Assignment 3

Challenge

Widgets Create a basic system description and document a normalized schema from the attached widgets (widgets.tsv) text file. Include

1. What you think this system would do
2. What you feel would be a reasonable database structure for the data and a reasonable architecture for the system
3. Any questions or concerns you have regarding this dataset/system that might need to be answered before establishing an ideal database/solution for such a system. It's a very open-ended problem.

Solution

1. The system appears to be related to some kind of sales records, in which you have information about the product, packaging, customer, distribution details, etc. Most likely the system will be used to track orders and stocks

2. The table is a mix of data that contains information about the customer , warehouse, suppliers, product, etc. The way the data is presented contradicts the principle of data normalization.

   Because of how the initial widget table was constructed there is a lot of redundancy. The normalization process is needed to avoid having redundant information, and to avoid having errors or anomalies in the data. The normalization process also simplifies the process of adding information. For example, adding a customer or a supplier name, without having to also add a product or warehouse.

   The initial table

	A	B	C	D	E	F	G	H	I
1	widget	packaging	customer	price	supplier	cost	warehouse	qty	min_qty
2	Ant Trap	bag of 10	Home Place	$9	Little Traps	$0.50	AUS	112	50
3	Ant Trap	bag of 5	Home Place	$5	Little Traps	$0.50	AUS	112	50
4	Ant Trap	bag of 10	Bug Store	$10	Little Traps	$0.50	AUS	112	50
5	Ant Trap	bag of 5	Bug Store	$6	Little Traps	$0.50	AUS	112	50
6	Mouse Trap	box of 2	Home Place	$5	Little Traps	$1	ATL	200	50
7	Mouse Trap	box of 1	Home Place	$3	Little Traps	$1	ATL	200	50
8	Mouse Trap	bag of 10	Home Place	$20	Little Traps	$1	ATL	200	50
9	Mouse Trap	bag of 5	Bug Store	$15	Little Traps	$1	ATL	200	50
10	Bear Trap	box of 1	Home Place	$50	Big Traps	$40	MSP	10	10
11	Bear Trap	box of 5	Home Place	$220	Big Traps	$40	MSP	10	10
12	Bear Trap	box of 1	No Bears R Us	$60	Big Traps	$40	MSP	10	10
13	Moose Trap	box of 1	Home Place	$75	Big Traps	$50	MSP	5	5
14	Moose Trap	box of 1	No Bears R Us	$80	Big Traps	$50	MSP	5	5
15	Elephant Trap	crate of 1	Home Place	$100	Raytheon	$90	MSP	3	5
16	Elephant Trap	crate of 1	No Bears R Us	$110	Raytheon	$90	MSP	3	5

The widget table can be broken into

Customers
ID
customer

Widgets
ID
widget
cost
qty
min_qty

*assuming qty and min_qty are referring to the stock of the widget, not the ordered quantity.

Suppliers
ID
supplier

Warehouses

ID
warehouse

Packing
ID
packing
price

* In the example we see different prices for the same product and that is why I included the price in the packing table and not in the widget one.

Orders
ID
widget_id
packing_id
cusomer_id
supplier_id
warehouse_id

There are some questions that need to be clarified before implementing the solution.

1. Do we have different suppliers for the same widget
2. Why are the prices different for the same widget, since they have the same packing and are delivered from the same warehouse
3. What is should happen when the qty < min_qty (which is visible on some of the items)