Database Design

8-3
Modeling Change: Price

Objectives

This lesson covers the following objectives:

- Solve the business requirement of tracking changes in price or values by constructing a model that uses a historical entity

- Describe the meaning of journaling/logging

- Identify the business need for journaling/logging and construct a model that addresses this requirement

Purpose

- Historical prices are important when looking for trends, determining the appreciation or depreciation value of items, or getting a refund for an item purchased in the past at a previous price.

- Many businesses track history of change -- who changed it, when it was changed, and so on.

- Example: if a student's grade is changed, it is useful to record when it was changed, the old grade, the new grade, and who changed it.

The Importance of Price Changes

- Changes in price are often an important consideration when modeling business requirements.

- Some examples would be:
  - The stock market: Prices are changing by the second and you are watching the reader board, wondering when to buy and when to sell. What factors would you consider?
  - The fuel industry: Why would you want to track the price changes in fuel if you are thinking of buying a car or heating your home during the winter?
  - Construction businesses: Why are price changes important to a contractor of a five-year bridge-construction project?

What's the Price Today?

- The prices of products change over time.
- Some go up, some go down, and others fluctuate up and down.
- Food, clothing and school fees are more expensive now than they were twenty years ago.
- Technology often gets cheaper over time.
- You can buy a standard specification laptop computer today for around half the price of ten years ago.
- Gold, silver and currency are examples of commodities whose prices fluctuate.

Model Historical Price

- It is often useful to have information on past prices.

- The model shown here tracks the historical price of a product.

PRODUCT
id
* name

have

of

PRICE
start date
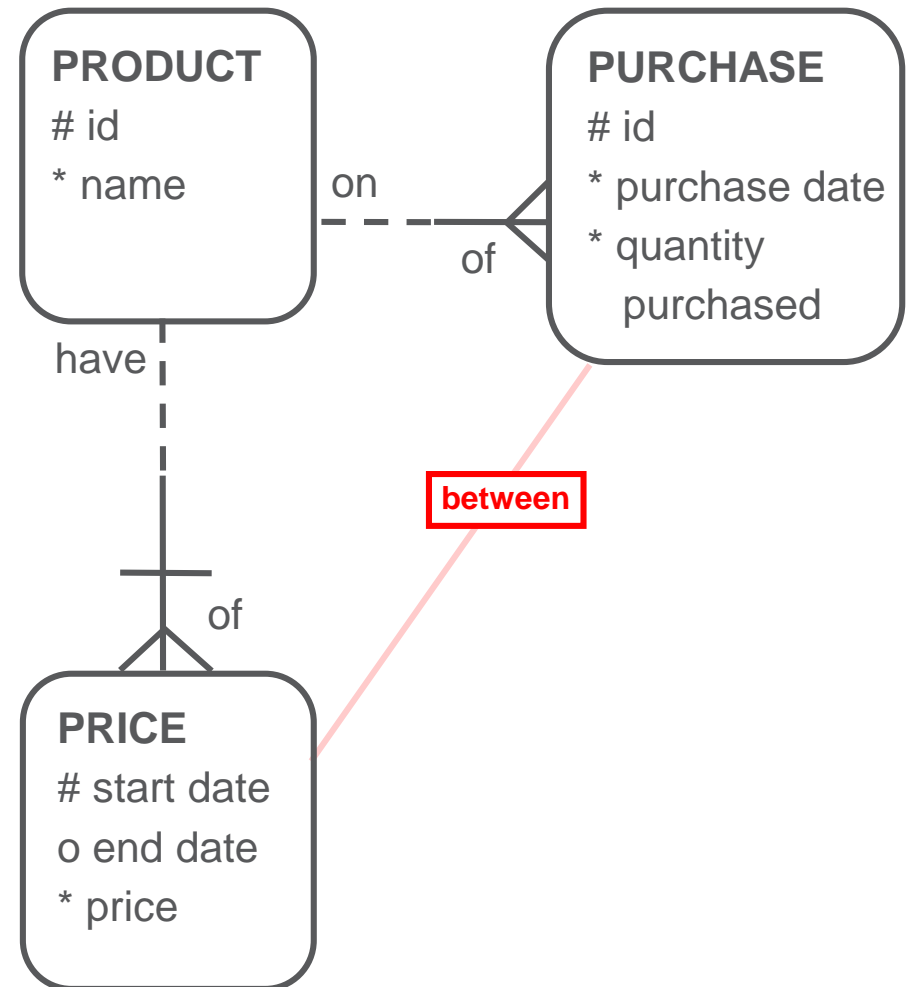o end date
* price

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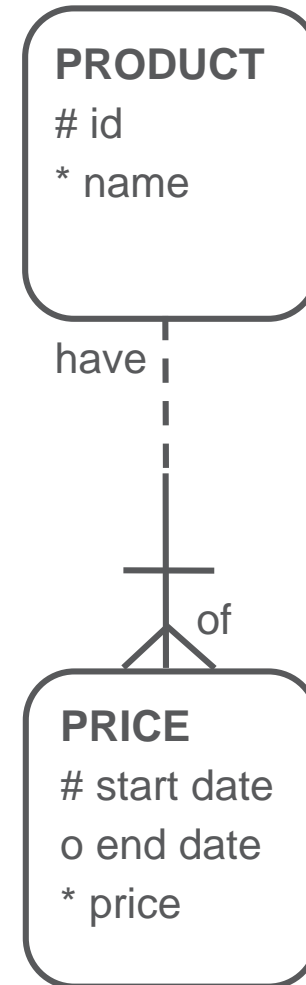
Historical Price Changes

- Consider what happens when you return an item to a store.

- You purchased the item at a certain price, but it has gone on sale since then.

Tracking Price Changes

- Businesses often need to keep a record of price changes.

- In this model, we assume that each PURCHASE is of only one product.

- The price that was paid can be found by matching the purchase date between the start date and the end date of PRICE.

PRODUCT
id
* name

on

of

PURCHASE
id
* purchase date
* quantity
  purchased

have

between

of

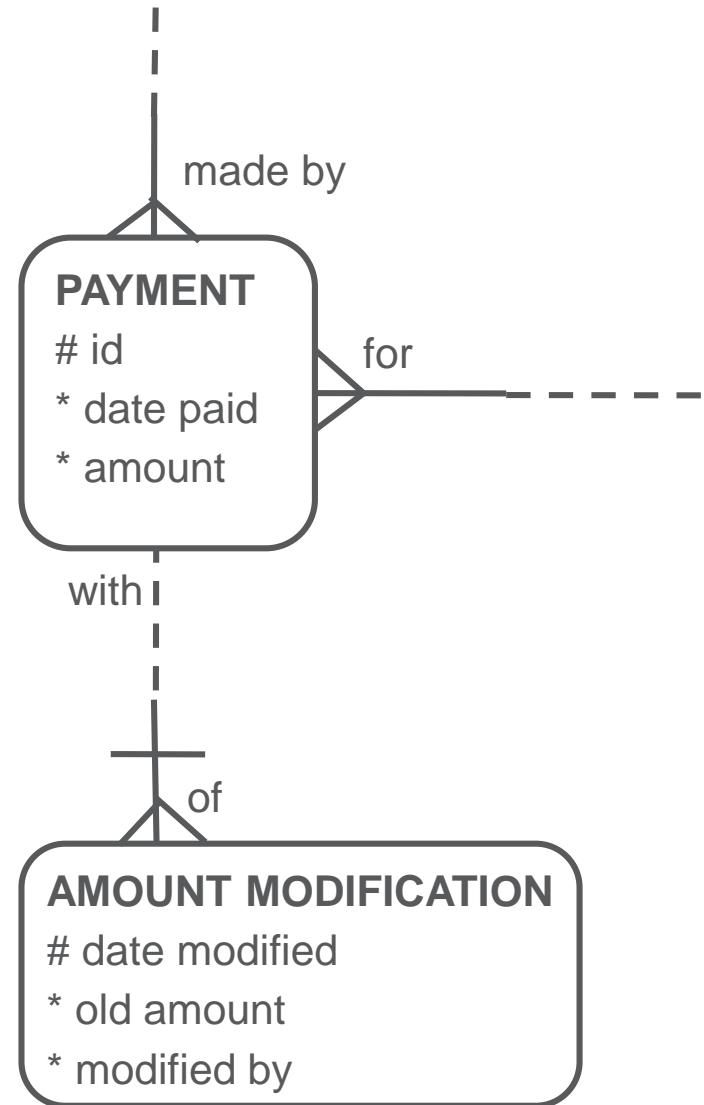**PRICE**
start date
o end date
* price

Other Data Changing Over Time

- We've seen that prices change over time.
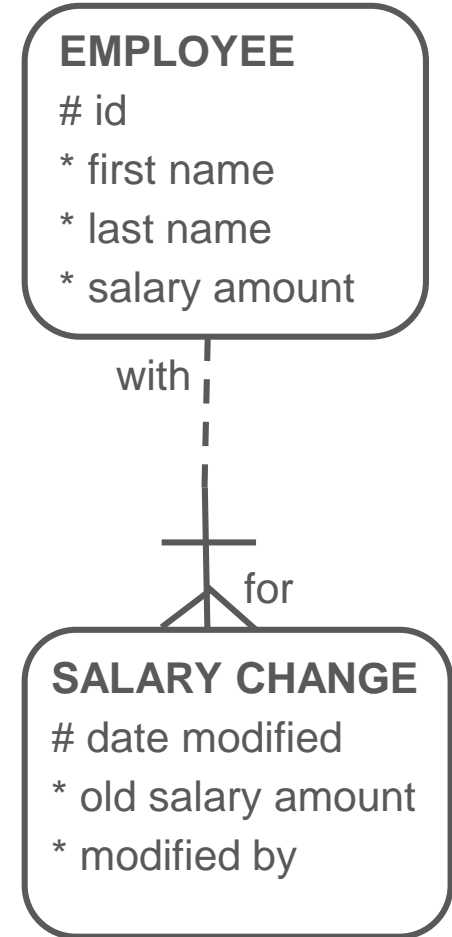- Other types of information can also change, for different business reasons.

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Journaling

- Whenever a system allows a user to modify or remove particular information, the question should be asked, "Do the old values need to be kept on record?"

- This is called "logging" or "journaling."

- This is often an issue when the information is financial or of a sensitive nature, such as a student grade change.

made by

PAYMENT
id
* date paid
* amount

for

with

of

AMOUNT MODIFICATION
date modified
* old amount
* modified by

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Journal Content

- A journal usually consists of both the modified value and the information about who did the modification and when it was done.

- This extra information can, of course, be expanded if you wish.

EMPLOYEE
id
* first name
* last name
* salary amount

with

for

SALARY CHANGE
date modified
* old salary amount
* modified by

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Modeling Change: Price

Terminology

Key terms used in this lesson included:

- Appreciation

- Depreciation

- Journaling and/or logging

Summary

In this lesson, you should have learned how to:

- Solve the business requirement of tracking changes in price or value by constructing a model that uses a historical entity

- Describe the meaning of journaling/logging

- Identify the business need for journaling/logging and construct a model that addresses this requirement