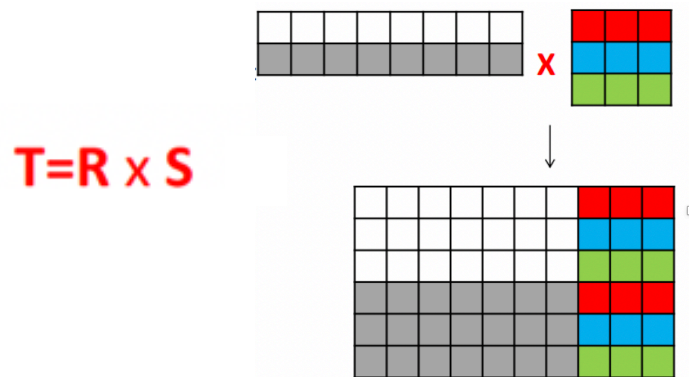


# Cross (Cartesian)Product

51

## Cartesian Product Example



52

## Cartesian Product Example

$T = \text{Course} \times \text{Professor}$

Course		Professor	
Topic	Year	Name	Rank
Algorithms	2	Dr. Monk	Professor
Python	2	Dr. Pooh	Associate Professor
Databases	3	Dr. Patel	Assistant Professor
GUI	3		



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## Cartesian Product Example

$T = \text{Course} \times \text{Professor}$

Course		Professor	
Topic	Year	Name	Rank
Algorithms	2	Dr. Monk	Professor
Python	2	Dr. Pooh	Associate Professor
Databases	3	Dr. Patel	Assistant Professor
GUI	3		




Topic	Y	Name	Rank
Algorithms	2	Dr. Monk	Professor
Algorithms	2	Dr. Pooh	Assoc. Professor
Algorithms	2	Dr. Patel	Assist. Professor
Python	2	Dr. Monk	Professor
Python	2	Dr. Pooh	Assoc. Professor
Python	2	Dr. Patel	Assist. Professor
Databases	3	Dr. Monk	Professor
Databases	3	Dr. Pooh	Assoc. Professor
Databases	3	Dr. Patel	Assist. Professor
GUI	3	Dr. Monk	Professor
GUI	3	Dr. Pooh	Assoc. Professor
GUI	3	Dr. Patel	Assist. Professor

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

## Cartesian Product Example

```
SELECT ColumnName_1,  
       ColumnName_2,  
       ColumnName_N  
FROM [Table_1],[Table_2]
```

Meals	
Omelet	
Fried Egg	
Sausage	

Drinks	
Orange Juice	
Tea	
Coffee	

CROSS JOIN

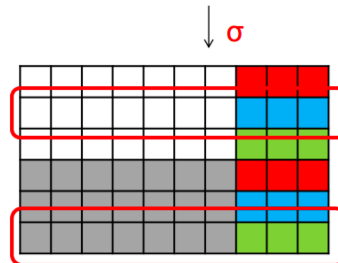
Menu Combination	
	
	
	
	
	
	
	
	
	

55

## Cartesian Product Example

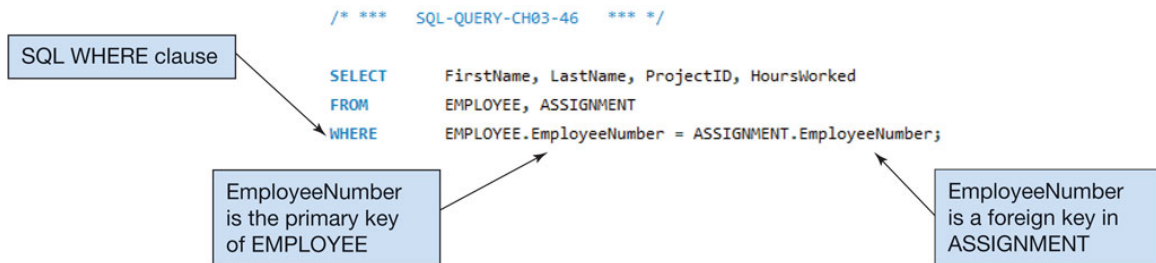


$$T = \sigma_{\text{condition}} (R \times S)$$



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## Using Primary Key and Foreign Key Values in the SQL WHERE Clause in an Implicit SQL JOIN



58

## Example

```

10 SELECT
11     fname, lname, address
12 FROM
13     employee,
14     department
15 WHERE
16     dnumber = dno;

```

fname	lname	address
Jared	James	123 Peachtree, Atlanta, GA
Jon	Jones	111 Allgood, Atlanta, GA
Justin	Mark	2342 May, Atlanta, GA
Kim	Grace	6677 Mills Ave, Sacramento, CA
Jeff	Chase	145 Bradbury, Sacramento, CA
John	James	7676 Bloomington, Sacramento, CA
Nandita	Ball	222 Howard, Sacramento, CA
Evan	Wallis	134 Pelham, Milwaukee, WI
Josh	Zell	266 McGrady, Milwaukee, WI
Tom	Brand	112 Third St, Milwaukee, WI
Jenny	Vos	263 Mayberry, Milwaukee, WI
Chris	Carter	565 Jordan, Milwaukee, WI
Alex	Freed	4333 Pillsbury, Milwaukee, WI
Bonnie	Bays	111 Hollow, Milwaukee, WI
Alec	Best	233 Solid, Milwaukee, WI
Sam	Sned...	987 Windy St, Milwaukee, WI
Bob	Bender	8794 Garfield, Chicago, IL
Jill	Jarvis	6234 Lincoln, Chicago, IL
Kate	King	1976 Boone Trace, Chicago, IL
Lyle	Leslie	417 Hancock Ave, Chicago, IL
Billie	King	556 Washington, Chicago, IL
Jon	Kramer	1988 Windy Creek, Seattle, WA
Ray	King	213 Delk Road, Seattle, WA
Gerald	Small	122 Ball Street, Dallas, TX
Arnold	Head	233 Spring St, Dallas, TX
Helga	Pataki	101 Holyoke St, Dallas, TX
Naveen	Drew	198 Elm St, Philadelphia, PA
Carl	Reedy	213 Ball St, Philadelphia, PA
Sammy	Hall	433 Main Street, Miami, FL
Red	Bacher	196 Elm Street, Miami, FL
James	Borg	450 Stone, Houston, TX

31 Rows

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## Example2

```
1 • SELECT
2   fname, lname, address
3 FROM
4   employee,
5   department
6 WHERE
7   dnumber = dno AND dname = 'Software';
```

fname	lname	address
Jared	James	123 Peachtree, Atlanta, GA
Jon	Jones	111 Allgood, Atlanta, GA
Justin	Mark	2342 May, Atlanta, GA
Kim	Grace	6677 Mills Ave, Sacramento, CA
Jeff	Chase	145 Bradbury, Sacramento, CA
John	James	7676 Bloomington, Sacramento, CA
Nandita	Ball	222 Howard, Sacramento, CA

7 Rows