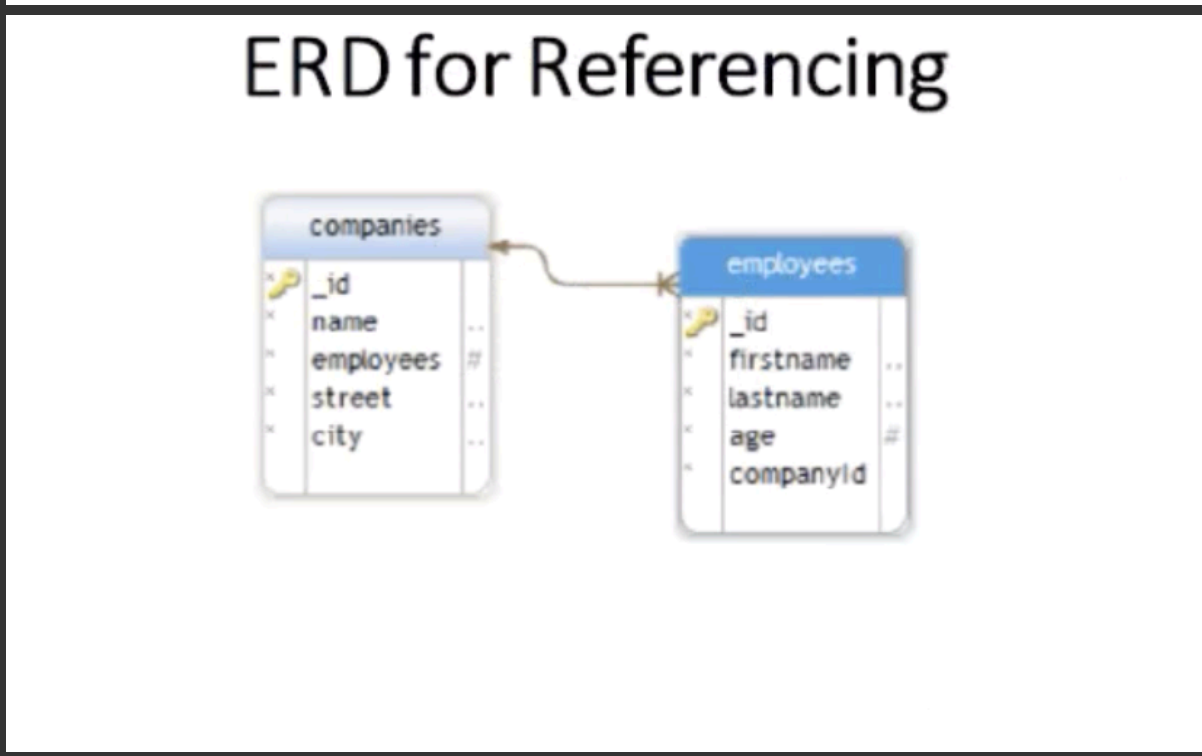
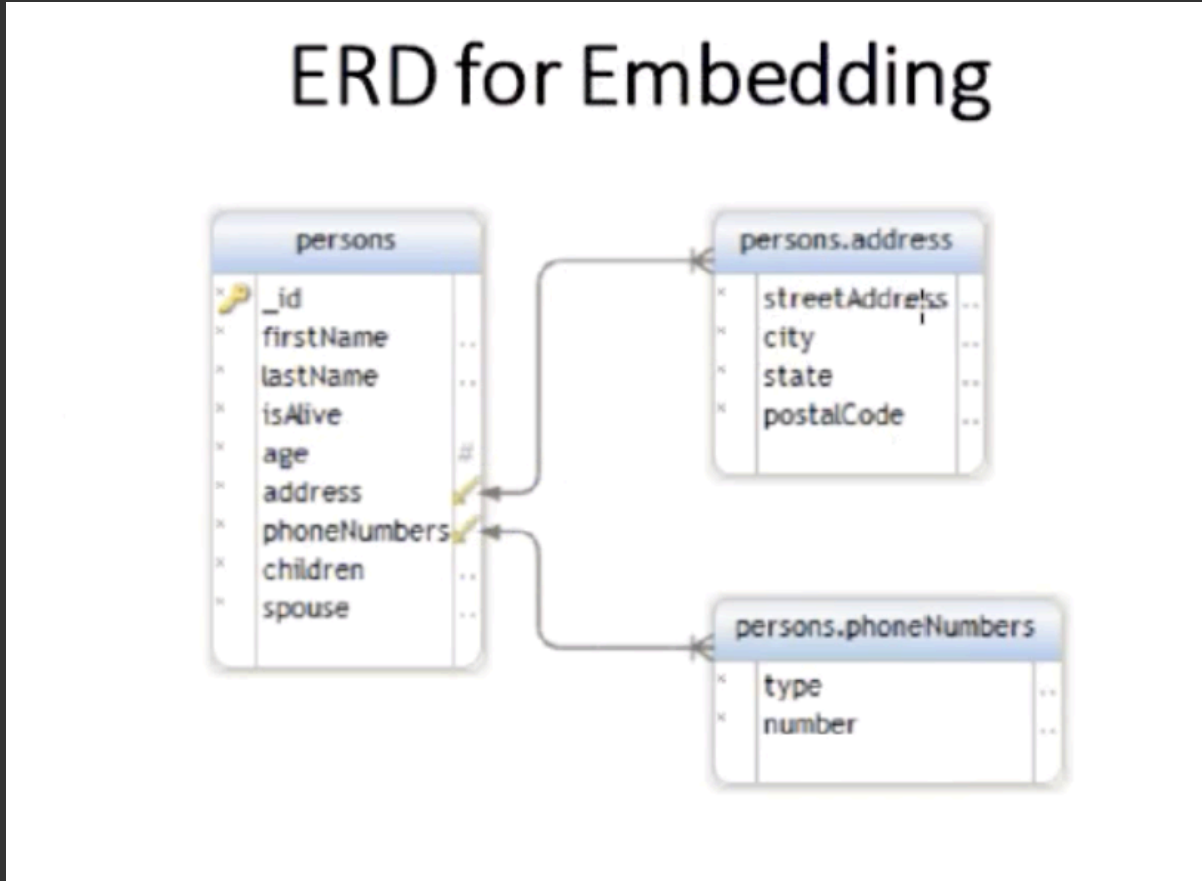


Document Database Design - Embedding or Referencing

Embedding

Referencing:(Denormalized)
1.many to many
2.need to be updated



SQL

Role of SQL Commands

Front End Programs

Application
Excel
Access
SSMS
Etc.

Relational Database Server

SQL Server
Oracle
Access
MySQL
Etc.

SQL ANSI
Standard Commands

- SQL ANSI standard commands are sent from the front end to the back end server
- Back end server:
 - Parses command to determine action to be taken
 - Completes the action
 - Returns results

SQL Command Categories

DML	DDL	DCL
SELECT	CREATE TABLE	GRANT
INSERT	ALTER TABLE	REVOKE
UPDATE	DROP TABLE	DENY
DELETE	CREATE VIEW	
	ALTER VIEW	
	DROP VIEW	

- DML: Data Manipulation Language
 - Selects and alters data
- DDL: Data Definition Language
 - Creates, alters, and drops database objects
- DCL: Data Control Language
 - Controls users' permissions

We can use SQL to work with both relational databases and NoSQL

Aggregate Function

关键字:
COUNT
DISTINCT
AS

```
SELECT CustomerID, AccountNumber, COUNT(SalesOrderID) AS '# of Orders'
FROM AdventureWorks2008R2.Sales.SalesOrderHeader
GROUP BY CustomerID, AccountNumber
ORDER BY '# of Orders' DESC;
```

Hint:所有非aggregate Column都要包含在group by里

MongoDB Node.js programming

INSERT

INSERT

```
// Data to insert
var myobj = { name: "Diaz"};

// Get a reference to document collection, then insert data
db.collection("Nodejs").insertOne(myobj, function(err, res) {
  if (err) throw err;
  console.log("1 document inserted");
```

DELETE

DELETE

```
// Data to delete
var myquery = { name: 'Diaz' };

// Get a reference to document collection, then delete data
db.collection("Nodejs").deleteOne(myquery, function(err, obj) {
  if (err) throw err;
  console.log("1 document deleted");
```

UPDATE

UPDATE

```
// Old value
var myquery = { name: "Smith" };

// New value
var newvalues = { $set: {name: "Harvey"} };

// Get a reference to document collection, then query and update data
db.collection("Nodejs").updateMany(myquery, newvalues, function(err, res) {
  if (err) throw err;
  console.log(res.result.nModified + " document(s) updated");
```

JOINS

HAVING - use to filter the data after aggregating

关键字要按照相应顺序

```
SELECT T.TerritoryID, T.Name ,
       Count(S.BusinessEntityID) AS [Total Sales People]
FROM Sales.SalesTerritory T
INNER JOIN Sales.SalesPerson S
ON T.TerritoryID = S.TerritoryID
WHERE T.CountryRegionCode = 'US'
GROUP BY T.TerritoryID, T.Name
HAVING Count(S.BusinessEntityID) > 1
ORDER BY Count(S.BusinessEntityID);
```