SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

COURSE NAME : 19CS402 - DATABASE MANAGEMENT
SYSTEMS

II YEAR / IV SEMESTER

Unit 1- Introduction to Data Base

Topic 7 : Entity and Relationship Model

Agenda

- Entity Relational Model
- Purpose of E/R Model
- Advantage and Disadvantage
- Entity
- Entity Sets
- Attribute
- Component of ER Diagram

Entity Relationship Model

- Peter Chen's Landmark Paper in 1976
  - "The Relationship Model: Toward a Unified View of Data"
  - Graphical representation of entities and their relationships
  - Entity Relationship (ER) Model
    Based on Entity, Attributes & Relationships
    - Entity is a thing about which data are to be collected and stored
      - e.g. EMPLOYEE
    - Attributes are characteristics of the entity
      - e.g. SSN, last name, first name
    - Relationships describe an associations between entities
      - i.e. 1:M, M:N, 1:1
      - Complements the relational data model concepts
    - Helps to visualize structure and content of data groups
      - entity is mapped to a relational table
    - Tool for conceptual data modeling (higher level representation)
      Represented in an Entity Relationship Diagram (ERD)

- Entity relational model is a model for identify entities to be represented in the database and representation of how those entities are related

Database Design Process

- The ER –model is most relevant to first three step

RA	→	CDD	→	LDD	→	SR	→	PDD

A & SD
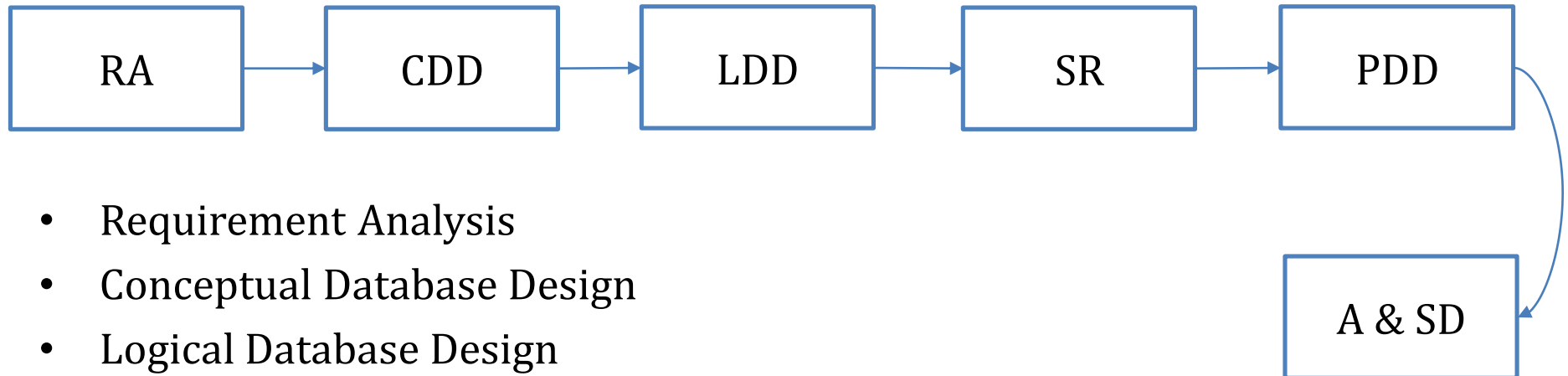
- Requirement Analysis
- Conceptual Database Design
- Logical Database Design
- Schema Refinement
- Physical Database Design
- Application and Security Design

E-R Model: Pros & Cons

- Advantages
  Exceptional conceptual simplicity
  - easily viewed and understood representation of database
  - facilitates database design and management
    Integration with the relational database model
  - enables better database design via conceptual modeling

- Disadvantages
  Incomplete model on its own
  - Limited representational power
    – cannot model data constraints not tied to entity relationships
      » e.g. attribute constraints
    – cannot represent relationships between attributes within entities
  - No data manipulation language (e.g. SQL)
    Loss of information content
  - Hard to include attributes in ERD

ER Model

Purpose of E/R Model

- The E/R model allows us to sketch database schema designs.

  – Includes some constraints, but not operations.

- Designs are pictures called *entity-relationship diagrams*.
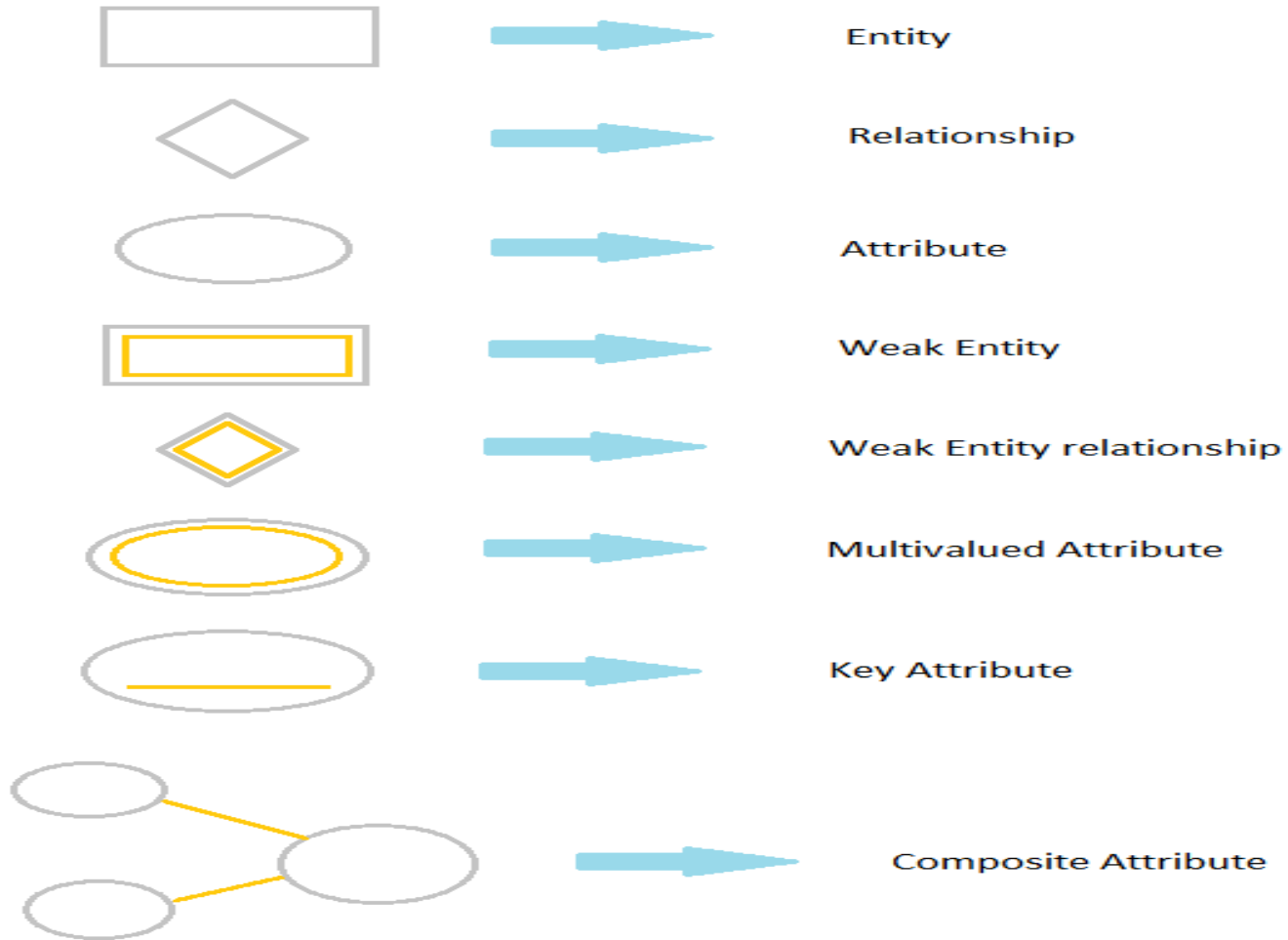
- Later: convert E/R designs to relational DB designs.

- *Entity* = "thing" or object.
- *Entity set* = collection of similar entities.
  - Similar to a class in object-oriented languages.
- *Attribute* = property of (the entities of) an entity set.
  - Attributes are simple values, e.g. integers or character strings, not structs, sets, etc.
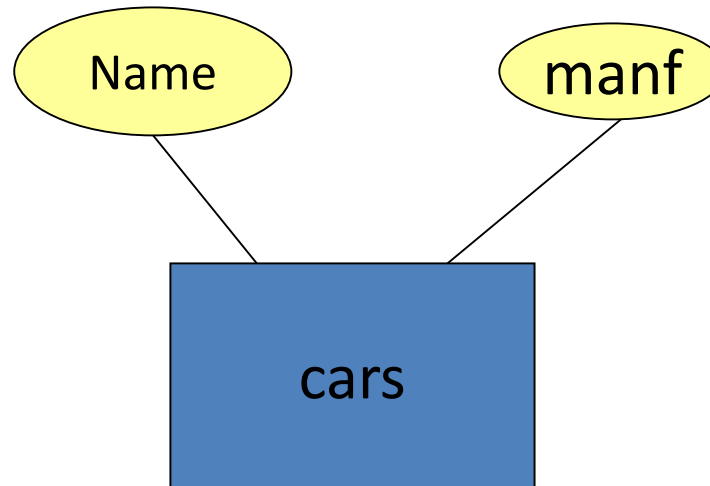
Component of ER Diagram

Entity

Relationship

Attribute

Weak Entity

Weak Entity relationship

Multivalued Attribute

Key Attribute

Composite Attribute

Example:

- Entity set car has two attributes, name and manf (manufacturer).
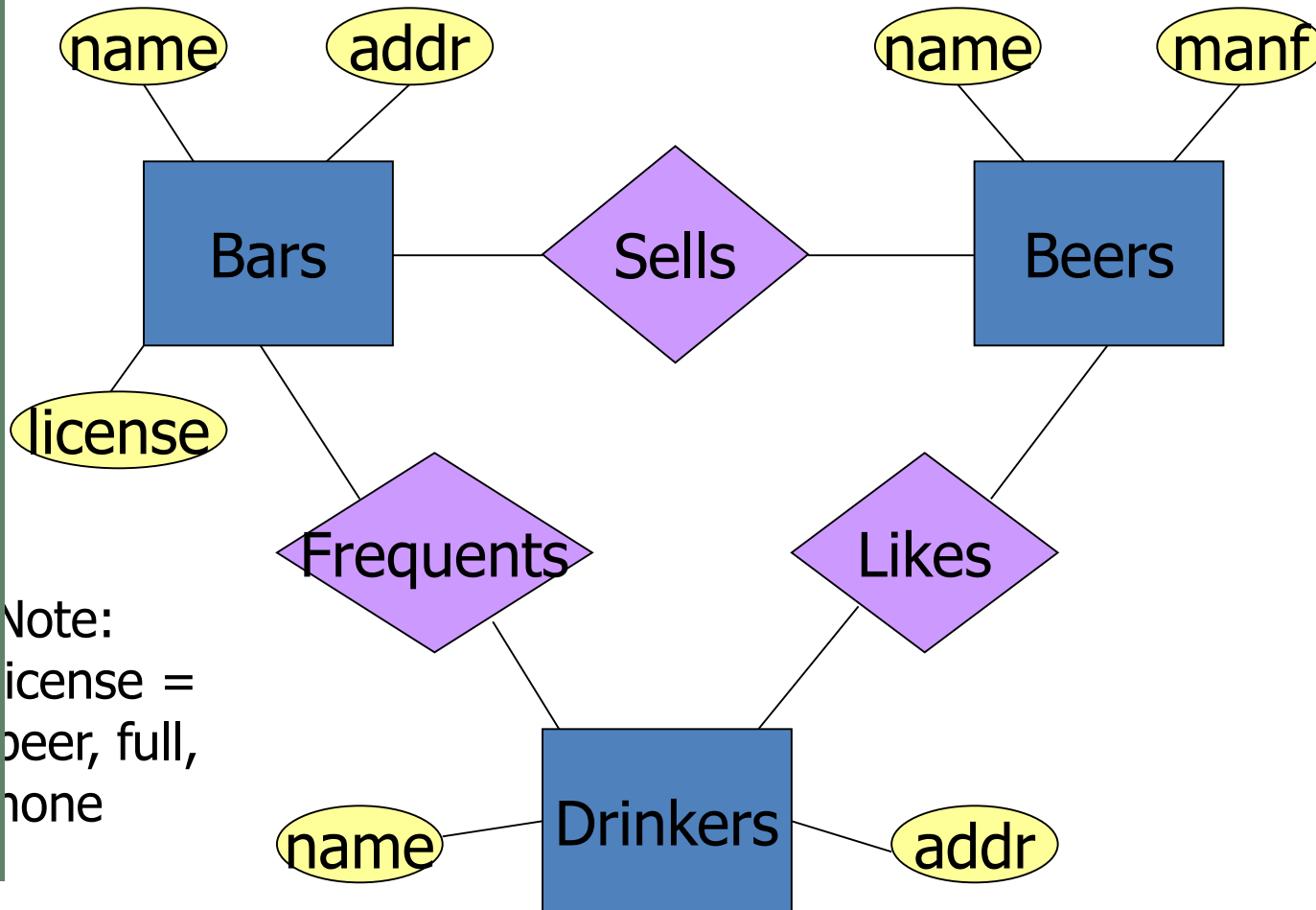- Each car entity has values for these three attributes, e.g. (color and design , model)

Relationships

- A relationship connects two or more entity sets.

- It is represented by a diamond, with lines to each of the entity sets involved.

Example: Relationships

Bars sell some beers.
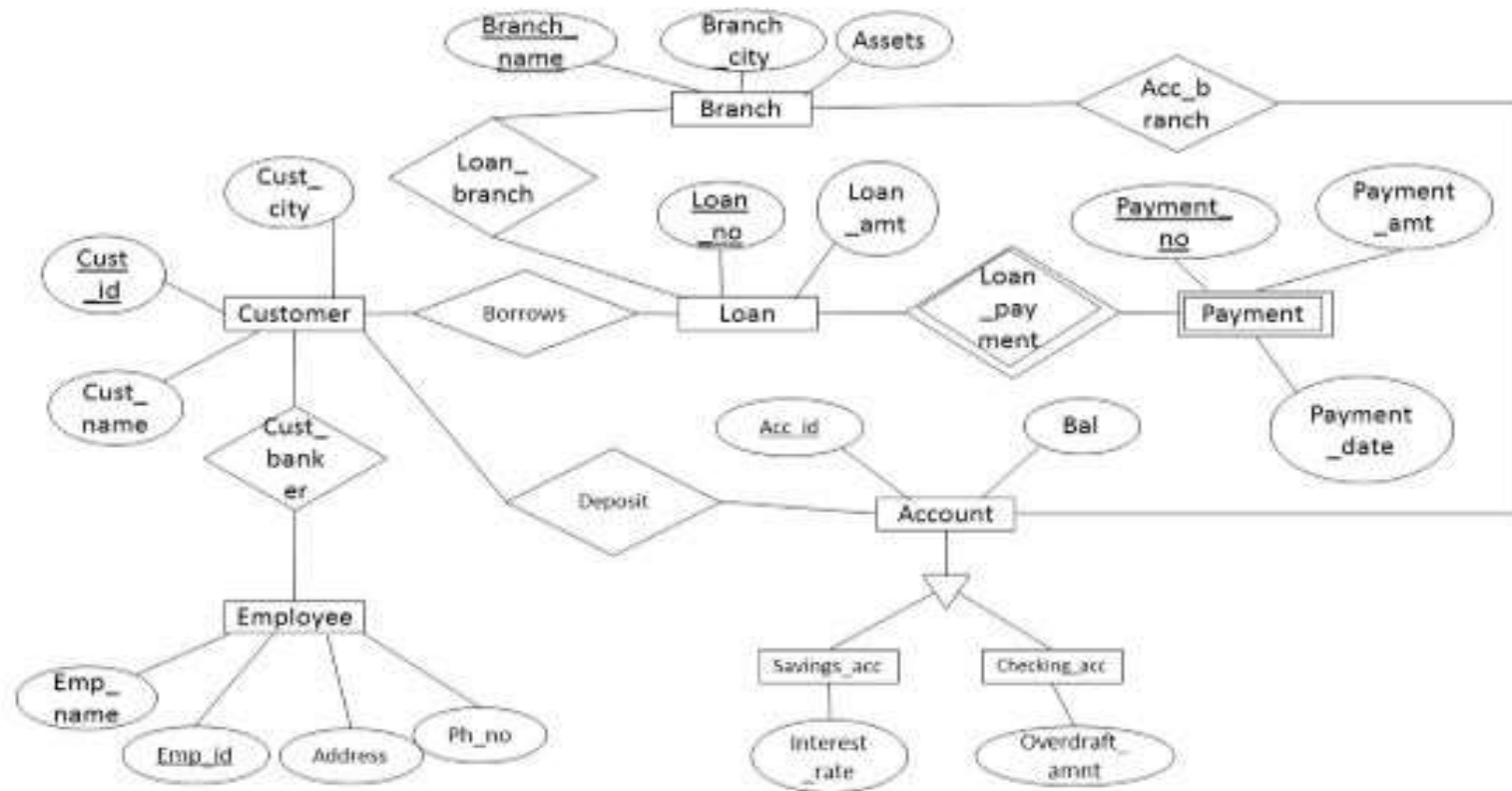
Drinkers like some beers.

Drinkers frequent some bars.

Note:
license =
beer, full,

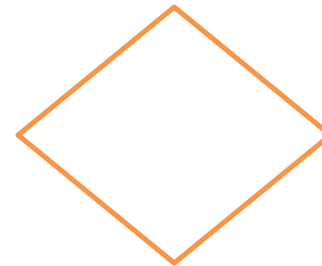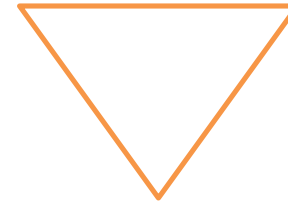- Draw the ER diagram for Banking Systems (AU Dec-17, May 14 and Dec 14)
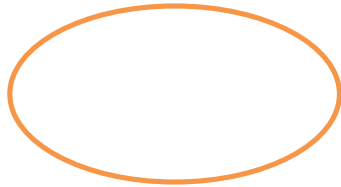
ACTIVITY

E- MODEL

- ANS:_____

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1. 1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, - Database System Concepts‖, Sixth Edition, Tata McGraw Hill, 2011.

2. Ramez Elmasri, Shamkant B. Navathe, ―Fundamentals of Database Systems, Sixth Edition, Pearson Education, 2011.

3. C.J.Date, A.Kannan, S.Swamynathan, ―An Introduction to Database Systems, Eighth Edition, Pearson Education, 2006.

4. Raghu Ramakrishnan, ―Database Management Systems‖, Fourth Edition, McGraw-Hill College Publications, 2015.

THANK YOU