

# UTD

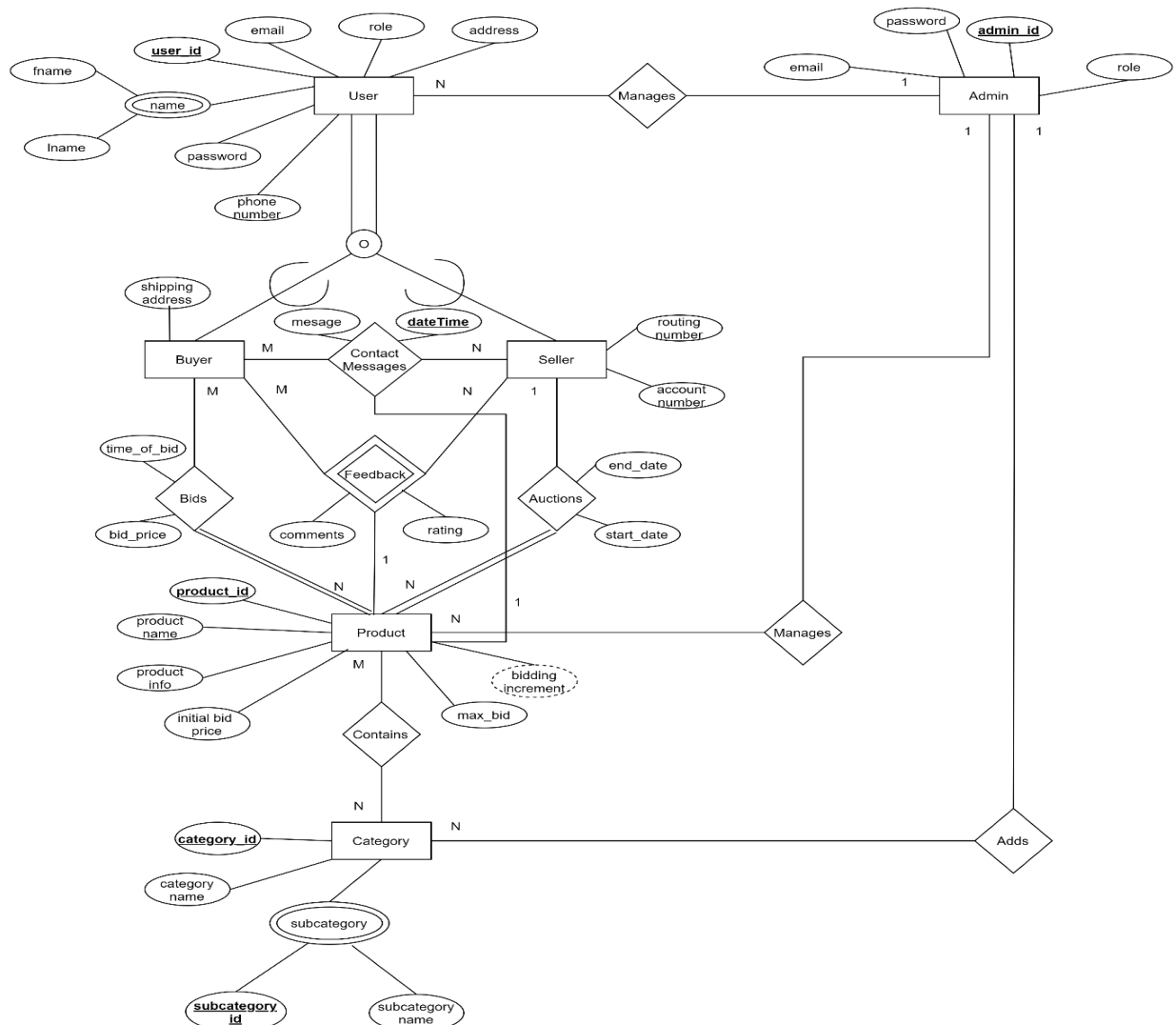
## CS 6360.003 Database Design

### Project – Phase 2 (Conceptual and Logical Database Design)

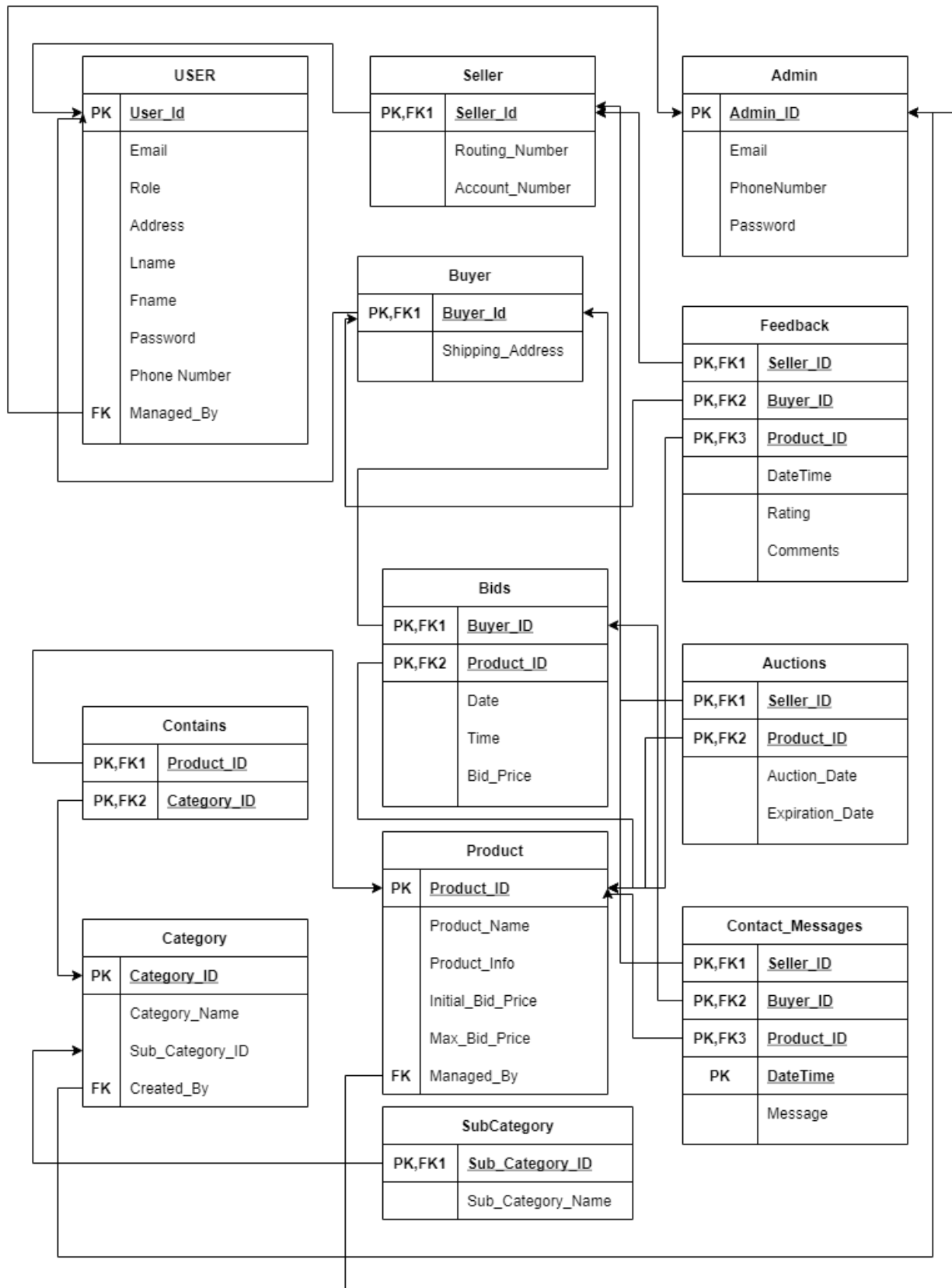
#### Team Members:

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#### A) ER Diagram (including the description of the entities, attributes, keys, cardinality, and Participation constraints).



## B) Database Schema



### **C) List of business rules and integrity constraints of the database (optional)**

Below is the list of business rules we have taken in our project:

- Admin can view all contact messages/feedbacks, manages data from buyers and sellers.
- User can either be buyer or seller or it can be both.
- Buyer can bid on multiple products.
- Seller can auction for one or more products.
- A product might fall under multiple categories.
- Buyers and sellers can send feedback after completion of the transaction.

### **D) Specify a set of functional dependencies for each relation presented.**

Below are the set of functional dependencies of the each relation of our project:

#### **User Relation:-**

- User\_id  $\rightarrow$  {Email, Role, Address, Lname, Fname, Phone\_number}
- Email, Phone\_number, Role  $\rightarrow$  {User\_id, Address, Fname, Lname}
- Email, Password  $\rightarrow$  {User\_id, Fname, Lname, Role}

#### **Seller Relation:-**

- Seller\_id  $\rightarrow$  {Routing\_number, Account\_number}

#### **Buyer Relation:-**

- Buyer\_id  $\rightarrow$  {Shipping\_address}

#### **Admin Relation:-**

- Admin\_id  $\rightarrow$  {Email, Phone, Number, Password}
- Email  $\rightarrow$  {Admin\_id, Phone\_number, Password}
- Phone\_number  $\rightarrow$  {Admin\_id, Email, Password}

#### **Feedback Relation:-**

- Seller\_id, Buyer\_id, Product\_id  $\rightarrow$  {DateTime, Rating, Comments}
- Product\_id, DateTime  $\rightarrow$  {Seller\_id, Buyer\_id, Rating, Comments}
- Product\_id  $\rightarrow$  {Rating, Comments}

#### **Bid Relation:-**

- BuyerID, ProductID  $\rightarrow$  {Date, Time, Bid\_Price}
- BuyerID, Date, Time  $\rightarrow$  {ProductID, Bid\_Price}
- ProductID, Bid\_Price  $\rightarrow$  {BuyerID, Date, Time}

#### **Auction Relation:-**

- SellerID, ProductID  $\rightarrow$  {Auction\_Date, Expiration\_Date}

#### **Product Relation:-**

- Product\_id  $\rightarrow$  {Product\_name, Product\_info, Initial\_bid\_price, Max\_Bid\_price, Manage\_by}
- Product\_id, Product\_name  $\rightarrow$  {Product\_info, Initial\_bid\_price, Max\_bid\_price}
- Product\_name  $\rightarrow$  {Product\_info, Initial\_bid\_price, Max\_bid\_price}

**Category Relation:-**

- Category\_id → {Category\_name, Sub\_category\_id, created\_by}
- Category\_id, Sub\_category\_id → {category\_name}
- Sub\_category\_id → {Category\_name}

**SubCategory:-**

- Sub\_category\_id → Sub\_category\_name

**Contact\_Messages:-**

- Seller\_id, Buyer\_id, Product\_id, DateTime → {Message}
- Buyer\_id, Product\_id, DateTime → {Seller\_id, Message}
- Seller\_id, Buyer\_id, DateTime → {Product\_id, Message}
- Seller\_id, Product\_id, DateTime → {Buyer\_id, Message}