

Shared knowledge, shared growth

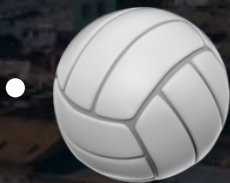
My highlights from Clickworks Weekly Tech Meetings





About me, myself & I

- Bruges, Belgium
- full time Certified 11-19 Claris FileMaker Developer
- proud member of the Clickworks team
- like pushing FileMaker to its limits
- like technical challenges



Topics

- Indexing
- Relationships
- OData
- Variable External Datasources
- Transactions
- JSON/HTML/base64
- Importing repeating data



Indexing



Indexing

- None, minimal, all
- Value index & Word index



Indexing

Minimal

- Value indexes
- Used for
 - joining related records
 - search in number, date, time, ...
- First 100 characters / value



Indexing

All

- Word index
- Used for:
 - searching in text
- Every unique word



Indexing

- Will increase filesize
 - especially word index for large text fields
- Also used for:
 - auto-complete
 - unique/existing value
 - value lists
 - ...
- Importing/deleting records can take more time



Indexing

What we learned...

- When using the field in a value list:
=> use the option 'All'
- If you use it to search on it:
=> use the option 'All'

Indexing

Indexing and storing the results of a calculation improves the performance of some operations like finds at the cost of increased file size and time spent indexing.

☐ Do not store calculation results -- recalculate when needed

Indexing: ☐ None ☐ Minimal ☒ All

☐ Automatically create indexes as needed



Indexing

What we learned...

- Always think about indexing
- Turn it off or on
=> uncheck 'automatically create indexes as needed'
- You don't want the server to automatically start indexing on a million records....

Indexing

Indexing and storing the results of a calculation improves the performance of some operations like finds at the cost of increased file size and time spent indexing.

☐ Do not store calculation results -- recalculate when needed

Indexing: ☐ None ☐ Minimal ☒ All

☐ Automatically create indexes as needed



Indexing

What we learned...

- Indexing can work against you...
- Use case:
 - table with 10M+ records
 - subset of data (around 150 records)
 - import/update
 - matching on indexed field



Indexing

What we learned...

Specify Import Order

Specify the import order for the target fields.

1 of 138

SOURCE: Connect_DEV_20..._DefaultCAT_2.xlsx

Update

TARGET: Current Table ("CAL")

Data	Source Fields	Mapping	Target Fields	Last Order
37	From source file	Match Field	_CATid	
10	From source file	Import	LineType_nr	
0	From source file	Import	IsStaffelkortingValues	
0	From source file	Import	IsWork	
0	From source file	Import	FormulaPrice	
	From source file	Import	FormulaQuantity	
1	From source file	Import	Sortorder	
	From source file	Import	TotalNr	
	From source file	Import	DiscountFix	
-4	From source file	Import	IsOmitWhenEmpty	
	From source file	Import	FormulaExtraInfo	
0	From source file	Import	IsOverrideAllowed	
0	From source file	Import	IsShowBedragForAll	
0	From source file	Import	IsShowCommission	
1	From source file	Import	IsShowDetailForAll	
0	From source file	Import	IsShowLineBelow	
0	From source file	Import	IsUnstoredCalculation	
40	From source file	Import	_ENTid	
	From source file	Import	_UNTid	

Import Options

Character set for source file: Unicode (UTF-16, Windows)

Field delimiter for source file:

☒ Tab

☐ Other:

☒ Perform the auto-enter options for fields during import
Examples: serial number, creation timestamp, modification timestamp, lookups.

☐ Preserve external container storage

Repeating Fields: Keep values in the original record

Indexing

What we learned...

FileMaker Pro File Edit View Insert Format Records Development Tools Window Help

Connect_DEV (connect-dev)

1 / 182.065 Found (Unsorted)

Records Show All New Record Delete Record Find Sort Share

Layout: Project C...jet Calcul View As: Preview Edit Layout

Dashboard Agenda Lijsten Focus Zoeken

Stieperaere Tijl << BSWO-0127367-AB >>

13/4 2/6 2/6 OFF OK

Info Voorstel **Calculatie** Overdracht Website Marketing Aanbeveling Controle

Voorstel v1 Laatste keer berekend op: 02/06/2025 21:47:28

	Aantal	Eenheid	Berekend	Prijs ingave	Korting	Netto	Opmerking
Materialen							
Hoofdleveranciers							
ALU - Profel	2		€ 1.087,00	€		€ 652,20	
ALU - Pierret				€			
Renson via Pierret				€	%		
PVC - Profel				€			
PVC - ALU Profel				€			
PVC - WnD				€			
HOUT - Profel				€			
Wilms				€	%		
Frager				€	%		
Prodes - Profel				€	%		
Profel Prodes				€	%		
Renson				€	%		
Elcia (niet toegewezen)	1		€ 338,67	€		€ 237,07	
Bijproducten							
Rolluik(en)				€	%		

Neem snapshot

Print Element PDF Ant maken

Indexing

What we learned...

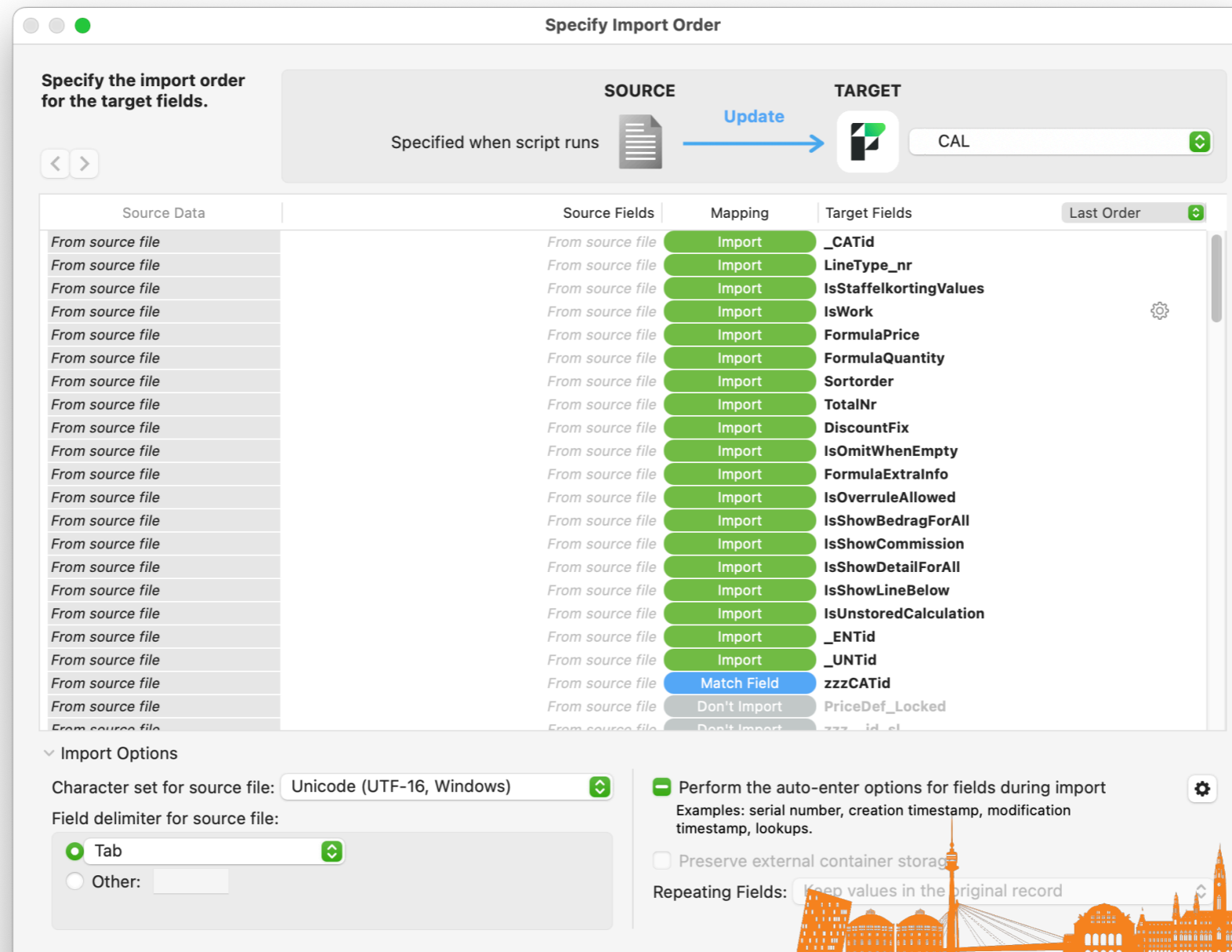
- On client over WAN: 42s
- On server PSOS: 20s



Indexing

What we learned...

- Solution: match on unindexed duplicate of foreign key



Indexing

What we learned...

FileMaker Pro File Edit View Insert Format Records Development Tools Window Help

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Voorstel v1 Laatste keer berekend op: 02/06/2025 21:47:28

Aantal	Eenheid	Berekend	Prijs ingave	Korting	Netto	Opmerking
Extra lijn			€	%		
KOSTEN & WINST						
Totale kostprijs (excl BTW)					€ 1.465,77	
* Optioneel: Nieuwbouwverzekering					€	%
Aanbevolen winst (berekend)					€ 123,50	950 € / dag
Effectieve winst (wijzigbaar)					€	€ 124,00 954
* Optioneel: korting						
Bruto verkoopprijs (korting bijgeteld)					€ 1.589,77	
Korting 1 (wijzigbaar)	Korting	<input checked="" type="checkbox"/> Vermeld korting op offerte	€	%		
Korting 2 (wijzigbaar)	Korting	<input checked="" type="checkbox"/> Vermeld korting op offerte	€	%		
VERKOOPPRIJS						
Verkoopprijs (excl BTW)					€ 1.589,77 8 %	
BTW (klant 1)					€ 95,39 6%	
BTW (klant 2)						
Verkoopprijs (incl BTW)					€ 1.685,16	

Prijs/Element Maak PDF Klant maken

Indexing

What we learned...

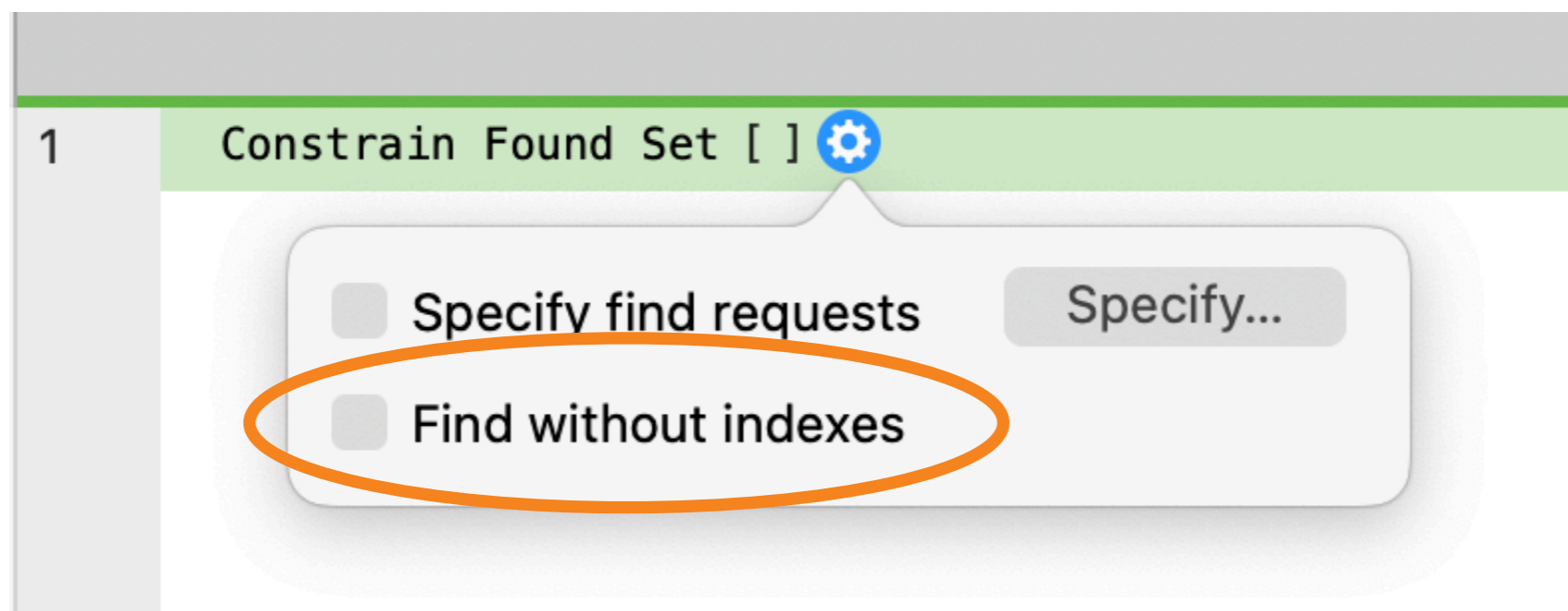
- On client over WAN: 15s
- On server PSOS: 2s



Indexing

Related: new feature in v21

- Possible to ignore indexes when constraining found set



Relationships



Relationships

Sorting

- Only works in the one relationship you sort on
- Not on subsequent TOs



Relationships

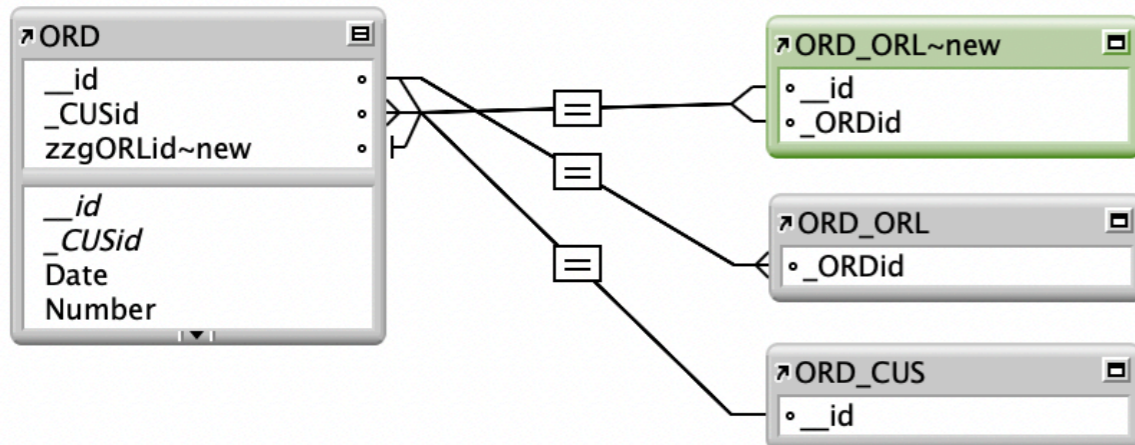
Magic key

- Creating records in related table
- Using empty global field on the left side
- Transactional as long as you don't commit main record



Relationships

Magic key



Edit Relationship

A relationship defines the set of matching related records in one table for each record in another table. Select the pair of fields to be used to find matching records. To create complex relationship criteria, use additional pairs of fields.

Table: **ORD**

- __id
- _CUSid
- Date
- Number
- zzgORLid~new
- zzk0
- zzk1
- zzs1

Table: **ORD_ORL~new**

- __id
- _ORDid
- Amount
- Description
- Price
- zzk0
- zzk1
- zzs1

=

ORD

ORD_ORL~new

__id	=	_ORDid
AND zzgORLid~new	=	__id

Duplicate Delete

ORD

ORD_ORL~new

☐ Allow creation of records in this table via this relationship

☐ Delete related records in this table when a record is deleted in the other table

☐ Sort records [Specify...](#)

☒ Allow creation of records in this table via this relationship

☐ Delete related records in this table when a record is deleted in the other table

☐ Sort records [Specify...](#)

Cancel OK



Relationships

Magic key

- Fails when using separation model
- Unless you 'Open Record' first



vienna
●●● -- ●●●
calling

OData

A large, glowing blue circular graphic with the letters 'API' in the center. The graphic has a futuristic, digital feel with concentric rings and light effects. The background of the right half of the slide is a dark blue with a network-like pattern of lines and dots.

API



OData

Kudos to John Renfrew

- Did you know that...
You can directly view data/metadata in your browser! How cool is that!

https://dev.clickworks.eu/fmi/odata/v4/beer_data/

[https://dev.clickworks.eu/fmi/odata/v4/beer_data/BRW?\\$format=json&filter=%22_id%22%20eq%201](https://dev.clickworks.eu/fmi/odata/v4/beer_data/BRW?$format=json&filter=%22_id%22%20eq%201)

[https://dev.clickworks.eu/fmi/odata/v4/beer_data/\\$metadata](https://dev.clickworks.eu/fmi/odata/v4/beer_data/$metadata)



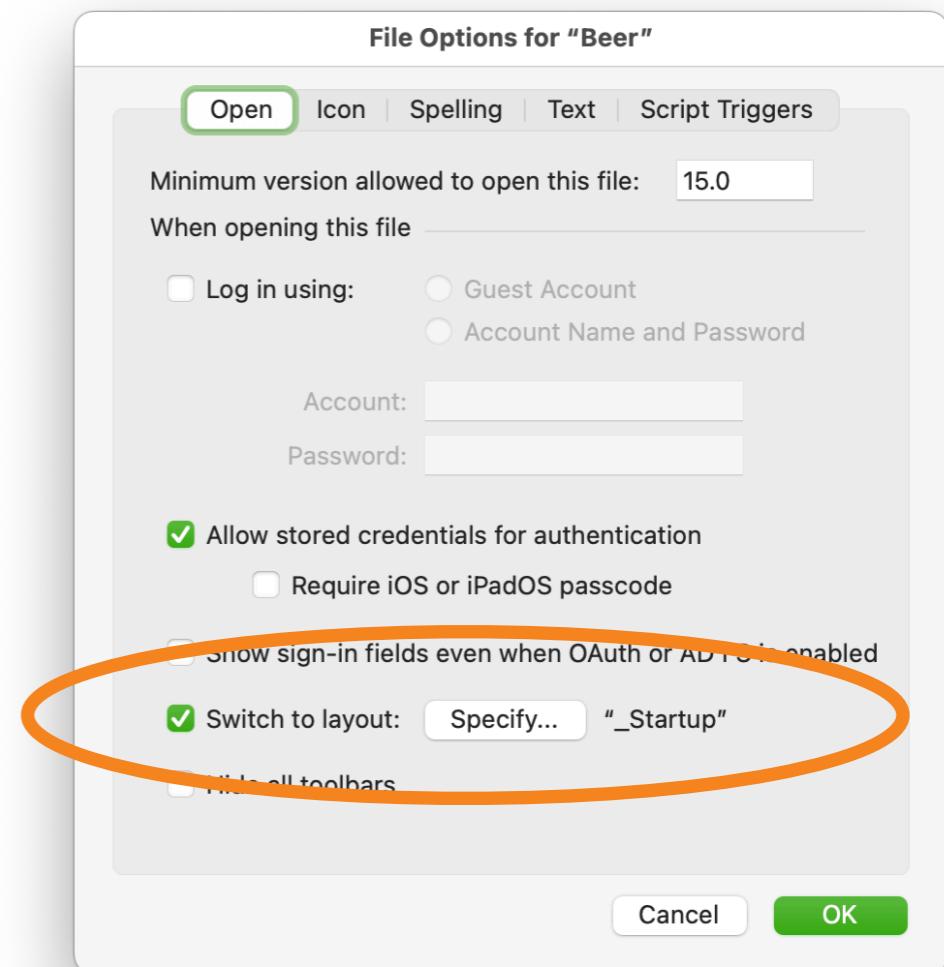
Variable External Datasources



Variable EDS

When it does not work...

- Set the startup layout to a layout NOT based on any of the external datasources



Variable EDS

When it does not work...

- Create a clone of the file
- **OnLastWindowClose** script: at the end of the script: **go to a layout** from your **main file**, not based on a TO with data from an external file
- Separate the **OnFirstWindowOpen** script.
 - First set your global variables with the path to the external datasources
 - Then call another script with your startup logic



Variable EDS

OData

- Will not work
For request and modify data
- But will work in a script (POST)



Variable EDS

FM Data API

- Run startup script
(with initialisation of \$\$datasource)
directly after login
- Then it will work the whole duration of your session

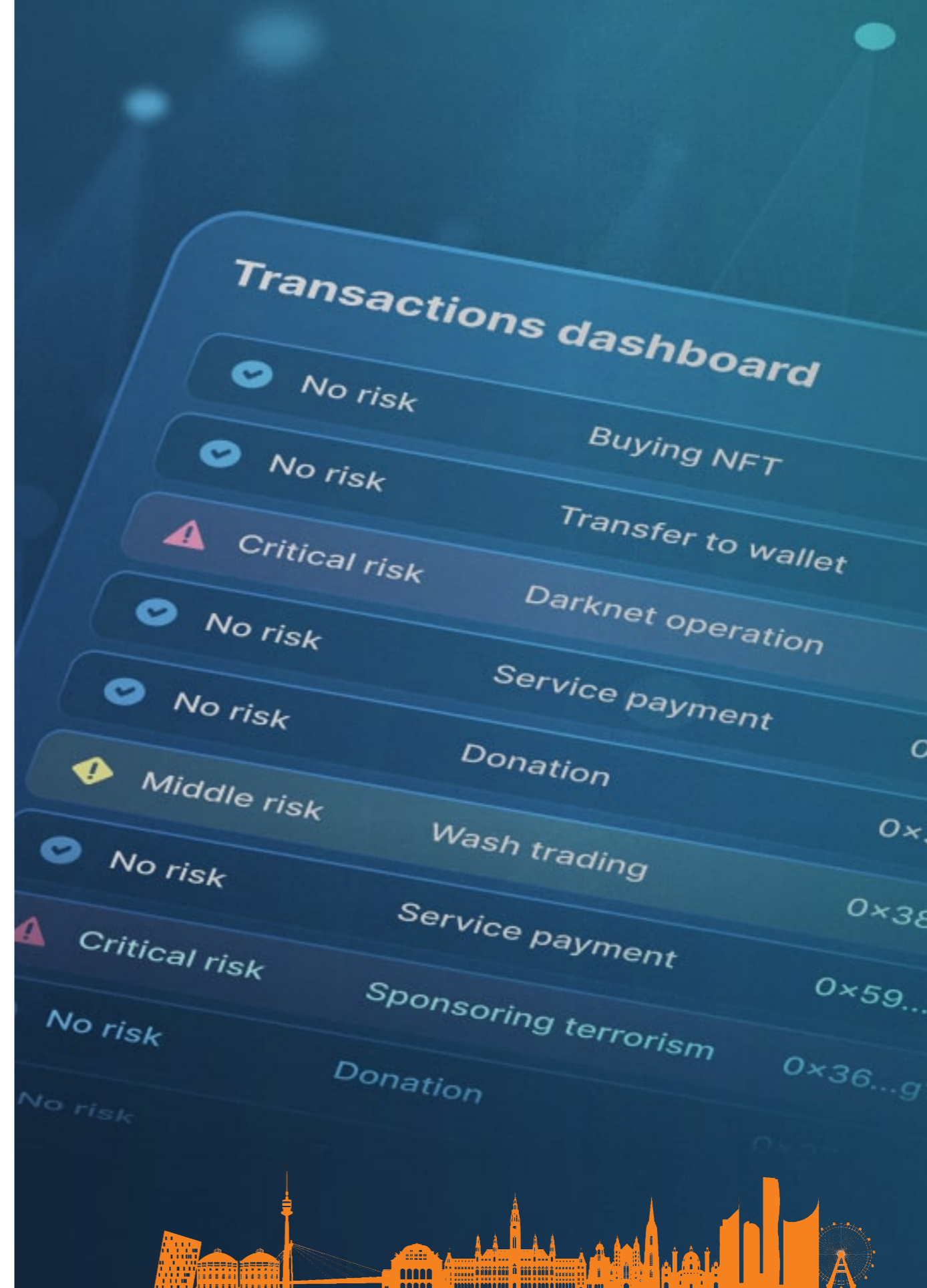
<https://community.claris.com/en/s/question/0D53w00005XStvfCAD/should-global-variables-as-external-data-sources-be-recognised-with-filemaker-data-api-calls>

- Bonus DAPI fact: did you know it can not receive a 'null' value???

<https://community.claris.com/en/s/question/0D50H00007urz8mSAA/filemaker-data-api-and-null-values-creating-records>



Transactions



Transactions

Update in v21

- Reverting a transaction in a sub-script is now possible
- Open/Commit transaction are still ignored

https://support.claris.com/s/article/Reverting-transactions-in-sub-scripts-with-FileMaker-2024?language=en_US



Transactions

Update in v21

Example: Main script

In the primary table, the following script opens a transaction. Within the transaction, the TextField value is changed, the sub-script is performed, and the NumberField value is changed. The transaction is then committed.

```
Open Transaction [ ]  
  Set Field [ PrimaryTable::TextField ; "abc123" ]  
  Perform Script [ Specified From List ; "Transaction Sub-script" ; Parameter: ]  
  Set Field [ PrimaryTable::NumberField ; 42 ]  
Commit Transaction
```



Transactions

Update in v21

Example: Transaction Sub-script

```
Open Transaction [ ]
```

```
  Set Field [ RelatedTable::TextField ; "abc123" ]
```

```
  Revert Transaction [ Condition: RelatedTable::NumberField = 1 ]
```

```
Commit Transaction
```



Transactions

Demo file

- We still have a nice demo file on our website
- Here you can find out more about all the different behaviours within the transaction functionality

<https://www.clickworks.eu/en/a-practical-guide-to-transactions-in-filemaker/>



vienna
●●-● -- ●---●
calling

JSON/HTML/ base64

```
background-image: "center / cover no-repeat fixed  
url('data:image/jpeg;base64,/9j/4AAQSkZJRgABAQAASABIAAD/4QBMRXhpZG  
AUclhZWgAAB2AAAAUz1hZWgAAB3QAAAUYlhZWgAAB4gAAAAUc lRSQwAAB5wAAAAO  
AAAAJAAA2ZkZURFAAAALAAAA4prb0tSAAAFfGAAA7Zzd lNFAAAAJgAAAth6aEN0AA  
UAcgBmAGkAbAAgAFIARwBCACARwBlAG4A6QByAGkAYwBvBBcEMAQzBD AE0wRMBD0E  
bgBlAHMAIABSAEcAQgAtAFAAcgBvAGYAaQBsx3y8GAAGAFIARwBCACDVBLhc0wzHfC  
BgAGWAbgB5ACAACABYAg8AZgBPagWAIBSAEC AQgQE BDEESQQ4BDkAIAQ/BEAEPgR  
MTcwNiAwGE5MmU1N2VkAP/bAEMABQICAgICA wICA wQDAwMECWQEBAQFBwULBQSPDX  
2csKc+4dYr2HDl5g0TebnyJxpJX3gQr4Ze5aVUA0bo77kmUpmtkvVKJUwrMmgD+KH  
jt lsVY4n6kz3LFOLIBxz94K8XIiwylSBGGtANTXQCvtNTCx4sK0HF0bgDcx8VeQmN+  
HS2QEVJf6gFk0vIpH9aAWYZJM59CupLZhT3cTb7gTcAXMnmPh5+gCyGbDz0DUA0vUt  
loTSemwSb/AGqJsRR/XImGJo6LSiWF9CxQm0lsAhaFhEtULmAznQu5HXcq0AZaDKQH  
2AAAB0A7juAhCgsRVArSsIWYqmAgIQFAFqCjHUZA0ZCzsJYVC9JA hXuEIWSELQeYvP  
KldwC4m8uQWFXV8xE/QNN3o9QEp57ArmxFilA0swGnbTMU1fuQnrQBycibe4Dq6KNw  
HcrIygRX+5fhJ/9cwyjr40wy2zGJ8PiupJEZ1zKI757SMtgrWnYZXqvUzIVqgaCIwE  
OF lVPsRXRKUr84H/ABvi23RM0K9abFwvgf0GI30LLyNIyqwVGVA RpLqZVUVcIG8NGa  
Ovm09AwAE6CZAdmx0cCcghmAFNgJDLCkR+BN0QCajKtcxQGmgDo0o6yADR G4poWfMK  
j loKP lAtXfMAqP8AIcytb1Gjb6i9G6ICYd5VC0mMxWbUE0+gDKM7CsUG+wdqNqkgFr  
pG53E7ICz0zIr fkt06Ce u4FiHZgkeI jtuFVP tuhn+Q8UbibU7hEmppKu q5GU+HDfu  
KTDX0KrAXILE8glsh0AFRB5uSIqAvSeZV3IXCRGL3KqZkw9tyqx BpZZ lVEsvt0RXP  
ruL03FVQR AE37opF6lrAEonqUjcJlwGD3yA98WBKZDqK5/oAEh7oXyyJmAqrDa73Ay  
kWn0Ab9RuM5H6AADyAeo9R6j2ge7+RSfD+hpsAGw89g4sAAuLgmw9UHA8+oCopAcgC  
H4vIjWndh8WP4rEzpTdGKR PemG+5VZVDouN9UHScMzq9Ap xQtBE8thFFSA3/FZgIhe  
AZaAI0ug8ubGHKEgKAQC+QAigCwAAqpkIRuIsItly I2ndoqUdxNQrdQH9BoPhHD6GT  
3UDaxTKUhSISVL3JCroBrD/EtifXL/ACAqVV6CII6rVFVgKn15F6RsS5cNA KvLMsyv  
9odx3gBuTcuxAGSLnoTXIZTIF69gLD3zAj13KTFyCsBR8VPMZFUAJJQ2IquQK1UDc  
SKgNJ Ea3GYiQGWSGYTYeYF8iCX9UFqqHMtx0ILTQAhbMRGdB mAkaAGCFVBY/YEuqdx  
hWEF2PaHoBPc6F90Iv49ie7AXoQJSVhSdhb6EXP8C4BhBZaaB56AF ZhfEXJkyAuYis  
slMr l5lz+oHX/jxYXHDPY1gcK8nP8A48q10N4XW3mRG0VVAJhe4T6kV0wq1KmsNejC  
AWRUchQCQ5Gc5C1RKABA +Q55DXcAljcbj3zAvoPuPQegE6hB8g7WA0voFVhqoTqa6C  
z0gs1p1ALLxZin5LZEGBdTmNNCq/Oaaa9QJis2tLLvr cZSRvc+TADZickKxABUuyK7  
BFVi4VGLoCzEcXLoAWRx E6lmuxIC57EDfVaAA nUMj cPbQquABPI egFml vMdSTuOnkB  
cq7gTP6EzsV0Wjl57gzVtSxGVQGogBMPih8mxn+C5achNOIijpzGFbi NqhqcAESXiV  
gAC1EMlS12AWo+o3bf8hm5cwFRWYuK3vqN1YAodugq+oU9xcBtAhXTE6iqCq62E0eg  
SBuidC/QCZ0LyyJ1KBGVxq0kEuBeZ0i Fi2uAzQ08xqAHkB5gAtegn2gPSwCs7D2xt5  
nQLFvCj QTCWmsAXEOs736mYqtZNYsc6+Ey+i5AVXqqzvBL8K1r07wstAf0OuWrRu  
bdPkAihUqfm lqZblADxe8xoX?XCeYa1vb d5vsA921+YFeE... QLydA1VAL  
msdQN r3Q... zKgRP... fanMOIqn
```

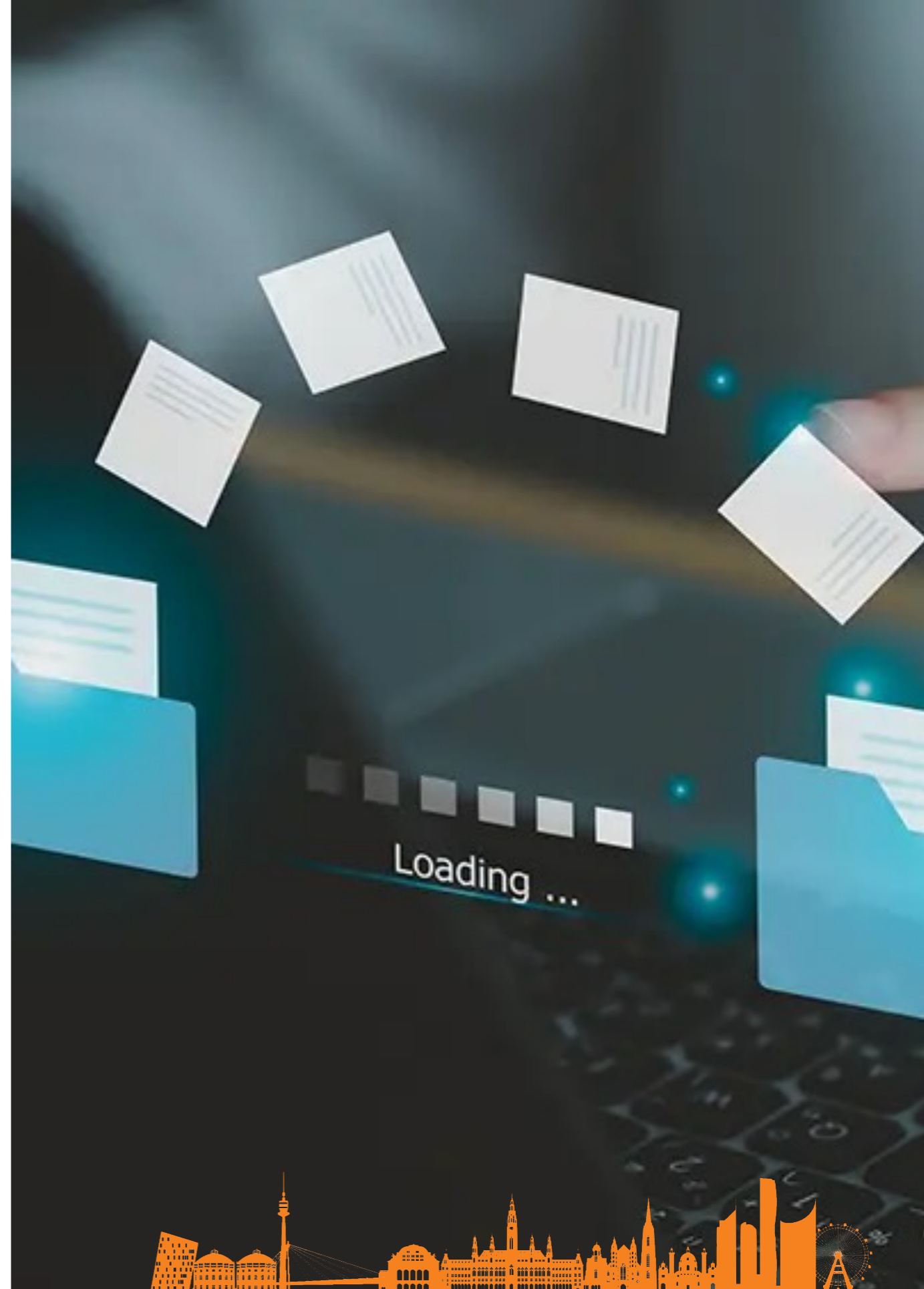
JSON/HTML/base64

Lesson learned, again...

- Do not store it as text
- Why not?
 - Can make record loading very slow
 - Can make your database file very big
- Better to:
 - Not store it ;-)
 - Store it as an external container file



Importing repeating fields



Importing

Repeating fields

- Did you know...

The screenshot shows the 'Specify Import Order' dialog box. At the top, it says 'Specify the import order for the target fields.' Below this, there's a 'SOURCE' field with 'TableWithRepeatingFields' and a 'TARGET' field with 'Current Table ("NormalizedTable")'. An 'Add' button is between them. Below this is a table with columns: 'Data', 'Source Fields', 'Mapping', 'Target Fields', and 'Custom Order'. The table has several rows, including one for 'RepeatingData' which is highlighted in green. At the bottom, there's an 'Import Options' section. The 'Perform the auto-enter options for fields during import' checkbox is checked. Below it, there's a 'Repeating Fields:' dropdown menu with 'Split values into separate records' selected. This section is circled in orange. At the bottom right, there are 'Cancel' and 'Import' buttons.

Data	Source Fields	Mapping	Target Fields	Custom Order
1	__id	Import	__id	
Admin	zzzCreaName	Import	zzzCreaName	
03/06/2025 17:53	zzzCreaTS	Import	zzzCreaTS	
Admin	zzzModName	Import	zzzModName	
03/06/2025 17:54:19	zzzModTS	Import	zzzModTS	
174	RepeatingData	Import	Data	

Import Options

- ☒ Perform the auto-enter options for fields during import
Examples: serial number, creation timestamp, modification timestamp
- ☐ Preserve external container storage
- Repeating Fields:



Importing

Repeating fields

- Did you know...

▼ Import Options

☒ Perform the auto-enter options for fields during import
Examples: serial number, creation timestamp, modification timestamp, lookups.



☐ Preserve external container storage

Repeating Fields: Split values into separate records

