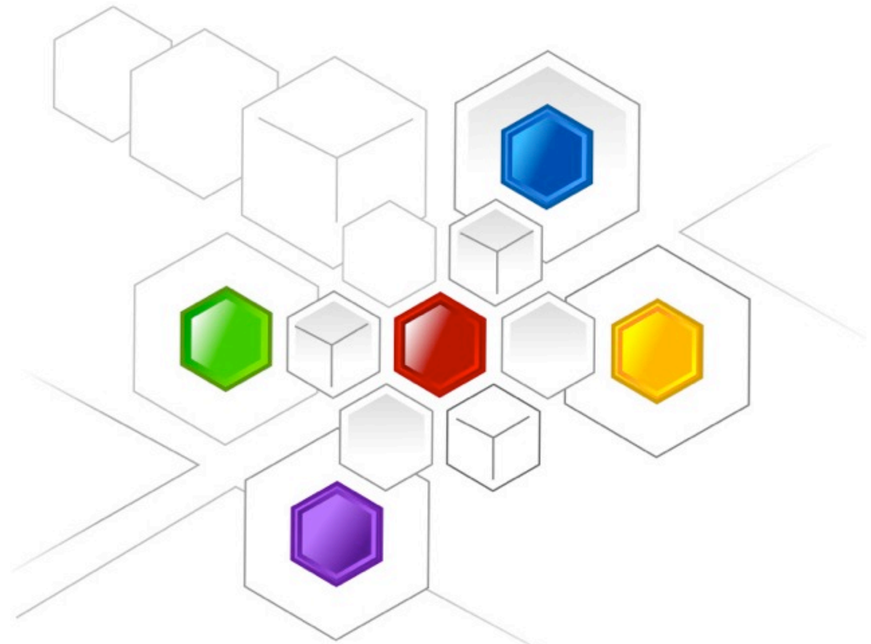
SQLite Databases

Simon Larkin



www.QiSQL.com

'queue eye sequel dot com'

SIMON LARKIN

SIMON LARKIN

DATABASE SPECIALIST

SIMON LARKIN

DATABASE SPECIALIST

30 YEARS EXPERIENCE (OLD GEEZER!)

ORACLE

CSC

FREELANCE

DIAGEO

SIMON LARKIN

DATABASE SPECIALIST

30 YEARS EXPERIENCE (OLD GEEZER!)

CHURCHILL INSURANCE

QISQL

HARDINGTON CONSULTANCY

ORACLE

CSC

FREELANCE

DIAGEO

SIMON LARKIN

DATABASE SPECIALIST

30 YEARS EXPERIENCE (OLD GEEZER!)

CHURCHILL INSURANCE

QISQL

HARDINGTON CONSULTANCY

Rubbish at Keynote Presentations!

Is SQLite - Lite?

Is SQLite - Lite?

NO!

Is SQLite - Lite?

NO!

SQLite is used by many famous companies
some may surprise you!

Is SQLite - Lite?

NO!

SQLite is used by many famous companies
some may surprise you!

Later in the Demo I'll try and show just
how fast SQLite can be

Adobe

TOSHIBA

php

AIRBUS

python™

intuit

Google

Dropbox

REALbasic

McAfee

Microsoft

skype

Sun microsystems

symbian

Top SQLite'd Applications

LIGHTROOM

APPLE MAIL / ITUNES

DUH!

QiSQL

Cross Platform?

Cross Platform?

YES

Cross Platform?

YES

Tip:

Always use ‘proper’ SQL when possible

Recordsets, Database Records, Data Types etc.
Are NOT portable

SQL

SQL

Pronounced ‘SEQUAL’

SQL

Pronounced ‘SEQUAL’

Structured Query Language

SQL

Pronounced ‘SEQUAL’

Structured Query Language

SQL Does CRUD!

SQL

Pronounced ‘SEQUAL’

Structured Query Language

SQL Does CRUD!

SQL has its own ANSI Standard

SQL

Pronounced ‘SEQUAL’

Structured Query Language

SQL Does CRUD!

SQL has its own ANSI Standard

Some flavours are ANSI Compliant

SQL

Pronounced ‘SEQUAL’

Structured Query Language

SQL Does CRUD!

SQL has its own ANSI Standard

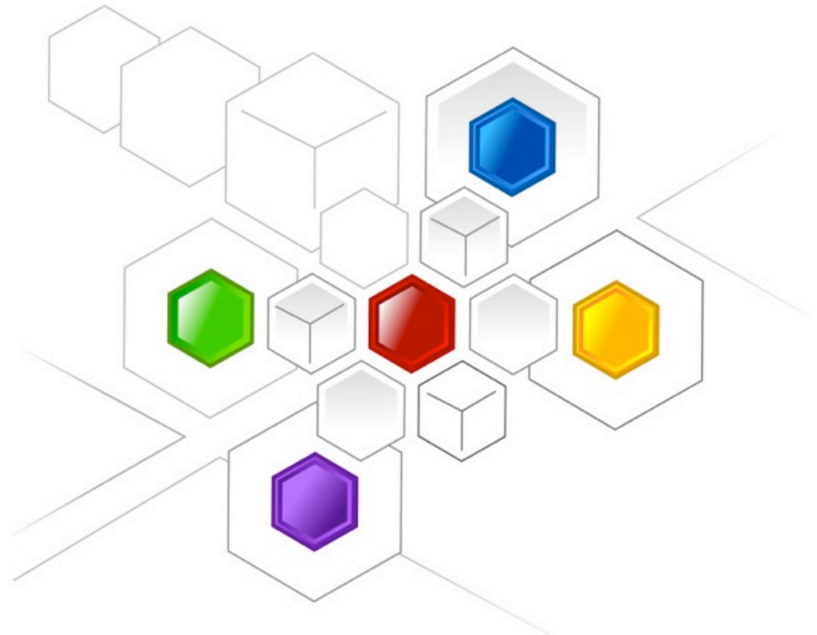
Some flavours are ANSI Compliant

SQLite is Nearly ANSI 92 compliant

ANSI92 'Alter Table' Support

Very Flakey in SQLite - get your design right!

Many applications promise but none deliver (yet!)



ANSI92 Views

Views are ‘Read Only’

GOOD!

ANSI92 Outer Joins

SQLite only supports
LEFT OUTER JOINS

Not really a problem!

ANSI92 Grant / Revoke

OK, so SQL is a standalone single user database

Permissions would be silly!

Data Types

SQLite Does Not Enforce Data Types

Data Types

SQLite Does Not Enforce Data Types

- This is a GOOD thing!
- YOU can create your own Data Types
- You CAN enforce Data Types with:

  Triggers and Constraints

SQLITE Limits

BLOB 1gb (2.1gb)

SQLITE Limits

BLOB 1gb (2.1gb)

Columns in Table - 2000 (32,767)

SQLITE Limits

BLOB 1gb (2.1gb)

Columns in Table - 2000 (32,767)

SQL Statement - 1mb (1gb)

SQLITE Limits

BLOB 1gb (2.1gb)

Columns in Table - 2000 (32,767)

SQL Statement - 1mb (1gb)

Tables in Join - 64

SQLITE Limits

BLOB 1gb (2.1gb)

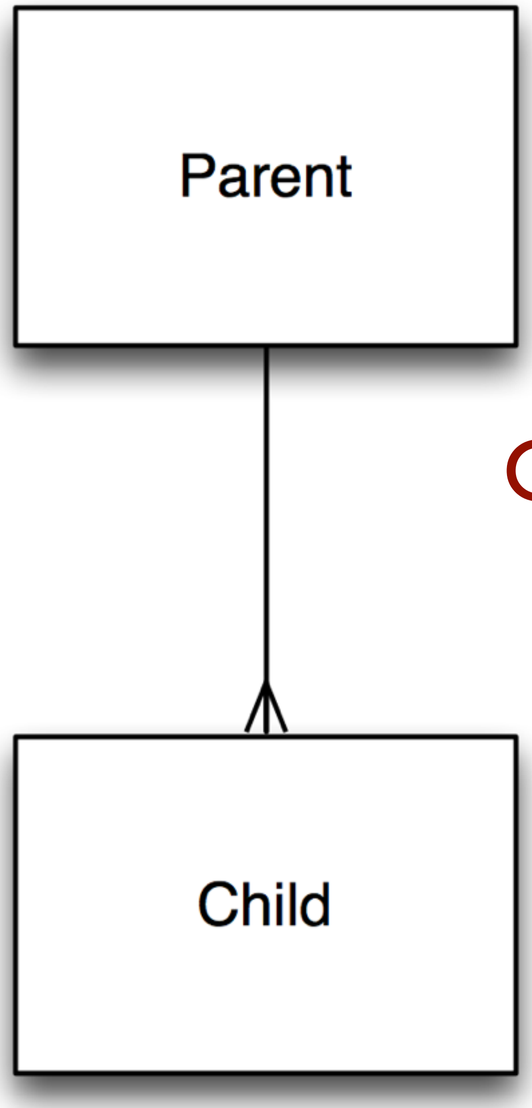
Columns in Table - 2000 (32,767)

SQL Statement - 1mb (1gb)

Tables in Join - 64

Database Size - 14tb

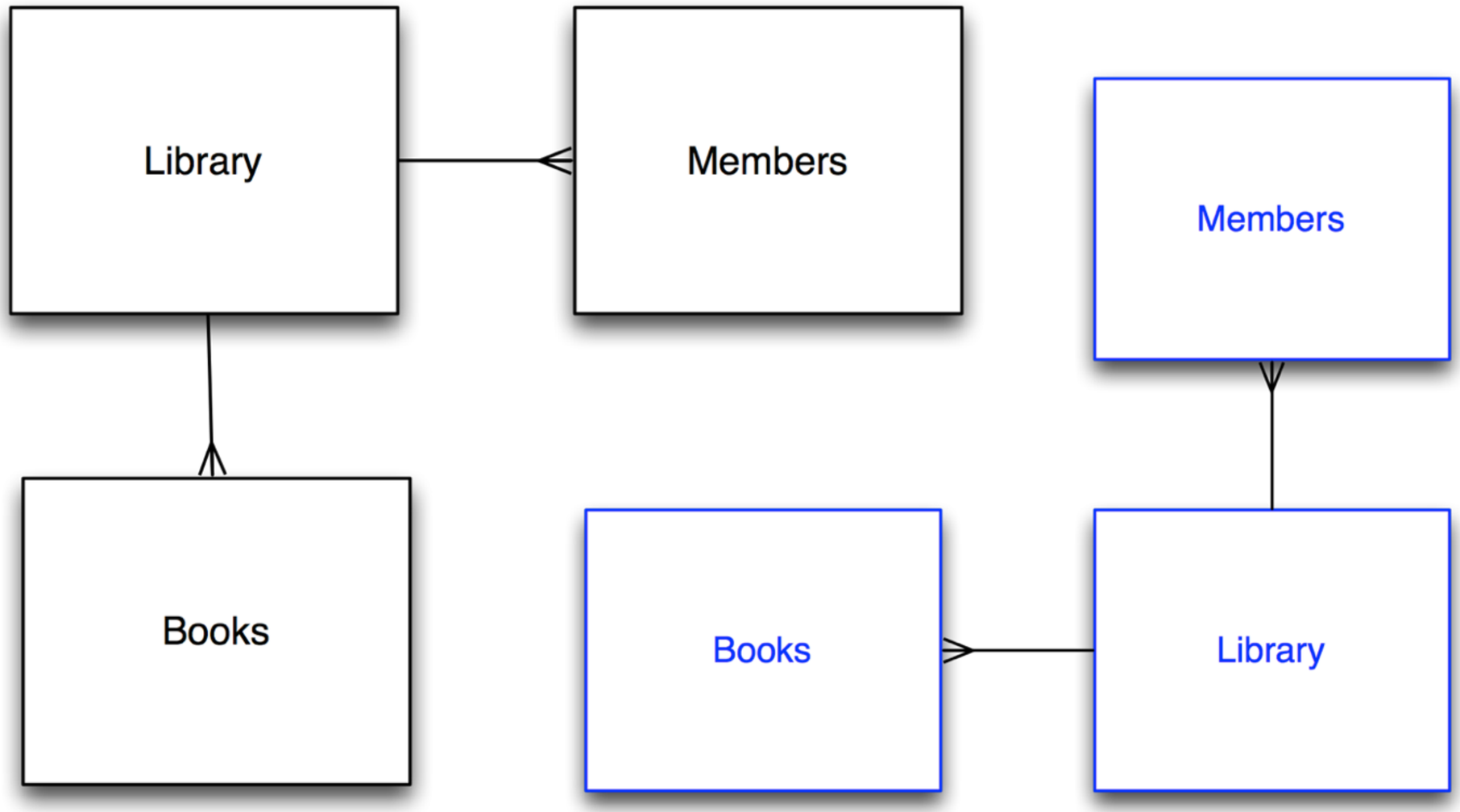
DATA MODEL



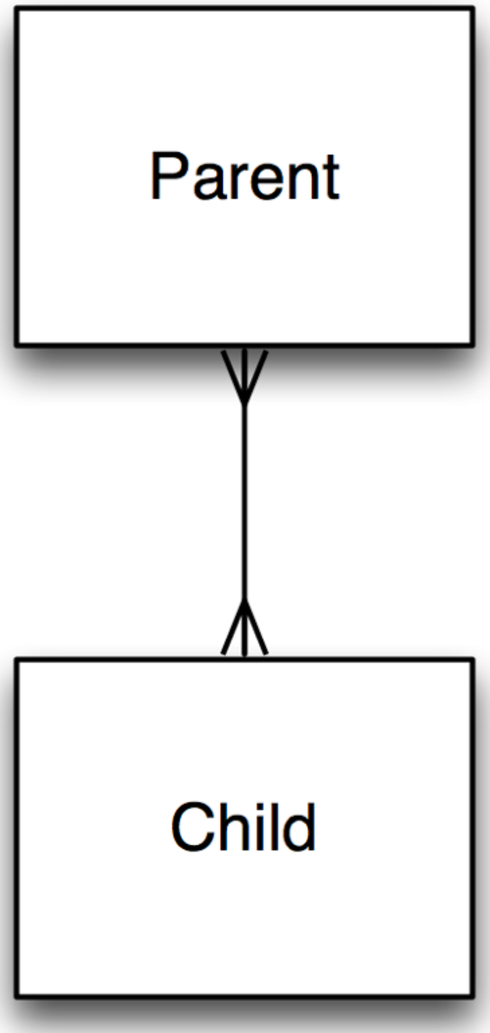
ONE to MANY

ONE to MANY

more Relationship Examples



Relationships



MANY to MANY

Very Important

But.....

Normalisation

Normalisation

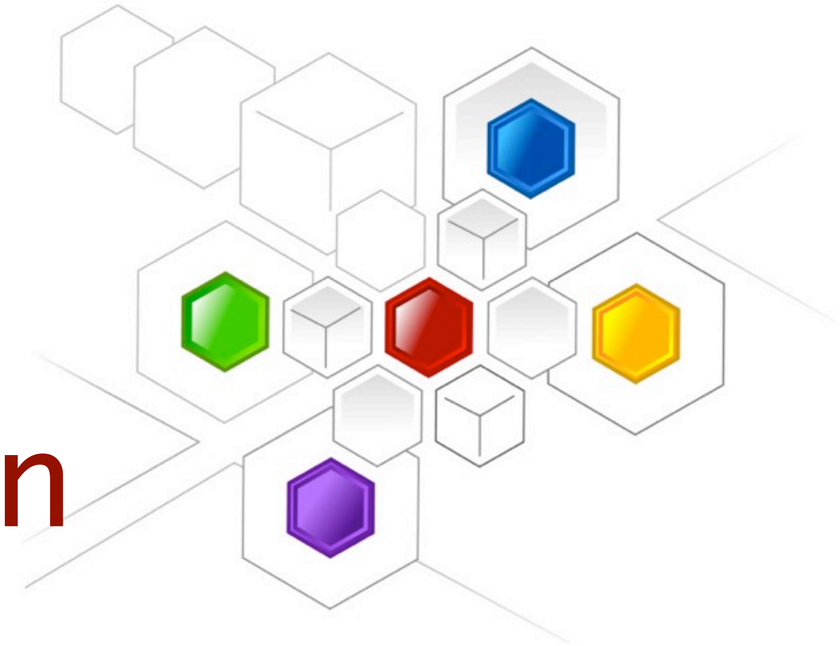
Organise into optimised, non-repeating groups (Entities)

Normalisation

Organise into optimised, non-repeating groups (Entities)

'OK you data get yourself into non-repeating groups!'

Slides on first, second and third Normal Form are on the website:

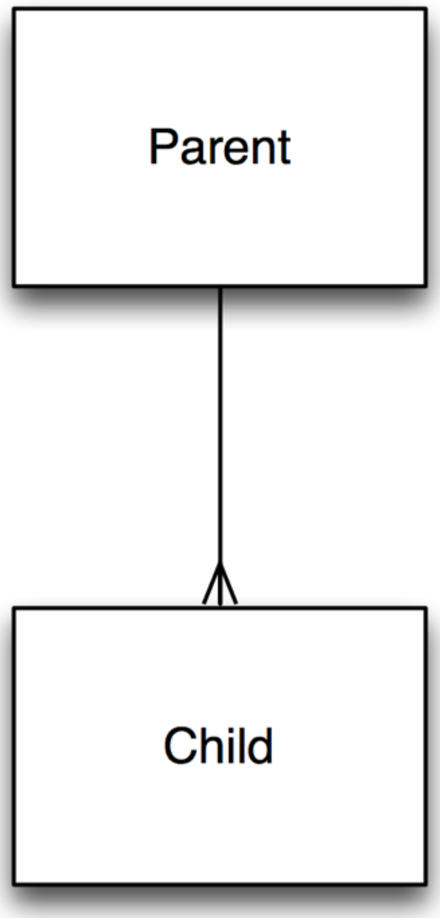


www.QiSQL.com

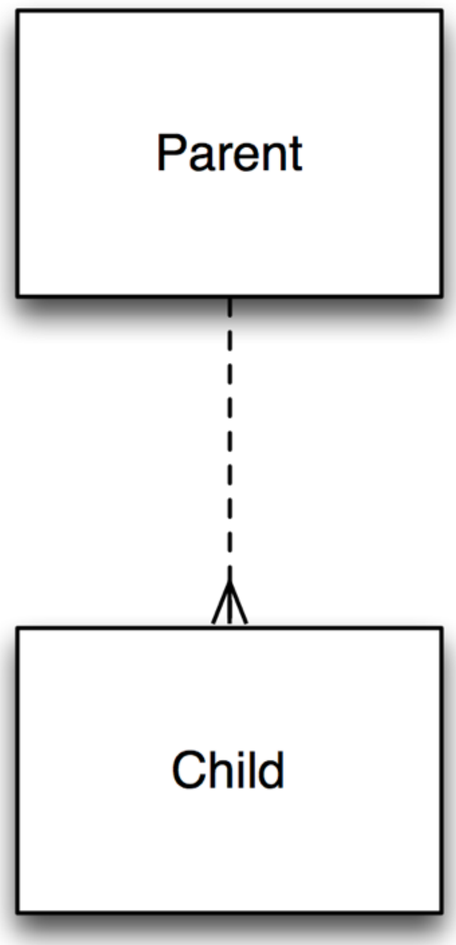
‘queue eye sequel dot com’

Back To Data Modelling

No Orphans



Orphans Allowed



People Addresses - Example

Column	Value
ID	1
Name	Simon
Address	1 The Street

Perfect! Primary Key (ID), Unique Key (Name)

People Addresses - Example

Column	Value
ID	1
Name	Simon
Address	1 The Street

Perfect! Primary Key (ID), Unique Key (Name)

Then Client wants Work Address - OK.....

Column	Value
ID	1
Name	Simon
Address	1 The Street
Work Address	2 The Avenue

People Addresses - Example

Then they need the previous address - OK, just add another column

Column	Value
ID	1
Name	Simon
Address	1 The Street
Work Address	2 The Avenue
Previous Address	9 Hill View

People Addresses - Example

Then they need the previous address - OK, just add another column

Column	Value
ID	1
Name	Simon
Address	1 The Street
Work Address	2 The Avenue
Previous Address	9 Hill View

If less than ‘n ‘ years then guess what?

Column	Value
ID	1
Name	Simon
Address	1 The Street
Work Address	2 The Avenue
Previous Address	9 Hill View
Prev Previous Address	1 The Street

People Addresses - Example

The Data might look a bit like this

ID	Name	Address	Previous...
1	Simon	1 The Street	2 The Avenue
2	Mrs Simon	1 The Street	2 The Avenue
3	Simon	1 The Street	2 The Avenue
4	George	2 The Avenue	1 The Street

Not very Normalised!

People Addresses - Example

Only Link
Entity Man can
save the day!

People Addresses - Example

Only Link
Entity Man can
save the day!

People Addresses - Example

People

ID	Name
1	Simon

Address Types

ID	Type
1	Residential
2	Prison

Addresses

ID	Address	Add. Type
1	1 The Street	1
2	2 The Avenue	1
3	The Scrubs	2

Person Address Link

ID	PersonID	AddressId	From	To
1	1	1	2010-01-01	
2	1	2	2009-01-01	2009-12-31
3	1	3	2008-01-01	2008-12-31

PROBLEMS

&

OPPORTUNITIES

Lookup Table

Every database would love to have its very own look up table!

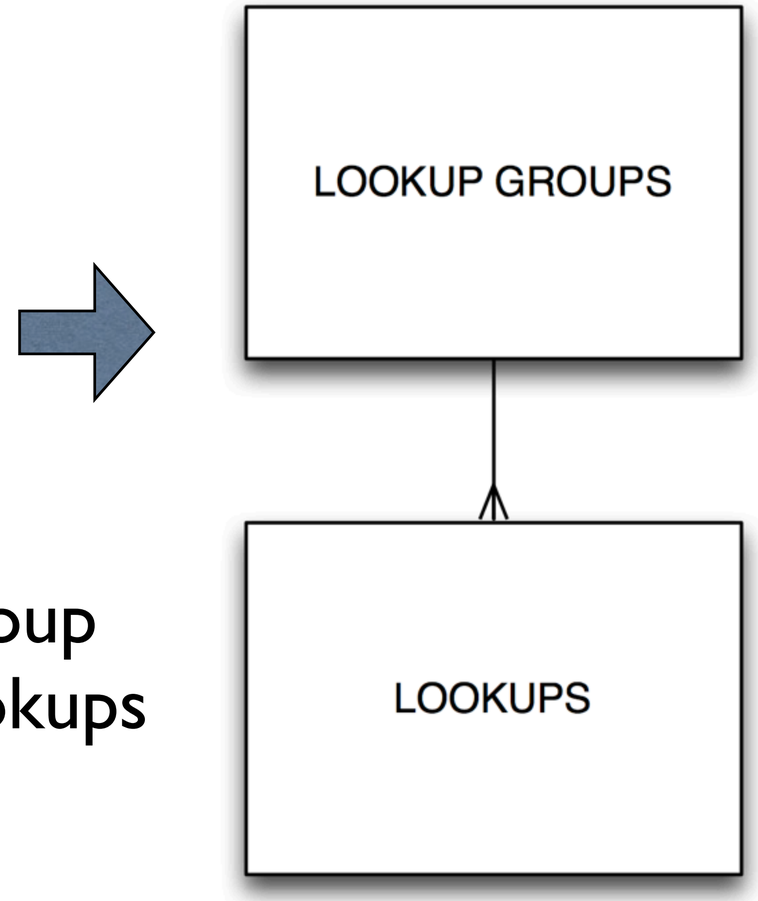
Each Lookup Group
may have many lookups
(items)

Lookup Table

Every database would love to have its very own look up table!

Operating System and Country each have just one constant value.

So.... we can create a nice Relational model:



Each Lookup Group may have many lookups (items)

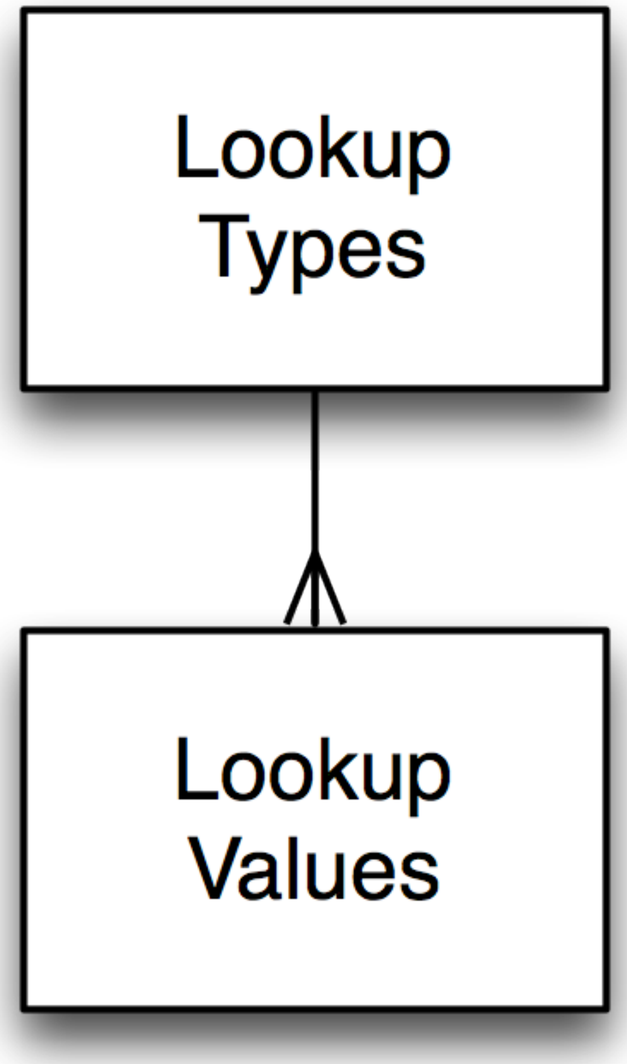
Lookups

Address Types
People Types
Genders
Nationalities
etc.

Lookups

Address Types
People Types
Genders
Nationalities
etc.

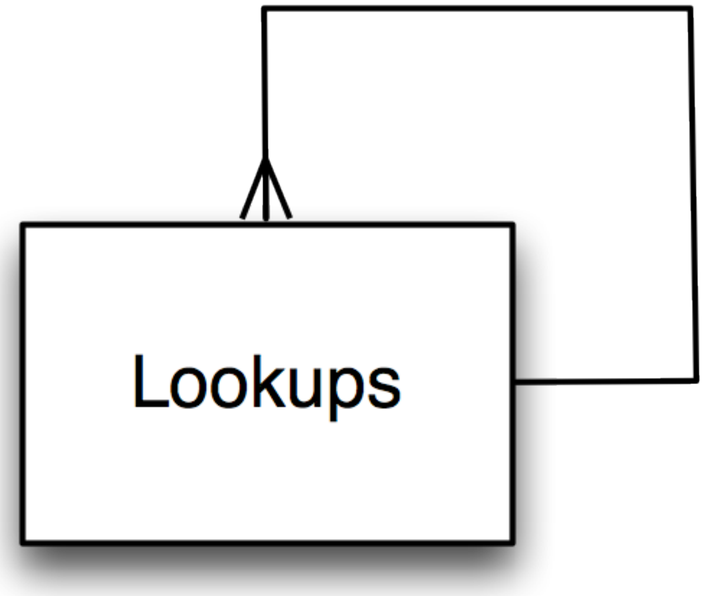
Static Values
could be stored in a
master detail mode
like this



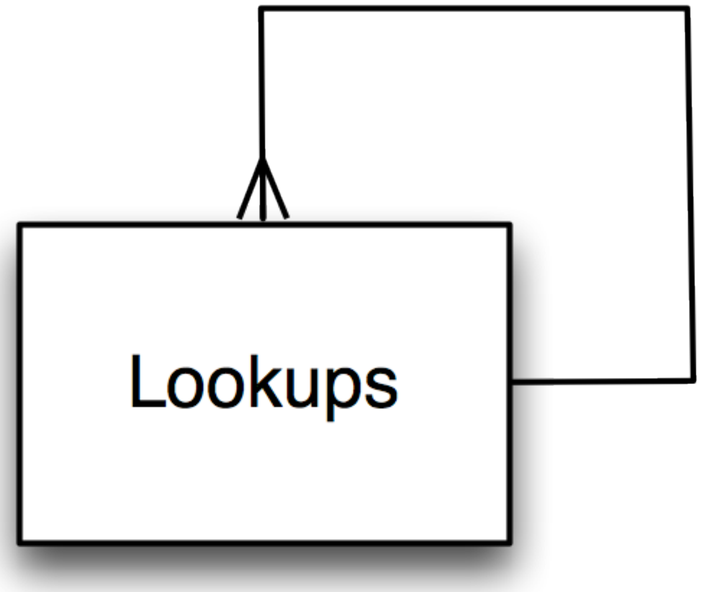
OR.....

How about a Self Referencing Hierarchy Table?

How about a Self Referencing Hierarchy Table?



How about a Self Referencing Hierarchy Table?



ID	ParentID	Name
1		Address Types
2	1	Home
3	1	Prison
4		People Types
5	4	Attendee
6	4	Presenter

DATABASE STUFF

NULL is NULL, NOT Empty
Nothing can EQUAL Null or....

NULL can not EQUAL anything

DATABASE STUFF

NILs, Nulls, Nuffinks

NULL is NULL, NOT Empty
Nothing can EQUAL Null or....

NULL can not EQUAL anything

DATABASE STUFF

NILs, Nulls, Nuffinks

NIL AIN'T NOT SQL

NULL is NULL, NOT Empty
Nothing can EQUAL Null or....

NULL can not EQUAL anything

Common NULL Problem

Common NULL Problem

select * from table where column is null;

NO ROWS

Common NULL Problem

select * from table where column is null;

NO ROWS

SOLUTION (BLANK VALUE IN COLUMN!)

select * from table where column is null or column = ‘’;

OR.... DEFINE ALL COLUMNS AS NOT NULL, OR USE DEFAULT VALUE

DATES

DATES

Oooh err, I set up a date field in my Database and it ain't not working!

DATES

Oooh err, I set up a date field in my Database and it ain't not working!

SQLITE doesn't care what you defined your field as, so when you insert date into your database:

DATES

Oooh err, I set up a date field in my Database and it ain't not working!

SQLITE doesn't care what you defined your field as, so when you insert date into your database:

USE A FLIPPIN' SQL DATE FORMAT

DDDD-MM-YY (HH:MM:SS)

MY RECORDSET IS NIL

MY RECORDSET IS NIL

IT DOES NOT MEAN NO DATA
YOUR SQL STATEMENT IS WRONG!!!

MY RECORDSET IS NIL

IT DOES NOT MEAN NO DATA
YOUR SQL STATEMENT IS WRONG!!!

ALWAYS, ALWAYS, ALWAYS....
CHECK FOR ERRORS AFTER EVERY SQL STATEMENT:

MY RECORDSET IS NIL

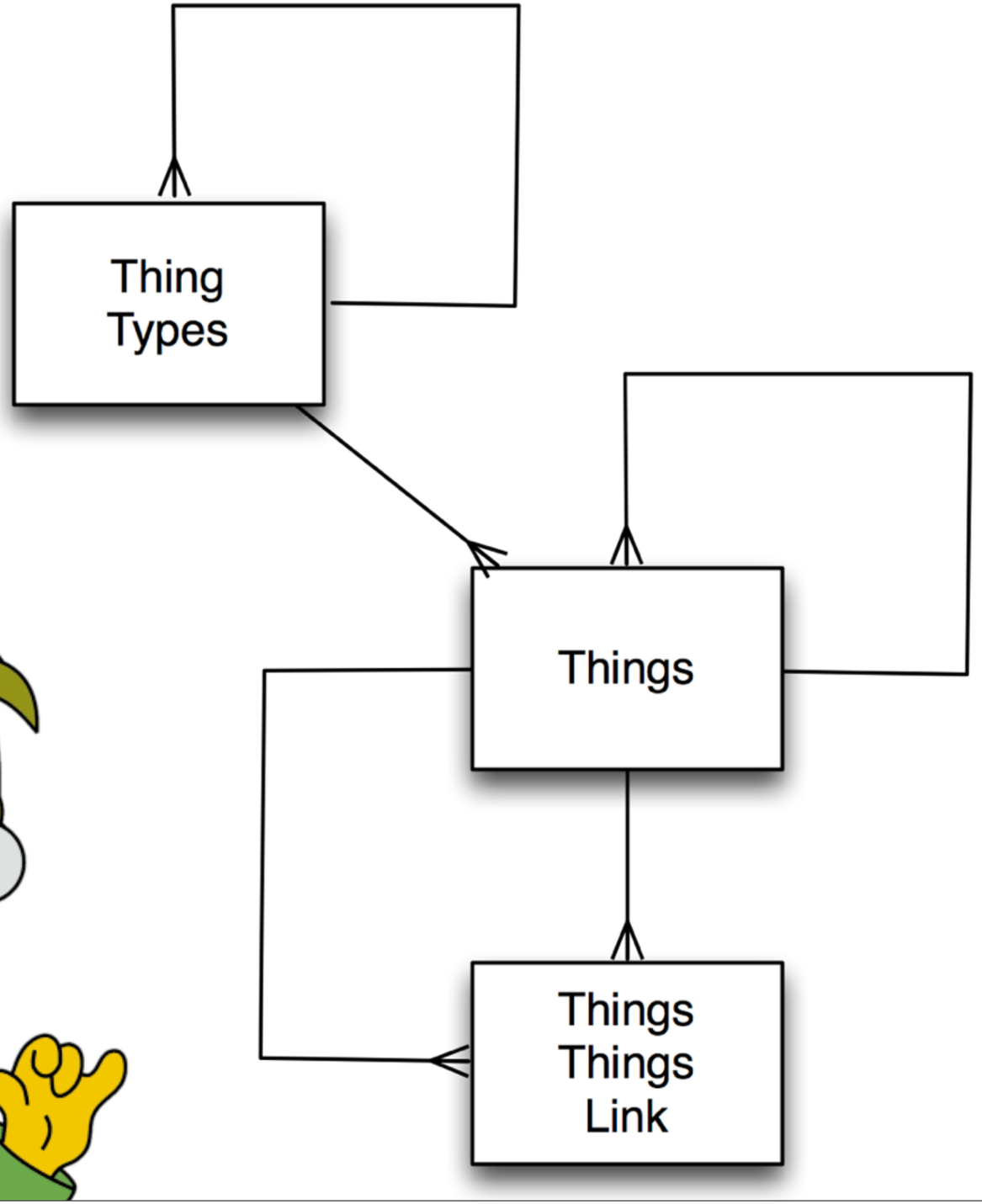
IT DOES NOT MEAN NO DATA
YOUR SQL STATEMENT IS WRONG!!!

ALWAYS, ALWAYS, ALWAYS....
CHECK FOR ERRORS AFTER EVERY SQL STATEMENT:

IF DB.ERROR THEN .....

A Final Thought .....

The Mad Scientist
Database Model



That's All Folks!

Simon Larkin

simon@QiSQL.com

www.QiSQL.com

'queue eye sequel dot com'