Database Design

8-3

Modeling Change: Price

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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?

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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

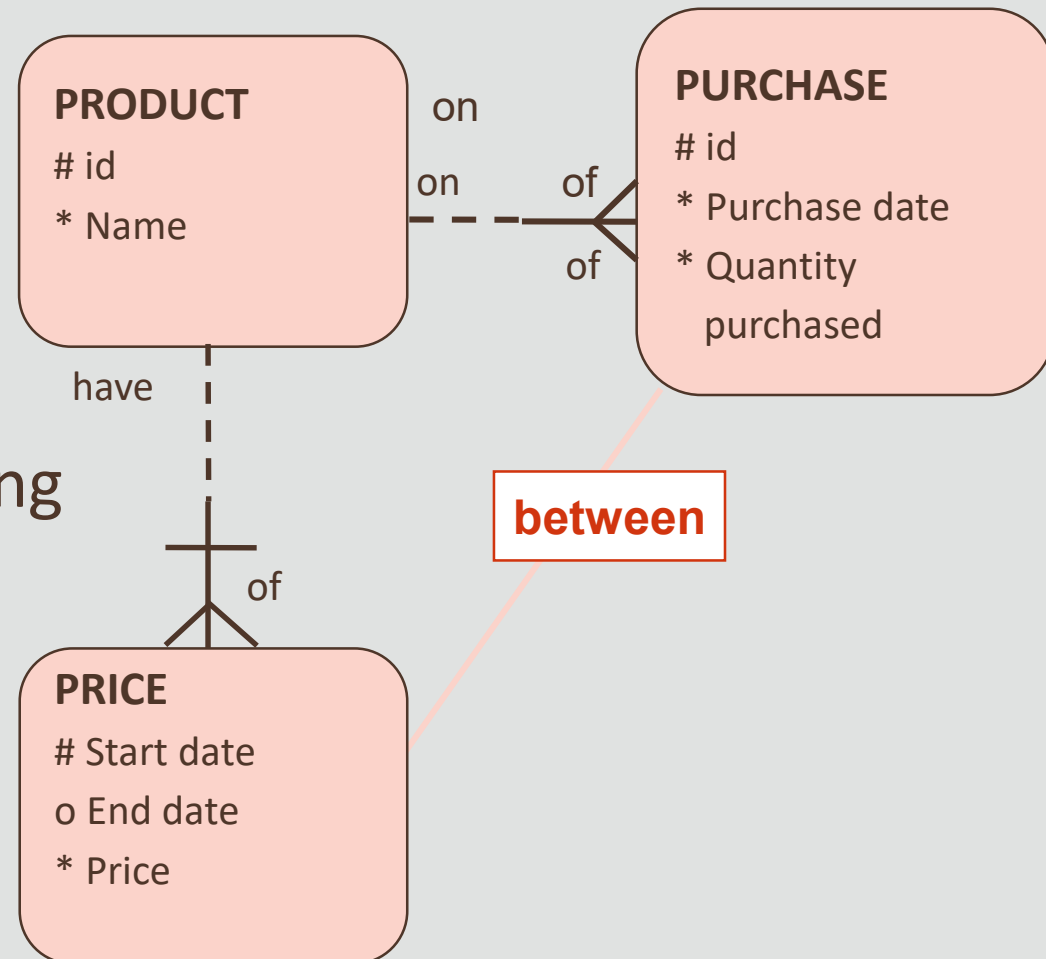PRICE
Start date
o End date
* Price
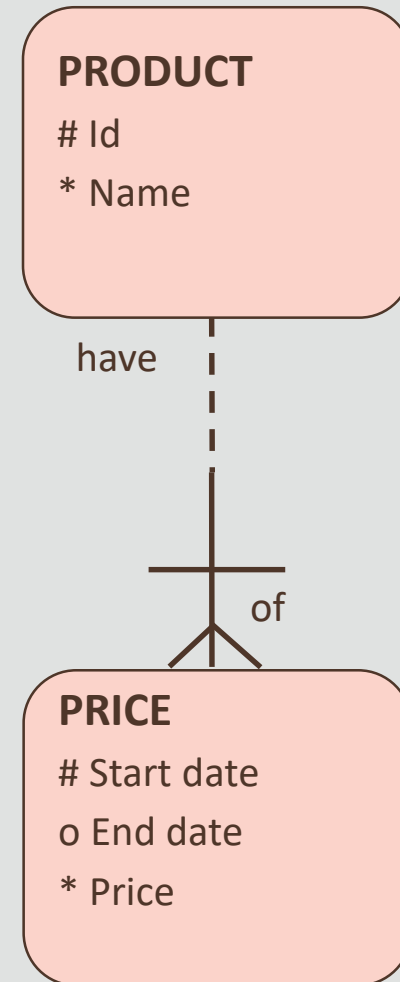
Historical Price Changes

- 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

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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
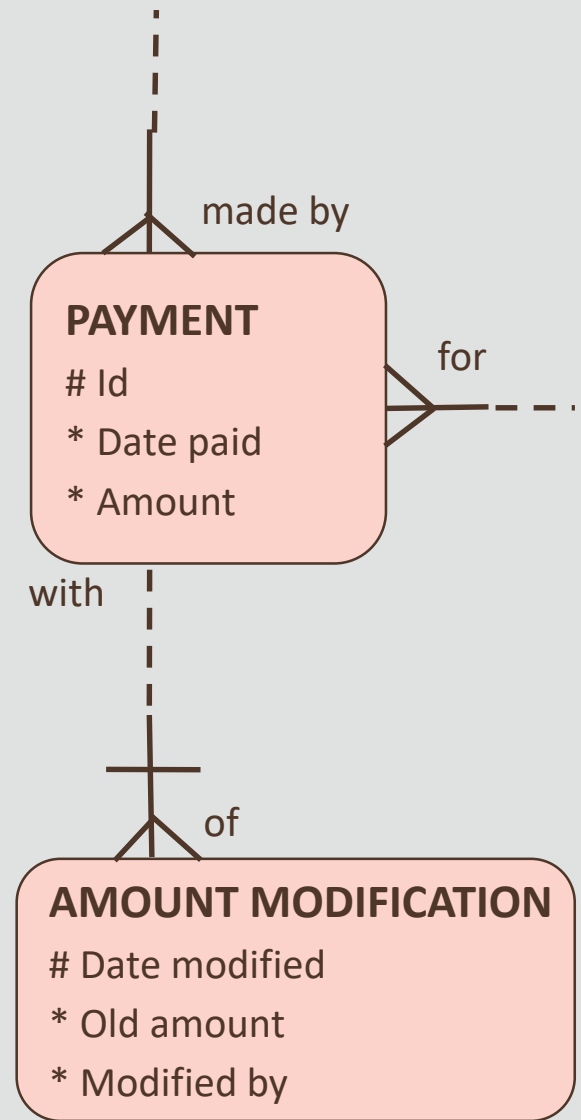
PRODUCT
id
* Name

on

on

of

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
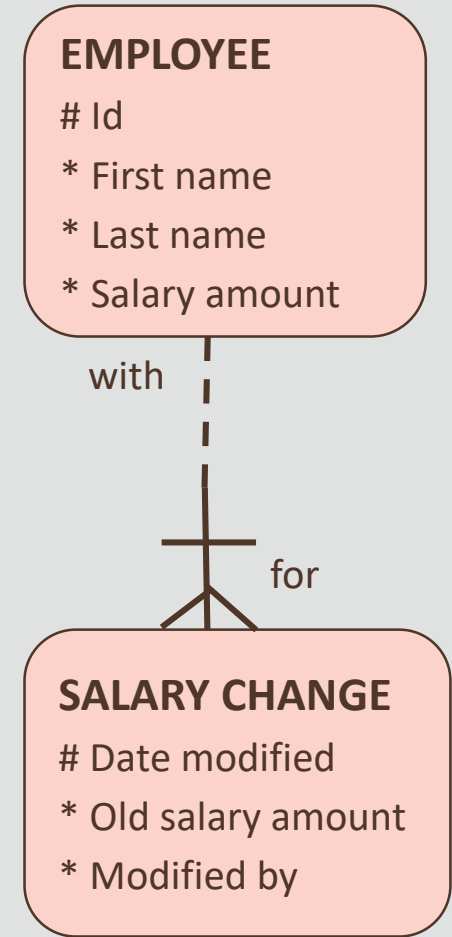- Other types of information can also change, for different business reasons

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

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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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