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LIS-S511 Database Design

9/25/2022

Data Narrative Reflection

While the initial database served as rough sketch for fulfilling the financial recording and order fulfillment needs of a warehouse which can take orders, it did not at the time take into account how certain factors for information may vary, such as prices for items or the wages that employees earn. And if they were changed but recorded, then the results of financial audits would be skewed, as they would base costs of employee hours or of parts in stock based only on the current value information, rather than what the costs and revenue were at the time they were first accrued. As such, record tables had to be made for these changes in financially relevant information, specifically by creating a table to record initial value of wages upon first entering an employees information, and by ensuring that this table would automatically update, by inserting a new instance into the table whenever an employees wages were changed. This table, WAGE_REGISTER, has unique instances indicated by the unique combination employee in question, and the time in which the new wage was recorded.

Another missing detail was how employees may be given different hours based on certain events. Since overtime for a warehouse may not be regular, you cannot simply record the hours of the employee based on their position or shift. Warehouses, like many workplaces, instead have a timeclock that each employee clocks into at the beginning and end of each day, recording the hours. Abstracting the timeclock is necessary to include the day-to-day variations in employee performance, much as absences do, as well as in daily costs of running the warehouse. The table which records this, TIMECLOCK, records only three attributes: the employee in question, a time for clock-in, and a time for clock out. Since a clock-in necessitates a clock-out and since on-the-clock employees would have no clock-out value at the time, the composite key such a table would be the employee in question and there clock in time. Because the database is intended to be used, inserted to, and updated in real time of warehouse operation, Clock-out is one of the few attributes within the database which can be held as a null value without a flag.

Last of the missing tables to record financial relevant but potentially varying information was how to record the varying costs of items as they suppliers might renegotiate or new suppliers are found for preselected parts. As such, restock purchases for items are now recorded in the table RESTOCK, which records the part in question, the time of purchase, the price of item at purchase, the supplier at the time (as this might vary along with prices for the items the warehouse wishes to stock), and finally the total cost of the purchase, which can default to the amount times the price but can also be set incase of special deals worked out between supplier and warehouse. While this table cause prices to be inconsistent with how the part is priced later down the line or the supplier for said part later down the line, it allows the warehouse to more accurately record financial records and conduct audits.

In addition, specification of certain tables was also needed, specifically in regards to employee specialization and fleet specialization. Employees would be assigned specific tasks with specific information requirements, specifically in regards to tracking packers and drivers, those responsible to fulfilling and delivering orders. Implemented as two partial complete disjoint subtypes, DRIVER and PACKER tables hold the necessary information of DRIVER license as well as whether or not the PACKER is forklift certified, an important record for additional duties such as dual packer/picker. The EMPLOYEE table attribute for the distinction, EMP_TITLE is one of the few attributes to allow a null value. Along with employees, Fleet has been specialized to record the information of both trucks and forklifts and their information distinctions such as mast height of forklift or axle weight of trucks, in the full compete disjoint subtype tables FORKLIFT and TRUCK.

Besides requiring more tables, certain relationships had to be adjusted to contain dummy variables to ensure as few null values in records as possible. Since an in use database would hold flag indicators for missing information to make their lack more glaring or interpretable to the user, certain optional relationships have been made mandatory but been given a null indicator value via a dummy instance, instance 0. Enforced by the primary key for all none composite tables being integers, this holding this value within a foreign key field indicates that such an entity has not been decided upon yet, such as with the SHIP_ID in PACKAGE table, to to indicate that such information has been lost by the initial instance being removed from the system, such as FLEET_ID 0 for SHIPMENT table, or SUPP_ID for item table. The indication varies depending on the nature of the table. Since insurance premiums and payments for trucks would be one-time payments as opposed to continuous operating costs like employee wages or items, they can be more easily deleted, and as such they're 0 value indicates a deleted value.