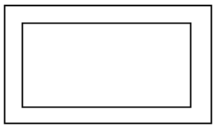
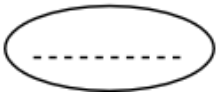
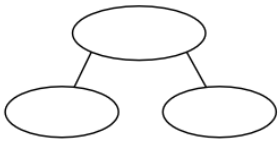
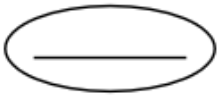
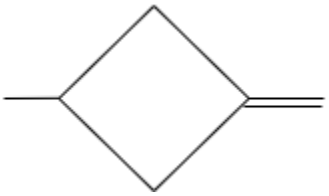
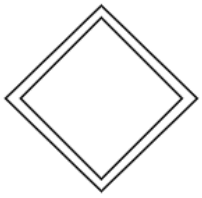
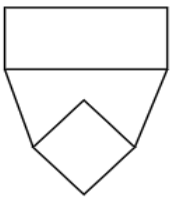
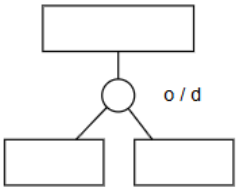
CSE370 Final Guidelines

Final Syllabus:

- ER/EER

  Things to keep in mind:

Strong entity	Weak entity 	Simple Attributes
Partial Attribute 	Multivalued Attribute	Composite Attribute 
Key Attribute 	Relationship 	Identifying Relationship 
Recursive Relationship 	Total Participation ⇒ ‖ Optional Participation ⇒ |	SuperClass/SubClass 
Cardinality Ratio 1:1 ⇒One to One, 1:N ⇒ One to Many, M:N ⇒ Many to Many [Must Use different letters for M:N] NOTE: If Cardinality and Participation is not Clearly mentioned OR can't be inferred from Question, Make Logical Assumption		Disjoint ⇒ d Overlapping ⇒ o

- **Schema Mapping**

  Step 1: Mapping of Regular/Strong Entity Types [Primary Key should be underlined]
  Step 2: Mapping of Weak Entity Types [Both Partial Key and Foreign key of Strong Entity should be underlined]
  Step 3: Mapping of Binary 1:1 Relation Types
  Put the FK in the relation/table that has Total Participation, Otherwise any relation is fine.
  (Not underlined, must use arrow head to point towards referenced PK)
  Step 4: Mapping of Binary 1:N Relationship Types
  Put the FK in the relation that is in the N side
  (Not underlined, must use arrow head to point towards referenced PK)
  Step 5: Mapping of Binary M:N Relationship Types
  Create another relation with both participating entities Key as composite key
  (Both underlined, and both are FK so they should point to their respective PK)
  Step 6: Mapping of Multivalued attributes
  Create another relation with the key of that entity and multivalued attribute
  (Both key and attribute must be underlined. FK must point towards PK)
  Step 7: Mapping of N-ary Relationship Types
  Relationship relation with n FKs

  Superclass / Subclass schema mapping

  8A: Can be applied for all types (total or optional, disjoint or overlapping)
  8B: Can be applied if the specialization is **Total Only**
  8C: Can be applied if the specialization is **Disjoint Only**
  8D: Can be applied for all types (total or optional, disjoint or overlapping)

  - Option 8A: Multiple relations-Superclass and subclasses
  - Option 8B: Multiple relations-Subclass relations only
  - Option 8C: Single relation with one type attribute
  - Option 8D: Single relation with multiple type attributes

SCHEMA EXAMPLE MAPPING [Pictures Attached, Link Below]

- **Binary Relationships**
- **Specialization/ Generalization**
- **Multivalued**
- **Recursive M:N**

- Normalization
  - 1NF disallows
    - composite attributes
    - multivalued attributes
    - nested relations
  - 2NF
    - Must be in 1NF,
    - All attributes depend on the whole key. Must be Fully Functionally Dependent (transitive dependencies can exist in 2NF)
  - 3NF
    - Must be in 2NF
    - All attributes depend on nothing but the key (No transitive dependencies exist)
  - **Normalization_Example_Solved [Quiz]**
- Indexing
  - Primary vs secondary index
  - Sparse vs Dense index
  - **B+ Tree Simulation**
- SQL

  Select
  From
  Where
  Group by
  Having
  Order by
  Like %, _
  Aggregate functions (min, max, count, sum, avg)
  Subquery
  Inner join

  PRACTICE SHEET LINK: 8. CSE370_Mysql [Practice Sheet]