

Final Project DBDL
CSC572 Advanced Database Concepts
Camron Khan

Time Logs:

1. 10/3/17
 - a. 3 hours
 - b. Started and completed the Entities, Attributes, Functional Dependencies, Primary Keys, and Special Restrictions sections
2. 10/5/17
 - a. 2 hours
 - b. Started and completed the DBDL 3NF and Data Structure Diagram sections
3. 10/7/17
 - a. 2 hours
 - b. Made changes to DBDL based on user feedback

Entities:

1. Order
2. OrderLine
3. Customer
4. SalesRep
5. ItemClass
6. Part
7. Warehouse
8. Inventory
9. Manufacturer

Attributes:

1. OrderID
2. OrderDate
3. OrdererType
4. OrderLineQuantity
5. OrderLineQuotedPrice
6. CustomerID
7. CustomerName
8. CustomerStreet
9. CustomerCity
10. CustomerState
11. CustomerZip
12. CustomerBalance
13. CustomerCreditLimit
14. SalesRepID
15. SalesRepFirstName
16. SalesRepLastName
17. SalesRepStreet
18. SalesRepCity
19. SalesRepState
20. SalesRepZip
21. SalesRepCommissionRate
22. ItemClassID
23. ItemClassDescription
24. PartID
25. PartDescription

26. PartPrice
27. PartCost
28. WarehouseID
29. WarehouseDescription
30. InventoryQuantity
31. ManufacturerID
32. ManufacturerName

Functional Dependencies:

1. OrderID → OrderDate, OrdererType, CustomerID
2. (OrderID, PartID) → OrderLineQuantity, OrderLineQuotedPrice
3. CustomerID → CustomerName, CustomerStreet, CustomerCity, CustomerState, CustomerZip, CustomerBalance, CustomerCreditLimit, SalesRepID
4. SalesRepID → SalesRepFirstName, SalesRepLastName, SalesRepStreet, SalesRepCity, SalesRepState, SalesRepZip, SalesRepCommissionTotal, SalesRepCommissionRate
5. ItemClassID → ItemClassDescription
6. PartID → PartDescription, PartPrice, PartCost, ManufacturerID
7. WarehouseID → WarehouseDescription
8. (WarehouseID, PartID) → InventoryQuantity
9. ManufacturerID → ManufacturerName

Primary Keys:

1. OrderID
2. (OrderID, PartID)
3. CustomerID
4. SalesRepID
5. ItemClassID
6. PartID
7. WarehouseID
8. (WarehouseID, PartID)
9. ManufacturerID

Special Restrictions:

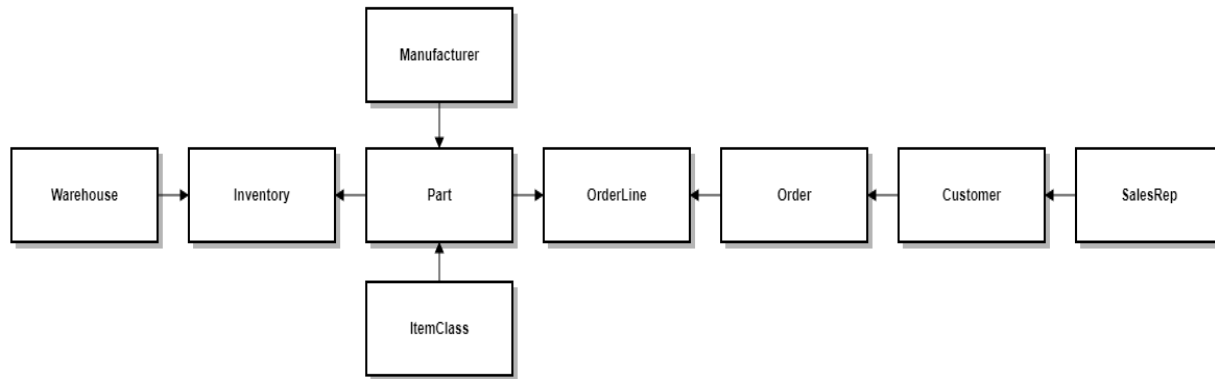
1. Legal values for the OrderedByType column in the Order table are 'customer' and 'sales rep'
2. Legal values for the ItemClassDescription column in the ItemClass table are 'hand tools', 'power tools', 'safety equipment', and 'miscellaneous equipment'
3. The total commission for a sales rep is calculated by summing the product of the order line quantity and the order line quoted price for each order within the current fiscal year to date for each customer that a sales rep represents and multiplying this value by the sales rep's commission rate
4. The total number of units on hand for a given part is calculated by summing the quantity of that part at each warehouse
5. The total on-hand value for a given part is calculated by multiplying that part's total number of units on hand by that part's cost

DBDL 3NF:

1. Order(OrderID, OrderDate, OrdererType, CustomerID)
FK CustomerID → Customer
2. OrderLine(OrderID, PartID, OrderLineQuantity, OrderLineQuotedPrice)
FK OrderID → Order
FK PartID → Part
3. Customer(CustomerID, CustomerName, CustomerStreet, CustomerCity, CustomerState, CustomerZip, CustomerBalance, CustomerCreditLimit, SalesRepID)
FK SalesRepID → SalesRep

4. SalesRep(SalesRepID, SalesRepFirstName, SalesRepLastName, SalesRepStreet, SalesRepCity, SalesRepState, SalesRepZip, SalesRepCommissionTotal, SalesRepCommissionRate)
5. ItemClass(ItemClassID, ItemClassDescription)
6. Part(PartID, PartDescription, PartPrice, PartCost, ItemClassID, ManufacturerID)
FK ItemClassID → ItemClass
FK ManufacturerID → Manufacturer
7. Warehouse(WarehouseID, WarehouseDescription)
8. Inventory(WarehouseID, PartID, InventoryQuantity)
FK WarehouseID → Warehouse
FK PartID → Part
9. Manufacturer(ManufacturerID, ManufacturerName)

Data Structure Diagram



Questions for the User / Prof. Waggoner:

1. Are the terms "parts" and "tools" used interchangeably?
2. Is the "quoted price" on an order line the same thing as a part's "part price"?
3. Can I safely assume that in cases where an ID is required (i.e., ManufacturerID, ItemClassNumber) that I should break those entities into their own tables?
4. Do we want uniqueness constraints on any of the following?
 - a. ItemClassDescription
 - b. PartDescription
 - c. WarehouseDescription
 - d. ManufacturerName
5. Are there any quantity minimums or maximums on order lines?
6. Do we need to differentiate between clients and customers? For example, two customers who work for the same organization placing orders for that organization.
7. Should SalesRepCommissionTotal be considered a calculated column, since we could determine this value by multiplying the SalesRepCommissionRate by the sum of all order lines associated with that rep within a given date range?
8. Regarding the OrdererID and OrdererType columns in the Order table:
 - a. Can I use the OrdererID column to map to either a CustomerID or a SalesRepID and then use the OrdererType column to specify which former belongs to by a restricted set of values (i.e., 'customer', 'sales rep')?
 - b. If the above is allowable, how should this be modeled in the data structure diagram given that the OrdererID column is not a true foreign key?
9. It is not listed anywhere in the requirements, but is a contact person first name, last name, and phone number required for each customer?