

Loading data into Northwind Data Warehouse from Northwind Database/ PostgreSQL

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Loading Dimension Data from the Northwind OLTP Database into the NW_Customer_DIM and NW_Employee_DIM Dimension Table

In this project, I will insert data into the two-dimensional table. Before jumping into the technical part, I would like to talk about what kind of business data is contained in the Northwind_DW and how to process the design of this business dimension table. Using the Northwind retail business database and our textbook's fourth-step dimensional design process helps me understand the dimensions.

The first step is to select a business process that helps to understand business performance and activities and the dimension describing each business process to identify the organization's business process. For example, the customer dimension explains the customer process, and the employee contains performance metrics. Most business processes affect results by input, which is why most organizations put first process output and then the metrics of the following information. The second is to declare the grain answer question of what each fact table row points to regarding the business process's events or "How to describe a single row in the fact table such as one row containing per sales transaction of a single product. The fact table's primary key shows the grain report business terms. If the grain isn't apparent at the beginning of the design process, all data models rest on a trap. If steps 3 or 4 fail, you may turn to step 2 to create grain. The third step is to identify the dimension answer to how businesspeople explain the data from the business measurement events. If step 2 is clear about grain, it is easy to identify the dimensions. For example, I created a customer and employee dimension table. The last step, identifying the facts, helps to answer the business process measures. Fact table contains different grains from separate dimension tables and the numeric result of data like quantity order or dollar cost. In the previous project, I created a two-dimensional table; now, I will load data from the OLTP Northwind database. The Bellow SQL comment will explain the new function or syntax I will use on this project.

The 'INSERT INTO table_name VALUE (.....,.....,.....)' statement helps to insert or add values for all the columns or specific columns of the table.

The 'SELECT * FROM table_name' statement displays all the available fields in the table.

Figure 1: Loading data into NW_Customer_DIM with PostgreSQL.

```

36 INSERT INTO public.nw_customer_dim VALUES ('HILAA', 'HILARION-Abastos', 'Carlos Hernández', 'Sales Representative', 'Carrera 22 con
37 INSERT INTO public.nw_customer_dim VALUES ('HUNG0', 'Hungry Coyote Import Store', 'Yoshi Latimer', 'Sales Representative', 'City Cen
38 INSERT INTO public.nw_customer_dim VALUES ('HUNG0', 'Hungry Owl All-Right Grocers', 'Patricia McKenna', 'Sales Associate', '18 Johas
39 INSERT INTO public.nw_customer_dim VALUES ('ISLAT', 'Island Trading', 'Helen Bennett', 'Marketing Manager', 'Garden House Crowther W
40 INSERT INTO public.nw_customer_dim VALUES ('KOENE', 'Königlich Essen', 'Philip Cramer', 'Sales Associate', 'Maubelstr. 90', 'Branden
41 INSERT INTO public.nw_customer_dim VALUES ('LACOR', 'La corne d'abondance', 'Daniel Tonini', 'Sales Representative', '87, avenue de
42 INSERT INTO public.nw_customer_dim VALUES ('LAMAI', 'La maison d'Asie', 'Annette Roulet', 'Sales Manager', '1 rue Alsace-Lorraine',
43 INSERT INTO public.nw_customer_dim VALUES ('LAUGB', 'Laughing Bacchus Wine Cellars', 'Yoshi Tannamuri', 'Marketing Assistant', '1980
44 INSERT INTO public.nw_customer_dim VALUES ('LAZYK', 'Lazy K Country Store', 'John Steel', 'Marketing Manager', '12 Orchestra Terrace
45 INSERT INTO public.nw_customer_dim VALUES ('LEHMS', 'Lehmanns Marktstand', 'Renate Messner', 'Sales Representative', 'Magazinweg 71,
46 INSERT INTO public.nw_customer_dim VALUES ('LEHMS', 'Let''s Stop N Shop', 'Jafne Yorres', 'Owner', '87 Polk St. Suite 5', 'San Franc
47 INSERT INTO public.nw_customer_dim VALUES ('LILAS', 'LILA-Supermercado', 'Carlos González', 'Accounting Manager', 'Carrera 52 con Av
48 INSERT INTO public.nw_customer_dim VALUES ('LINDO', 'LIND-Delicatessen', 'Felipe Iqzuerdo', 'Owner', 'Ave. 5 de Mayo Porlanar', 'I.
49 INSERT INTO public.nw_customer_dim VALUES ('LONEP', 'Lonesome Pine Restaurant', 'Fran Wilson', 'Sales Manager', '89 Chiaroscuro Rd.,
50 INSERT INTO public.nw_customer_dim VALUES ('MAGAA', 'Magazzini Alimentari Riuniti', 'Giovanni Rovelli', 'Marketing Manager', 'Via Lu
51 INSERT INTO public.nw_customer_dim VALUES ('MAYSO', 'Mayson Dewey', 'Catherine Dewey', 'Sales Agent', 'Rue Joseph-Beno 5321', 'Bruxel
52 INSERT INTO public.nw_customer_dim VALUES ('MEREP', 'Mère Poularde', 'Jean Fresnière', 'Marketing Assistant', '43 rue St. Laurent',
53 INSERT INTO public.nw_customer_dim VALUES ('MOROK', 'Morgenstern Gesundkost', 'Alexander Feuer', 'Marketing Assistant', 'Heerstr. 22
54 INSERT INTO public.nw_customer_dim VALUES ('NORTS', 'North/South', 'Simon Crother', 'Sales Associate', 'South House 388 Queensbrdg
55 INSERT INTO public.nw_customer_dim VALUES ('OCCAN', 'Occane Atlántico Ltda.', 'Yvonne Moncada', 'Sales Agent', 'Ing. Gustavo Moncada
56 INSERT INTO public.nw_customer_dim VALUES ('OLDWO', 'Old World Delicatessen', 'Rene Phillips', 'Sales Representative', '1743 Berling
57 INSERT INTO public.nw_customer_dim VALUES ('OTTIK', 'Ottilies Käseladen', 'Henriette Pfalzheim', 'Owner', 'Mehreimerstr. 369', 'Köl
58 INSERT INTO public.nw_customer_dim VALUES ('PARIS', 'Paris spécialités', 'Marie Bertrand', 'Owner', '265, boulevard Charonne', 'Paris
59 INSERT INTO public.nw_customer_dim VALUES ('PERIC', 'Pericles Comidas clásicas', 'Guillermo Hernández', 'Sales Representative', 'Calle
60 INSERT INTO public.nw_customer_dim VALUES ('PICCO', 'Piccolo und mehr', 'Georg Pipo', 'Sales Manager', 'Geislweg 14', 'Salzburg', 'A
61 INSERT INTO public.nw_customer_dim VALUES ('PRINZ', 'Princesa Isabel Vinhos', 'Isabel de Castro', 'Sales Representative', 'Estrada 1
62 INSERT INTO public.nw_customer_dim VALUES ('QUEDE', 'Que Delícia', 'Bernardo Batista', 'Accounting Manager', 'Rua da Panificadora, 1
63 INSERT INTO public.nw_customer_dim VALUES ('QUEEN', 'Queen Cozinha', 'Lúcia Carvalho', 'Marketing Assistant', 'Alameda dos Canários, 1
64 INSERT INTO public.nw_customer_dim VALUES ('QUICK', 'QUICK-Stop', 'Hersi Kloss', 'Accounting Manager', 'Taucherstrasse 10', 'Cuneo', 'I
65 INSERT INTO public.nw_customer_dim VALUES ('RANCH', 'Rancho grande', 'Sergio Gutierrez', 'Sales Representative', 'Av. del Libertador
66 INSERT INTO public.nw_customer_dim VALUES ('RATTC', 'Rattlesnake Canyon Grocery', 'Paula Wilson', 'Assistant Sales Representative',
67 INSERT INTO public.nw_customer_dim VALUES ('REGGC', 'Reggiani Caseifici', 'Maurizio Moroni', 'Sales Associate', 'Strada Provinciale
68 INSERT INTO public.nw_customer_dim VALUES ('RICAR', 'Ricardo Adocicados', 'Janete Lima', 'Assistant Sales Agent', 'Av. Copacabana
69 INSERT INTO public.nw_customer_dim VALUES ('RISCU', 'Richter Supermarkt', 'Michael Holz', 'Sales Manager', 'Grenzacherweg 237', 'Gen
70 INSERT INTO public.nw_customer_dim VALUES ('ROKEV', 'Romero y tomito', 'Alejandra Cantino', 'Accounting Manager', 'Gran Vía, 1', 'Ma
71 INSERT INTO public.nw_customer_dim VALUES ('SANTO', 'Santé Gourmet', 'Jonas Bergulfsen', 'Owner', 'Erling Skakkes gate 78', 'Staveng
72 INSERT INTO public.nw_customer_dim VALUES ('SAVEA', 'Save-a-lot Markets', 'Jose Pavarotti', 'Sales Representative', '187 Suffolk Ld.
73 INSERT INTO public.nw_customer_dim VALUES ('SEVES', 'Seven Seas Imports', 'Hari Kumar', 'Sales Manager', '90 Madhurst Rd., 'London
74 INSERT INTO public.nw_customer_dim VALUES ('SIMOB', 'Smoons bistro', 'Jytte Petersen', 'Owner', 'Vinbæltet 34', 'København', 'NULL',
75 INSERT INTO public.nw_customer_dim VALUES ('SPECI', 'Spécialités du monde', 'Dominique Perrier', 'Marketing Manager', '125, rue Laur
76 INSERT INTO public.nw_customer_dim VALUES ('SPLIN', 'Split Rail Beer & Ale', 'Art Braunschweiger', 'Sales Manager', 'P.O. Box 555',
77 INSERT INTO public.nw_customer_dim VALUES ('SUPBO', 'Suprêmes délices', 'Pascale Cartrrin', 'Accounting Manager', 'Boulevard Tirou,
78 INSERT INTO public.nw_customer_dim VALUES ('THEBI', 'The Big Cheese', 'Liz Nixon', 'Marketing Manager', '89 Jefferson Way Suite 2',
79 INSERT INTO public.nw_customer_dim VALUES ('THECR', 'The Cracker Box', 'Liu Wong', 'Marketing Assistant', '55 Grizzly Peak Rd., 'Bu
80 INSERT INTO public.nw_customer_dim VALUES ('TOSKP', 'Tome Spezialitäten', 'Karin Josepha', 'Marketing Manager', 'Luisenstr. 48', 'Mün
81 INSERT INTO public.nw_customer_dim VALUES ('TORTU', 'Tortuga Restaurante', 'Miguel Angel Paolino', 'Owner', 'Avda. Azteca 123', 'Méx
82 INSERT INTO public.nw_customer_dim VALUES ('TRADI', 'Tradição Hipermercados', 'Anabela Domingues', 'Sales Representative', 'Av. Inês
83 INSERT INTO public.nw_customer_dim VALUES ('TRAIN', 'Trail''s Head Gourmet Provisioners', 'Helvetius Nagy', 'Sales Associate', '722
84 INSERT INTO public.nw_customer_dim VALUES ('VAPFE', 'Vaffeljernet', 'Palle Ibsen', 'Sales Manager', 'Smagsloget 45', 'Århus', 'NULL',
85 INSERT INTO public.nw_customer_dim VALUES ('VICTE', 'Victualies en stock', 'Mary Savelley', 'Sales Agent', '12, rue du Commerce', 'Lj
86 INSERT INTO public.nw_customer_dim VALUES ('VINET', 'Vins et alcools Chevalier', 'Paul Henriot', 'Accounting Manager', '59 rue de l'
87 INSERT INTO public.nw_customer_dim VALUES ('WANDK', 'Die Wandernde Kuh', 'Rita Müller', 'Sales Representative', 'Adenauerallee 980',
88 INSERT INTO public.nw_customer_dim VALUES ('WARTH', 'Wartian Herkku', 'Pirkko Koskitalo', 'Accounting Manager', 'Torikatu 38', 'Oulu
89 INSERT INTO public.nw_customer_dim VALUES ('WELLS', 'Wellington Importadora', 'Paula Parente', 'Sales Manager', 'R. do Mercado, 27
90 INSERT INTO public.nw_customer_dim VALUES ('WHITC', 'White Clover Markets', 'Karl Jablonski', 'Owner', '1380 - 14th Ave. S. Suite 20
91 INSERT INTO public.nw_customer_dim VALUES ('WILMK', 'Wilman Kala', 'Matti Karttunen', 'Owner/Marketing Assistant', 'Keskuskatu 45',
92 INSERT INTO public.nw_customer_dim VALUES ('WOLZA', 'Wolski Zajazd', 'Zbyszek Piastaniewicz', 'Owner', 'ul. Filtrowa 68', 'Warsz

```

Figure 2: Display the fields in the NW_Customer_DIM dimension table.

Northwind_DW/postgres@PostgreSQL 10

Query History

```
1 select * from nw_customer_dim;
```

Data Output Messages Notifications

	customer_id [PK] character varying (5)	company_name character varying (40)	contact_name character varying (30)	contact_title character varying (30)	address character varying (60)
1	ALFKI	Alfreds Futterkiste	Maria Anders	Sales Representative	Öbere Str. 57
2	ANATR	Ana Trujillo Emparedados y helados	Ana Trujillo	Owner	Avda. de la Constitución 2222
3	ANTON	Antonio Moreno Taquería	Antonio Moreno	Owner	Mataderos 2312
4	AROUT	Around the Horn	Thomas Hardy	Sales Representative	120 Hanover Sq.
5	BERGS	Berglunds snabbköp	Christina Berglund	Order Administrator	Berguvsvägen 8
6	BLAUS	Blauer See Delikatessen	Hanna Moos	Sales Representative	Forsterstr. 57
7	BLONP	Blondesddsl père et fils	Frédérique Citeaux	Marketing Manager	24, place Kléber
8	BOLID	Bólido Comidas preparadas	Martín Sommer	Owner	C/ Araquil, 67
9	BONAP	Bon app'	Laurence Leblan	Owner	12, rue des Bouchers
10	BOTTM	Bottom-Dollar Markets	Elizabeth Lincoln	Accounting Manager	23 Tsawassen Blvd.
11	BSBEV	B's Beverages	Victoria Ashworth	Sales Representative	Fauntleroy Circus
12	CACTU	Cactus Comidas para llevar	Patricio Simpson	Sales Agent	Cerrito 333
13	CENTC	Centro comercial Moctezuma	Francisco Chang	Marketing Manager	Sierras de Granada 9993
14	CHOPS	Chop-suey Chinese	Yang Wang	Owner	Hauptstr. 29
15	COMMIL	Comércio Mineiro	Pedro Afonso	Sales Associate	Av. dos Lusíadas, 23
16	CONSH	Consolidated Holdings	Elizabeth Brown	Sales Representative	Berkeley Gardens 12 Brewery
17	DRACD	Drachenblut Delikatessen	Sven Ottlieb	Order Administrator	Waiservweg 21
18	DUMON	Du monde entier	Janine Labrun	Owner	67, rue des Cinquante Otages
19	EASTC	Eastern Connection	Ann Devon	Sales Agent	35 King George
20	ERNSH	Ernst Handel	Roland Mendel	Sales Manager	Kirchgasse 6
21	FAMIA	Familia Arquibaldo	Aria Cruz	Marketing Assistant	Rua Orós, 92
22	FISSA	FISSA Fabrica Inter. Salchichas S.A.	Diego Roel	Accounting Manager	C/ Morazarzal, 86
23	FOLIG	Folies gourmandes	Martine Rancé	Assistant Sales Agent	184, chaussée de Tournai
24	FOLKO	Folk och få HB	Maria Larsson	Owner	Åkergatan 24
25	FRANK	Frankenversand	Peter Franken	Marketing Manager	Berliner Platz 43
26	FRANR	France restauration	Carine Schmitt	Marketing Manager	54, rue Royale
27	FRANS	Franchi S.p.A.	Paolo Accorti	Sales Representative	Via Monte Bianco 34
28	FURIB	Furia Bacalhau e Frutos do Mar	Lino Rodriguez	Sales Manager	Jardim das rosas n. 32
29	GALED	Galería del gastrónomo	Eduardo Saavedra	Marketing Manager	Rambla de Catalunya, 23
30	GODOS	Godos Cocina Típica	José Pedro Freyre	Sales Manager	C/ Romero, 33
31	GOURL	Gourmet Lanchonetes	André Fonseca	Sales Associate	Av. Brasil, 442
32	GREAL	Great Lakes Food Market	Howard Snyder	Marketing Manager	2732 Baker Blvd.
33	GROSR	GROSELLA-Restaurante	Manuel Pereira	Owner	5ª Ave. Los Palos Grandes
34	HANAR	Hanari Carnes	Mario Pontes	Accounting Manager	Rua do Paço, 67
35	HILAA	HILARION-Abastos	Carlos Hernández	Sales Representative	Carrera 22 con Ave. Carlos Soublette #8-35
36	HUNGC	Hungry Coyote Import Store	Yoshi Latimer	Sales Representative	City Center Plaza 516 Main St.
37	HUNGO	Hungry Owl All-Night Grocers	Patricia McKenna	Sales Associate	8 Johnston Road
38	ISLAT	Island Trading	Helen Bennett	Marketing Manager	Garden House Crowther Way
39	KOENE	Königlich Essen	Philip Cramer	Sales Associate	Maubelstr. 90

Total rows: 91 of 91 Query complete 00:00:00.268 Ln 1, Col 31

11:38 AM 4/7/2023

Figure 3: Insert and display the NW_Employee_DIM dimension table

Northwind_DW/postgres@PostgreSQL 10

Query Query History

```

1 --Loading data into nw_employee_dim dimensional table
2 INSERT INTO public.nw_employee_dim VALUES (1, 'Davolio', 'Nancy', 'Sales Representative', 'Ms.', '1
3 INSERT INTO public.nw_employee_dim VALUES (2, 'Fuller', 'Andrew', 'Vice President, Sales', 'Dr.', '
4 INSERT INTO public.nw_employee_dim VALUES (3, 'Leverling', 'Janet', 'Sales Representative', 'Ms.', '
5 INSERT INTO public.nw_employee_dim VALUES (4, 'Peacock', 'Margaret', 'Sales Representative', 'Mrs.'
6 INSERT INTO public.nw_employee_dim VALUES (5, 'Buchanan', 'Steven', 'Sales Manager', 'Mr.', '1955-0
7 INSERT INTO public.nw_employee_dim VALUES (6, 'Suyama', 'Michael', 'Sales Representative', 'Mr.', '
8 INSERT INTO public.nw_employee_dim VALUES (7, 'King', 'Robert', 'Sales Representative', 'Mr.', '196
9 INSERT INTO public.nw_employee_dim VALUES (8, 'Callahan', 'Laura', 'Inside Sales Coordinator', 'Ms.
10 INSERT INTO public.nw_employee_dim VALUES (9, 'Dodsworth', 'Anne', 'Sales Representative', 'Ms.', '
11
12 ALTER TABLE ONLY NW_Employee_DIM
13     ADD CONSTRAINT fk_employees_employees FOREIGN KEY (reports_to) REFERENCES NW_Employee_DIM;
14
15 Select * From nw_employee_dim;

```

Data Output Messages Notifications

	employee_id [PK] smallint	last_name character varying (20)	first_name character varying (10)	title character varying (30)	title_of_courtesy character varying (25)	birth_date date	hire_da date
1	1	Davolio	Nancy	Sales Representative	Ms.	1948-12-08	1992-0
2	2	Fuller	Andrew	Vice President, Sales	Dr.	1952-02-19	1992-0
3	3	Leverling	Janet	Sales Representative	Ms.	1963-08-30	1992-0
4	4	Peacock	Margaret	Sales Representative	Mrs.	1937-09-19	1993-0
5	5	Buchanan	Steven	Sales Manager	Mr.	1955-03-04	1993-1
6	6	Suyama	Michael	Sales Representative	Mr.	1963-07-02	1993-1
7	7	King	Robert	Sales Representative	Mr.	1960-05-29	1994-0
8	8	Callahan	Laura	Inside Sales Coordinator	Ms.	1958-01-09	1994-0
9	9	Dodsworth	Anne	Sales Representative	Ms.	1966-01-27	1994-1

Total rows: 9 of 9 Query complete 00:00:00.060 Ln 15, Col 1

11:50 AM 4/7/2023

Concern:

When loading data from OLTP into OLAP, should we insert data manually, as I did in this project, for each value? OLTP database contains data from the direct App on time; the business user wants to see the report, and the current data warehouse can't support report needs. Can I create a new data warehouse with new dimensions and a fact table to insert a million fields into the new data warehouse? There should be an automatic update of the data system from OLTP to OLAP system.

References

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Ralph Kimball & Margy Ross, 2013. The Data Warehouse Toolkit The Definitive Guide to Dimensional Modeling. 3rd edition.