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COS 221 Tutorial 1

- This tutorial takes place on **09 March 2023**.
- This tutorial consists of **4 questions**.
- The tutorial does not contribute towards your final marks.

Scenario

Consider an ONLINE_AUCTION database system in which members (buyers and sellers) participate in the sale of items. The data requirements for this system are summarised as follows:

The online site has members, each of whom is identified by a unique member number and is described by an e-mail address, name, password, home address, and phone number.

A member may take on the role of a buyer or a seller per LOT. A buyer has a shipping address recorded in the database. A seller has a bank account number and routing number recorded in the database.

Items are placed by a seller for sale and are identified by a unique item number assigned by the system. Items are also described by an item title and a description. Items are grouped into lots by the auction house. A lot contains 1 or more items that are auctioned as a unit.

A lot is described by starting bid price, bidding increment, the start date of the auction, and the end date of the auction. Lots are also categorised based on a fixed classification hierarchy (for example, a modem may be classified as COMPUTER → HARDWARE → MODEM).

Buyers make bids for lots they are interested in. The bid price and the time of bid are recorded. The bidder at the end of the auction with the highest bid price is declared the winner, and a transaction between buyer and seller may then proceed.

The buyer and seller may record feedback regarding their completed transactions. Feedback contains a rating of the other party participating in the transaction (1-10) and a comment.

Design an enhanced entity-relationship diagram for the ONLINE_AUCTION database and build the design using a data modelling tool such as draw.io, ERwin, Rational Rose or Visual Paradigm (online version).

Question 1: Entity and attribute design ..... (0 marks)

1.1 Identify the various entities from the provided text.

1.2 For each of the previously identified entities, identify all attributes for entity.

1.3 For each of the previously identified attributes, expand all complex (composite and/or multivalued) attributes.

1.4 For each of the previously identified attributes, list which attributes are derived.

1.5 Does your conceptual design require the use of NULL values for certain attributes. If so, list and explain why the identified attributes would require NULL values.

Question 2: Relationship design ..... (0 marks)

2.1 Are there attributes that are better suited as part of the relationships?

2.2 What structural constraints exist for the the relationships?

2.3 Is there a need for identifying relationships in this model?

Question 3: Generalisation/Specialisations ..... (0 marks)

Do generalisations/specialisations exist and need to be modelled?

Question 4: Conceptual Data Modelling and Database Design ..... (0 marks)

Draw the final (E)ER-diagram using an appropriate tool.