The Relational Data Model

After this video you will be able to

- Describe the structural components of a relational data model
- Demonstrate which components make up a data model's 'schema'
- Explain the purpose of primary and foreign keys
- Describe "Join" and other operations

A Collection of Tables

ID	FName	LName	Department	Title	Salary
202	John	Gonzales	IT	DB Specialist	104750
203	Mary	Roberts	Research	Director	175400
204	Janaki	Rao	HR	Financial Analyst	63850
205	Alex	Knight	IT	Security Specialist	123500
206	Pamela	Ziegler	IT	Programmer	85600
207	Harry	Dawson	HR	Director	115450

No Duplicates

ID	FName	LName	Department	Title	Salary
202	John	Gonzales	IT	DB Specialist	104750
203	Mary	Roberts	Research	Director	175400
204	Janaki	Rao	HR	Financial Analyst	63850
205	Alex	Knight	IT	Security Specialist	123500
206	Pamela	Ziegler	IT	Programmer	85600
207	Harry	Dawson	HR	Director	115450
~~207~~	~~Harry~~	~~Dawson~~	~~HR~~	~~Director~~	~~115450~~

Dissimilar Tuples Disallowed

ID	Fname	Lname	Department	Title	Salary
202	John	Gonzales	IT	DB Specialist	104750
203	Mary	Roberts	Research	Director	175400
204	Janaki	Rao	HR	Financial Analyst	63850
205	Alex	Knight	IT	Security Specialist	123500
206	Pamela	Ziegler	IT	Programmer	85600
207	Harry	Dawson	HR	Director	115450
Jane	Doe	208	Res. Associate	65800	Research

Relational Schema

Employee

ID: Int Primary key	Fname: string Not null	Lname: string Not null	Department: Enum (HR, IT, Research, Business)	Title: string	Salary: int > 25000
202	John	Gonzales	IT	DB Specialist	104750
203	Mary	Roberts	Research	Director	175400
204	Janaki	Rao	HR	Financial Analyst	63850
205	Alex	Knight	IT	Security Specialist	123500
206	Pamela	Ziegler	IT	Programmer	85600
207	Harry	Dawson	HR	Director	115450
~~Jane~~	~~Doe~~	~~208~~	~~Res. Associate~~	~~65800~~	~~Research~~

Foreign Keys

EmpSalaries

EmpID	Date	Salary
202	1/1/2016	104750
203	2/15/1016	175400
204	6/1/2015	63850
205	9/15/2015	123500
206	10/1/2015	85600
207	4/15/2015	115450
202	9/15/2014	101250
204	3/1/2015	48000
207	9/15/2013	106900
205	10/1/2014	113400

Foreign key

EmpSalaries.EmpID References
Employees.ID

Primary key

Joining Relations

ID	FName	LName
202	John	Gonzales
203	Mary	Roberts
204	Janaki	Rao
205	Alex	Knight
206	Pamela	Ziegler
207	Harry	Dawson

EmpID	Date	Salary
202	1/1/2016	104750
203	2/15/1016	175400
204	6/1/2015	63850
205	9/15/2015	123500
206	10/1/2015	85600
207	4/15/2015	115450
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204	3/1/2015	48000
207	9/15/2013	106900
205	10/1/2014	113400

ID	FName	LName	Date	Salary
202	John	Gonzales	1/1/2016	104750
202	John	Gonzales	9/15/2014	101250
203	Mary	Roberts	2/15/1016	175400
204	Janaki	Rao	6/1/2015	63850
204	Janaki	Rao	3/1/2015	48000
205	Alex	Knight	9/15/2015	123500
205	Alex	Knight	10/1/2014	113400
206	Pamela	Ziegler	10/1/2015	85600
207	Harry	Dawson	4/15/2015	115450
207	Harry	Dawson	9/15/2013	106900

Excel and Relational Model

4042	Explosive	0			0		1	3 Minor (likely < $1 million)
4043	Explosive						1	4 Unknown
4044	Incendiary	0			0		1	3 Minor (likely < $1 million)
4045	Incendiary	0			0		1	
4046	Pistols	0			0		1	3 Minor (likely < $1 million)
4047	chemical mace	0	0	0		0	0	
4048	Automatic firearm; Explosive	0			0		1	2 Major (likely > $1 million but < $1 billion)
4049	Pistols	2			0		0	
4050	Incendiary	0			0		1	4 Unknown
4051	Automatic firearm	1			0		0	
4052	Incendiary	0			0		1	4 Unknown
4053		0			0		0	
4054	Bomb; Fake bomb	1	1	0	3	3	0	0
4055	Firearm	1					0	

Excel and Relational Model