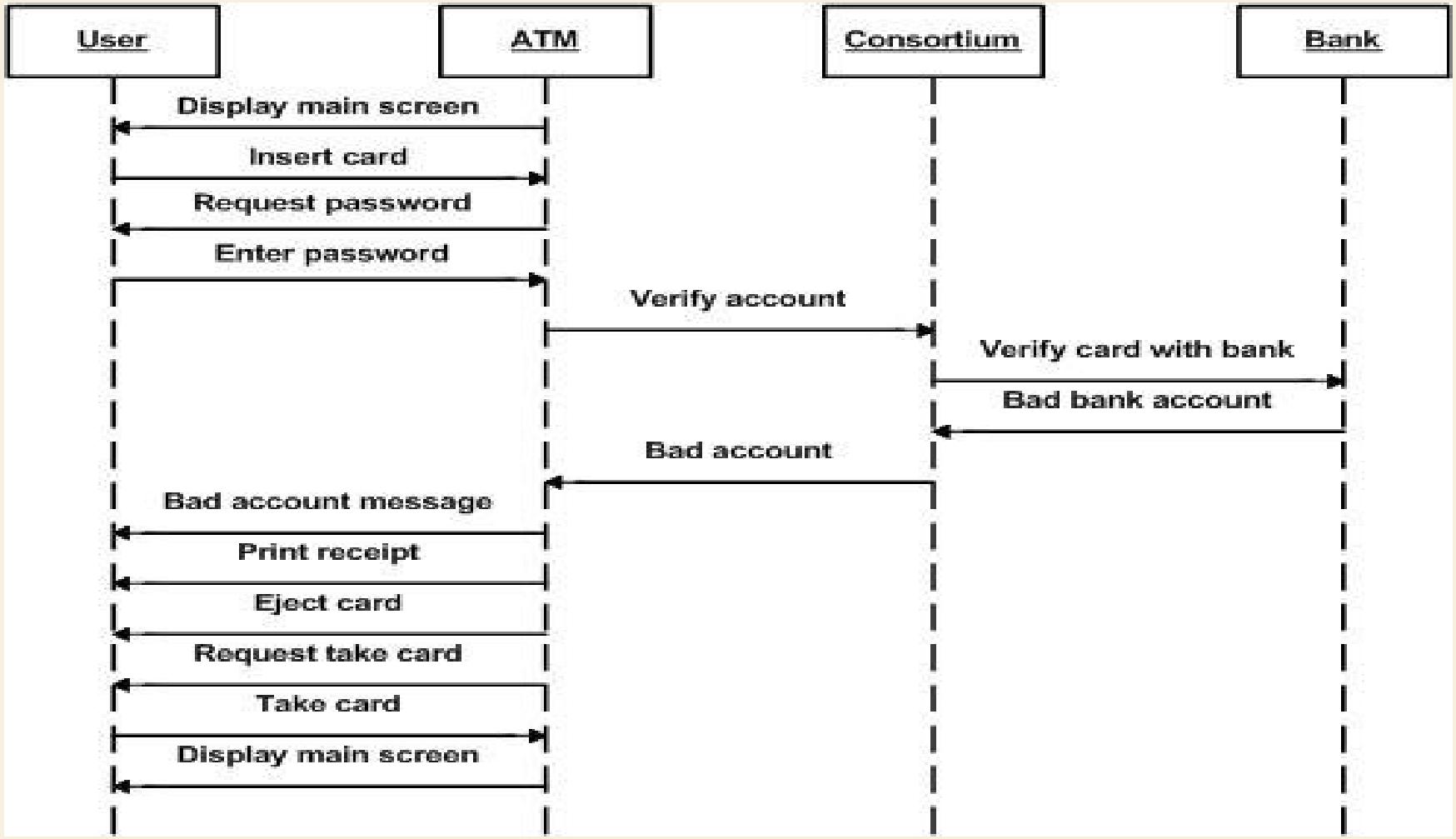
1. UML
2. Flow Chart Technique
3. Data Flow Diagram
4. Decision Table
5. Decision Trees
6. Entity Relationship Diagram

1. UML DIAGRAMS

- A UML use case diagram is the primary form of system/software requirements.
- Use cases specify the expected behaviour (what), and not the exact method of making it happen (how).
- Use cases once specified can be denoted both textual and visual representation (such as UML).

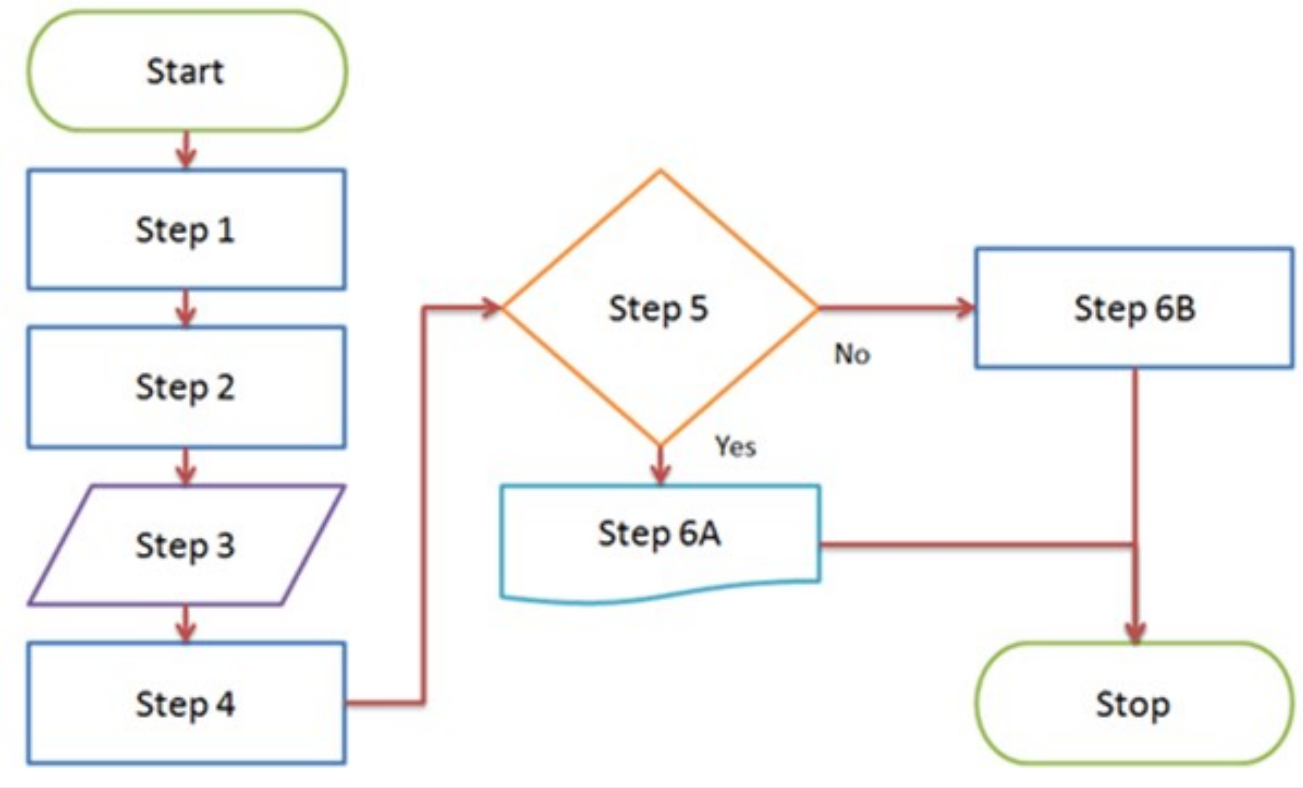


1. UML - SEQUENCE DIAGRAM



2. FLOW CHART TECHNIQUE

- A flowchart is a visual representation of the sequential flow and control logic of a set of related activities or actions.
- Easy to understand



3. DATA FLOW DIAGRAM (DFD)

- Data flow diagrams show how data is processed by a system in terms of inputs and outputs.
- Components of data flow diagram includes
  - Process
  - Flow
  - Store
  - Entity (Source and Destination of information flow)

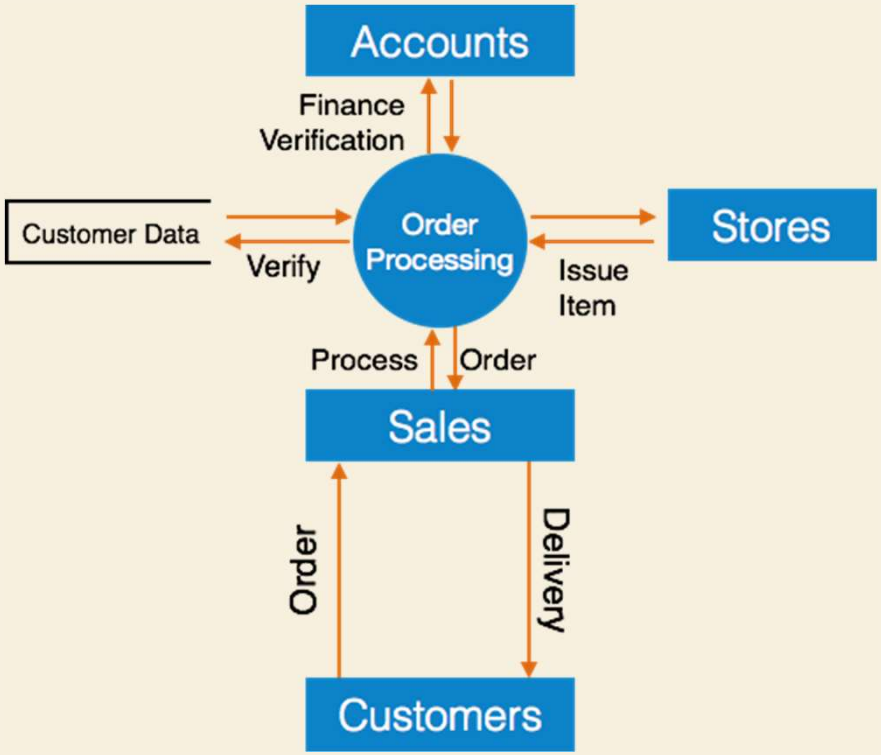
- There is a prominent difference between DFD and Flowchart.
- The flowchart depicts flow of control in program modules.
- DFDs depict flow of data in the system at various levels. DFD does not contain any control or branch elements.

3. LEVELS OF DFD

- **Level 0 -** Highest abstraction level DFD is known as Level 0 DFD, which depicts the entire information system as one diagram concealing all the underlying details.
- Level 0 DFDs are also known as context level DFDs.

3. LEVELS OF DFD

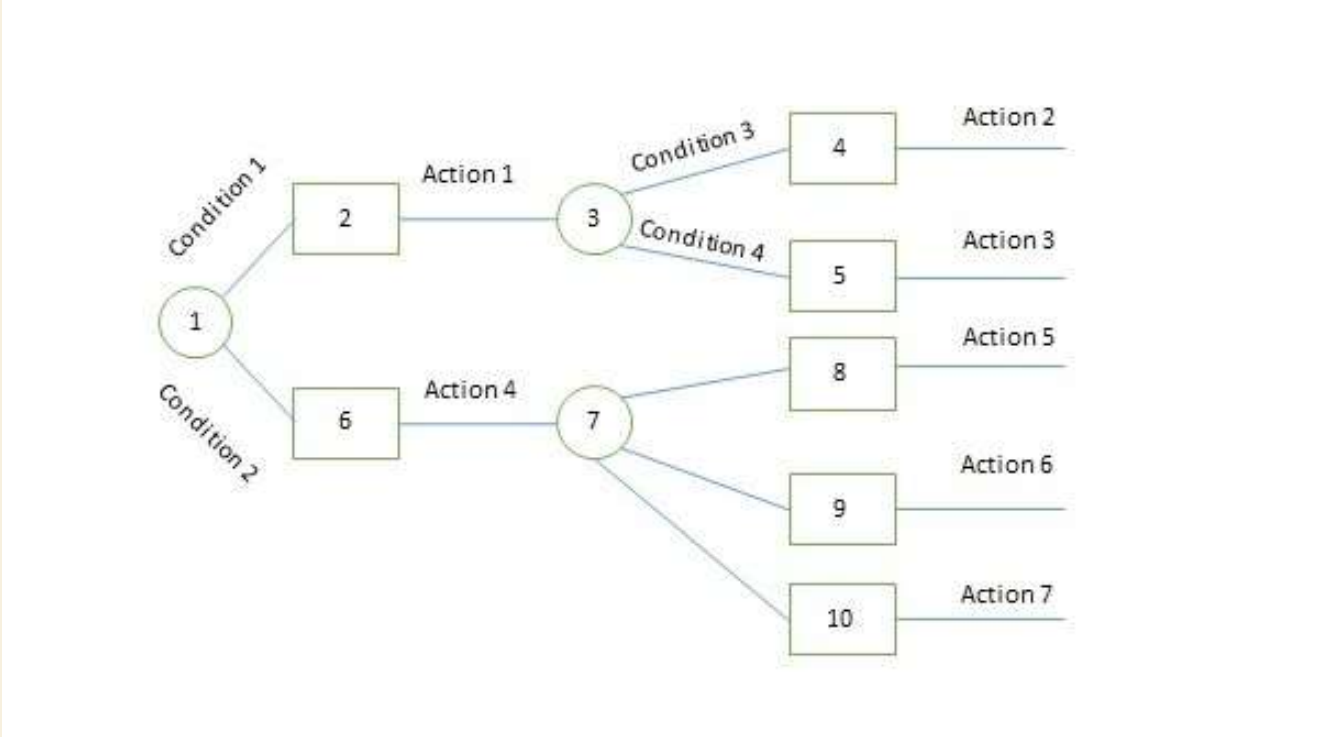
- **Level 1** - The Level 0 DFD is broken down into more specific, Level 1 DFD.
- Level 1 DFD depicts basic modules in the system and flow of data among various modules. Level 1 DFD also mentions basic processes and sources of information



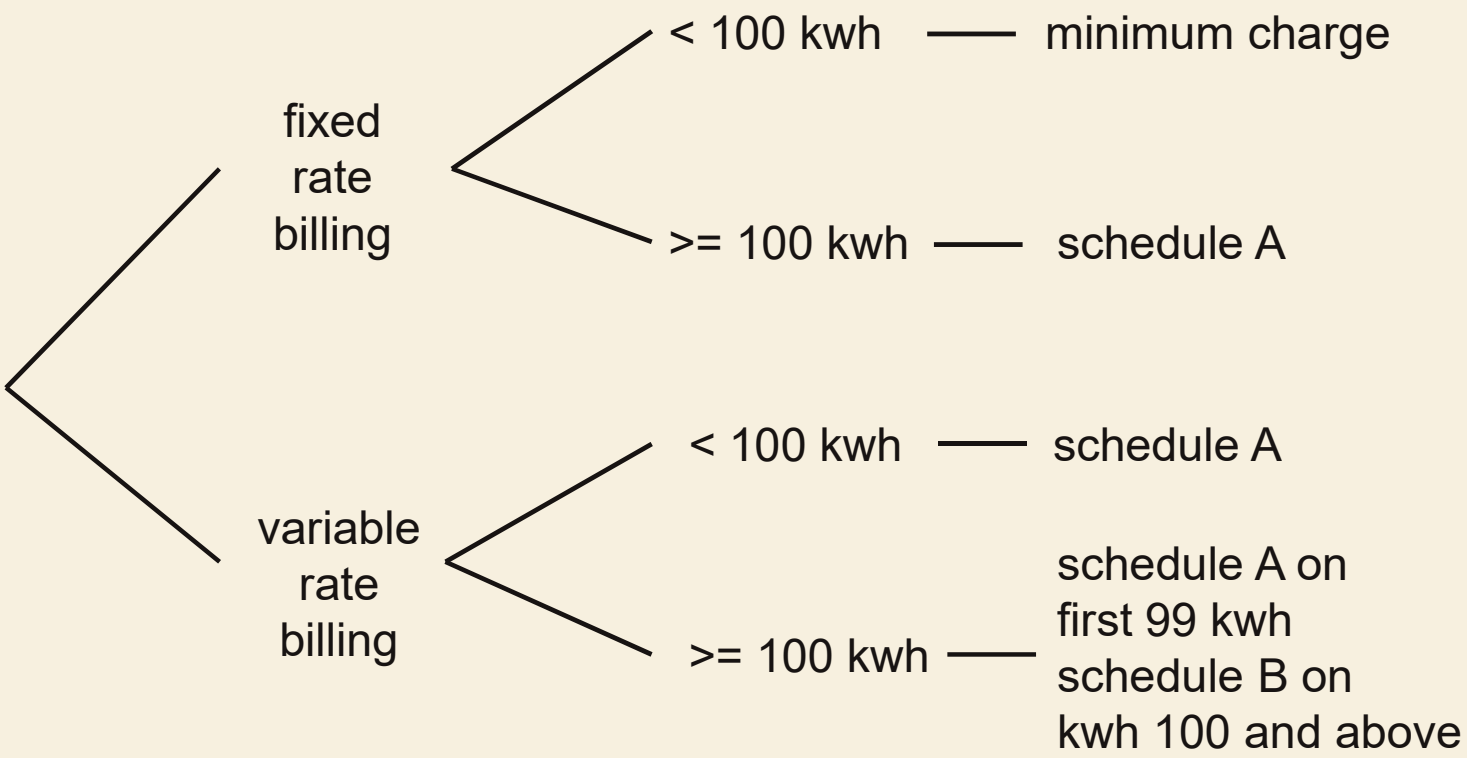
- **Level 2** - At this level, DFD shows how data flows inside the modules mentioned in Level 1.

4. DECISION TREES

- Decision trees are a method for defining complex relationships by describing decisions and avoiding the problems in communication. A decision tree is a diagram that shows alternative actions and conditions within horizontal tree framework.



4. DECISION TREE



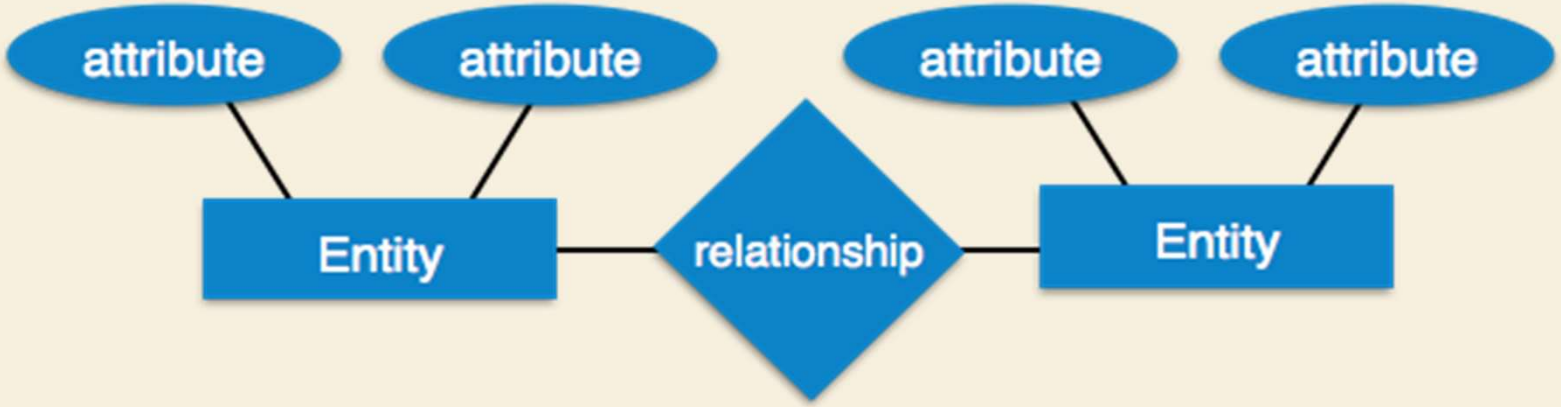
5. DECISION TABLE

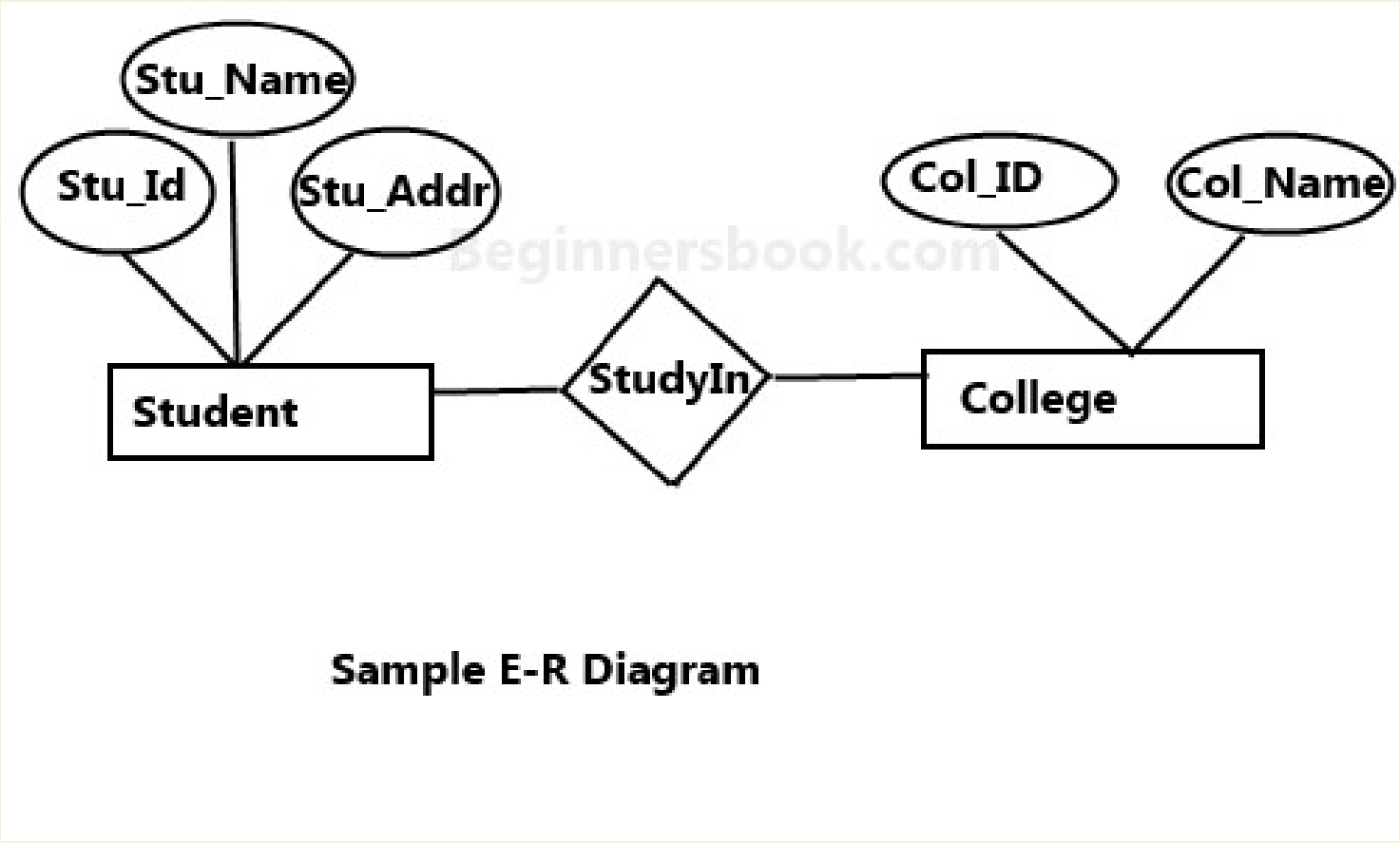
- Decision tables describe **all possible combinations of conditions** and the decision appropriate to each combination

	Rules			
Conditions	1	2	3	4
Account type	fixed	fixed	variable	variable
Consumption	< 100	>=100	<100	>= 100
Actions				
Minimum charge	X			
Schedule A		X	X	
Schedule A on first 99 kwh, Schedule B on kwh 100 +				X

6. ENTITY RELATIONSHIP DIAGRAM

- Entity-Relationship model is a type of database model based on the notion of real world entities and relationship among them.
- We can map real world scenario onto ER database model.
- ER Model creates a set of entities with their attributes, a set of constraints and relation among them





Sample E-R Diagram

Reference

Software Engineering 6th Edition Ian Sommerville

Thank You