Université de Sherbrooke

Bases de données dimensionnelles
Exemple Commande
MCED_BDD_90

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— document de travail, ne pas citer —

Table des matières

1. Introduction

Cet exemple de processus de commande tiré de [Adamson2010a].

1.1. Élicitation

Order Report Western Region January 2009 (cont'd)					
Category	Product	SKU	Quantity Sold	Cost	Order Dollars
Packaging	Box - Large	011-4822	700	$ 950.53	$ 1,100.00
	Box - Medium	011-4899	1,250	$ 1,001.84	$ 1,380.00
	Box - Small	011-5744	1,200	$ 1,200.72	$ 1,330.00
	Clasp Letter	011-1729	400	$ 352.82	$ 356.00
	Envelope #10	021-0011	2,000	$ 2,017.46	$ 2,080.00
	Envelope Bubble	021-0012	1,200	$ 866.51	$ 1,212.00
	All Packaging			*$ 6,389.88*	*$ 7,458.00*
Pens	Gel Pen Black	017-1999	5000	$ 116.39	$ 120.00
	Gel Pen Blue	017-2444	2990	$ 600.88	$ 624.91
	Silver Pen	017-3001	50	$ 128.46	$ 130.00
	All Pens			*$ 845.73*	*$ 874.91*
Grand Total				**$207,229.42**	**$214,896.91**
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Figure 1-2   Sample page from an orders report

Facts	Dimensions
Order Dollars	Product
Cost Dollars	Product Description
Quantity Ordered	SKU
	Brand Code
	Brand
	Brand Manager
	Category Code
	Category
	Order Date
	Month of Order
	Quarter of Order
	Fiscal Period of Order
	Year of Order
	Salesperson
	Salesperson ID
	Territory
	Territory Code
	Territory Manager
	Region
	Region Code
	Region VP
	Customer
	Customer ID
	Headquarters State of Customer
	Billing Address
	Billing City
	Billing State
	Billing Zip
	SIC Code of Customer
	Industry Name of Customer

Figure 1-3   Facts and dimensions for the orders process

1.2. Schéma en étoile

Product

Product
Product Description
SKU
Brand Code
Brand
Brand Manager
Category Code
Category

Salesperson

Salesperson
Salesperson ID
Territory
Territory Code
Territory Manager
Region
Region Code
Region VP

Facts

Order Dollars
Cost Dollars
Quantity Ordered

by ... by ... by ... by ...

Day

Order Date
Month of Order
Quarter of Order
Fiscal Period of Order
Year of Order

Customer

Customer
Customer ID
Headquarters State of Customer
Billing Address
Billing City
Billing State
Billing Zip
SIC Code of Customer
Industry Name of Customer

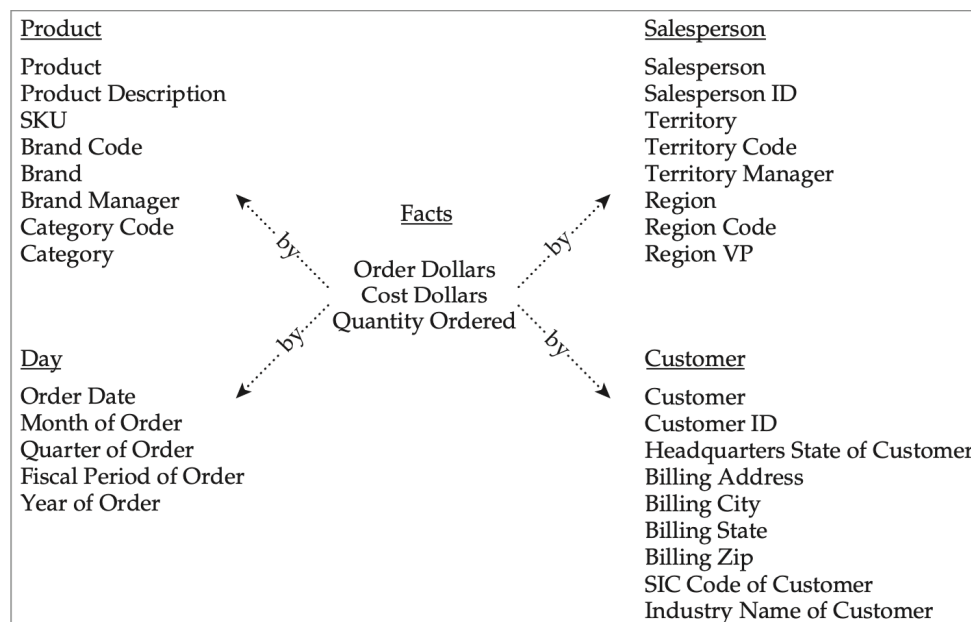**Figure 1-4**   Sorting out facts and dimensions for the orders process

```
┌─────────────────────────┐                          ┌─────────────────────────┐
│ PRODUCT                 │                          │ SALESPERSON             │
├─────────────────────────┤                          ├─────────────────────────┤
│ product_key             │                          │ salesperson_key         │
│ product                 │                          │ salesperson             │
│ product_description     │                          │ salesperson_id          │
│ sku                     │                          │ territory               │
│ brand                   │                          │ territory_code          │
│ brand_code              │                          │ territory_manager       │
│ brand_manager           │                          │ region                  │
│ category                │                          │ region_code             │
│ category_code           │                          │ region_vp               │
└─────────────────────────┘      ┌──────────────────┐└─────────────────────────┘
                                 │ ORDER_FACTS      │
                                 ├──────────────────┤
                                 │ product_key      │
                                 │ salesperson_key  │
                                 │ customer_key     │
                                 │ day_key          │
                                 │ quantity_ordered │
                                 │ order_dollars    │
                                 │ cost_dollars     │      ┌─────────────────────────┐
┌─────────────────────────┐     └──────────────────┘      │ CUSTOMER                │
│ DAY                     │                                ├─────────────────────────┤
├─────────────────────────┤                                │ customer_key            │
│ day_key                 │                                │ customer                │
│ full_date               │                                │ customer_id             │
│ month_name              │                                │ headquarters_state      │
│ month_abbr              │                                │ billing address         │
│ quarter                 │                                │ billing_city            │
│ year                    │                                │ billing_state           │
│ fiscal_period           │                                │ billing_zip             │
│                         │                                │ sic_code                │
└─────────────────────────┘                                │ industry_name           │
                                                           └─────────────────────────┘
```
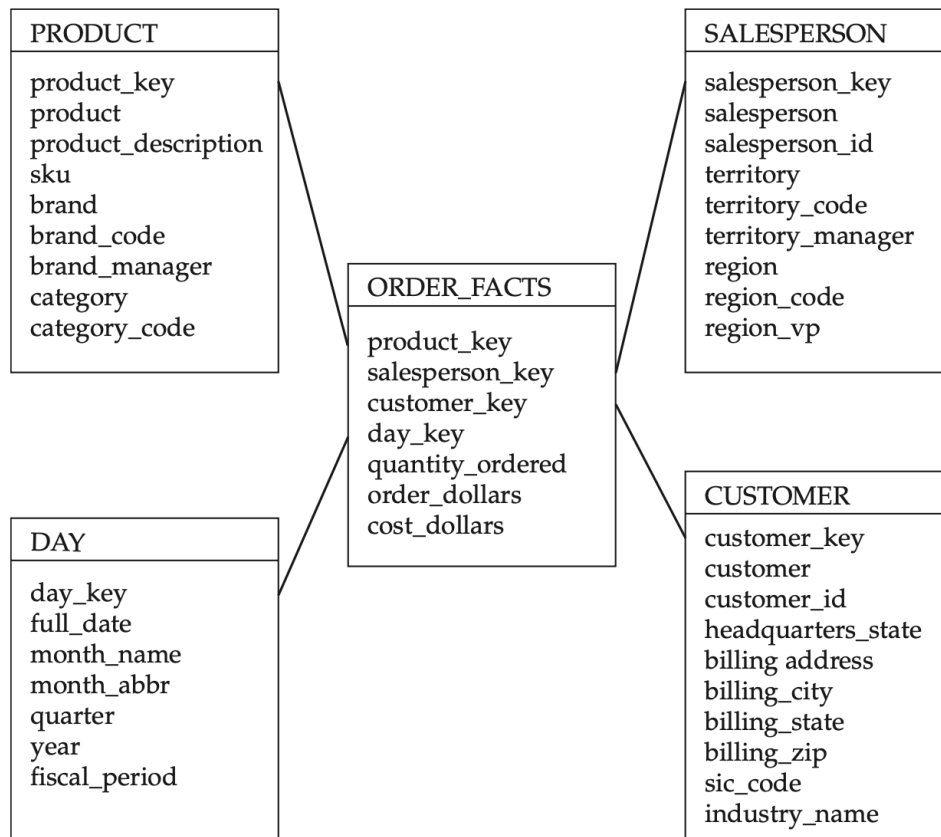
Figure 1-5   A simple star schema for the orders process

A fact row represents orders of a product sold by a salesperson to a customer on a given day.

1.3. Interrogation

1.3.1. Browser

SQL Query

```
SELECT DISTINCT
    product.category
FROM
    product
ORDER By
    product.category
```

Query Results

```
CATEGORY
========
.
.
.
Fasteners
Folders
Packaging
Pens
Measurement
Notebooks
Storage
.
.
.
```

SQL Query

```
SELECT DISTINCT
    product.category,
    product.product
FROM
    product
WHERE
    product.category = "Packaging"
ORDER BY
    product.product
```

Query Results

```
CATEGORY        PRODUCT
========        =======
Packaging       Box - Large
Packaging       Box - Medium
Packaging       Box - Small
Packaging       Clasp Letter
Packaging       Envelope #10
Packaging       Envelope Bubble
```

Figure 1-7 Browse queries and their results

1.3.2. Drill across

Query

Dimensions that will appear in results
Aggregated fact that will appear in results

Tables in the query

Dimensions are used to filter the results

Surrogate key columns are used to join the tables together

Dimensions specify scope of SQL SUM() aggregation

Dimensions control sorting of results

```sql
SELECT
    product.category,
    product.product,
    SUM( order_facts.order_dollars ) AS "ORDER DOLLARS"
FROM
    day,
    product,
    order_facts
WHERE
    day.month_name = "January" AND
    day.year = 2009 AND
    order_facts.day_key = day.day_key AND
    order_facts.product_key = product.product_key
GROUP BY
    product.category,
    product.product
ORDER BY
    product.category,
    product.product
```

Results

Each row summarizes numerous order lines from the fact table

```
                                        ORDER
CATEGORY           PRODUCT              DOLLARS
==============     ==================   =========
Packaging          Box - Large          1,100.00
Packaging          Box - Medium         1,271.00
Packaging          Box - Small          2,220.00
Packaging          Clasp Letter         7,503.00
Packaging          Envelope #10         5,872.00
Packaging          Envelope Bubble      6,708.00
Pens               Gel Pen Black          987.00
Pens               Gel Pen Blue         1,980.00
Pens               Silver Pen           2,206.00
```

Dimension values provide context

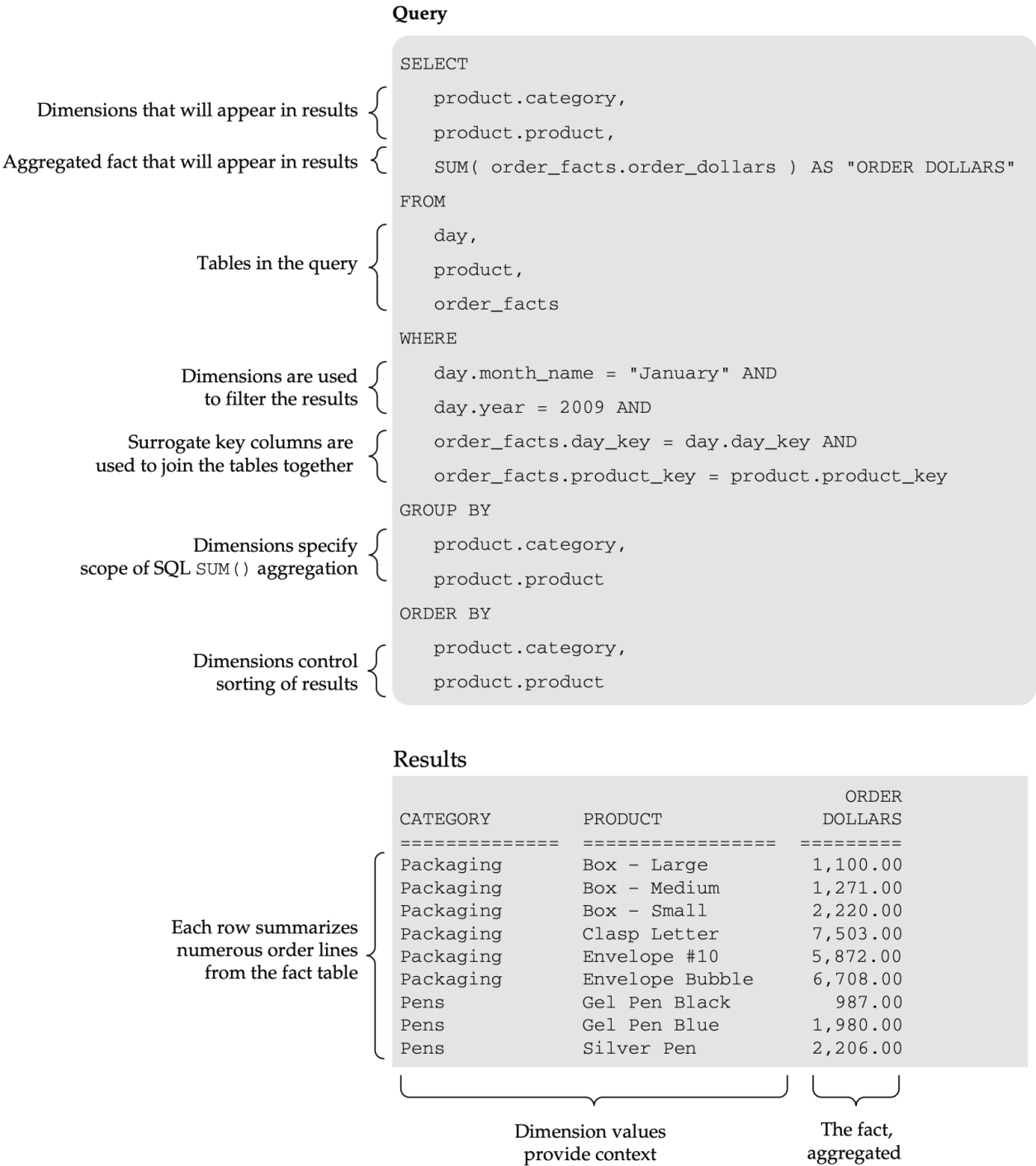The fact, aggregated

Figure 1-6   Querying the star schema

Références

[Adamson2010a]
Christopher ADAMSON ;
The complete reference star schema ;
McGraw-Hill, New York (NY, US), 2010 ;
ISBN 978-0-07-174432-4.

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