NJIT | CS 631 | DATA MANAGEMENT SYSTEMS DESIGN

Project Group 12
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Deliverable 2 -- Phase 2 Report

1) Outline of this phase:

- Designed a relational database schema based on the ER diagram submitted as part of deliverable 1.
- Added additional tables to account for multi-valued attributes to our relational schema.
- Designed a relational database schema based on the ER diagram provided by the professor.

2) ERR to Relational Mapping:

***Step 1*:** For each regular (non-weak) entity type E in the EER schema, create a relation R that includes all the simple (single-valued) attributes of E. Include only the simple components of composite attributes.

Step 2: For each weak entity type W in the ER schema with owner entity type E, create a relation R and include all simple (single-valued) attributes (or simple components of composite attributes) of W as attributes of R. In addition, include as foreign key attributes of R the primary key attribute(s) of the owner entity type(s).

Step 3: 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. Choose one of the relations – say S – and include as a foreign key in S the primary key of T. Include all the simple (single-valued) attributes (or simple components of composite attributes) of the 1:1 relationship type as attributes of S.

Step 4: For each regular binary 1:N relationship type R, identify the relation S that represents the participating entity type at the N-side of the relationship type. Include as a foreign key in S the primary key of the relation T that represents the other entity type participating in R. Include any simple (single-valued) attributes (or simple components of composite attributes) of the 1:N relationship type as attributes of S.

Step 5: For each 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 participating entity types. Also, include an attribute of S any simple (single-valued) attribute (or simple component of composite attribute) of the M: N relationship type.

Step 6: For each multivalued attribute A create a new relation R. Relation R will include an attribute corresponding to A (or its simple component attributes if A is composite), plus the primary key attribute K -- as a foreign key in R-- of the relation corresponding to the entity type or relationship type that has A as an attribute.

Step 7: For each regular n-ary relationship type R, where n > 2, create a new relation 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 (single-valued) attributes (or simple component attributes of a composite attribute) of the n-ary relationship type as attributes of S.

Additional tables added to the Relational Database schema to account for Multi-valued attributes:

- Created a table EMAIL_DETAILS to store all the linked email address to every WALLET user and its verification details.
- Created a table JOINT_ACC_DETAILS to store the USER_IDs in case of a Joint account type.

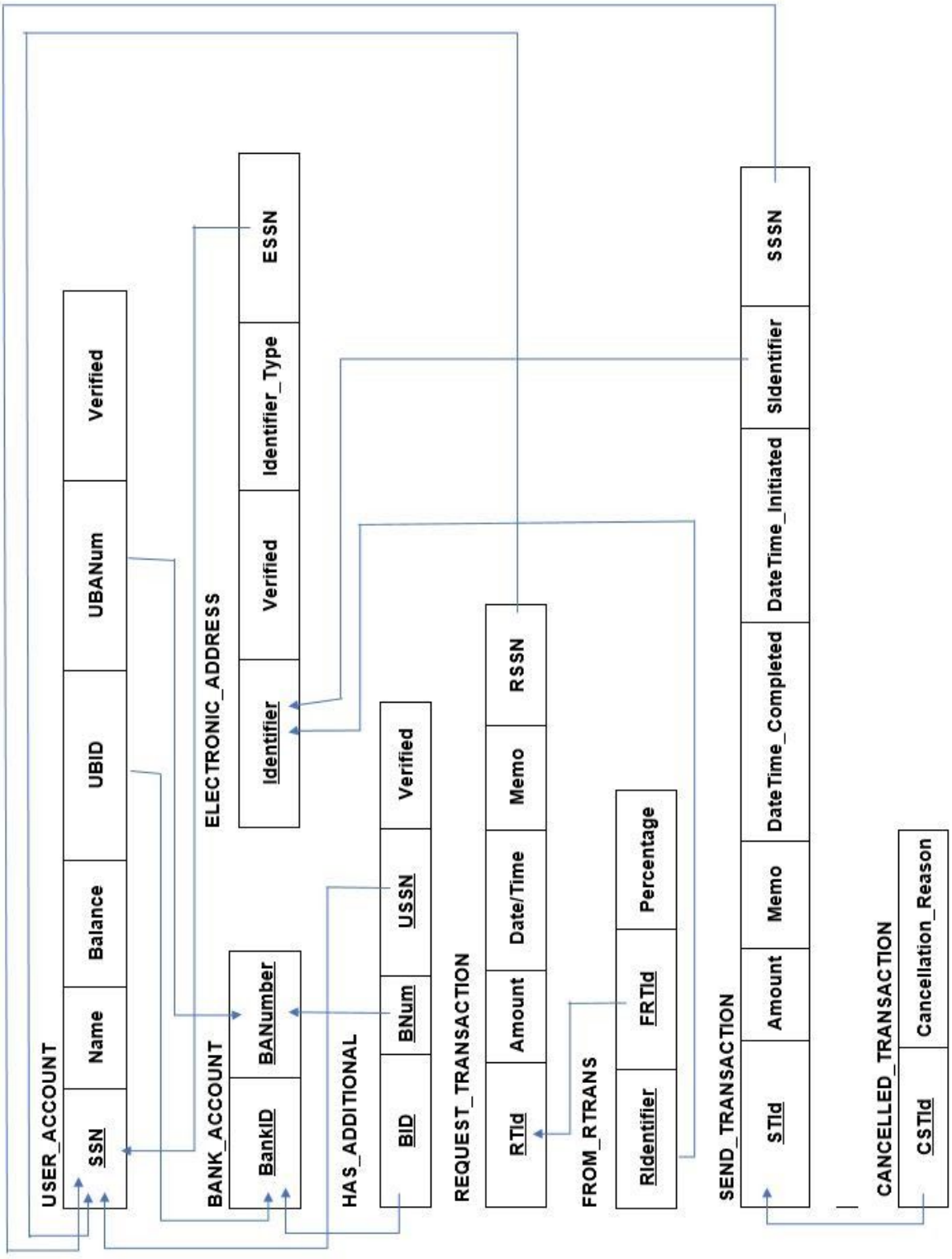
Other Constraints:

- Identifier_Type attribute of Electronic_Address table can have only Email_address or Phone as values.

3) Challenges Faced:

- There is no proper Tool available to build the relational schema.

Relational Database Schema (Based on Professor's ER Diagram)



Relational Database Schema (Based on our ER Diagram)