COMP2411 Database System Homework 1 Question A

Wang Ruijie

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Question A 1) Assumptions for the situation:

(1) The phone number (denoted by *mobile#*) is used to uniquely identify *customer*.

(2) Payment number (denoted by *payment#*) is created by me as an attribute to uniquely identify fee.

(3) One customer can bring n packages to m service center for delivery ($n \geq m$). As a result, a customer pays for n fees as the number of fees shall be equal to the number of packages.

(4) *Trasportation* has no relationship with the *Service Center*.

(5) The two attributes of *Service Center*, *addresses* and *types* are multivalued attributes.

(5) Since the fee that shall be paid by the customer is derived from the weight of the package and the modes of the transportations, the relationship among *package*, *transportation* and fee, $DERIVES$, has two attributes, $weight\_of\_package$ and the multivalued $modes\_of\_transportations$ (as there might exist n periods of transportations for each package).

Based on the assumptions given, the below is the ER Diagram:

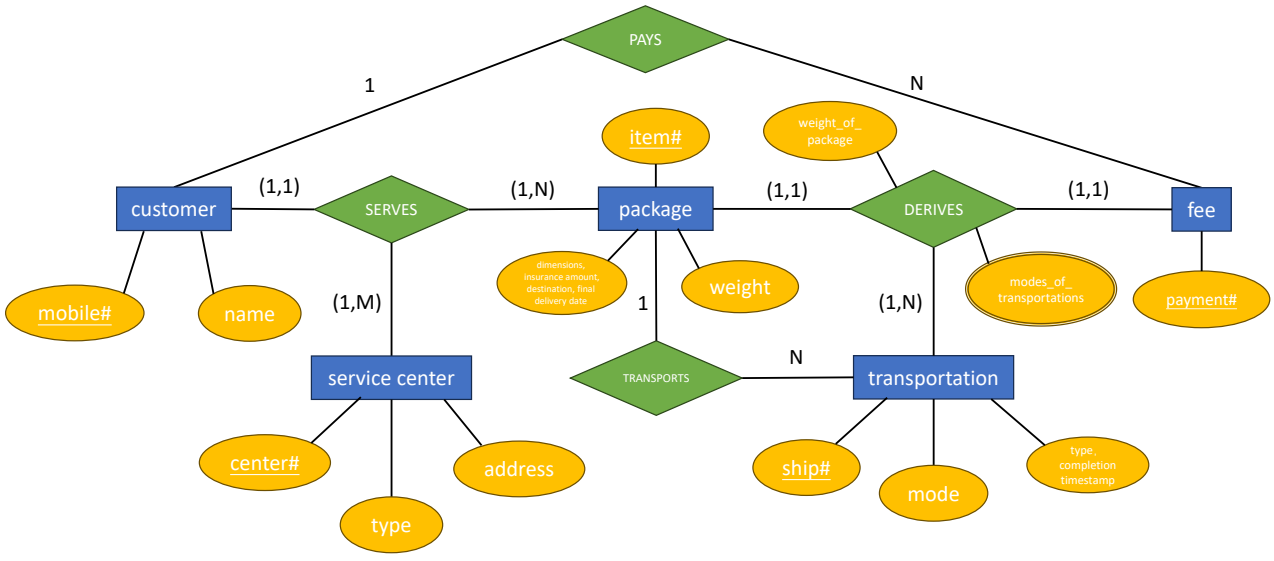

Figure 1: The ER Diagram for Question A

Question A 2) The ER Diagram can imply the Relational Schema below:

$$Customer(\underline{mobile\sharp}, name)$$

$$Service\ Center(\underline{center\sharp}, types, addresses)$$

$$Package(\underline{item\sharp}, weight, dimensions, insurance\ amount, destination, final\ delivery\ date)$$

$$Trasportation(\underline{ship\sharp}, mode, completion\ timestamp)$$

$$Fee(\underline{payment\sharp})$$

$$SERVES(\underline{phone\sharp}, \underline{item\sharp}, center\sharp)$$

$$TRANSPORTS(\underline{item\sharp}, \underline{ship\sharp})$$

$$DERIVES(\underline{item\sharp}, \underline{ship\sharp}, item\sharp, weight\_of\_package, modes\_of\_transportations)$$

$$PAYS(\underline{phone\sharp}, \underline{payment\sharp})$$

Please refer to the file *Question_B.sql* for my answer of the Question B.