



Cabinet Office

Andy Bennett

Lead Technical Architect

Government Digital Service

@databasescaling

The Anatomy Of A Spreadsheet And Architecture Of Its Metadata

Untitled 1 - OpenOffice Calc

File Edit View Insert Format Tools Data Window Help

Arial 10 B I U

D12 \sum = `=AVERAGE(B4:B8)`

	A	B	C	D	E	F
1	OFFICE SUPPLIES ORDER					
2						
3	<i>Item</i>	<i>Price</i>	<i>Quantity</i>	<i>Total</i>		
4	Copy paper	£2.49	20	£49.80		
5	Post-It Notes	£5.99	10	£59.90		
6	Stapler	£7.99	5	£39.95		
7	Paper punch	£11.90	15	£178.50		
8	Highlighter pen	£1.99	50	£99.50		
9						
10	TOTAL COST OF ORDER			£427.65		
11						
12	AVERAGE PRICE			£6.07		
13						

Sheet 1 / 3 Default STD * Sum=£6.07 151 %

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3	<i>Item</i>	<i>Price</i>	<i>Quantity</i>	<i>Total</i>		
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A4:D8

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A4:D8

Look Up & Load Validator

3	<i>Item</i>	<i>Price</i>	<i>Quantity</i>	<i>Total</i>
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A4:D8

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A4:D8

declare-type	"Item"	->	String
declare-type	"Price"	->	GBP×VAT
declare-type	"Quantity"	->	Number
declare-type	"Total"	->	Formula
declare-header	A3:D3		
declare-data	A4:D8		
validate!			
extract!			

declare-type

declare-type

declare-type

de

From Spreadsheet

declare-header

declare-data

"Item"

"Price"

"Quantity"

"Total"

-> String

-> GBPxVAT

-> Number

-> Formula

A3:D3

A4:D8

validate!

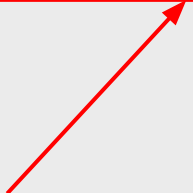
extract!

declare-type	"Item"	-> String
declare-type	"Price"	-> GBPxVAT
declare-type	"Quantity"	-> Number
declare-type	"Total"	-> Formula
declare-header	A3:D3	
declare-data	A4:D8	

Supplied By User

validate!
extract!

declare-type	"Item"	->	String
declare-type	"Price"	->	GBPxVAT
declare-type	"Quantity"	->	Number
declare-type	"Total"	->	Formula
declare-header	Sheet1!Header		
declare-data	Sheet1!Budget		
validate!			
extract!			



References Allow More General Metadata

declare-type	"Item"	->	String
declare-type	"Price"	->	GBP×VAT
declare-type	"Quantity"	->	Number
declare-type	"Total"	->	Formula
declare-header	A3:D3		
declare-data	A4:D8		

validate!
extract!


declare-type	"Item"	->	String
declare-type	"Price"	->	GBPxVAT
declare-type	"Quantity"	->	Number
declare-type	"Total"	->	Formula
declare-header	A3:D3		
declare-data	A4:D8		

Basic Type From Registry

validate!
extract!

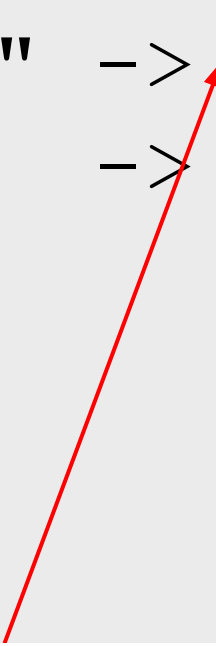
declare-type	"Item"	->	String
declare-type	"Price"	->	GBPxVAT
declare-type	"Quantity"	->	Number
declare-type	"Total"	->	Formula
declare-header	A3:D3		
declare-data	A4:D8		

validate!
extract!



declare-type	"Item"	->	String
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validate!
extract!



Could Be More Specific?

declare-type	"Item"	->	String
declare-type	"Price"	->	GBPxVAT
declare-type	"Quantity"	->	Number
declare-type	"Total"	->	Formula
declare-header	A3:D3		
declare-data	A4:D8		

Receiver's Processing Directives

validate!
extract!

declare-type	"Item"	->	String
declare-type	"Price"	->	GBP×VAT
declare-type	"Quantity"	->	Number
declare-type	"Total"	->	Formula
declare-header	A3:D3		
declare-data	A4:D8		

validate!

extract!

declare-type	"Item"	String
declare-type	"Price"	GBP×VAT
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declare-type	"Total"	Formula
declare-header	A3:D3	
declare-data	A4:D8	
validate!		
extract!		

Mockups

Submit Your Spreadsheet To Treasury

Select the area that contains the spending data

OFFICE SUPPLIES ORDER			
<i>Item</i>	<i>Price</i>	<i>Quantity</i>	<i>Total</i>
Copy paper	£2.49	20	£49.80
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Save and Continue

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Save and Continue

(0 rows)

- ☐ Number
- ☐ Number Of Laptops
- ☐ Currency
- ☐ GBP ex. VAT
- ☐ GBP inc. VAT
- ☐ Product Code
- ☐ Text

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Save and Continue

£2.49 (1 row)

- ☐ Number
- ☐ Number Of Laptops
- ☐ Currency
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Save and Continue

£2.49 (1 row)

- ☒ Number
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Save and Continue

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Save and Continue

£2.49..£1.99 (5 rows)

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- ☐ Number Of Laptops
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Save and Continue

20..50 (5 rows)

- ☐ Number
- ☒ Number Of Laptops
- ☐ Currency
- ☐ GBP ex. VAT
- ☐ GBP inc. VAT
- ☐ Product Code
- ☐ Text

Submit Your Spreadsheet To Treasury

Select a field to tell us what is it

<i>Item</i>	<i>Price</i>	<i>Quantity</i>	<i>Total</i>
Copy paper	£2.49	20	£49.80
Post-It Notes	£5.99	10	£59.90
Stapler	£7.99	5	£39.95
Paper punch	£11.90	15	£178.50
Highlighter pen	£1.99	50	£99.50

Save and Continue

"Cop...".."Hig..." (5 rows)

- ☐ Number
- ☐ Number Of Laptops
- ☐ Currency
- ☐ GBP ex. VAT
- ☐ GBP inc. VAT
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Cabinet Office

Thanks!

Andy Bennett
@databasescaling