

INDIVIDUAL ASSIGNMENT 1

See the submission page for details and due date/time

Draw an E-R diagram and Relational Schema for the following situation (state any assumptions you believe you have to make in order to develop a complete diagram): You are asked to create an entity relationship (ER) diagram as a part of an enterprise data model for a *home appliance store*.

Ace® Appliances is located in DFW Metroplex and sells large home appliances (washers, dryers, refrigerators, dishwashers, etc.) through its nine showrooms. It sells appliances from multiple manufacturers (Amana, Frigidaire, G.E., Hotpoint, Kenmore, etc.). Ace® regularly receives shipments of appliances from manufacturers to its warehouses. Ace® has two warehouses in the DFW Metroplex.

Customers visit Ace's showrooms around the Metroplex. A sales associate usually helps a customer. Once a customer decides to purchase one or more appliances, a purchase order is prepared at the showroom by a sales associate. Sales associates receive commission from the sales they make. It is of course possible to have multiple appliances in a purchase order.

Customers can sometimes pick the appliances from the showroom and install themselves if they wish (of course if the product is available in the showroom). Showrooms usually carry very limited inventory and most customers cannot really install large appliances themselves. Therefore, the appliance(s) on a given purchase order is (**are**) usually delivered from a warehouse and installed by certified Ace technician(s) at customer's location (home, office, dorm, etc) on the same or a later date. There usually is a separate charge for delivery and installation (**D & I**).

The firm currently employs many technicians who deliver and install the purchased appliance(s). Each newly hired technician goes through training before she/he can be assigned to any D & I at customer location. During the training period, a new technician is assigned to a senior technician who acts as a mentor. A new technician can go out for a D & I only if her/his mentor accompanies him. A technician in training cannot be assigned to a D & I alone.

Ace® Appliances wants to create a database that will keep track of all aspects of its appliance business as it is described above, including (but not limited to) its appliances,

showrooms, warehouses, manufacturers, inventory of appliances, shipments it receives, sales, orders, sales associates, customers, technicians (including who the trainees and their mentors are), deliveries and installations (who, for whom and when) and so on. Ace specifically wants to use this database to produce invoices for sales, deliveries and installations. It also wants to be able to keep track of its inventories in showrooms and warehouses. The database will be used to determine and store the schedule of deliveries and installations as well as technician assignments. In order to help this task please do the following:

Look at the data in ApplianceStoreBrief.xlsx and determine the functional dependencies in the data. For each attribute (column) identify the determinant attribute. Please look at the example data very carefully and consider the business description (business rules) given above. I also provided you with a sample report of what customer orders, delivery and installation looks like. Note that neither of these files contains full list of entities or tables. They are mentioned above, so add additional attributes as you see fit.

- A) Please provide detailed explanation about how you would proceed and split the data into multiple tables so that resulting tables do not contain redundancy. Please list each resulting table with its primary key(s) and foreign key(s) properly identified. Remember to use the relational schema representation we used in class to show the list of tables, foreign keys. See sample solution posted. Consider the business description (business rules) given above and look at the data and the sample excel file to understand the business processes.
- B) Please draw the Entity Relationship Diagram to represent the real estate agency's data model and requirements. Remember to use supertype/subtypes entities if necessary and useful. The ERD must include not only the entities and relationships with cardinalities (minimum and maximum) but also all attributes. Underline the primary keys. There must be no many-to-many relationships. You can use VISIO or any other tool for your ERD but make sure the crow's foot notation is used.

Submission Procedure

Submit a **soft copy** of your assignment as a **single PDF** file via **e-learning assignment submission page**. Remember this is an individual assignment by the due date stated in the syllabus (refer to the class syllabus for late submission and penalties). **Please put your**

course number and official full name in your file and the file's name.

That makes life easier for all of us 😊 See below:

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