

# Relational Databases

## (Section 13.2)

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# The MLPQ System

“Management of Linear Programming Queries”

Free download from:

<http://cse.unl.edu/~revesz/MLPQ/mlpq.htm>

Developed at University of Nebraska-Lincoln

1. Relational Database
2. Constraint Database
3. Geographic Database
4. Moving Objects Database

# Gallery Database

## Painting

Pnum	Title	Price	Id
2345	Wild Waters	245.00	126
4536	Sea Storm	8359.00	335
6666	Wild Waters	6799.00	234
6789	Paradise	590,000.00	234
7878	High Tide	98,000.00	456
7896	Faded Rose	145.00	123
9889	Sunset	975,000.00	234

## Painter

Id	Name	Phone
123	Ross	888-4567
126	Pollock	345-1122
234	Picasso	456-3345
335	O'Keefe	567-8999
456	Wharhol	777-7777

## Gallery

Pnum	Owner
2345	Johnson
6666	Johnson
4536	McCloud
7878	McCloud
6789	Palmer
7896	Palmer
9889	Palmer

# Representing Relational Databases as MLPQ input files

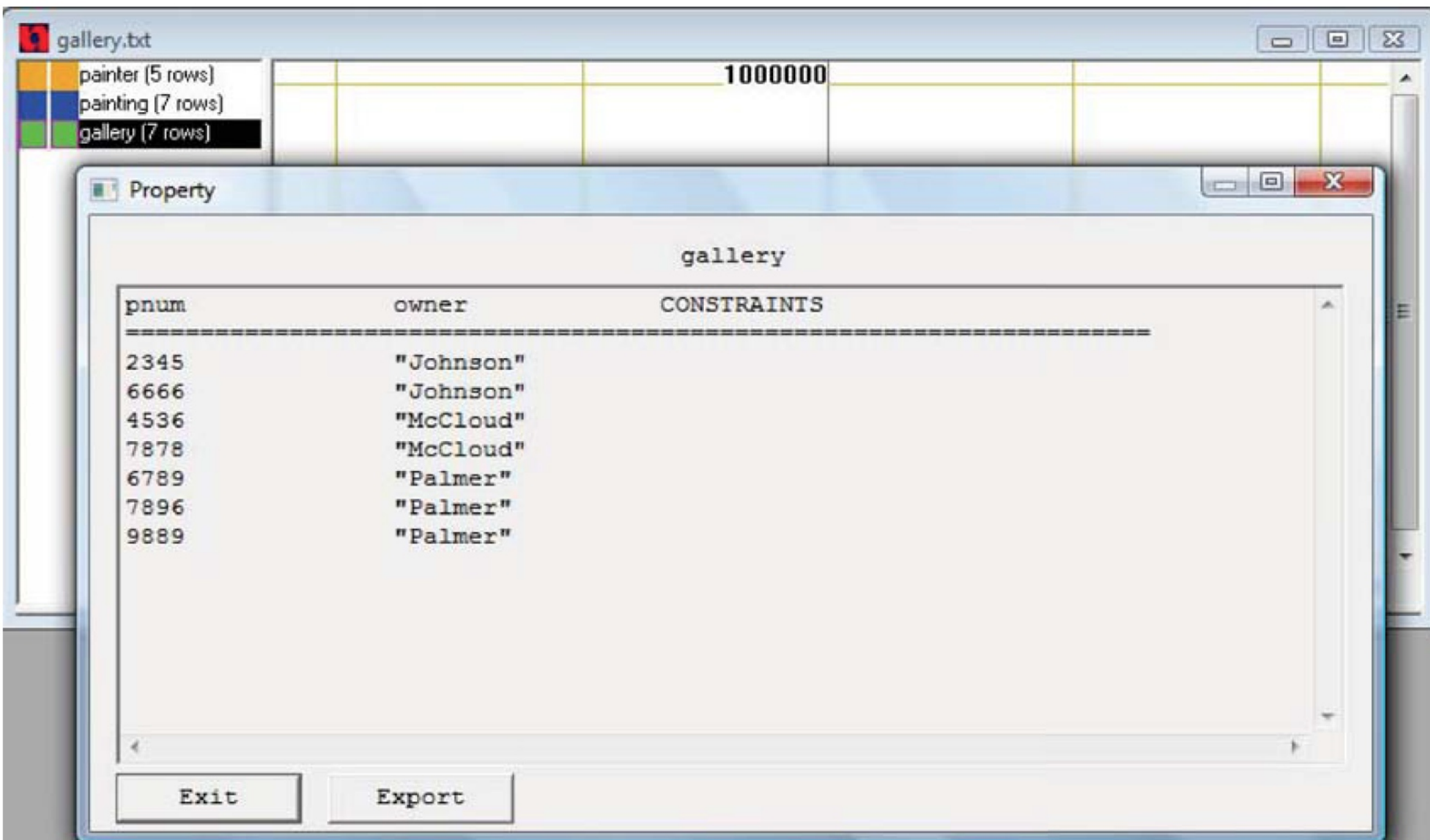
The Gallery Database can be represented by:

```
begin %MLPQ%
painter(id, name, phone) :- id=123, name="Ross",    phone="888-4567".
painter(id, name, phone) :- id=126, name="Pollock", phone="345-1122".
painter(id, name, phone) :- id=234, name="Picasso", phone="456-3345".
painter(id, name, phone) :- id=335, name="O'Keefe",  phone="567-8999".
painter(id, name, phone) :- id=456, name="Warhol",   phone="777-7777".

painting(pnum, title, price, id) :- pnum=2345, title="Wild Waters", price=245, id=126.
painting(pnum, title, price, id) :- pnum=4536, title="Sea Storm",   price=8359, id=335.
painting(pnum, title, price, id) :- pnum=6666, title="Wild Waters", price=6799, id=234.
painting(pnum, title, price, id) :- pnum=6789, title="Paradise",    price=590000, id=234.
painting(pnum, title, price, id) :- pnum=7878, title="High Tide",   price=98000, id=456.
painting(pnum, title, price, id) :- pnum=7896, title="Faded Rose",  price=145, id=123.
painting(pnum, title, price, id) :- pnum=9889, title="Sunset",      price=975000, id=234.

gallery(pnum, owner) :- pnum=2345, owner="Johnson".
gallery(pnum, owner) :- pnum=6666, owner="Johnson".
gallery(pnum, owner) :- pnum=4536, owner="McCloud".
gallery(pnum, owner) :- pnum=7878, owner="McCloud".
gallery(pnum, owner) :- pnum=6789, owner="Palmer".
gallery(pnum, owner) :- pnum=7896, owner="Palmer".
gallery(pnum, owner) :- pnum=9889, owner="Palmer".
end %MLPQ%
```

# Displaying a Relation in MLPQ



The screenshot shows a window titled "gallery.txt" with a sidebar on the left containing three items: "painter (5 rows)", "painting (7 rows)", and "gallery (7 rows)". The "gallery (7 rows)" item is selected. The main area displays a table with the title "gallery". The table has three columns: "pnum", "owner", and "CONSTRAINTS". The data is as follows:

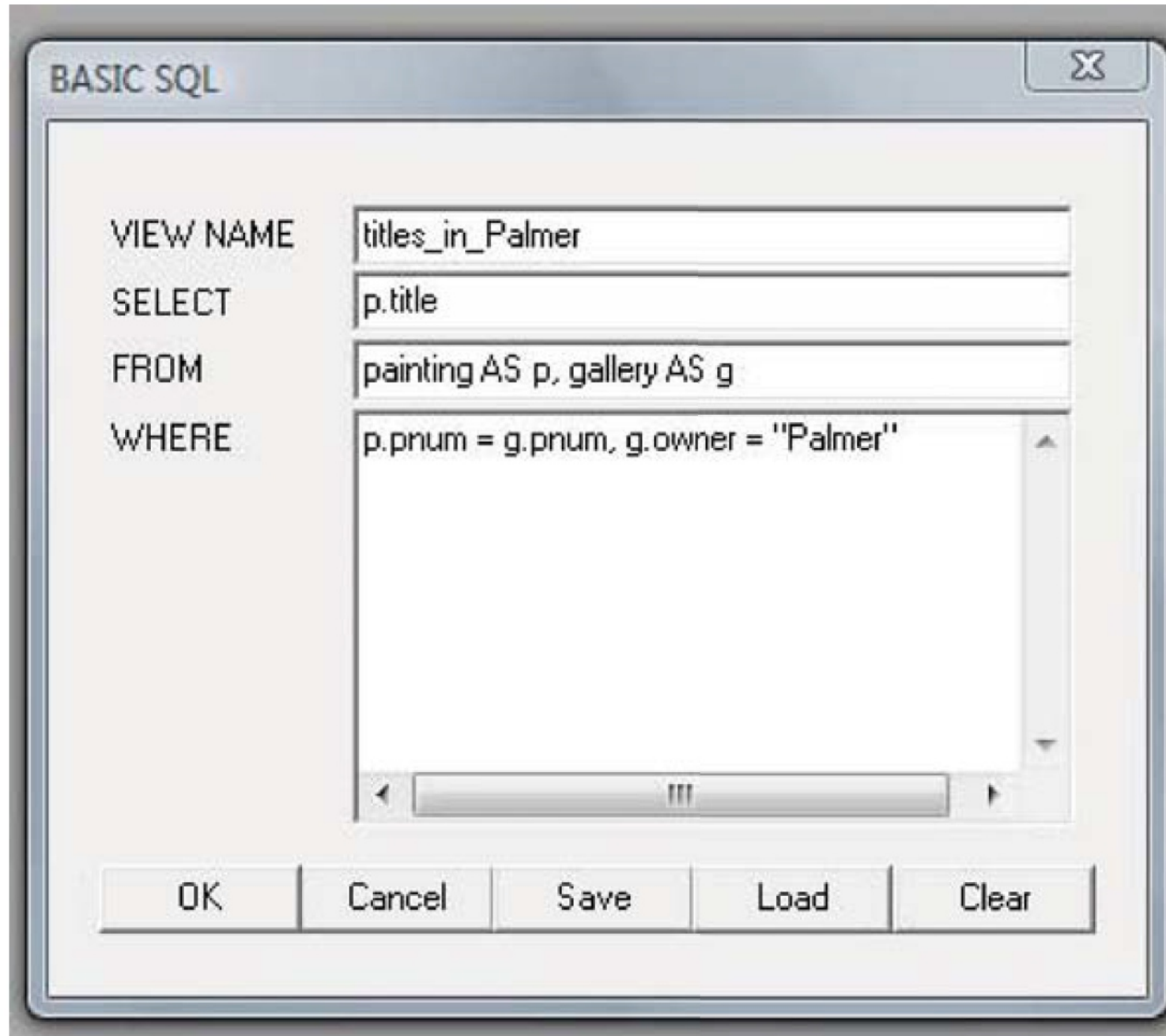
pnum	owner	CONSTRAINTS
2345	"Johnson"	
6666	"Johnson"	
4536	"McCloud"	
7878	"McCloud"	
6789	"Palmer"	
7896	"Palmer"	
9889	"Palmer"	

At the bottom of the window, there are two buttons: "Exit" and "Export".

# SQL Queries in MLPQ

SQL query:

Find the titles of the paintings in Palmer's gallery.



A screenshot of a "BASIC SQL" dialog box. The dialog has a title bar with a close button (X). Inside, there are four labeled text input fields: "VIEW NAME" containing "titles\_in\_Palmer", "SELECT" containing "p.title", "FROM" containing "painting AS p, gallery AS g", and "WHERE" containing "p.pnum = g.pnum, g.owner = 'Palmer'". The "WHERE" field has a vertical scrollbar on its right side. At the bottom of the dialog are five buttons: "OK", "Cancel", "Save", "Load", and "Clear".

Label	Value
VIEW NAME	titles_in_Palmer
SELECT	p.title
FROM	painting AS p, gallery AS g
WHERE	p.pnum = g.pnum, g.owner = "Palmer"

Buttons: OK, Cancel, Save, Load, Clear