

FMSync

An Open Source Solution for Synchronising Distributed Archaeological Databases
in a Centralised Open Access System

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CAA 2018, Tübingen

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Motivation

FileMaker Pro is widespread across archaeological projects, e.g.:

The screenshot displays the 'cera[m]alex' FileMaker Pro interface. The header bar includes navigation buttons ('Startseite', 'Zurück', 'Neuer Datensatz'), the title 'ABSTRACT CERAMALEX', and user information ('Daten eingegeben von Heike Moeller', '136').

Hinweis:
Felder und Layout-Bereiche, die mit einem "*" markiert sind, sind obligatorisch und MÜSSEN ausgefüllt werden.

Morphologie*

- 1. Level: Cooking Ware
- 2. Level: Vessels for cooking
- 3. Level: pot
- 4. Level:
- 5. Level:
- 6. Level:

Morphologie-auswahl
Speichern
Bearbeiten

Grabungsort: Schedia
Grabungsinterne Typnummer: -

Verbundene Datierungen

Zeitpunkt Zeitspanne>>

ANFANG Epoche ENDE

Datenquelle Filemaker **Bearbeiter**

Kontext* Excavation Area: Schedia Befund: 9088 Area: 9

Fabric* Egypt Excavation Area: Schedia; Name: CG.1 vgl. FOUAD M4/A2 - Cooking Ware CommonName: marl/alluvial

Verbundene Bilder

Isolated Sherd:

CERAMALEX\9088-509Niton-16-a_131.jpg

Fabric:

CERAMALEX\Niton-30008.8-Img10428_10.jpg

Morphologie:

CERAMALEX\Niton9082_1_1768.jpg

Before FMSync: Sharing Data

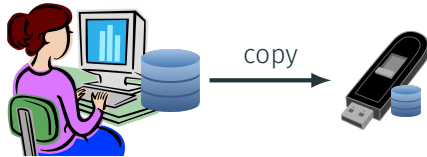


FileMaker A



FileMaker B

Before FMSync: Sharing Data

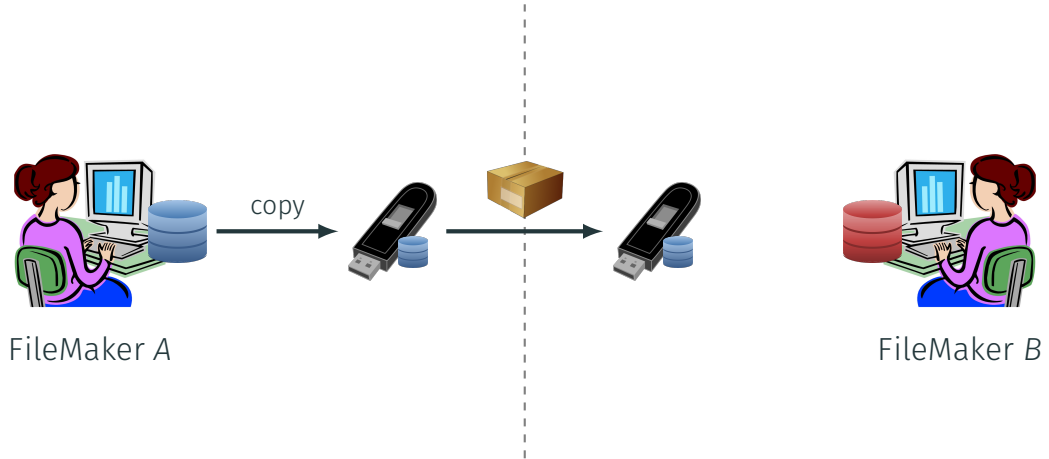


FileMaker A

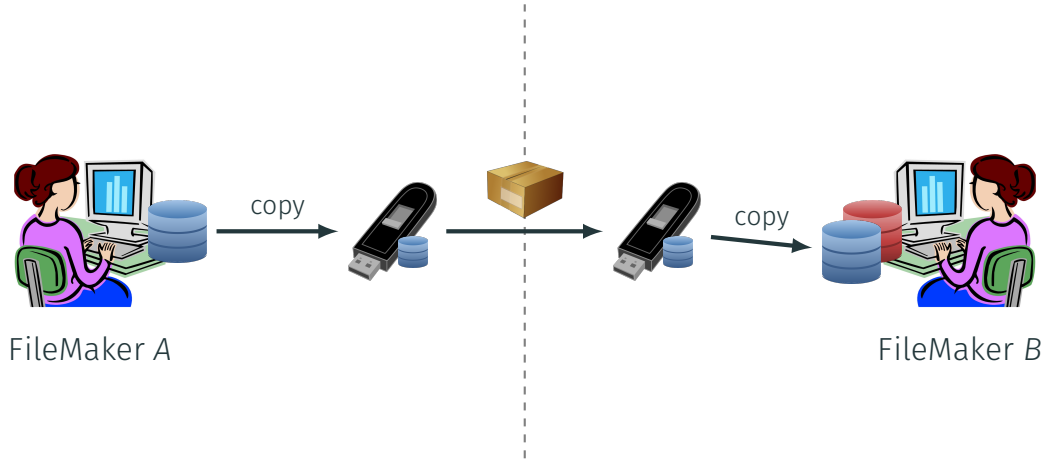


FileMaker B

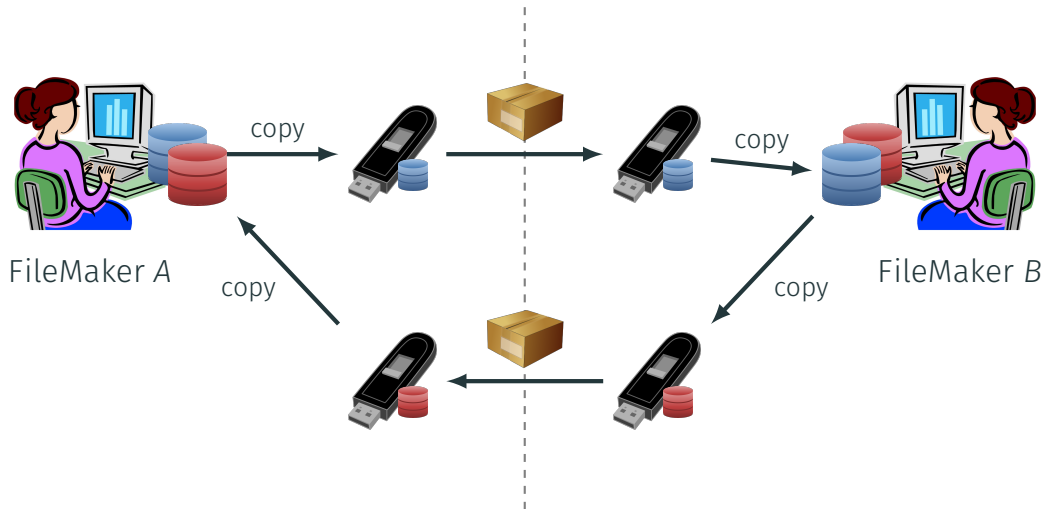
Before FMSync: Sharing Data



Before FMSync: Sharing Data



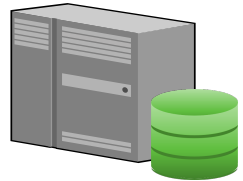
Before FMSync: Sharing Data



Before FM Sync: Publishing Data

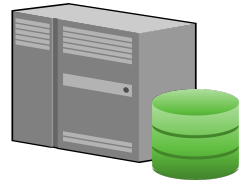


FileMaker



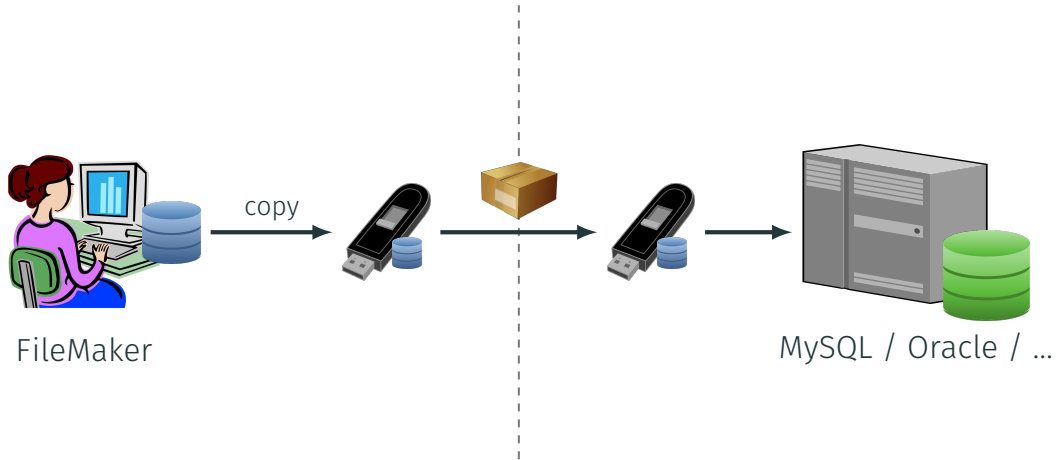
MySQL / Oracle / ...

Before FMSync: Publishing Data

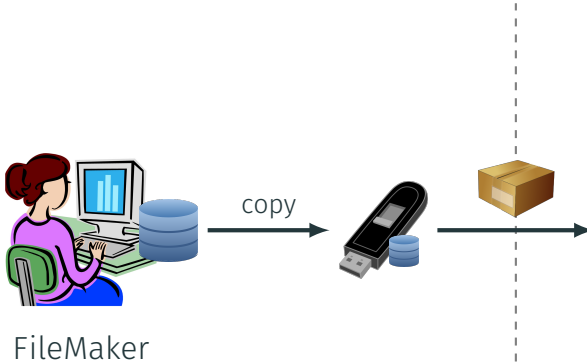


MySQL / Oracle / ...

Before FMSync: Publishing Data

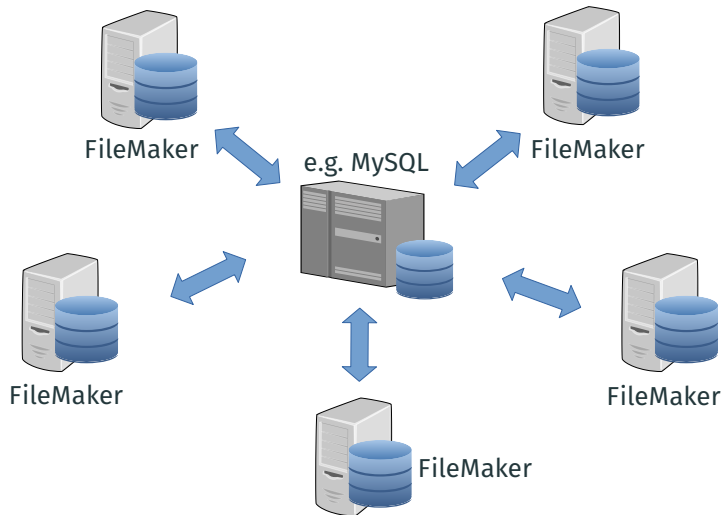


Before FMSync: Publishing Data



Approach

FMSync: Topology



Yo, Felix! 'Tis nuthin nu.

SymmetricDS supports [...] Oracle, MySQL, MariaDB, PostgreSQL, MS SQL Server (including Azure), IBM DB2 (UDB, iSeries, and zSeries), H2, HSQLDB, Derby, Firebird, Interbase, Informix, Greenplum, SQLite, Sybase ASE, Sybase ASA (SQL Anywhere), Amazon Redshift, MongoDB, and VoltDB databases.

<https://www.symmetricds.org/>

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<https://www.symmetricds.org/>



Purchase Quote

				Quote Date	2018-03-09
				Quote Number	
				Expiration	2018-04-08
	Product	QTY	Unit Price	Extended Price	
FM160277LL	FileMaker Server 16 FLT Perpetual Volume License + 1 Year Maintenance (10 users)	1	US\$4,284.00	US\$4,284.00	
			Subtotal:	US\$4,284.00	
			Shipping:	US\$0.00	
			Estimated Tax:	US\$0.00	
			Total:	US\$4,284.00	

- Proprietary, badly written software
- Still totally not worth the price

... is better than the existing ones, since

- it is **open source** (GPL 3 license)
- it is free
- it allows **open access** scenarios
- it is Java-based, thus **platform-independent** and flexible
- it is user-friendly
- it allows to already **keep data in sync** while collecting

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Why underestimation is bad

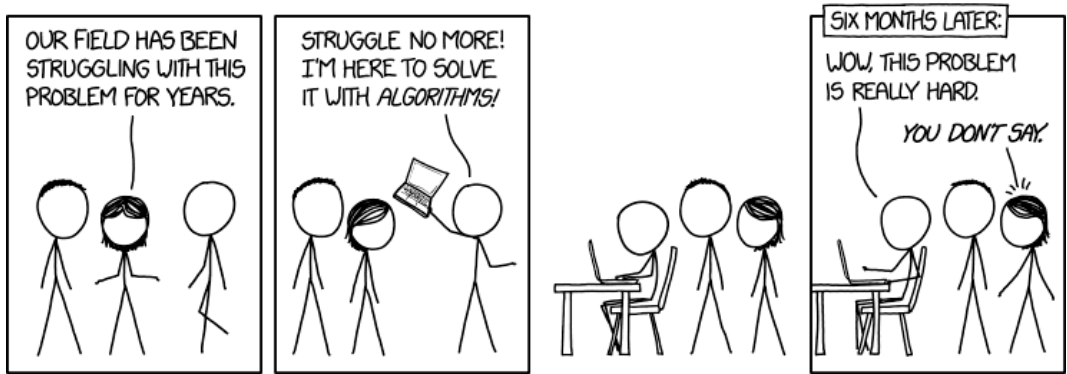
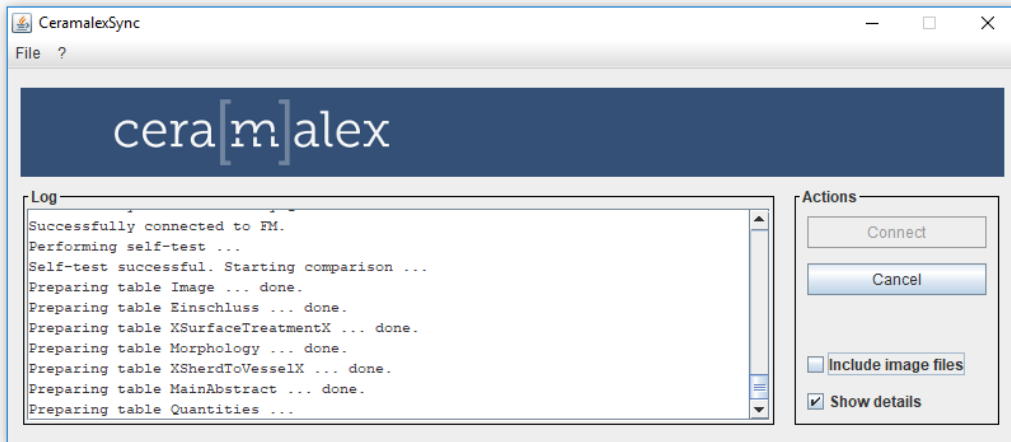


Figure 1: I can relate to this. [xkcd.com/1831]

Implementation

Main Window



Detail Window

Sync databases

Filters

!= X Pairs

-> <- Individuals

Options

Refresh tables ☒ Show sync relevant fields

Start!

Cancel

Fabric Image IsolatedSherdMainAbstract Literaturzitat MainAbstract SurfaceTreatmentAction XMorphologyX

A	ArachneEnt...	FS_MainAb...	FS_Morpho...	Level1	Level1_6	Level2	Level3	A	ArachneEnt...	FS_MainAb...	FS_Morpho...	Level1	Level1_6	Level2	Level3
C	14184	2099	Cooking W...	Cooking W...	Vessels fo...	lid or pan		C	22249	14184	2099	Cooking W...	Cooking W...		
C	30772	1541	Domestic f...	Domestic f...	Saqqiah po...			C	23697	30772	1541	Domestic f...	Domestic f...		
C	32121	2134	Transport V...	Transport ...	Amphora	AE 3		C	25046	32121	2134	Transport V...	Transport ...		
C	32945	2054	Transport V...	Transport ...	Amphora	AE 3		C	25870	32945	2054	Transport V...	Transport ...	Amphora	
C	34829	1816	Transport V...	Transport ...	Amphorae			C	27754	34829	1816	Transport V...	Transport ...		
C	36712	1816	Transport V...	Transport ...	Amphorae			C	29637	36712	1816	Transport V...	Transport ...		
C	1	1771	Terrakotta	Terrakotta/...	Bes			C	30580	1	1771	able ware...			
C	13	1697						C	30592	13	1697	Cooking W...	Cooking W...	cooking pot	
C	14	1699						C	30593	14	1699	Fine Ware	Fine Ware/////		
C	29	1721	Lamps	Lamps/////				C	30608	29	1721				
??								??	31934	100032	0				
UL				Fine Ware	Fine Ware/...	Plate									

Select all rows with C

Resolve conflict ...

bisschen zur syncmainmain

Foreign Key Difficulty

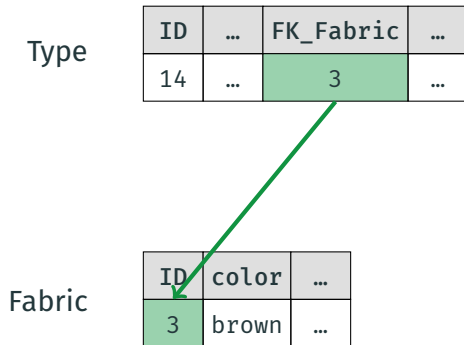
Type

ID	...	FK_Fabric	...
14	...	3	...

Fabric

ID	color	...
3	brown	...

Foreign Key Difficulty



Foreign Key Difficulty

Type

ID	...	FK_Fabric	...
14	...	3	...

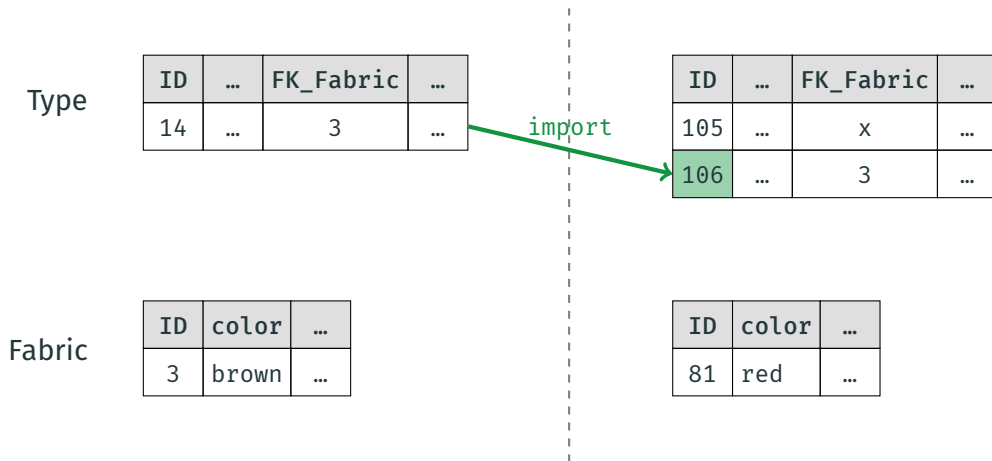
Fabric

ID	color	...
3	brown	...

ID	...	FK_Fabric	...
105	...	x	...

ID	color	...
81	red	...

Foreign Key Difficulty



Foreign Key Difficulty

Type

ID	...	FK_Fabric	...
14	...	3	...

ID	...	FK_Fabric	...
105	...	x	...
106	...	3	...

Fabric

ID	color	...
3	brown	...

import

ID	color	...
81	red	...
82	brown	...

Foreign Key Difficulty

Type

ID	...	FK_Fabric	...
14	...	3	...

Fabric

ID	color	...
3	brown	...

ID	...	FK_Fabric	...
105	...	x	...
106	...	3	...

ID	color	...
81	red	...
82	brown	...

Foreign Key Difficulty

Type

ID	...	FK_Fabric	...
14	...	3	...

Fabric

ID	color	...
3	brown	...

ID	...	FK_Fabric	...
105	...	x	...
106	...	3	...

ID	color	...
81	red	...
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Type

ID	...	FK_Fabric	...
14	...	3	...

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ID	color	...
3	brown	...

ID	...	FK_Fabric	...
105	...	x	...
106	...	3	...

...

ID	color	...
81	red	...
82	brown	...

Foreign Key Difficulty: Solution

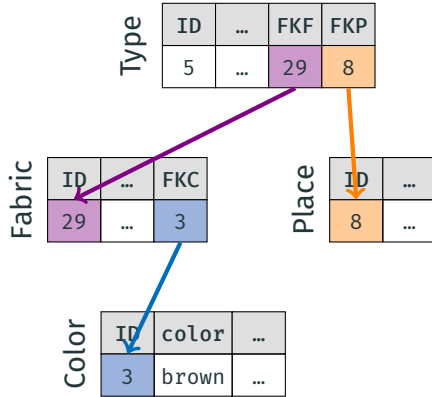
Type	ID	..	FKF	FKP
	5	..	29	8

Fabric	ID	..	FKC
	29	..	3

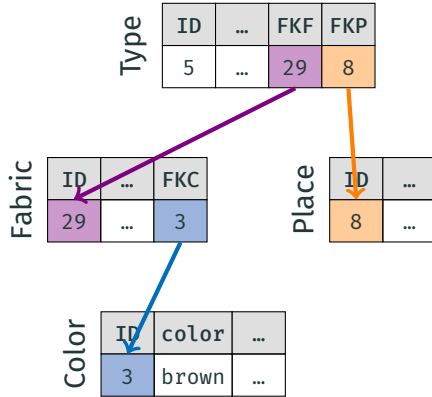
Place	ID	..
	8	..

Color	ID	color	..
	3	brown	..

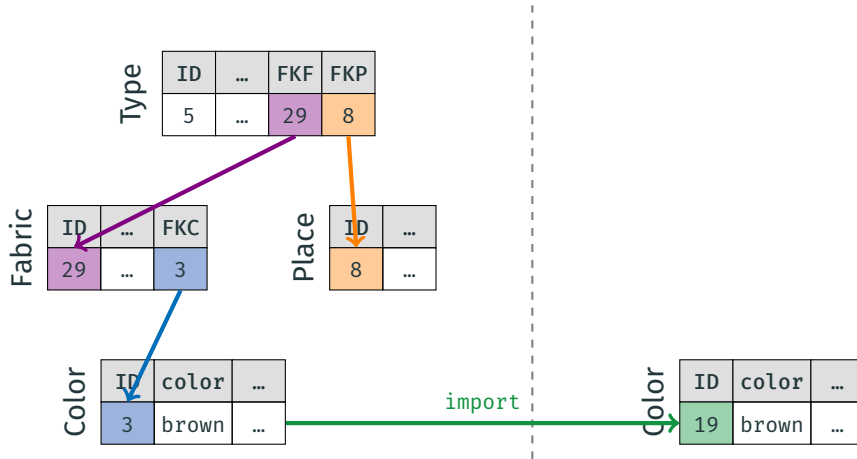
Foreign Key Difficulty: Solution



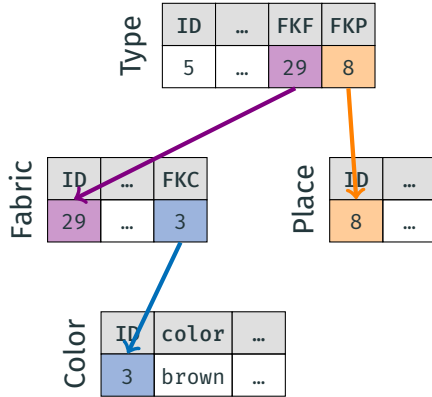
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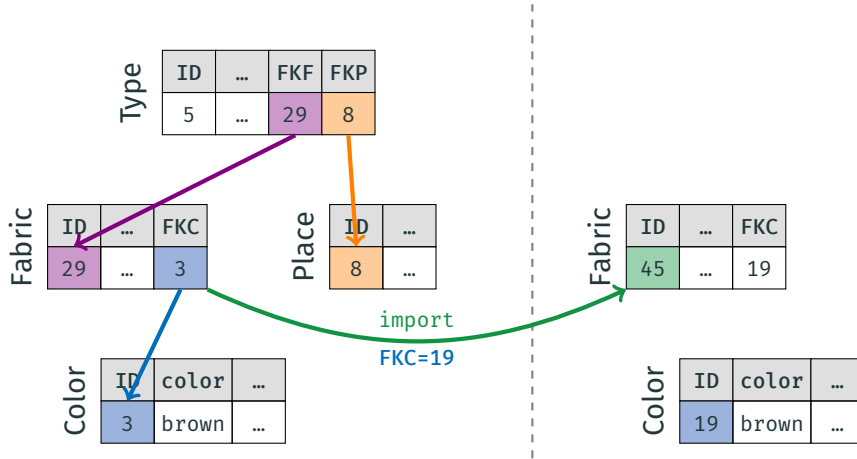


Foreign Key Difficulty: Solution

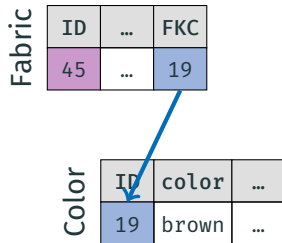
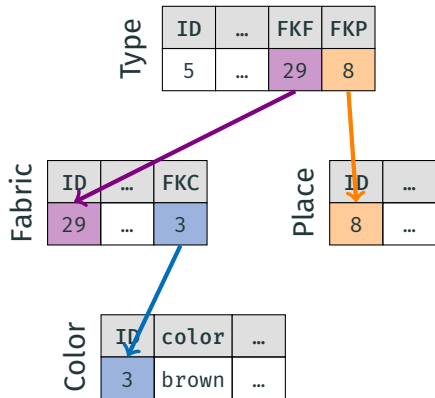


ID	color	...
19	brown	...

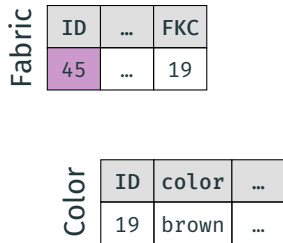
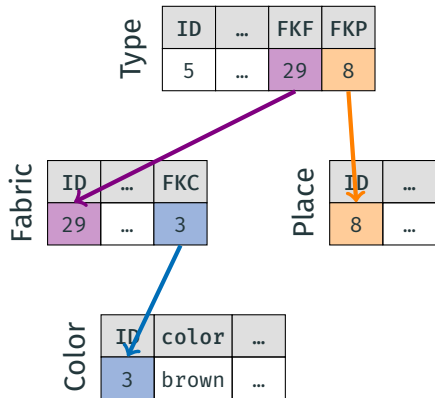
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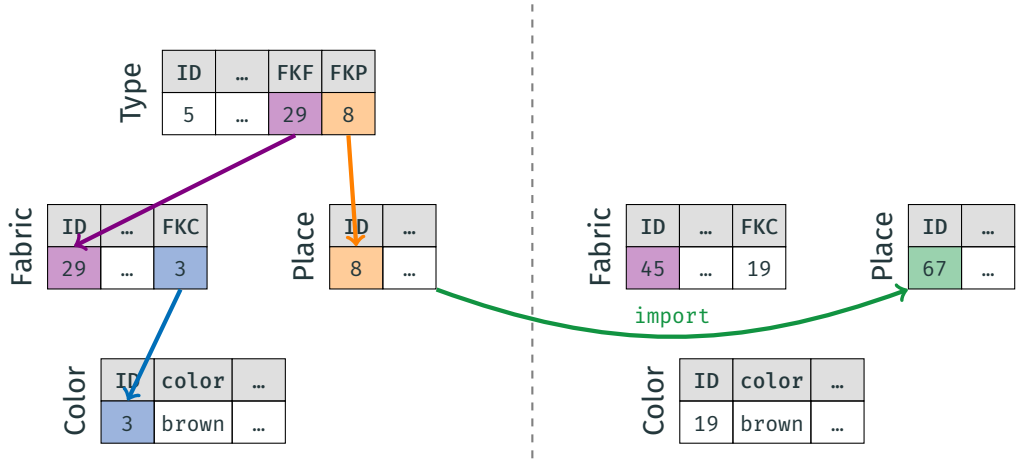
Foreign Key Difficulty: Solution



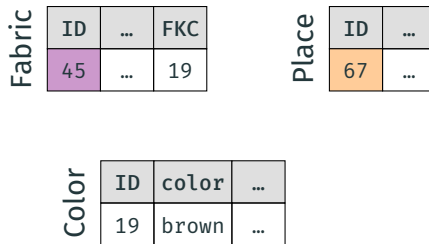
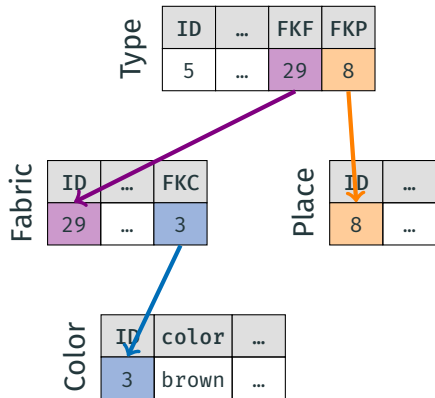
Foreign Key Difficulty: Solution



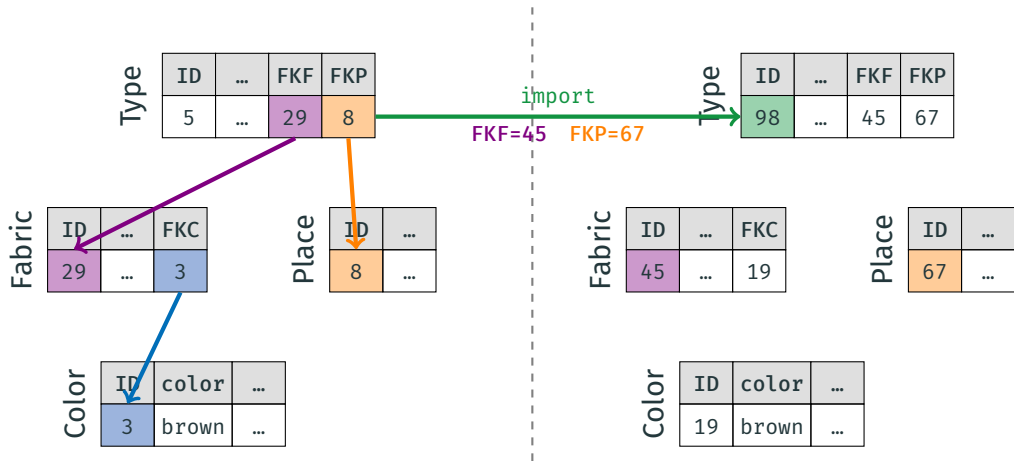
Foreign Key Difficulty: Solution



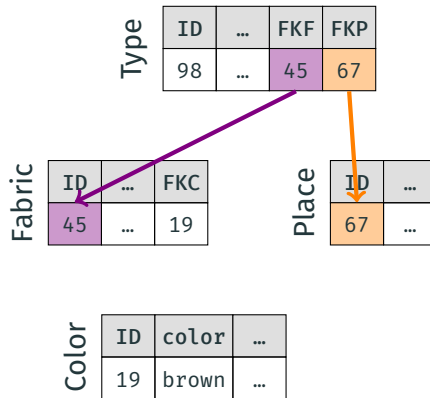
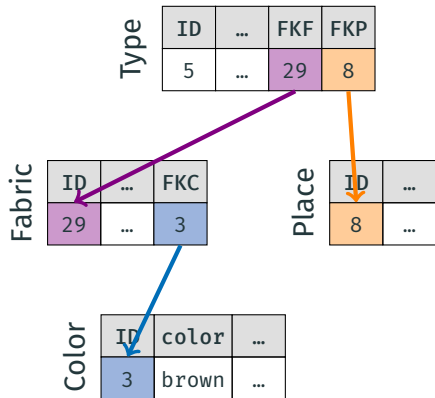
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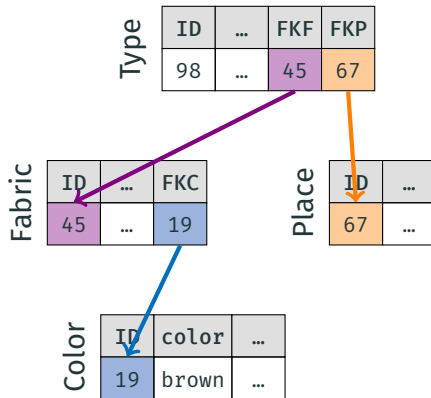
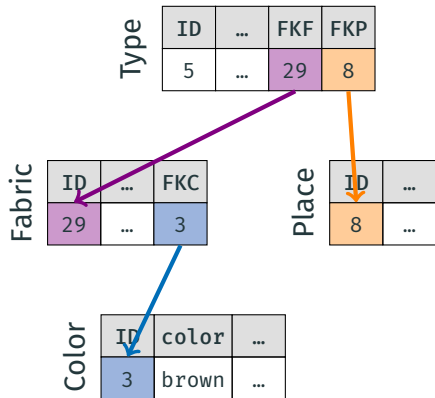
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Foreign Key Difficulty: Solution



Foreign Key Difficulty: Solution



Thank you very much for your attention!

<https://github.com/horle/fmsync> Questions?

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