

FMSync

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

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Motivation

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

The screenshot displays the 'ABSTRACT CERAMALEX' interface. At the top, the 'cera[m]alex' logo is on the left, and navigation buttons 'Startseite', 'Zurück', and 'Neuer Datensatz' are in the center. On the right, it shows 'Daten eingegeben von Heike Hoeller' and the number '136'. A 'Hinweis' (Note) states: 'Hinweis: Felder und Layout-Bereiche, die mit einem "*" markiert sind, sind obligatorisch und MÜSSEN ausgefüllt werden.' (Note: Fields and layout areas marked with "*" are mandatory and MUST be filled out).

The main form is divided into several sections:

- Morphologie***: A section for recording the morphology of the artifact. It includes a list of levels (1. Level to 6. Level) with corresponding dropdown menus for 'Cooking Ware', 'Vessels for cooking', and 'pot'. There is a 'Morphologie-auswahl' (Morphology selection) dropdown, a 'Speichern' (Save) button, and a 'Bearbeiten' (Edit) button.
- Grabungsort**: A section for recording the excavation site. It includes a 'Grabungsort' (Excavation site) dropdown menu, a 'Schedia' dropdown menu, and a 'Grabungsinterne Typnummer' (Excavation internal type number) dropdown menu.
- Verbundene Datierungen**: A section for recording associated dates. It includes a 'Zeitpunkt' (Time point) dropdown menu, a 'Zeitspanne' (Time span) dropdown menu, and a 'Zeitpunkt Zeitspanne' (Time point Time span) dropdown menu.
- Datenquelle**: A section for recording the data source. It includes a 'Datenquelle' (Data source) dropdown menu, a 'Filemaker' dropdown menu, and a 'Bearbeiter' (Editor) dropdown menu.
- Kontext***: A section for recording the context. It includes a 'Kontext*' (Context*) dropdown menu with the value 'Excavation Area: Schedia Befund: 9088 Area: 9'.
- Fabric***: A section for recording the fabric. It includes a 'Fabric*' (Fabric*) dropdown menu with the value 'Egypt Excavation Area: Schedia: Name: CG.1 vgl. FOUAD M4/A2 - Cooking Ware CommonName: marl/alluvial'.
- Verbundene Bilder**: A section for recording associated images. It includes three image thumbnails: 'Isolated Sherd', 'Fabric', and 'Morphologie'. Each image has a red 'X' icon next to it, indicating it is mandatory.

Before FMSync: Sharing Data

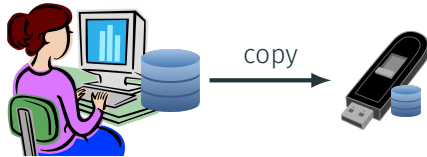


FileMaker A



FileMaker B

Before FMSync: Sharing Data

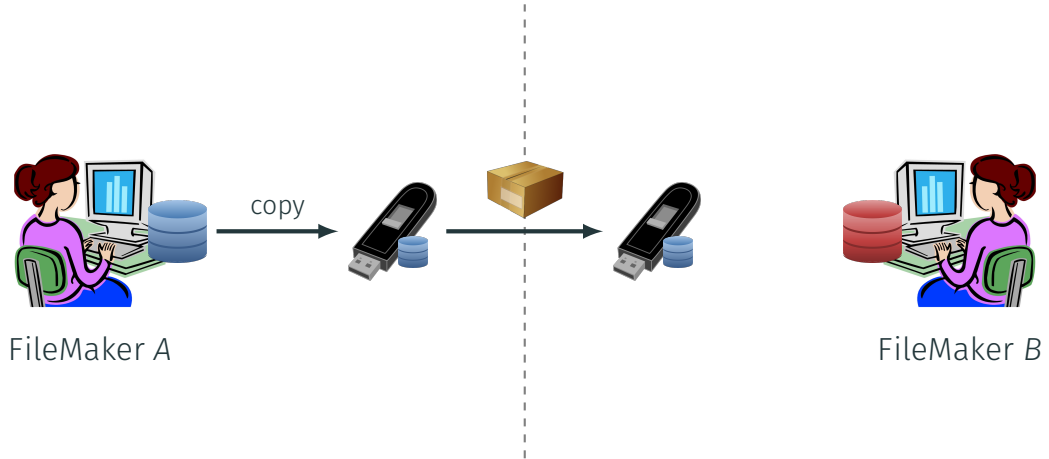


FileMaker A

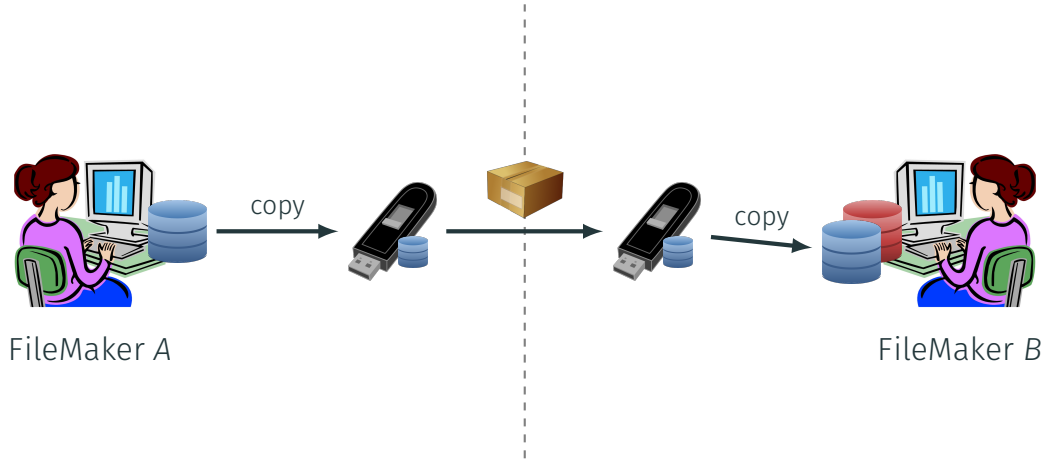


FileMaker B

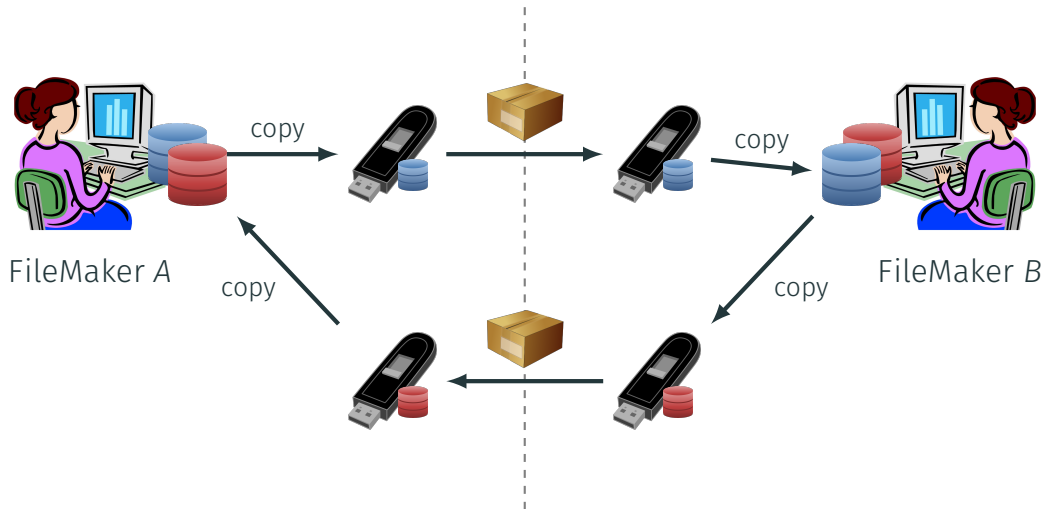
Before FMSync: Sharing Data



Before FMSync: Sharing Data



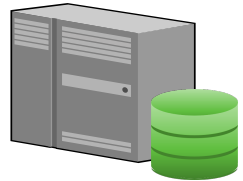
Before FMSync: Sharing Data



Before FMSync: Publishing Data

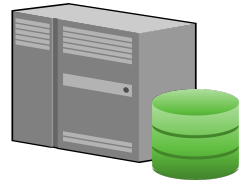


FileMaker



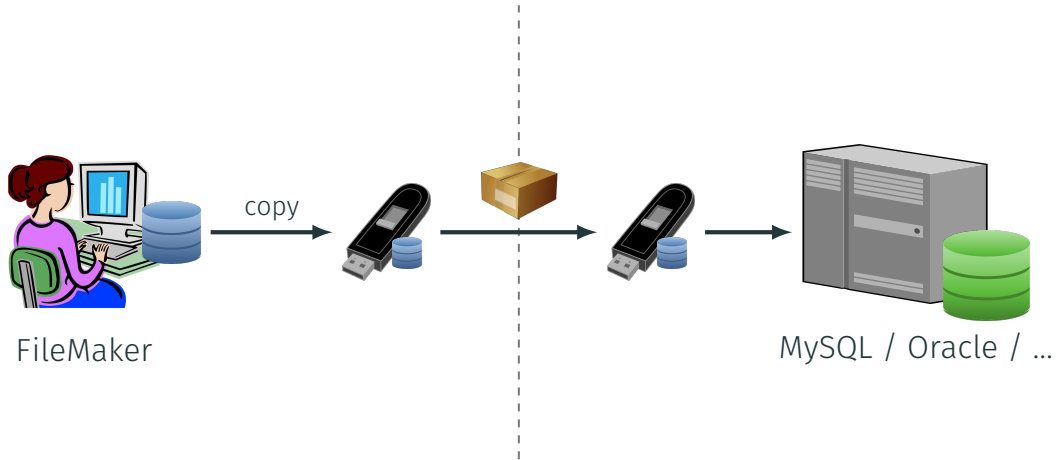
MySQL / Oracle / ...

Before FMSync: Publishing Data

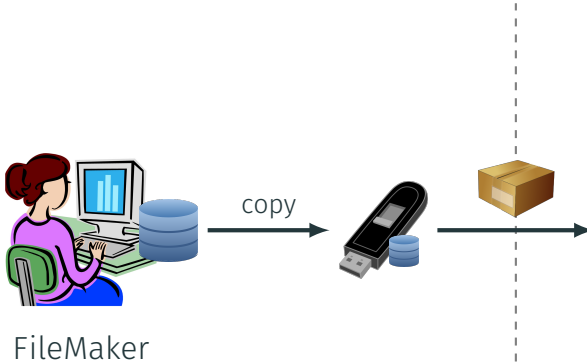


MySQL / Oracle / ...

Before FMSync: Publishing Data

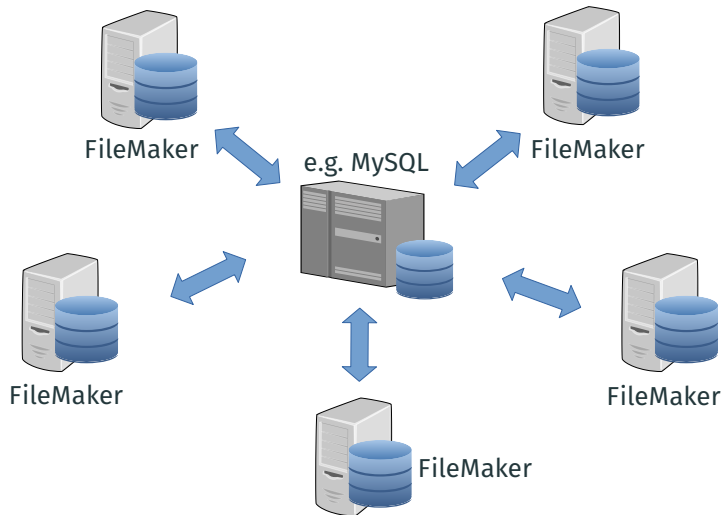


Before FMSync: Publishing Data



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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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

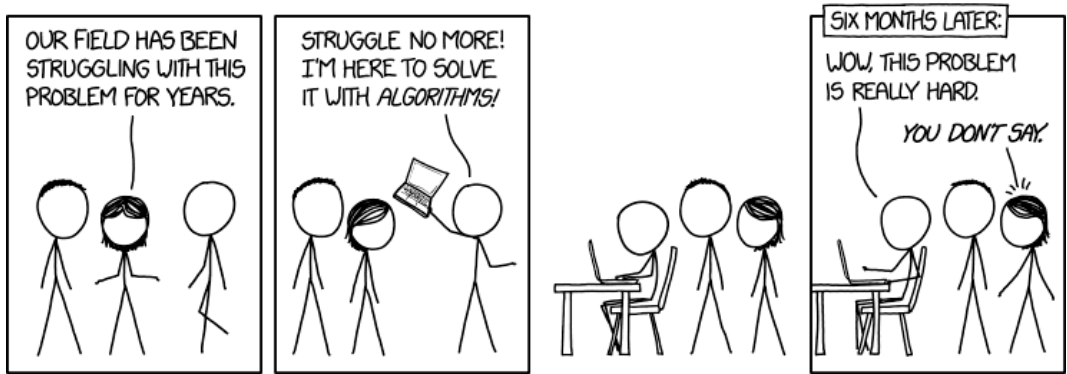


Figure 1: I can relate to this. [xkcd.com/1831]

Implementation

Inhalt...

bisschen zur sync

Foreign Key Difficulty

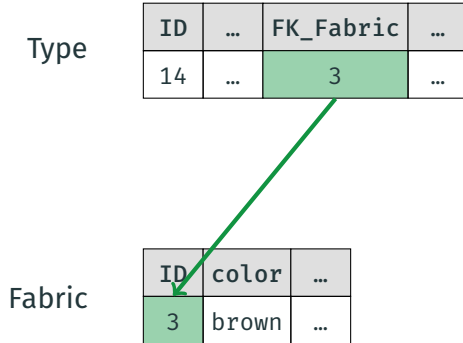
Type

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

Fabric

ID	color	...
3	brown	...

Foreign Key Difficulty



Foreign Key Difficulty

Type

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

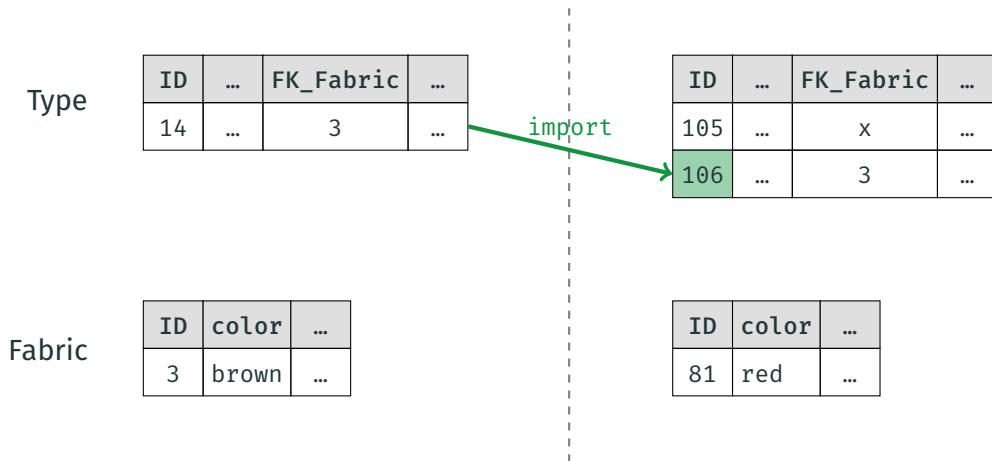
Fabric

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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Foreign Key Difficulty

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ID	...	FK_Fabric	...
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...

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

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

Foreign Key Difficulty: Solution

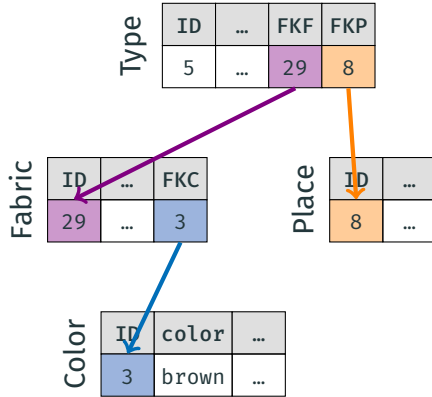
Type	ID	...	FKF	FKP
	5	...	29	8

Fabric	ID	..	FKC
	29	..	3

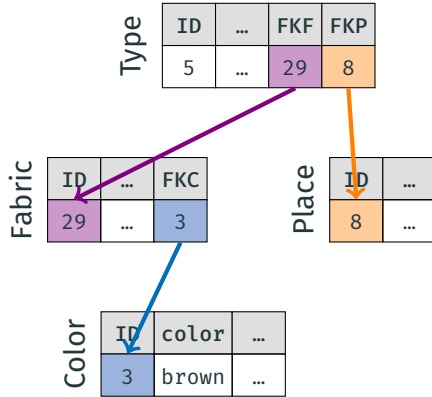
Place	ID	..
	8	..

Color	ID	color	...
	3	brown	...

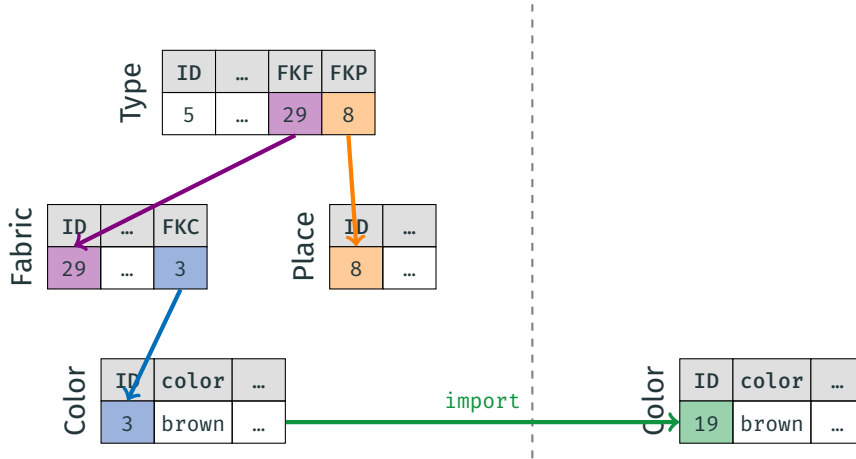
Foreign Key Difficulty: Solution



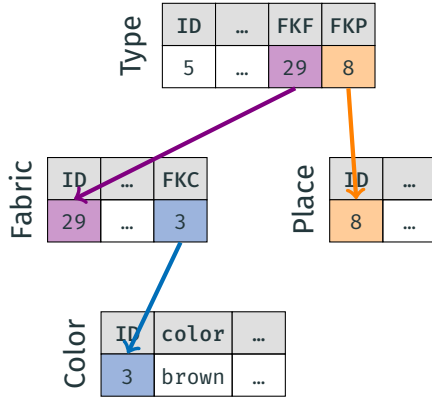
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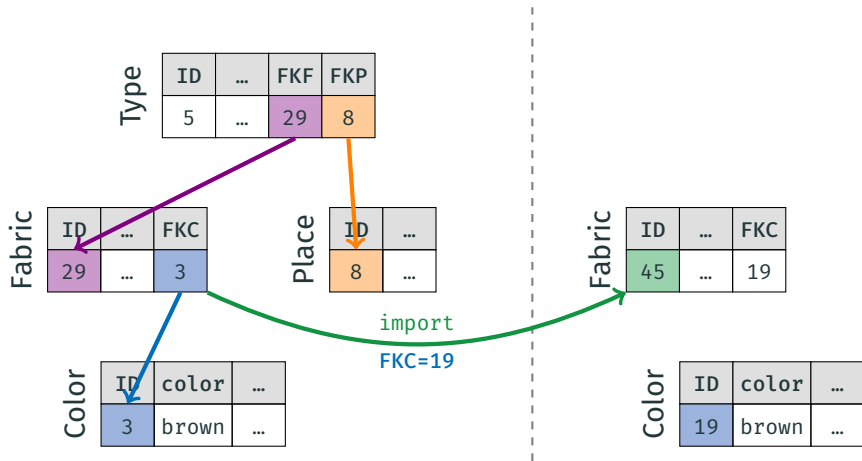


Foreign Key Difficulty: Solution

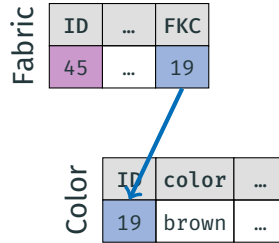
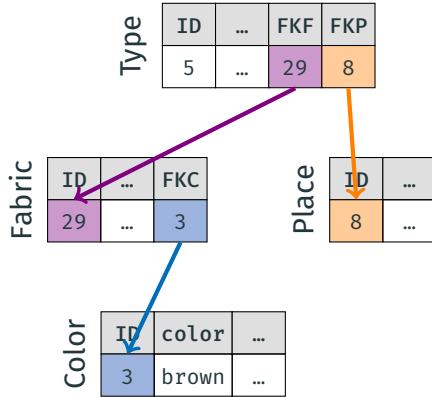


ID	color	...
19	brown	...

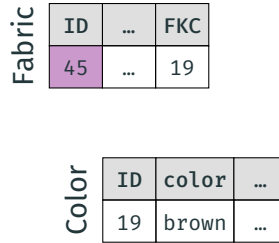
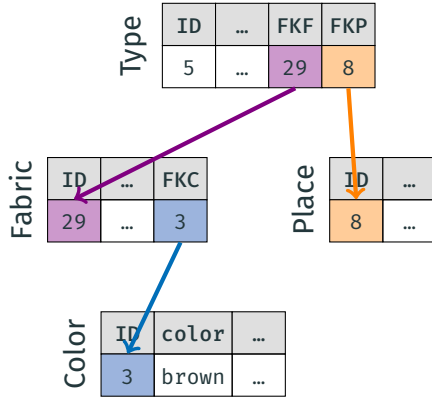
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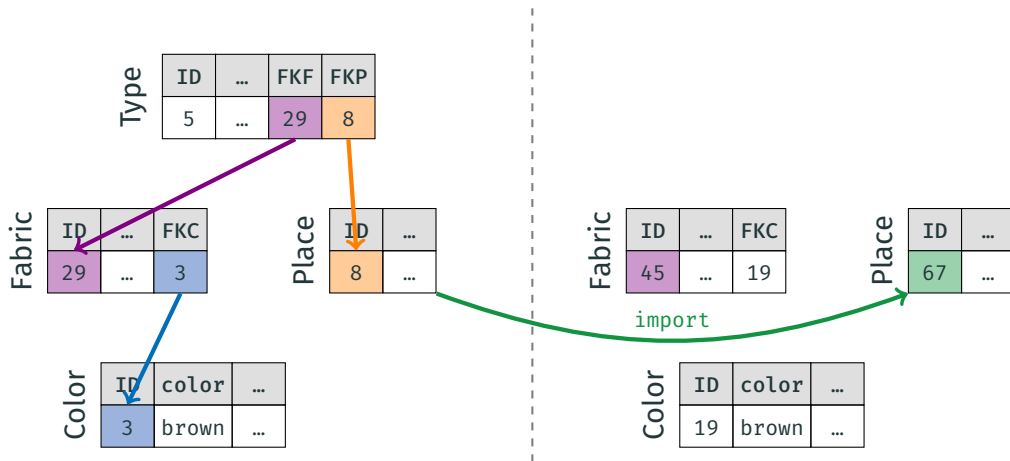
Foreign Key Difficulty: Solution



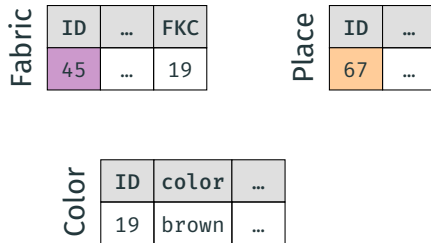
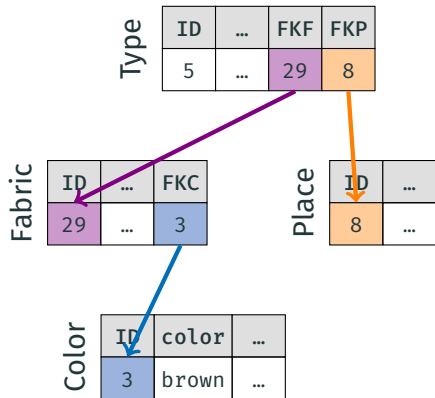
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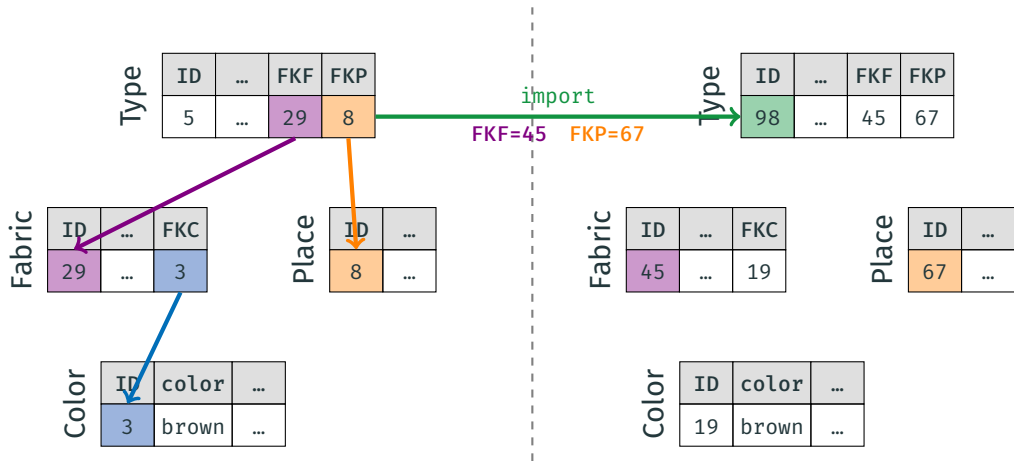
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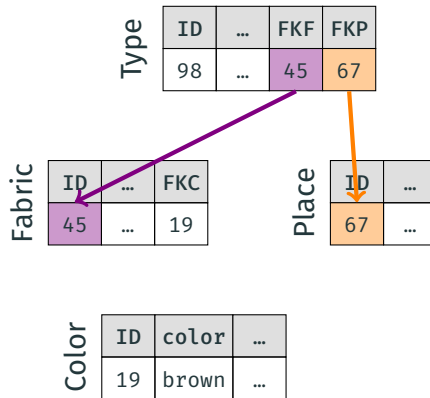
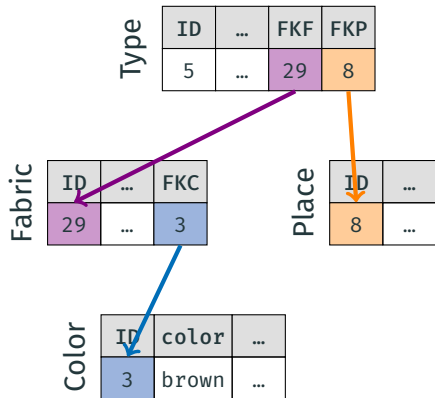
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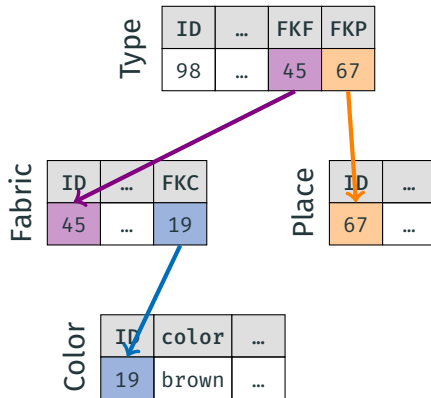
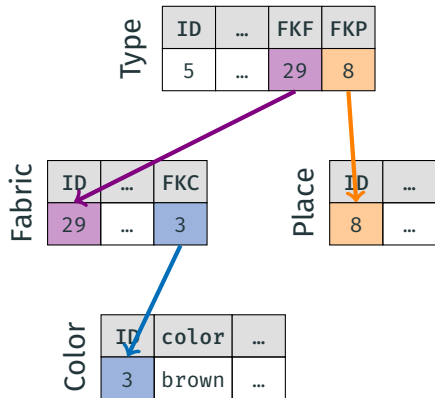
Foreign Key Difficulty: Solution



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Thank you very much for your attention!

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

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