**St. Xavier’s College**

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**DATABASE MANAGEMENT SYSTEM**

**LAB ASSIGNMENT #4**

**Submitted By**

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**Submitted To**

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**E-R DIAGRAM WITH CASE STUDY**

**DATABSE DESIGN**

**CHARACTERISTICS OF RELATION**

**E-R RELATIONAL MAPPING ALGORITHM**

**Step 1: Mapping of Regular Entity Types.**

* For each regular (strong) entity type E in the ER schema, create a relation R that includes all the simple attributes of E.
* Choose one of the key attributes of E as the primary key for R.
* If the chosen key of E is composite, the set of simple attributes that form it will together form the primary key of R.

**Step 2: Mapping of Weak Entity Types**

* For each weak entity type W in the ER schema with owner entity type E, create a relation R & include all simple attributes (or simple components of composite attributes) of W as attributes of R.
* Also, include as foreign key attributes of R the primary key attribute(s) of the relation(s) that correspond to the owner entity type(s).
* The primary key of R is the combination of the primary key(s) of the owner(s) and the partial key of the weak entity type W, if any.

**Step 3: Mapping of Binary 1:1 Relation Types**

* For each binary 1:1 relationship type R in the ER schema, identify the relations S and T that correspond to the entity types participating in R.
* There are three possible approaches:
* **Foreign Key approach**: Choose one of the relations-say S-and include a foreign key in S the primary key of T. It is better to choose an entity type with total participation in R in the role of S.
* **Merged relation option**: An alternate mapping of a 1:1 relationship type is possible by merging the two entity types and the relationship into a single relation. This may be appropriate when both participations are total.
* **Cross-reference or relationship relation option:** The third alternative is to set up a third relation R for the purpose of cross referencing the primary keys of the two relations S and T representing the entity types.

**Step 4: Mapping of Binary 1:N Relationship Types.**

* For each regular binary 1:N relationship type R, identify the relation S that represent the participating entity type at the N-side of the relationship type.
* Include as foreign key in S the primary key of the relation T that represents the other entity type participating in R.
* Include any simple attributes of the 1:N relation type as attributes of S.

**Step 5: Mapping of Binary M:N Relationship Types.**

* For each regular binary M:N relationship type R, create a new relation S to represent R.
* Include as foreign key attributes in S the primary keys of the relations that represent the E participating entity types; their combination will form the primary key of S.
* Also include any simple attributes of the M:N relationship type (or simple components of composite attributes) as attributes of S.

**Step 6: Mapping of Multivalued attributes.**

* For each multivalued attribute A, create a new relation R.
* This relation R will include an attribute corresponding to A, plus the primary key attribute K-as a foreign key in R-of the relation that represents the entity type of relationship type that has A as an attribute.
* The primary key of R is the combination of A and K. If the multivalued attribute is composite, we include its simple components.

**Step 7: Mapping of N-ary Relationship Types.**

* For each n-ary relationship type R, where n>2, create a new relationship S to represent R.
* Include as foreign key attributes in S the primary keys of the relations that represent the participating entity types.
* Also include any simple attributes of the n-ary relationship type (or simple components of composite attributes) as attributes of S.