

Conceptual relationships are a starting point for defining physical relationships.

parts. We are missing the record for a purchase order's line item. Therefore, the diagram would look something like this:



Each purchase order may include many line items, but each line item is on only one PO. Similarly, a part number can be on many line items (in different POs), but each line item is for only one part number.

In short, a two-headed arrow is meaningful because it indicates a many-to-many relationship, but it is a symptom that there's an entity missing. A hidden record exists which, when found, forms the intersection of the two records already identified. When you find a many-to-many situation in file design, feel free to tag it with arrows at each end. Remember, though, it means we are not finished. Find the missing intersection record, break the arrow in two, insert the intersection, reverse the broken pieces of arrow, and the two-headed relationship will vanish.

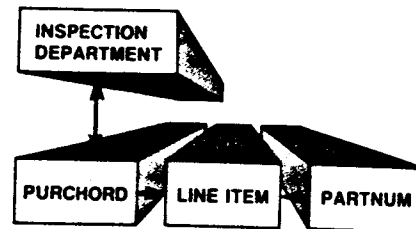
One last thought: whenever a two-headed arrow is replaced with a new intersection entity, review the other relationships in which the original parent entities were involved. Look at each arrow pointing toward the parent boxes and consider its meaning. You may find it is more appropriately drawn pointing to the newly formed intersection box than to the original parent box. The relationship still carries the same meaning, but moving it to point to the new box makes the diagram more precise.

Each inspection department can be involved with many purchase orders. The fact that their involvement ("inspection date," "quantity rejected," etc.) is at the level of individual line items can be revealed in three steps.

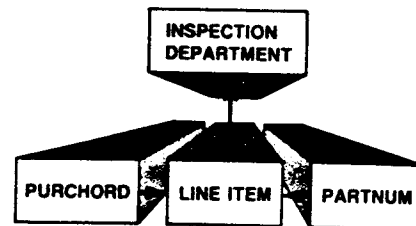
Start by identifying the many-to-many relationship.



Identify and draw the intersection entity.



Reconsider the relationship between inspection department and purchase order.



Next time, we'll review the second basic manipulation, merging entities with the headless arrow. ©

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