Shelby Simpson; CS205-01; Spring 2018

**Optimized Logical Schema(Version 2)**

The purpose of this file is to optimize the normalized logical schema.

Based on: Normalized Logical Schema(Version 2)

Changes: No changes were made to the normalized logical schema.

Part (PartID, Name\*, Unit Cost\*, Contains, BOM)

Part satisfies 1st Normal Form since there are no multi-valued or composite attributes and the non-key attributes Name and Unit Cost are determined by the candidate key PartID.

Part satisfies 2nd Normal Form since PartID is a complete candidate key.

Part satisfies 3rd Normal Form since the non-key attributes Name and Unit Cost are determined by the complete candidate key PartID.

Part satisfies BCNF since there are no key attributes.

Technician (TechnicianID, Name\*, Street, City, State, Zip, Uses)

Technician satisfies 1st Normal Form since there are no multi-valued attributes and the only composite attribute, address, has already been unbundled. The non-key attributes Name, Street, City, State, and Zip are all determined by the candidate key TechnicianID.

Technician satisfies 2nd Normal Form since TechnicianID is a complete candidate key.

Technician satisfies 3rd Normal Form since the non-key attributes Name, Street, City, State, and Zip are all determined by the complete candidate key TechnicianID.

Technician satisfies BCNF since there are no key attributes.

COrder (OrderID, [OrderTotal]\*, DateToFill, CustomerID\*, PartID\*)

*CustomerID references Customer.CustomerID; PartID references Part.PartID*

COrder satisfies 1st Normal Form since there are no multi-valued or composite attributes and the non-key attributes OrderTotal, DateToFill, CustomerID, and PartID are determined by the candidate key OrderID.

COrder satisfies 2nd Normal Form since OrderID is a complete candidate key.

COrder satisfies 3rd Normal Form since the non-key attributes OrderTotal, DateToFill, CustomerID, and PartID are determined by the complete candidate key OrderID.

COrder satisfies BCNF since there are no key attributes.

ForPart (PartID, OrderID, Quantity\*, [LineTotal]\*)

*PartID references Part.PartID; OrderID references Order.OrderID*

ForPart satisfies 1st Normal Form since there are no multi-valued or composite attributes and the non-key attributes Quantity and LineTotal are determined by the candidate key PartID, OrderID.

ForPart satisfies 2nd Normal Form since PartID, OrderID is a complete candidate key.

ForPart satisfies 3rd Normal Form since the non-key attributes Quantity, and LineTotal are determined by the complete candidate key PartID, OrderID.

ForPart satisfies BCNF since there are no key attributes.

Assembly Card (CardNumber, OrderID\*, Creates)

*OrderID references COrder.OrderID*

Assembly Card satisfies 1st Normal Form since there are no multi-valued or composite attributes and the non-key attributes OrderID is determined by the candidate key CardNumber.

Assembly Card satisfies 2nd Normal Form since CardNumber is a complete candidate key.

Assembly Card satisfies 3rd Normal Form since the non-key attribute OrderID is determined by the complete candidate key CardNumber.

Assembly Card satisfies BCNF since there are no key attributes.

Customer (CustomerID, Name\*, Street\*, City\*, State\*, Zip\*, Places)

Customer satisfies 1st Normal Form since there are no multi-valued attributes and the only composite attributes, address, has already been unbundled. The non-key attributes Name, Street, City, State, and Zip are all determined by the candidate key CustomerID.

Customer satisfies 2nd Normal Form since CustomerID is a complete candidate key.

Customer satisfies 3rd Normal Form since the non-key attributes Name, Street, City, State, and Zip are all determined by the complete candidate key CustomerID.

Customer satisfies BCNF since there are no key attributes.

Supplier (SupplierID, Name\*, Street\*, City\*, State\*, Zip\*, Ships)

Supplier satisfies 1st Normal Form since there are no multi-valued attributes and the only composite attribute, address, has already been unbundled. The non-key attributes Name, Street, City, State, and Zip are all determined by the candidate key SupplierID.

Supplier satisfies 2nd Normal Form since SupplierID is a complete candidate key.

Supplier satisfies 3rd Normal Form since the non-key attributes Name, Street, City, State, and Zip are all determined by the complete candidate key SupplierID.

Supplier satisfies BCNF since there are no key attributes.

Supply Shipment (SupplyID, Quantity\*, SupplierID\*, PartID\*)

*SupplierID references Supplier.SupplierID; PartID references Part.PartID*

Supply Shipment satisfies 1st Normal Form since there are no multi-valued or composite attributes and the non-key attributes Quantity, SupplierID, and PartID are determined by the candidate key SupplyID.

Supply Shipment satisfies 2nd Normal Form since SupplyID is a complete candidate key.

Supply Shipment satisfies 3rd Normal Form since the non-key attributes Quantity, SupplierID, and PartID are determined by the complete candidate key SupplyID.

Supply Shipment satisfies BCNF since there are no key attributes.