GSW_S22_CSCI6410_BonusProject_Lee_Brunovsky

Requirement Analysis

Since left unspecified in the assignment, I will assume that this is a 'Mom & Pop' grocery store of limited size; therefore, processing speed will not need to be maximized via information requirement efficiency such as concern over the storage of derived attributes. Likewise, security and shared access will not be major concerns, and data integrity can be insured by following proper database housekeeping commit and check constraint statements. For simplicity, the supply vendors SKU's and item names will be left constant with the grocery store business.

Business Rules

A brief interview with 'Mom & Pop' generated the following businesses rules in order to run a grocery store:

- Items must be procured by suppliers, which generates a 'SUPPLY' table and SUP_ORDER, SKU, VENDOR, ITEM, SUP_COST, SUP_QTY, and SUP_DATE data fields.

- Items will be sold to customers, which generates a "SALE' table and SALE_ORDER, SKU, SALE_PRICE, SALE_QTY, and SALE_DATE data fields.

- The inflow of good via supply and outflow of goods through sales will generate an 'INVENTORY' table and INV_ID, SKU, SUP_ORDER, SALE_ORDER, QTY, QOH and data fields.

- The aforementioned three business processes will generate an "ACCOUNTING' table and INV_ID, SKU, SALE_ORDER, and SUP_ORDER data fields.

An overall1st normal form (NF) diagram would look as follows:

1NF (SUP_ORDER, SALE_ORDER, SKU, VENDOR, ITEM, SUP_COST, SUP_QTY, SUP_DATE, SALE_PRICE, SALE_QTY, INV_ID, QOH, PMT_TYPE, DEBIT, CREDIT, SUB_TOTAL)

PARTIAL DEPENDENCIES:

(SUP_ORDER→ SKU, VENDOR, ITEM, SUP_COST, SUP_QTY, SUP_DATE)

(SALE_ORDER →SALE_PRICE, SALE_QTY)

TRANSITIVE DEPENDENCIES:

(SALE_ORDER, SUP_ORDER →INV_ID, QOH)
(INV_ID→PMT_TYPE, DEBIT, CREDIT, SUB_TOTAL)

In order to make the tables 3NF, we need to eliminate partial & transitive dependencies. The dependency diagrams look as follows:

SUPPLY (SUP_ORDER, SKU, VENDOR, ITEM, SUP_COST, SUP_QTY, SUP_DATE)
SALE (SALE_ORDER, SKU, SALE_PRICE, SALE_QTY, SALE_DATE)
INVENTORY (INV_ID, SUP_ORDER, SALE_ORDER,SKU, QOH)
ACCOUNTING (INV_ID, PMT_TYPE, DEBIT, CREDIT, SUB_TOTAL)

ERD crow foot diagram of 3F data structure below: