CSE 370 – Database Systems

Spring 2023 : Section 05 : QUIZ 2

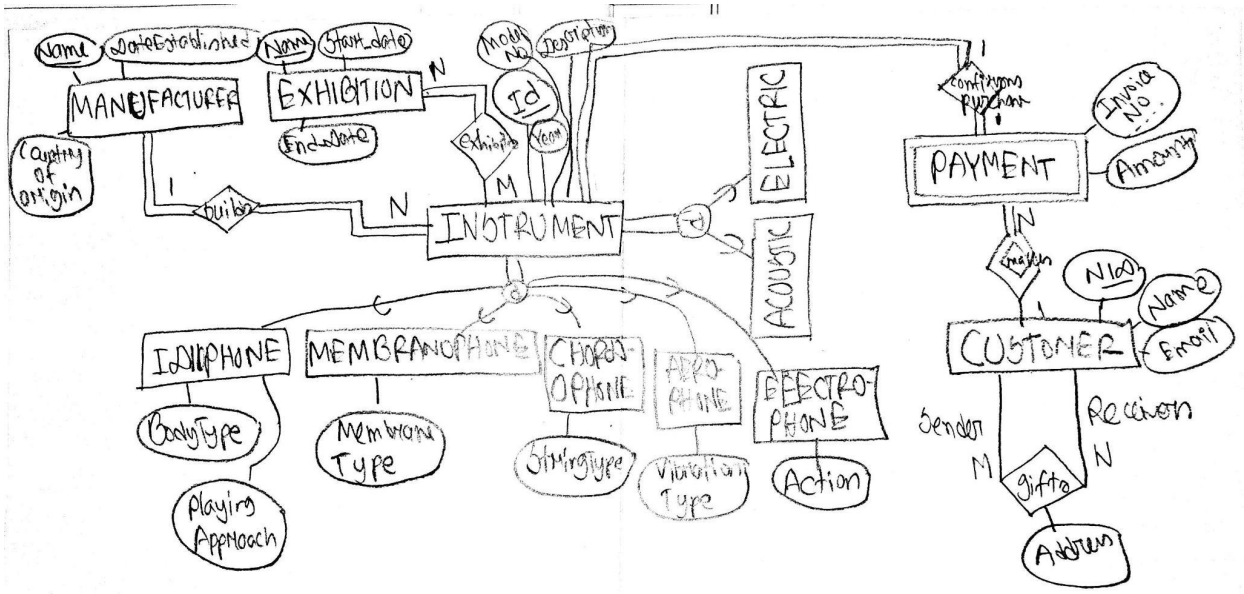
Question 1 [CO2] : 10 Points

Design a database to keep track of information for a Musical Instrument Shop. Assume that the following requirements were collected:

- The shop has a collection of INSTRUMENTS. Each INSTRUMENT has a unique ID, a Manufacturer (if known), a Year (when it was built, if known), a Model No, and a Description. The musical instruments are categorized in several ways, as discussed below.
- INSTRUMENTS are categorized based on their type. There are five types—IDIOPHONES, MEMBRANOPHONES, CHORDOPHONES, AEROPHONES and ELECTROPHONES.
- An IDIOPHONE has a BodyType and PlayingApproach attribute. A MEMBRANOPHONE has a MembraneType attribute. A CHORDOPHONE has a StringType attribute. An AEROPHONE has a VibrationType attribute. An ELECTROPHONE has an Action attribute.
- An INSTRUMENT can also be either ACOUSTIC or ELECTRIC.
- MANUFACTURERS build INSTRUMENTS. The shop keeps track of MANUFACTURERS information, if known: Name, DateEstablished (if known), Country_of_origin. The Name is assumed to be unique.
- The shop arranges EXHIBITIONS to occur, each having a Name, Start_date, and End_date. EXHIBITIONS are related to all the INSTRUMENTS that were on display during the exhibition.
- To purchase instrument(s), a CUSTOMER needs to get registered. PAYMENT confirms purchases of a CUSTOMER.
- A CUSTOMER can gift an instrument to other CUSTOMERs. In that case, the address of the one(s) who will receive the gift is recorded.

Draw an EER diagram for this application. There must be a weak entity, at least one relationship attribute, at least one m:n relationship and at least one recursive relationship. Discuss any assumptions you make, and then justify your EER design choices (if required).

Sample Solution (without Assumptions)


Name
DateEstablished
Name
Start_date
MANUFACTURER
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N
Id
Country of origin
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Year
1
builds
N
M
INSTRUMENT
ELECTRIC
ACOUSTIC
IDIOPHONE
MEMBRANOPHONE
CHORDOPHONE
AERO PHONE
ELECTRO PHONE
BodyType
Membrane Type
StringType
Vibration Type
Action
Playing Approach
1
confirms purchase
PAYMENT
Invoice No
Amount
N
makes
1
NId
Name
Email
CUSTOMER
Sender
M
gifts
Receiver
N
Address