

PROJECT REPORT

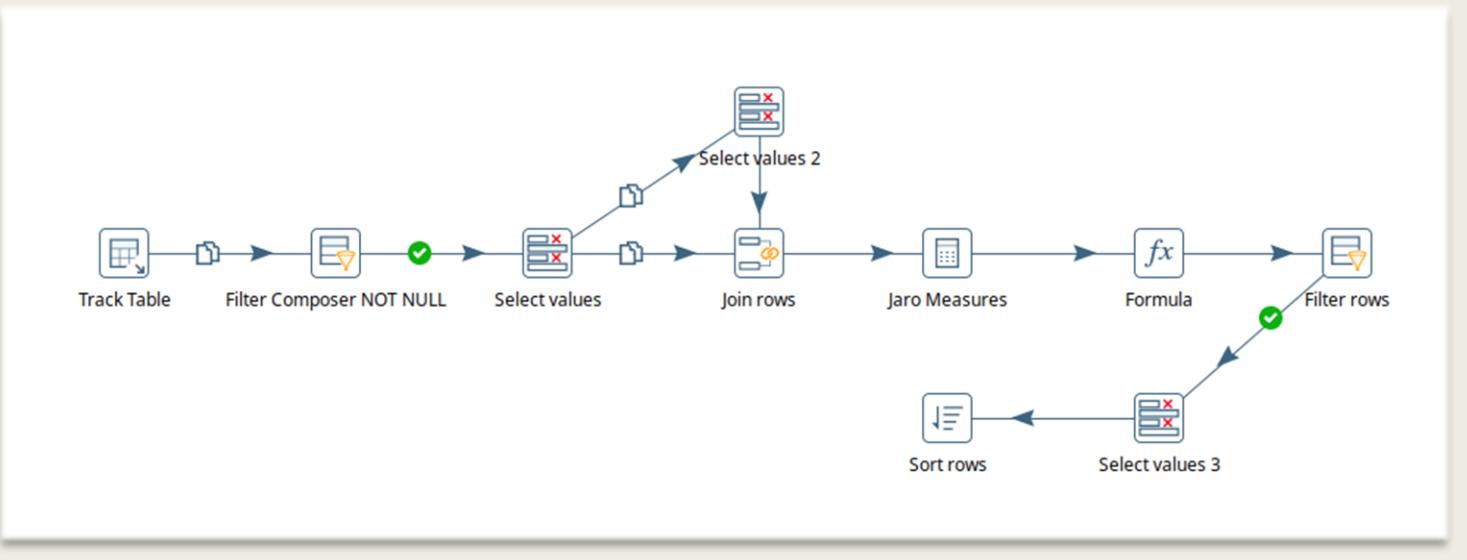
AID – Group 23

2020 / 2021

Daniel Pereira (89425) & Rodrigo Sousa (89535)

```
1.sql
1  CREATE OR REPLACE VIEW Contact(CustomerId, EmployeeId, FirstName, LastName, Address, City, State,
2   Country, PostalCode, Phone, Fax, Email) as
3   (SELECT c.CustomerId, NULL, c.FirstName, c.LastName, c.Address, c.City, c.State, c.Country, c.
4   PostalCode, c.Phone, c.Fax, c.Email
5   | FROM Customer as c)
6   UNION
7   (SELECT NULL, e.EmployeeId, e.FirstName, e.LastName, e.Address, e.City, e.State, e.Country, e.
8   PostalCode, e.Phone, e.Fax, e.Email
9   | FROM Employee as e);
```

CHALLENGE 1.



CHALLENGE 2.

TABLE INPUT (TRACK TABLE)

Table input

Step name **Track Table**

Connection **Chinook**

SQL

```
SELECT
    TrackId
,   Name
,   AlbumId
,   MediaTypeId
,   GenreId
,   Composer
,   Milliseconds
,   Bytes
,   UnitPrice
FROM Chinook.Track
```

Line 1 Column 0

Store column info in step meta data

Enable lazy conversion

Replace variables in script?

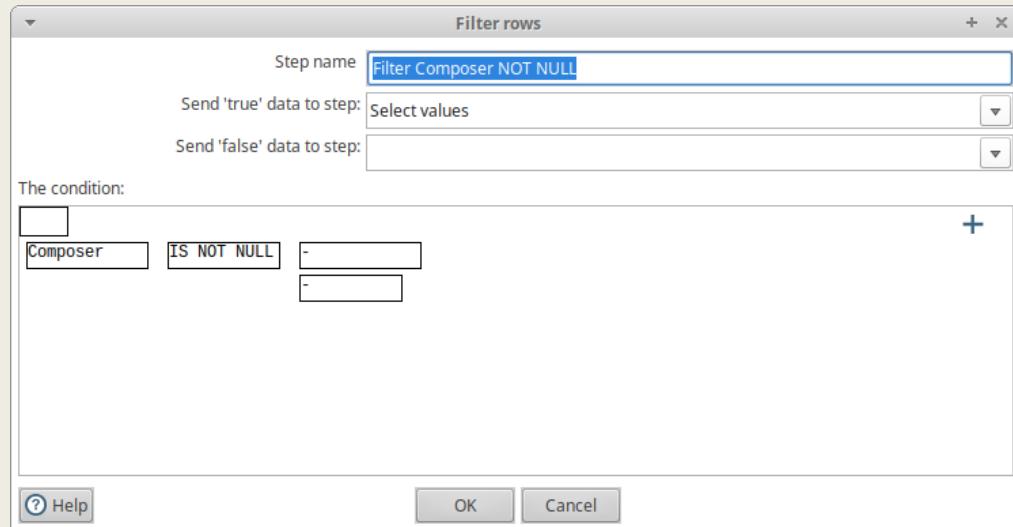
Insert data from step

Execute for each row?

Limit size

Rows of step: Track Table (1000 rows)

TrackId	Name	AlbumId	MediaTypeId	GenreId	Composer	Milliseconds	Bytes	UnitPrice
1	For Those About To Rock (We Salute You)	1	1	1	Angus Young, Malcolm Young, Brian Johnson	343719	11170334	0.99
2	Balls to the Wall	2	2	1	<null>	342562	5510424	0.99
3	Fast As a Shark	3	2	1	F. Baltes, S. Kaufman, U. Dirksneider & W. Hoffman	230619	3990994	0.99
4	Restless and Wild	3	2	1	F. Baltes, R.A. Smith-Diesel, S. Kaufman, U. Dirksneider & W. Hoffman	252051	4331779	0.99
5	Princess of the Dawn	3	2	1	Deafly & R.A. Smith-Diesel	375416	6290521	0.99
6	Put The Finger On You	1	1	1	Angus Young, Malcolm Young, Brian Johnson	205662	6713451	0.99
7	Let's Get It Up	1	1	1	Angus Young, Malcolm Young, Brian Johnson	233926	7636561	0.99
8	Inject The Venom	1	1	1	Angus Young, Malcolm Young, Brian Johnson	210834	6852860	0.99
9	Snowballed	1	1	1	Angus Young, Malcolm Young, Brian Johnson	203102	6599424	0.99
10	Evil Walks	1	1	1	Angus Young, Malcolm Young, Brian Johnson	263497	8611245	0.99
11	C.O.D.	1	1	1	Angus Young, Malcolm Young, Brian Johnson	199836	6566314	0.99
12	Breaking The Rules	1	1	1	Angus Young, Malcolm Young, Brian Johnson	263288	8596840	0.99
13	Night Of The Long Knives	1	1	1	Angus Young, Malcolm Young, Brian Johnson	205688	6706347	0.99
14	Spellbound	1	1	1	Angus Young, Malcolm Young, Brian Johnson	270863	8817038	0.99
15	Go Down	4	1	1	AC/DC	331180	10847611	0.99
16	Dog Eat Dog	4	1	1	AC/DC	215196	7032162	0.99
17	Let There Be Rock	4	1	1	AC/DC	366654	12021261	0.99
18	Bad Boy Boogie	4	1	1	AC/DC	267728	8776140	0.99
19	Problem Child	4	1	1	AC/DC	325041	10617116	0.99
20	Overdose	4	1	1	AC/DC	369319	12066294	0.99
21	Hell Ain't A Bad Place To Be	4	1	1	AC/DC	254380	8331286	0.99
22	Whole Lotta Rosie	4	1	1	AC/DC	323761	10547154	0.99
23	Walk On Water	5	1	1	Steven Tyler, Joe Perry, Jack Blades, Tommy Shaw	295680	9719579	0.99
24	Love In An Elevator	5	1	1	Steven Tyler, Joe Perry	321828	10552051	0.99
25	Rag Doll	5	1	1	Steven Tyler, Joe Perry, Jim Vallance, Holly Knight	264699	8675345	0.99
26	What It Takes	5	1	1	Steven Tyler, Joe Perry, Desmond Child	310622	10144730	0.99
27	Dude (Looks Like A Lady)	5	1	1	Steven Tyler, Joe Perry, Desmond Child	264855	8679940	0.99
28	Janie's Got A Gun	5	1	1	Steven Tyler, Tom Hamilton	330736	10869391	0.99
29	Cryin'	5	1	1	Steven Tyler, Joe Perry, Taylor Rhodes	309263	10056995	0.99
30	Amazing	5	1	1	Steven Tyler, Richie Supa	356519	11616195	0.99
31	Blind Man	5	1	1	Steven Tyler, Joe Perry, Taylor Rhodes	240718	7877453	0.99
32	Deuces Are Wild	5	1	1	Steven Tyler, Jim Vallance	215875	7074167	0.99
33	The Other Side	5	1	1	Steven Tyler, Jim Vallance	244375	7983270	0.99
34	Crazy	5	1	1	Steven Tyler, Joe Perry, Desmond Child	316656	10402398	0.99
35	Eat The Rich	5	1	1	Steven Tyler, Joe Perry, Jim Vallance	251036	8262039	0.99

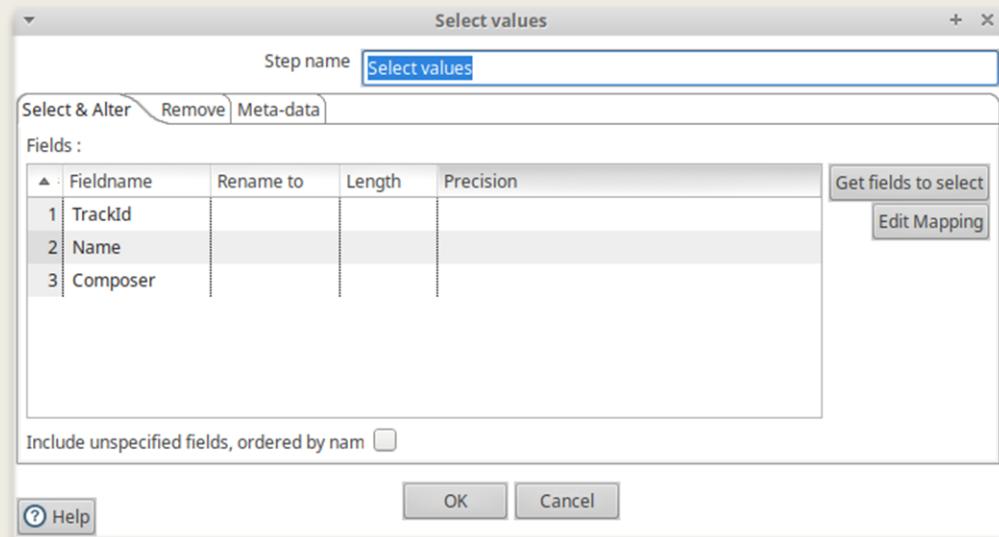


Rows of step Filter Composer NOT NULL (1000 rows)

#	TrackId	Name	AlbumId	MediaTypeId	GenreId	Composer	Milliseconds	Bytes	UnitPrice
1	1	Fast As A Shark (We Salute You)	1	1	1	Angus Young, Malcolm Young, Brian Johnson	343719	11170334	0.99
2	3	Fast As A Shark	3	2	1	F. Balmer, S. Kaufman, U. Dirksneider & W. Hoffman	230619	3990994	0.99
3	4	Restless and Wild	3	2	1	F. Balmer, R.A. Smith-Diesel, S. Kaufman, U. Dirksneider & W. Hoffman	252051	4331779	0.99
4	5	Princess of the Dawn	3	2	1	Deafly & R.A. Smith-Diesel	375419	6299521	0.99
5	6	Put The Finger On You	1	1	1	Angus Young, Malcolm Young, Brian Johnson	205662	6713451	0.99
6	7	Let's Get Up	1	1	1	Angus Young, Malcolm Young, Brian Johnson	239509	7603591	0.99
7	8	Shout The Verson	1	1	1	Angus Young, Malcolm Young, Brian Johnson	210834	7603590	0.99
8	9	Grounded	1	1	1	Angus Young, Malcolm Young, Brian Johnson	203102	6599424	0.99
9	10	Evil Walks	1	1	1	Angus Young, Malcolm Young, Brian Johnson	263497	8611245	0.99
10	11	C.O.D.	1	1	1	Angus Young, Malcolm Young, Brian Johnson	199336	6566313	0.99
11	12	Breaking The Rules	1	1	1	Angus Young, Malcolm Young, Brian Johnson	263289	8596846	0.99
12	13	Night Of The Long Knives	1	1	1	Angus Young, Malcolm Young, Brian Johnson	205688	6706347	0.99
13	14	Rockin' Around The World	1	1	1	Angus Young, Malcolm Young, Brian Johnson	272910	8849111	0.99
14	15	Go Down	4	1	ACDC		331180	91994761	0.99
15	16	Dog Eat Dog	4	1	ACDC		215196	7032162	0.99
16	17	Let There Be Rock	4	1	ACDC		366654	12021201	0.99
17	18	Bad Boy Boogie	4	1	ACDC		267728	8776140	0.99
18	19	Problem Child	4	1	ACDC		325041	10617711	0.99
19	20	Oversdose	4	1	ACDC		369319	12066262	0.99
20	21	Hell Ain't A Bad Place To Be	4	1	ACDC		254848	8338211	0.99
21	22	Rockin' Around The Rose	4	1	ACDC		322701	91994754	0.99
22	23	Walk On	5	1	Stevens Tyler, Joe Perry, Jack Blades, Tommy Shaw		355680	919979	0.99
23	24	Love In An Elevator	5	1	Stevens Tyler, Joe Perry		321828	10520201	0.99
24	25	Reg Doll	5	1	Stevens Tyler, Joe Perry, Jim Vallance, Holly Knight		264698	8675345	0.99
25	26	What It Takes	5	1	Stevens Tyler, Joe Perry, Desmond Child		310622	10144730	0.99
26	27	Dude (Looks Like A Lady)	5	1	Stevens Tyler, Joe Perry, Desmond Child		264895	867994	0.99
27	28	Jonesy's Got A Gun	5	1	Stevens Tyler, Tom Hamilton		330736	10869391	0.99
28	29	1979	5	1	Stevens Tyler, Joe Perry, Tommy Thayer		306923	10869391	0.99
29	30	Amazing	5	1	Stevens Tyler, Rickey Warwick Rhodes		350519	11616195	0.99
30	31	Blind Man	5	1	Stevens Tyler, Joe Perry, Taylor Rhodes		240718	7877463	0.99
31	32	Deuces Are Wild	5	1	Stevens Tyler, Jim Vallance		215873	7074167	0.99
32	33	The Other Side	5	1	Stevens Tyler, Jim Vallance		244375	7983270	0.99
33	34	Crazy	5	1	Stevens Tyler, Joe Perry, Desmond Child		316656	10402398	0.99
34	35	Eat The Rich	5	1	Stevens Tyler, Joe Perry, Jim Vallance		251036	8262039	0.99
35	36	Angel	5	1	Stevens Tyler, Desmond Child		307671	9999331	0.99
36	37	I Live For The Pleasure	6	1	Stevens Tyler, Joe Perry, Tommy Shaw		264895	867994	0.99

Close **Stop** **Get more rows**

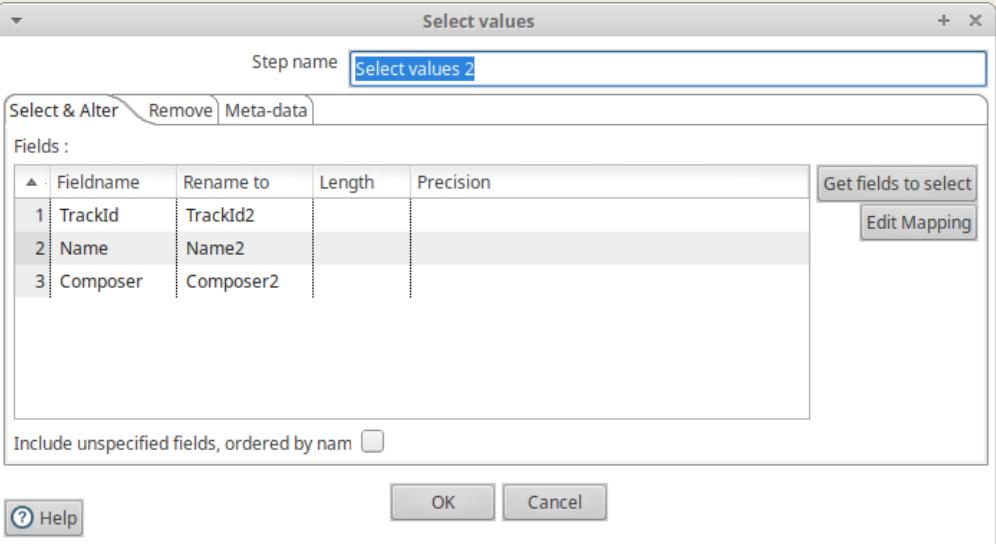
FILTER ROWS (FILTER COMPOSER NOT NULL)



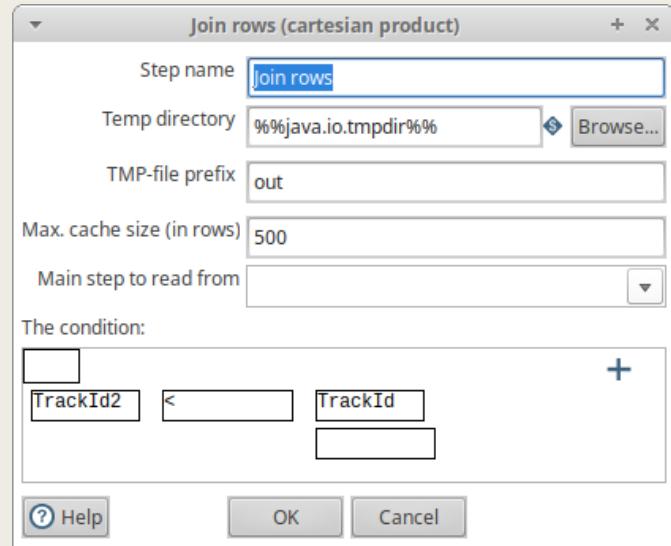
Data of step: Select values (1000 rows)		Examine preview data
*	TrackId	Name
1	1	Fast As Rock (We Salute You)
2	3	Fast As A Shark
3	4	Restless and Wild
4	5	Princess of the Dawn
5	6	Put The Finger On You
6	7	Let's Get Up
7	8	Break The Verson
8	9	Evolved
9	10	Evil Walks
10	11	C.O.D.
11	12	Breaking The Rules
12	13	Night Of The Long Knives
13	14	Evil Friend
14	15	On Down
15	16	Dog Ear Dog
16	17	Let There Be Rock
17	18	Bad Boy Boogie
18	19	Problem Child
19	20	Oversdose
20	21	There Is No Bad Place To Be
21	22	Whale Lung Ruse
22	23	Walk On Water
23	24	Love In An Elevator
24	25	Rig Doll
25	26	What It Takes
26	27	Dude (Looks Like A Lady)
27	28	Jerry's Got A Gun
28	29	Shy Guy
29	30	Amazing
30	31	Blind Man
31	32	Deuces Are Wild
32	33	The Other Side
33	34	Crazy
34	35	Eat The Rich
35	36	Angel
36	37	Living On Thin Plates

SELECT VALUES

SELECT VALUES (SELECT VALUES 2)



Rows of step: Jaro Measures (1000 rows)		Examine previous data									
#	TrackID2	Name2	Composer2	TrackID	Name	Composer	measure	name	measure_composer		
1	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	3	Fold As A Shark	F. Bales, S. Kaufman, U. Dricksreider & W. Hoffman	0.5637051317		0.5143503156		
2	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	4	Restless and Wild	F. Bales, S. Kaufman, D. S. Kaufman, U. Dricksreider & W. Hoffman	0.4827892475		0.5229963661		
3	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	5	Princesses of the Dawn	Deafly & R.A. Smith-Diesel	0.5247863248		0.4090509412		
4	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	6	Put The Finger In	Angus Young, Malcolm Young, Brian Johnson	0.5630036563	1.0			
5	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	7	Lets Get It Up	Angus Young, Malcolm Young, Brian Johnson	0.4068374068		1.0		
6	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	8	Don't Let Yourself Down	Angus Young, Malcolm Young, Brian Johnson	0.5448374068		1.0		
7	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	9	Sneeball	Angus Young, Malcolm Young, Brian Johnson	0.3478632479		1.0		
8	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	10	Evil Walks	Angus Young, Malcolm Young, Brian Johnson	0.3478632479		1.0		
9	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	11	C.O.D.	Angus Young, Malcolm Young, Brian Johnson	0.0		1.0		
10	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	12	Breaking The Rule	Angus Young, Malcolm Young, Brian Johnson	0.556980057		1.0		
11	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	13	Night Of The Long Knives	Angus Young, Malcolm Young, Brian Johnson	0.4598110839		1.0		
12	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	14	Spellbound	Angus Young, Malcolm Young, Brian Johnson	0.4175213675		1.0		
13	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	15	Adore	Angus Young, Malcolm Young, Brian Johnson	0.4031501018		0.4031501018		
14	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	16	Dog Is Dumb	AC/DC	0.4695916699		0.4695916699		
15	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	17	Let There Be Rock	AC/DC	0.5987823027		0.4093008131		
16	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	18	Bad Boy Boogie	AC/DC	0.3698058608		0.4091300813		
17	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	19	Problem Child	AC/DC	0.3717948718		0.4091300813		
18	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	20	Overdose	AC/DC	0.4508547009		0.4091300813		
19	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	21	Hell Ain't A Bad Place To Be	AC/DC	0.5147283272		0.4091300813		
20	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	22	Whole Lotta Love	AC/DC	0.5218248506		0.4091300813		
21	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	23	Walk On Water	Steve Tyler, Joe Perry, Jack-Schleske, Tommy Shaw	0.4275004274		0.2921100813		
22	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	24	Shout	Steve Tyler, Joe Perry	0.3336000000		0.3336000000		
23	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	25	Ray Gun	Steve Tyler, Joe Perry, Valance, Holly Knight	0.2670407171		0.2321744464		
24	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	26	What It Takes	Steve Tyler, Joe Perry, Desmond Child	0.440770402		0.5079709000		
25	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	27	Dude (Looks Like A Lady)	Steve Tyler, Joe Perry, Desmond Child	0.5283882784		0.5079399404		
26	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	28	Jane's Got A Gun	Steve Tyler, Tom Hamilton	0.4597878503		0.5079540213		
27	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	29	Cryin'	Steve Tyler, Joe Perry, Taylor Rhodes	0.3974535974		0.5020042041		
28	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	30	Amazing	Steve Tyler, Joe Perry, Taylor Rhodes	0.3894993895		0.4520042041		
29	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	31	Blind Man	Steve Tyler, Joe Perry, Taylor Rhodes	0.3791973789		0.5020042041		
30	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	32	Down Under Are Wild	Steve Tyler, Joe Perry, Taylor Rhodes	0.3535007506		0.5020042041		
31	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	33	The Other Side	Steve Tyler, Joe Perry, Taylor Rhodes	0.4739999999		0.4878478488		
32	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	34	Crazy	Steve Tyler, Joe Perry, Desmond Child	0.4085400985		0.5079399404		
33	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	35	Eat The Rich	Steve Tyler, Joe Perry, Jim Vallance	0.499163239		0.5361690317		
34	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	36	Angel	Steve Tyler, Joe Perry, Desmond Child	0.3170940171		0.5094058578		
35	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	37	Livin' On The Edge	Steve Tyler, Joe Perry, Mark Hudson	0.4275530276		0.4916972209		
36	1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	38	Ain't No Mountain High Enough	Steve Tyler, Joe Perry, Mark Hudson	0.4766330000		0.5066330000		



Rows of step join rows (1000 rows)

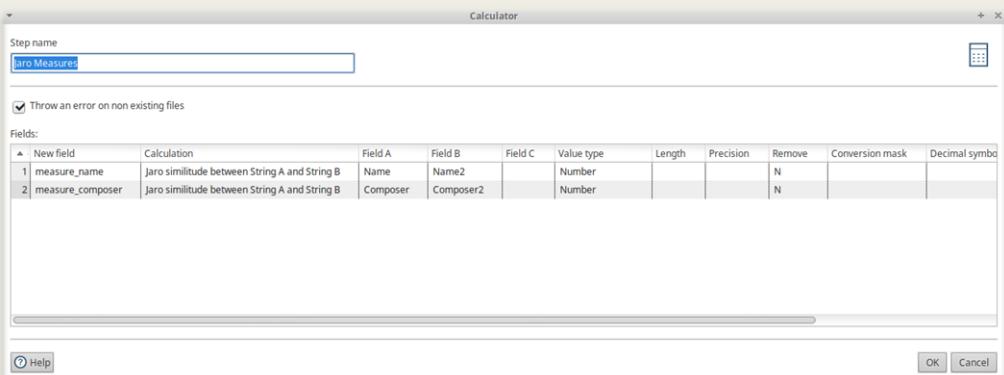
Examine preview data

TrackId2	Name2	Composer2	TrackId	Name	Composer
1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	3	Fast As A Shark	F. Balles, S. Kaufman, U. Dirksneider & W. Hoffman
2	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	4	Restless and Wild	F. Balles, R.A. Smith-Diesel, S. Kaufman, U. Dirksneider & W. Hoffman
3	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	5	Princess of the Dawn	Deafly & R.A. Smith-Diesel
4	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	6	Put The Finger On You	Angus Young, Malcolm Young, Brian Johnson
5	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	7	Let's Get It Up	Angus Young, Malcolm Young, Brian Johnson
6	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	8	Inject The Venom	Angus Young, Malcolm Young, Brian Johnson
7	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	9	Snowballled	Angus Young, Malcolm Young, Brian Johnson
8	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	10	Evil Walks	Angus Young, Malcolm Young, Brian Johnson
9	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	11	C.O.D.	Angus Young, Malcolm Young, Brian Johnson
10	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	12	Breaking The Rules	Angus Young, Malcolm Young, Brian Johnson
11	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	13	Night Of The Long Knives	Angus Young, Malcolm Young, Brian Johnson
12	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	14	Spellbound	Angus Young, Malcolm Young, Brian Johnson
13	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	15	Go Down	AC/DC
14	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	16	Dog Eat Dog	AC/DC
15	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	17	Let There Be Rock	AC/DC
16	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	18	Bad Boy Boogie	AC/DC
17	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	19	Problem Child	AC/DC
18	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	20	Oversdose	AC/DC
19	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	21	Hell Ain't A Bad Place To Be	AC/DC
20	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	22	Whole Lotta Rosie	Steven Tyler, Joe Perry, Jack Blades, Tommy Shaw
21	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	23	Walk On Water	Steven Tyler, Joe Perry, Jack Blades, Tommy Shaw
22	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	24	Love In An Elevator	Steven Tyler, Joe Perry
23	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	25	Rag Doll	Steven Tyler, Joe Perry, Jim Vallance, Holly Knight
24	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	26	What It Takes	Steven Tyler, Joe Perry, Desmond Child
25	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	27	Dude (Looks Like A Lady)	Steven Tyler, Joe Perry, Desmond Child
26	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	28	Janie's Got A Gun	Steven Tyler, Tom Hamilton
27	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	29	Cryin'	Steven Tyler, Joe Perry, Taylor Rhodes
28	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	30	Amazing	Steven Tyler, Richie Supa
29	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	31	Blind Man	Steven Tyler, Joe Perry, Taylor Rhodes
30	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	32	Deuces Are Wild	Steven Tyler, Jim Vallance
31	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	33	The Other Side	Steven Tyler, Jim Vallance
32	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	34	Crazy	Steven Tyler, Joe Perry, Desmond Child
33	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	35	Eat The Rich	Steven Tyler, Joe Perry, Jim Vallance
34	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	36	Angel	Steven Tyler, Desmond Child
35	1 For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson	37	Livin' On The Edge	Steven Tyler, Joe Perry, Mark Hudson

Close Stop Get more rows

JOIN ROWS (CARTESIAN PRODUCT)

CALCULATOR (JARO MEASURE)



Examine preview data									
steps of Juro Measures (1000 rows)		Composer		Composer		measure, name		measure, composer	
#	TrackId2	Name2	Composer2	TrackId	Name	Composer	measure	name	measure, composer
1	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		3	Fast As A Shark	F. Baines, S. Kaufman, U. Dirksreiter & W. Hoffman	0.5636791237	0.5143389156	
2	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		4	Restless And Wild	F. Baines, S. Kaufman, U. Dirksreiter & W. Hoffman	0.4877962475	0.5229959411	
3	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		5	Princesses Of The Dawn	Debby & R.A. Smith-Diesel	0.5247863248	0.4095095417	
4	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		6	Put The Finger On You	Angus Young, Malcolm Young, Brian Johnson	0.5663003663	1.0	
5	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		7	Lets Get It Up	Angus Young, Malcolm Young, Brian Johnson	0.4068870904	1.0	
6	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		8	Highway To Hell	Angus Young, Malcolm Young, Brian Johnson	0.4844661504	1.0	
7	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		9	Screamed	Angus Young, Malcolm Young, Brian Johnson	0.3478632479	1.0	
8	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		10	End Walks	Angus Young, Malcolm Young, Brian Johnson	0.3478632479	1.0	
9	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		11	C.O.D.	Angus Young, Malcolm Young, Brian Johnson	0.0	1.0	
10	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		12	Breaking The Rules	Angus Young, Malcolm Young, Brian Johnson	0.5569800557	1.0	
11	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		13	Night Of The Long Knives	Angus Young, Malcolm Young, Brian Johnson	0.4589160839	1.0	
12	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		14	Spellbound	Angus Young, Malcolm Young, Brian Johnson	0.4175213675	1.0	
13	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		15	Go Down	AC/DC	0.5015915018	0.4095095417	
14	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		16	Back In Black	AC/DC	0.8469159819	0.4095095417	
15	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		17	Let There Be Rock	AC/DC	0.5597820237	0.4095095417	
16	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		18	Bad Boy Bougie	AC/DC	0.3668058608	0.4095095417	
17	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		19	Problem Child	AC/DC	0.3771948718	0.4095095417	
18	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		20	Oversize	AC/DC	0.4508570509	0.4095095417	
19	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		21	Hell Aint As Bad Place To Be	AC/DC	0.5147283272	0.4095095417	
20	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		22	Whole Lotta Love	AC/DC	0.5218245806	0.4095095417	
21	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		23	Walk On Water	Steven Tyler, Joe Perry, Jack Blades, Tommy Shaw	0.229914247	0.3811188811	
22	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		24	Love Will Set You Free	Steven Tyler, Joe Perry, Tom Hamilton	0.3333333333	0.3811188811	
23	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		25	Push It	Steven Tyler, Joe Perry, David Lee Roth	0.2079040177	0.2527544644	
24	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		26	What's It Takes	Steven Tyler, Joe Perry, Desmond Child	0.4401039403	0.2570999999	
25	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		27	Dude (Looks Like A Lady)	Steven Tyler, Joe Perry, Dennis Doherty	0.5238832794	0.5070999999	
26	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		28	Jane's Got A Gun	Steven Tyler, Tim Hamilton	0.4358748503	0.5070999999	
27	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		29	Cryin'	Steven Tyler, Perry, Taylor Rhodes	0.3974359794	0.5030204639	
28	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		30	Amazing	Steven Tyler, Rickey Suga	0.3849958995	0.4520054201	
29	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		31	Blind Man	Steven Tyler, Perry, Taylor Rhodes	0.3791773789	0.5030204639	
30	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		32	Deuces Are Wild	Steven Tyler, Jim Vallance	0.5505827506	0.4887384508	
31	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		33	The Other Side	Steven Tyler, Joe Perry, Tom Hamilton	0.3777777778	0.4887384508	
32	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		34	Get Down Tonight	Steven Tyler, Joe Perry, Desmond Child	0.4045570005	0.5070999999	
33	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		35	Eye Of The Tiger	Steven Tyler, Joe Perry, Tom Hamilton	0.4905112330	0.5216160311	
34	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		36	Angel	Steven Tyler, Desmond Child	0.3170940177	0.5094635635	
35	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		37	Liver On The Edge	Steven Tyler, Joe Perry, Mark Hudson	0.4275539276	0.4916972209	
36	For Those About To Rock (We Salute You)	Angus Young, Malcolm Young, Brian Johnson		38	AC/DC	Alvin Lee/Klaus Eichhammer	0.4733333333	0.4733333333	A. EICHAMMER

Formula

Step name **Formula**

Fields:

New field	Formula	Value type
combined_measure	$0.65 * [\text{measure_name}] + 0.35 * [\text{measure_composer}]$	Number

OK **Cancel**

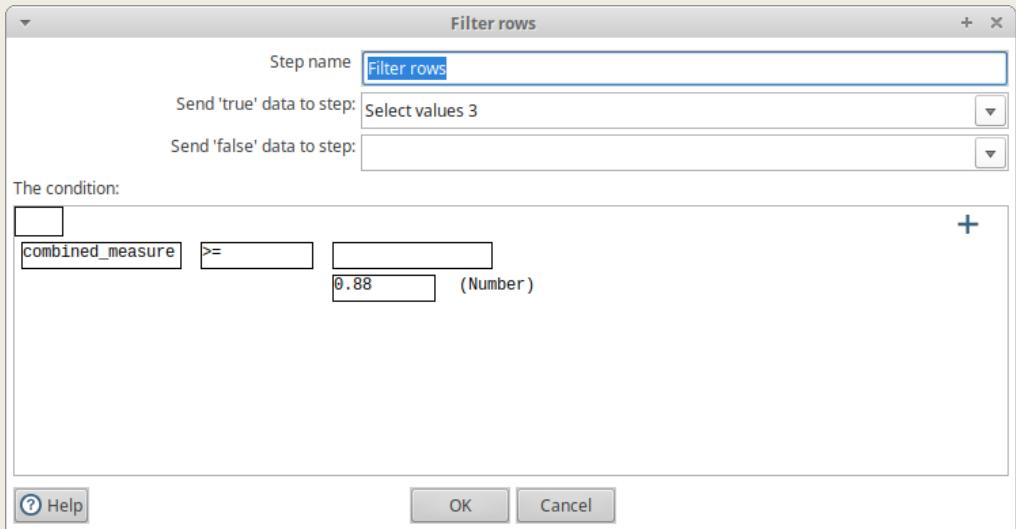
Rows of step: Formula (1000 rows)

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3	Fox As A Shark	F. Baker, S. Kaufman, U. Dirkschneider & W. Hoffman	0.5142339192	0.5466	
4	Bentfels and Wild	F. Baker, R.A. Smith-Diesel, S. Kaufman, U. Dirkschneider & W. Hoffman	0.4827798247	0.5232996116	0.4966
5	Princess of the Dawn	Deafly & R.A. Smith-Diesel	0.5247863248	0.4844	
6	Put The Finger On You	Angus Young, Malcolm Young, Brian Johnson	0.5646033663	0.4095059412	0.4844
7	Let's Get It Up	Angus Young, Malcolm Young, Brian Johnson	0.4968376068	1.0	0.6144
8	Inject The Venom	Angus Young, Malcolm Young, Brian Johnson	0.4496062621	1.0	0.6422
9	Snowballled	Angus Young, Malcolm Young, Brian Johnson	0.3478612479	1.0	0.5761
10	Ball Walks	Angus Young, Malcolm Young, Brian Johnson	0.3478612479	1.0	0.5761
11	C.O.D.	Angus Young, Malcolm Young, Brian Johnson	0.0	1.0	
12	Keep On Playing The Rules	Angus Young, Malcolm Young, Brian Johnson	0.5569619557	1.0	0.7189
13	Night Of The Long Knives	Angus Young, Malcolm Young, Brian Johnson	0.4289160838	1.0	0.6482
14	Spelbound	Angus Young, Malcolm Young, Brian Johnson	0.8175213075	1.0	0.6213
15	Go Down	AC/DC	0.5018315018	0.4081300813	0.4690
16	Dog Eat Dog	AC/DC	0.4609158609	0.4081300813	0.4424
17	Last There Be Rock	AC/DC	0.5957823027	0.4081300813	0.5307
18	Bad Boy Boogie	AC/DC	0.3608058605	0.4081300813	0.3777
19	Problem Child	AC/DC	0.3717948718	0.4081300813	0.3845
20	20th Century Boys	AC/DC	0.3920118233	0.4081300813	0.4079
21	Hall Arm In A Bad Place To Be	AC/DC	0.5147293272	0.4081300813	0.4779
22	Wholesome Rose	AC/DC	0.5218325986	0.4081300813	0.4820
23	Walk On Water	Steven Tyler, Joe Perry, Jack Blades, Tommy Shaw	0.4273504274	0.522914247	0.4607
24	Love Is An Elevator	Steven Tyler, Joe Perry	0.5353136460	0.389190127	0.4842
25	Rag Doll	Steven Tyler, Joe Perry, Jim Vallance, Holly Knight	0.2670940171	0.5257244444	0.3576
26	What It Takes	Steven Tyler, Joe Perry, Desmond Child	0.6401794042	0.507939904	0.4638
27	Dude (Looks Like A Lady)	Steven Tyler, Joe Perry, Desmond Child	0.5238862784	0.507939904	0.5212
28	Janie's Got A Gun	Steven Tyler, Tom Hamilton	0.4385785053	0.50794032	0.4627
29	Cryin'	Steven Tyler, Joe Perry, Taylor Rhodes	0.4520424036	0.4081300813	0.4349
30	Rock N Roll	Steven Tyler, Joe Perry	0.3846913995	0.4520424036	0.4349
31	Blind Man	Steven Tyler, Joe Perry, Taylor Rhodes	0.3799173789	0.5052043434	0.4223
32	Devil's Are Wild	Steven Tyler, Jim Vallance	0.5090627296	0.4837949082	0.5229
33	The Other Side	Steven Tyler, Jim Vallance	0.4763939764	0.4837949082	0.4789
34	Crazy	Steven Tyler, Joe Perry, Desmond Child	0.4208457085	0.507939904	0.4433
35	Eat The Rich	Steven Tyler, Joe Perry, Jim Vallance	0.4499316239	0.3861900317	0.5119
36	Angel	Steven Tyler, Desmond Child	0.3170940171	0.5090463587	0.3814
37	Livin' On The Edge	Steven Tyler, Joe Perry, Mark Hudson	0.4273504274	0.4916972209	0.4500

Close **Stop** **Get more rows**

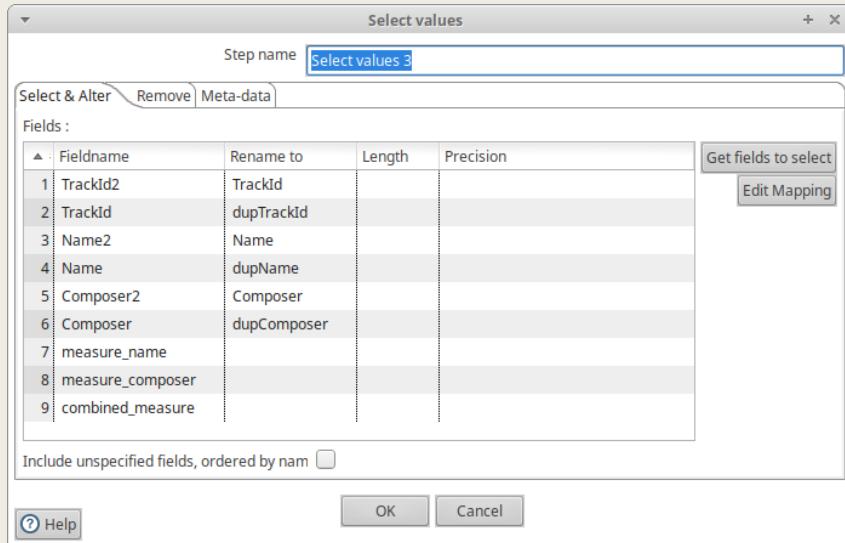
FORMULA

FILTER ROWS



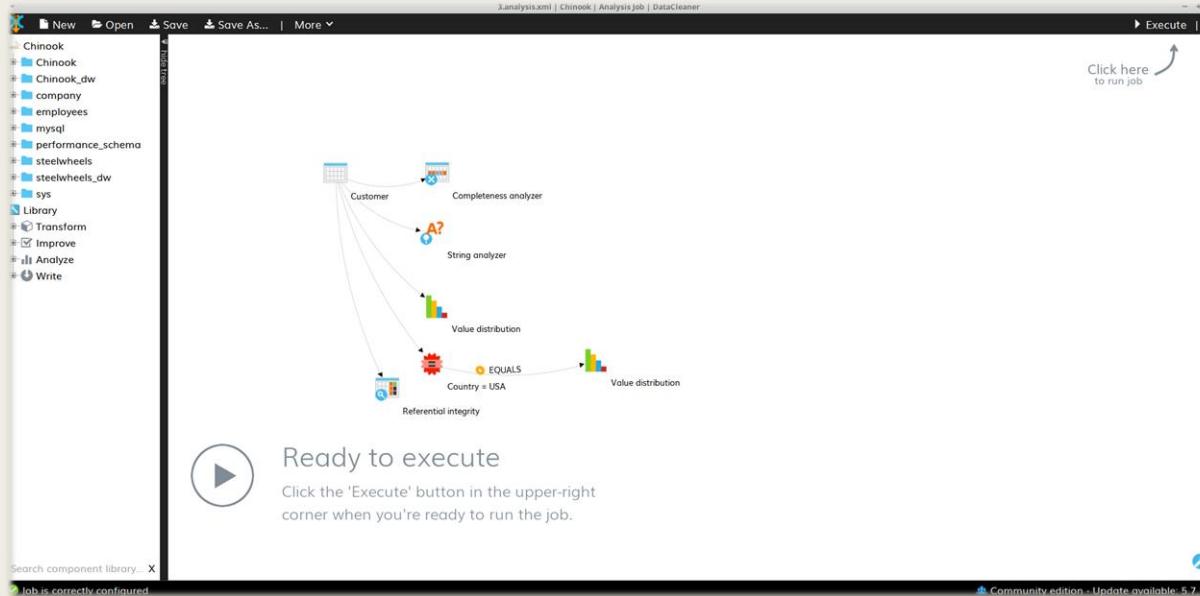
Examine previous data			
Row of step: Filter rows (165 rows)	TrackId	Name2	Composer
1	39	You Oughta Know	Alanis Morissette & Glenn Ballard
2	195	Let Me Love You Baby	Willie Dixon
3	199	Leave My Girl Alone	Buddy Guy
4	212	Drôô	Gilberto Gil
5	253	Maracatu Áfroíco	Chico Science
6	253	Maracatu Áfroíco	Chico Science
7	251	Maracatu Áfroíco	Chico Science
8	257	Mangueense	Chico Science
9	264	Maracatu Áfroíco (Atomic Version)	Chico Science
10	267	Maracatu Áfroíco (Roggia Mix)	Chico Science
11	283	A Sombra Da Maladade	Da Gamma/Toni Garrido
12	288	O Erê	Bernardo Vilela/Bruno Faraldo/Gama/Lázaro/Toni Garrido
13	290	A Estrada	Bruno Faraldo/Gama/Lázaro/Toni Garrido
14	293	Onde Você Morá?	Marisa Monte/Nando Reis
15	294	Realidade Virtual	Bernardo Vilela/Bruno Faraldo/Toni Garrido
16	294	Realidade Virtual	Bruno Faraldo/Gama/Lázaro/Toni Garrido
17	298	A Cor Do Sol	Bernardo Vilela/Gama/Lázaro
18	301	Shoo Shoo Me	J B Lenon/Wille Dixon
19	337	Shoo Shoo Me	J B Lenon/Wille Dixon
20	338	I Can't Quit You Baby	Willie Dixon
21	338	I Can't Quit You Baby	Willie Dixon
22	338	I Can't Quit You Baby	Willie Dixon
23	339	Communication Breakdown	Jimmy Page/John Bonham/John Paul Jones
24	339	Communication Breakdown	Jimmy Page/John Bonham/John Paul Jones
25	339	Communication Breakdown	Jimmy Page/John Bonham/John Paul Jones
26	340	Dazed and Confused	Jimmy Page
27	340	Dazed and Confused	Jimmy Page
28	340	Dazed and Confused	Jimmy Page
29	343	Communication Breakdown(2)	Jimmy Page/John Bonham/John Paul Jones
30	343	Communication Breakdown(2)	Jimmy Page/John Bonham/John Paul Jones
31	347	Whole Lotta Love	Jimmy Page/John Bonham/John Paul Jones/Robert Plant/Wille Dixon
32	345	Whole Lotta Love	Jimmy Page/John Bonham/John Paul Jones/Robert Plant/Wille Dixon
33	345	Whole Lotta Love	Jimmy Page/John Bonham/John Paul Jones/Robert Plant/Wille Dixon
34	347	Communication Breakdown(3)	Jimmy Page/John Bonham/John Paul Jones
35	348	I Can't Quit You Baby(2)	Willie Dixon
36	348	I Can't Quit You Baby(2)	Willie Dixon
37	50	You Oughta Know (Alternate)	Alanis Morissette & Glenn Ballard
38	253	Let Me Love You Baby	Willie Dixon
39	256	Leave My Girl Alone	B. Guy
40	110	Drôô	Gilberto Gil
41	266	Maracatu Áfroíco (Atomic Version)	Chico Science
42	267	Maracatu Áfroíco (Roggia Mix)	Chico Science
43	268	Maracatu Áfroíco (Trip Hop)	Chico Science
44	268	Maracatu Áfroíco (Trip Hop)	Chico Science
45	268	Maracatu Áfroíco (Trip Hop)	Chico Science
46	301	A Sombra Da Maladade	Da Gamma/Toni Garrido
47	300	O Erê	Bernardo Vilela/Bruno Faraldo/Gama/Lázaro/Toni Garrido
48	302	A Estrada	Bruno Faraldo/Gama/Lázaro/Toni Garrido
49	309	Onde Você Morá?	Marisa Monte/Nando Reis
50	309	Realidade Virtual	Bernardo Vilela/Bruno Faraldo/Toni Garrido
51	309	Realidade Virtual	Bruno Faraldo/Gama/Lázaro/Toni Garrido
52	311	A Cor Do Sol	Bernardo Vilela/Gama/Lázaro
53	349	You Shook Me	J B Lenon/Wille Dixon
54	1620	You Shook Me	J B Lenon/Wille Dixon
55	348	I Can't Quite You Baby(2)	Willie Dixon
56	1589	I Can't Quite You Baby	Willie Dixon
57	1625	I Can't Quite You Baby	Willie Dixon
58	343	Communication Breakdown(2)	Jimmy Page/John Bonham/John Paul Jones
59	343	Communication Breakdown(2)	Jimmy Page/John Bonham/John Paul Jones
60	1621	Communication Breakdown(2)	Jimmy Page/John Bonham/John Paul Jones
61	1624	Communication breakdown	Jimmy Page
62	1581	Dazed And Confused	Jimmy Page
63	1666	Dazed And Confused	Jimmy Page
64	1621	Dazed And Confused	Jimmy Page
65	347	Communication Breakdown(3)	Jimmy Page/John Bonham/John Paul Jones
66	1624	Communication breakdown	Jimmy Page
67	1627	Whole Lotta Love	Jimmy Page, Robert Plant, John Paul Jones, John Bonham
68	1627	Whole Lotta Love	John Bonham/John Paul Jones/Robert Plant/Wille Dixon
69	1581	Communication Breakdown	Jimmy Page/John Bonham/John Paul Jones
70	1581	I Can't Quite You Baby	Willie Dixon
71	1625	I Can't Quite You Baby	Willie Dixon

SELECT VALUES (SELECT VALUES 3)



Rows of step: Filter rows (105 rows)		Examine preview data	
#	TrackId	Name	Composer
1	39	You Oughta Know	Alexis Morissette & Glenn Ballard
2	195	Let Me Love You Baby	Willie Dixon
3	199	Leave My Girl Alone	Buddy Guy
4	212	Drôle	Gilberto Gil
5	233	Maracatu Admico	Chico Science
6	253	Maracatu Admico	Chico Science
7	253	Maracatu Admico	Chico Science
8	257	Mangaréven	Chico Science
9	266	Maracatu Admico [Atomic Version]	Chico Science
10	267	Maracatu Admico [Raggá Mix]	Chico Science
11	283	A Sombra Da Maladade	Da Gama/Toni Garrido
12	288	O Erê	Bernardo Vilhena/Bino Farias/Da Gama/Lázaro/Toni Garrido
13	290	A Estrada	Bino Faria/Da Gama/Lázaro/Toni Garrido
14	293	Deixa & More!	Maria Luiza/Raulito Reis
15	294	Pensamento	Bino Faria/Da Gama/Lázaro/Bernardo
16	296	Realidade Virtual	Bino Faria/Da Gama/Lázaro/Toni Garrido
17	298	A Cria Do Sol	Bernardo Vilhena/Da Gama/Lázaro
18	337	You Shook Me	J B Lenon/Wille Dixon
19	337	You Shook Me	J B Lenon/Wille Dixon
20	338	I Can't Quit You Baby	Willie Dixon
21	338	I Can't Quit You Baby	Willie Dixon
22	338	I Can't Quit You Baby	Willie Dixon
23	339	Communication Breakdown	Jimmy Page/John Bonham/John Paul Jones
24	339	Communication Breakdown	Jimmy Page/John Bonham/John Paul Jones
25	339	Communication Breakdown	Jimmy Page/John Bonham/John Paul Jones
26	340	Dazed and Confused	Jimmy Page
27	340	Dazed and Confused	Jimmy Page
28	340	Dazed and Confused	Jimmy Page
29	343	Communication Breakdown(2)	Jimmy Page/John Bonham/John Paul Jones
30	343	Communication Breakdown(2)	Jimmy Page/John Bonham/John Paul Jones
31	345	Whole Lotta Love	Jimmy Page/John Bonham/John Paul Jones/Robert Plant/Wille Dixon
32	345	Whole Lotta Love	Jimmy Page/John Bonham/John Paul Jones/Robert Plant/Wille Dixon
33	347	Communication Breakdown(3)	Jimmy Page/John Bonham/John Paul Jones
34	348	I Can't Quit You Baby(2)	Willie Dixon
35	348	I Can't Quit You Baby(2)	Willie Dixon
50	2535	Let Me Love You Baby	Willie Dixon
51	2536	Leave My Girl Alone	B. Guy
52	110	Drôle	Gilberto Gil
53	266	Maracatu Admico [Atomic Version]	Chico Science
54	267	Maracatu Admico [Raggá Mix]	Chico Science
55	268	Maracatu Admico [Trip Hop]	Chico Science
56	264	Mangaréven	Chico Science/Dengue/Lúcio Maia
57	268	Maracatu Admico [Trip Hop]	Chico Science
58	301	A Sombra Da Maladade	Da Gama/Toni Garrido
59	301	O Erê	Bernardo Vilhena/Bino Farias/Da Gama/Lázaro/Toni Garrido
60	293	Deixa & More!	Da Gama/Raulito Reis
61	299	Deixa & More!	Maria Luiza/Raulito Reis
62	305	Pensamento	Bino Faria/Gama/Rau Bernardo
63	306	Realidade Virtual	Bino Faria/Gama/Lázaro/Toni Garrido
64	311	A Cria Do Sol	Bernardo Vilhena/Da Gama/Lázaro
65	349	You Shook Me(2)	J B Lenon/Wille Dixon
66	349	You Shook Me	J B. Lenon/Wille Dixon
67	1620	I Can't Quit You Baby(2)	Willie Dixon
68	1589	I Can't Quit You Baby	Willie Dixon
69	1435	I Can't Quit You Baby	Willie Dixon
70	343	Communication Breakdown(2)	Jimmy Page/John Bonham/John Paul Jones
71	1624	Communication Breakdown(3)	Jimmy Page/John Bonham/John Paul Jones
72	1624	Communication Breakdown	Jimmy Page/John Bonham/John Paul Jones
73	1581	Dazed And Confused	Jimmy Page/Led Zeppelin
74	1621	Dazed And Confused	Jimmy Page
75	1621	Dazed And Confused	Jimmy Page
76	1621	Dazed And Confused	Jimmy Page
77	1627	Communication Breakdown(3)	Jimmy Page/John Bonham/John Paul Jones
78	1628	Communication Breakdown	Jimmy Page/John Bonham/John Paul Jones
79	1627	Whole Lotta Love	Jimmy Page/Robert Plant/John Paul Jones/john Bonham
80	1670	Whole Lotta Love	john Bonham/john Paul Jones/Robert Plant/Wille Dixon
81	1624	Communication Breakdown	Jimmy Page/John Bonham/John Paul Jones
82	1589	I Can't Quit You Baby	Willie Dixon
83	1625	I Can't Quit You Baby	Willie Dixon

Close

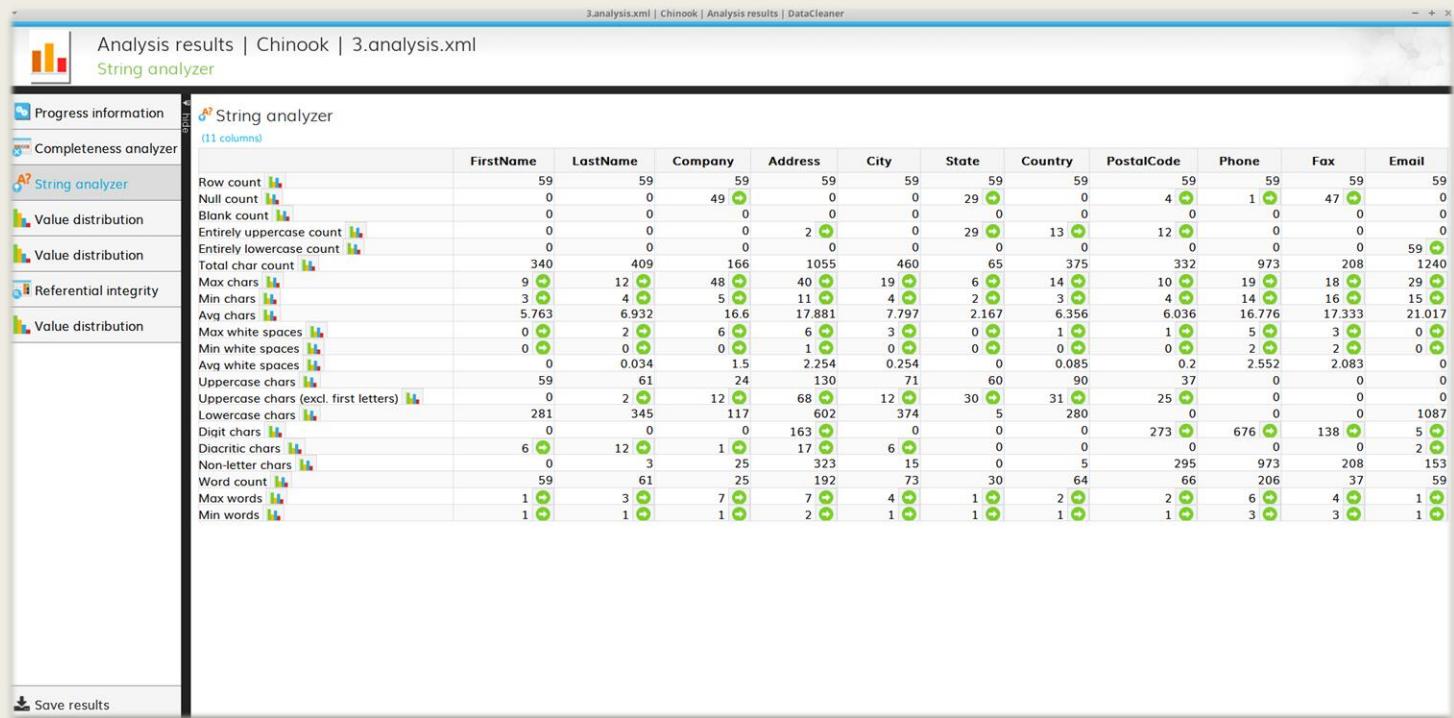


CHALLENGE 3.

Completeness Analyzer

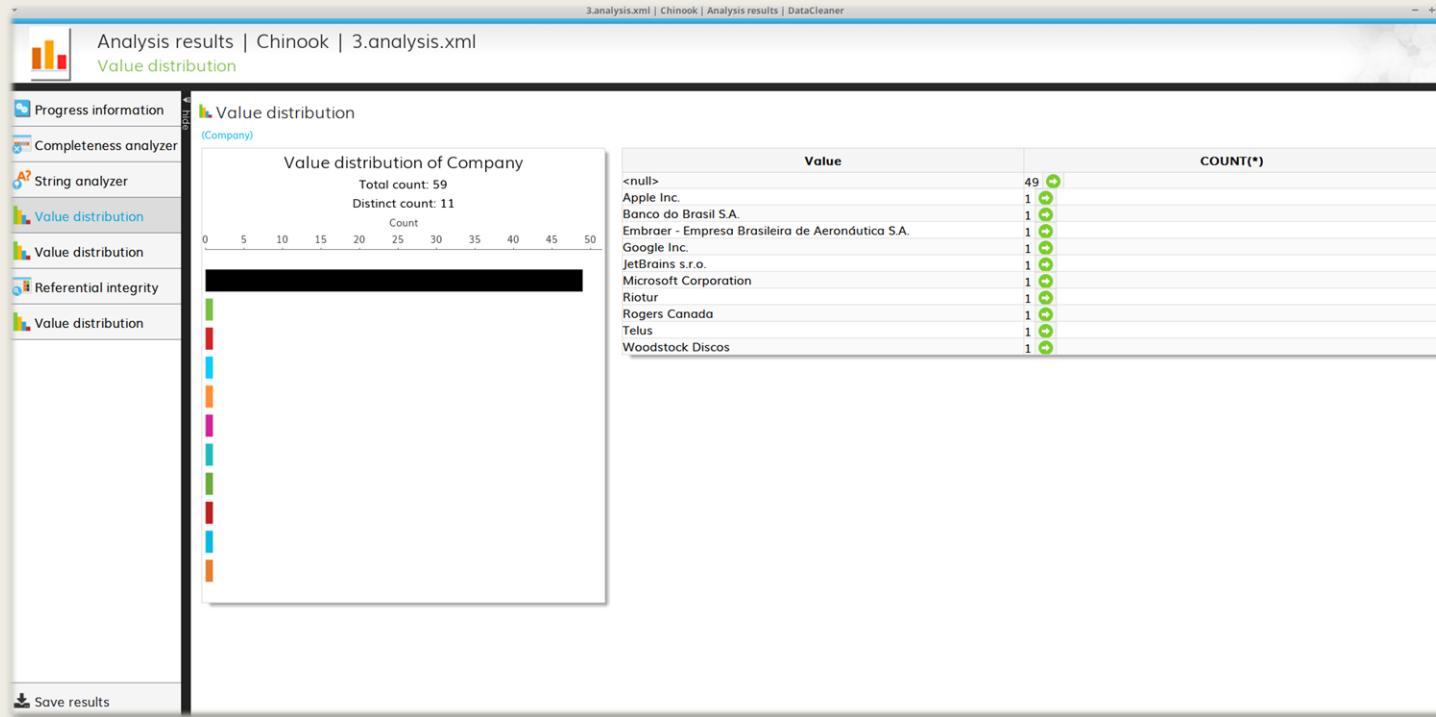
- There are 50 records with missing information
- Most of them are missing ‘State’ which is normal since there are a lot of countries not divided into states
- Most of the records with missing values have no ‘Fax’ associated

CustomerId	FirstName	LastName	Company	Address	City	State	Country	PostalCode	Phone	Fax	Email	SupportRepId
2	Leоне	Кохлер	<null>	Theodor-Heu... Stuttgart	<null>	Germany	70174	+49 0711 2...	<null>	leonekohler...	5	
29	Robert	Brown	<null>	796 Dundas ... Toronto	ON	Canada	M6J 1V1	+1 (416) 36...	<null>	robbrown@...	3	
30	Edward	Francis	<null>	230 Elgin Str... Ottawa	ON	Canada	K2P 1L7	+1 (613) 23...	<null>	edfrancis@...	3	
28	Julia	Barnett	<null>	302 S 700 E Salt Lake City	UT	USA	84102	+1 (801) 53...	<null>	jubarnett@g...	5	
34	João	Fernandes	<null>	Rua da Assu... Lisbon	<null>	Portugal	<null>	+351 (213) ...	<null>	jfernandes@...	4	
27	Patrick	Gray	<null>	1033 N Park... Tucson	AZ	USA	85719	+1 (520) 62...	<null>	patrick.gray...	4	
36	Hannah	Schneider	<null>	Touentzienstr... Berlin	<null>	Germany	10789	+49 030 26...	<null>	hannah.sch...	5	
37	Fynn	Zimmermann	<null>	Berger Straß... Frankfurt	<null>	Germany	60316	+49 069 40...	<null>	fzimmerma...	3	
26	Richard	Cunningham	<null>	2211 W Bern... Fort Worth	TX	USA	76110	+1 (817) 92...	<null>	ricunningha...	4	
38	Niklas	Schröder	<null>	Barbarossas... Berlin	<null>	Germany	10779	+49 030 21...	<null>	nschroder@...	3	
39	Camille	Bernard	<null>	4, Rue Milton Paris	<null>	France	75009	+33 01 49 7...	<null>	camille.bern...	4	
40	Dominique	Lefebvre	<null>	8, Rue Hano... Paris	<null>	France	75002	+33 01 47 4...	<null>	dominiquele...	4	
41	Marc	Dubois	<null>	11, Place Bel... Lyon	<null>	France	69002	+33 04 78 3...	<null>	marc.dubois...	5	
42	Wyatt	Girard	<null>	9, Place Loui... Bordeaux	<null>	France	33000	+33 05 56 9...	<null>	wyatt.girard...	3	
43	Isabelle	Mercier	<null>	68, Rue Jouv... Dijon	<null>	France	21000	+33 03 80 7...	<null>	isabelle_meri...	3	
25	Victor	Stevens	<null>	319 N. Franc... Madison	WI	USA	53703	+1 (608) 25...	<null>	vstevens@y...	5	
44	Terhi	Hämäläinen	<null>	Porthaninka... Helsinki	<null>	Finland	00050	+358 09 87...	<null>	terhi.hamal...	3	
45	Ladislav	Kovács	<null>	Erzsébet krt ... Budapest	<null>	Hungary	H-1073	<null>	<null>	ladislav_kov...	3	
46	Hugh	O'Reilly	<null>	3 Chatham ... Dublin	Dublin	Ireland	<null>	+353 01 67...	<null>	hughoreilly...	3	
20	Dan	Miller	<null>	541 Del Med... Mountain Vi...	CA	USA	94040-111	+1 (650) 64...	<null>	dmiller@co...	4	
47	Lucas	Mancini	<null>	Via Degli Sci... Roma	RM	Italy	00192	+39 06 397...	<null>	lucas.manci...	5	
24	Frank	Ralston	<null>	162 E Super... Chicago	IL	USA	60611	+1 (312) 33...	<null>	fralston@g...	3	
49	Stanisław	Wójcik	<null>	Ordynacka 10 Warsaw	<null>	Poland	00-358	+48 22 828 ...	<null>	stanislaw.w...	4	
50	Enrique	Muñoz	<null>	C/ San Bern... Madrid	<null>	Spain	28015	+34 914 45...	<null>	enrique_mu...	5	
21	Kathy	Chase	<null>	801 W 4th S... Reno	NV	USA	89503	+1 (775) 22...	<null>	kachase@h...	5	
51	Joakim	Johansson	<null>	Celsiusg. 9 Stockholm	<null>	Sweden	11230	+46 08-651 ...	<null>	joakim.joha...	5	



String Analyzer

- The postal code field is composed almost entirely of numbers, with some uppercase letters.
- A few records have a LastName with white spaces.
- As expected, all records only have digits in the Phone and Fax fields.

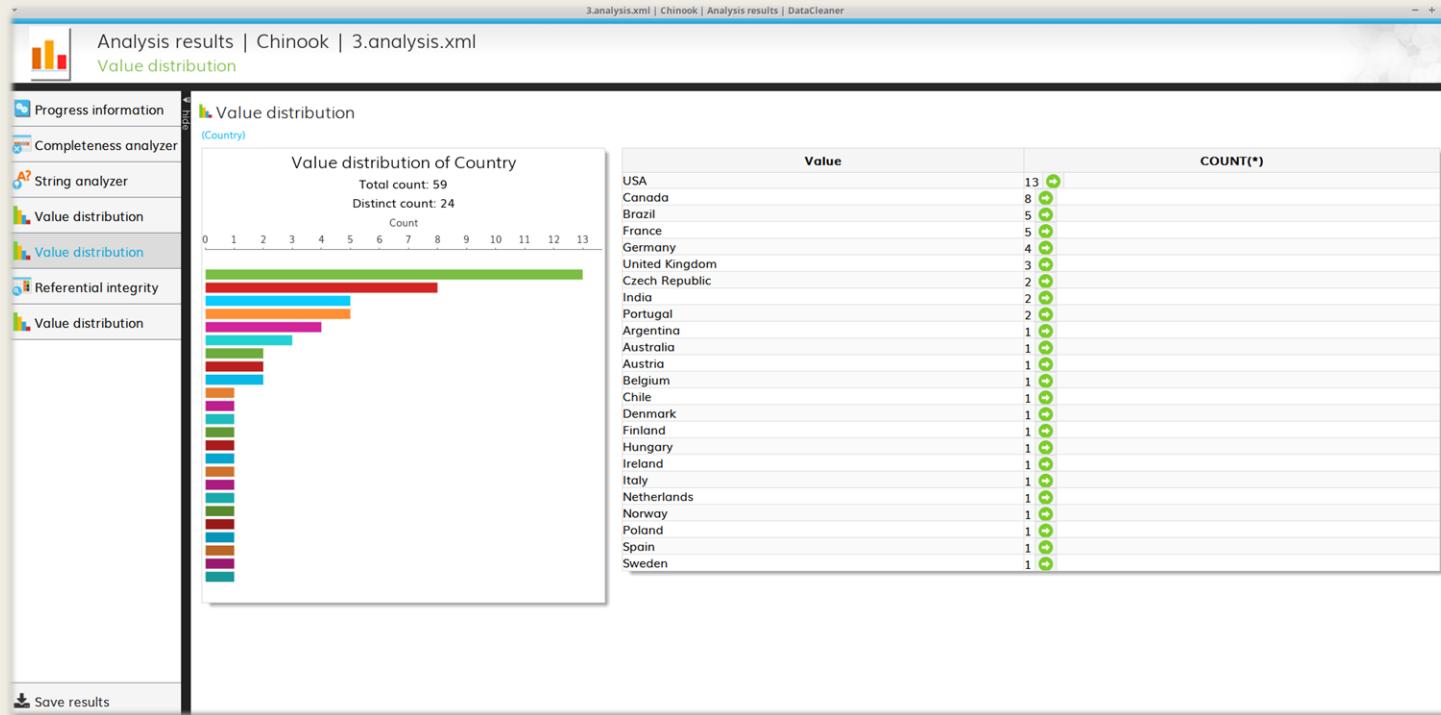


Value Distribution

- Most of the customer records have no company associated (null)
- All the companies associated with customers appear exactly 1 time

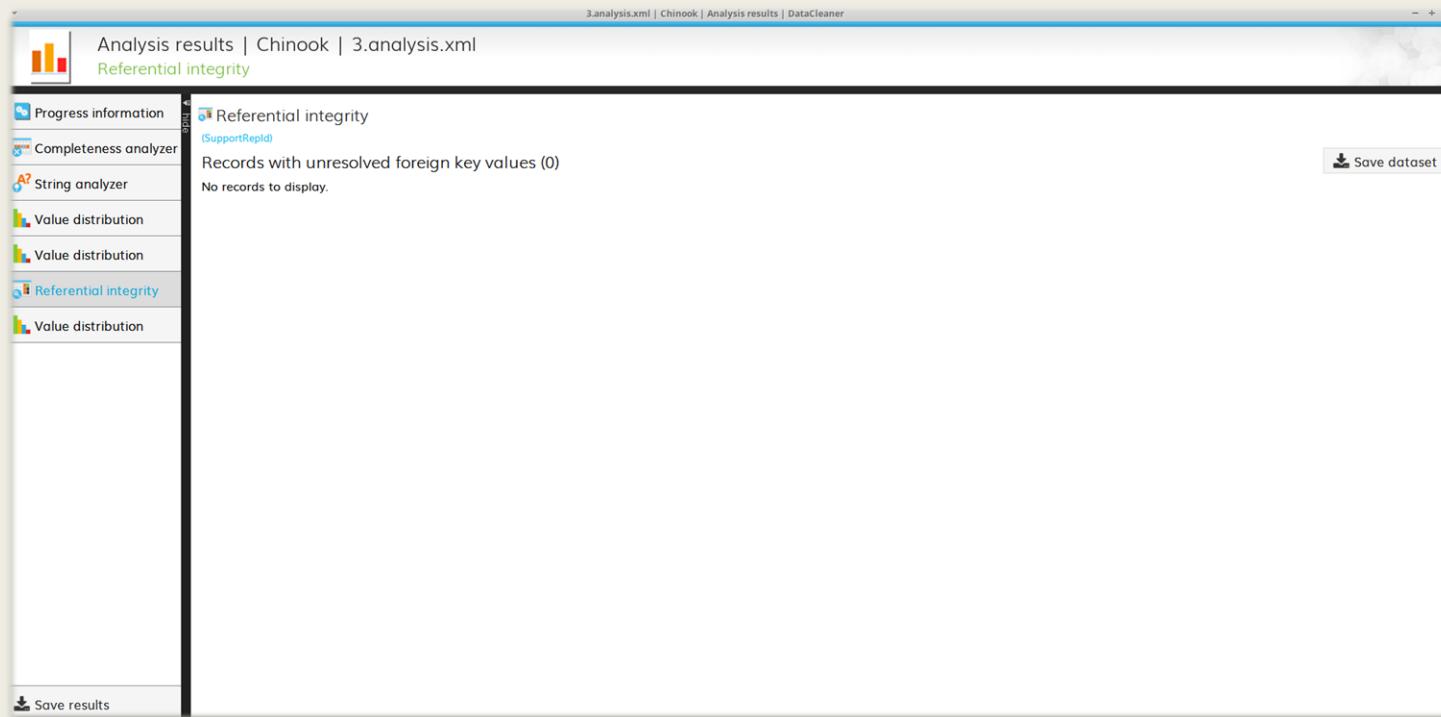
Value Distribution

- Most records are from American countries
- Only two records are from the continent of Asia, namely from India.



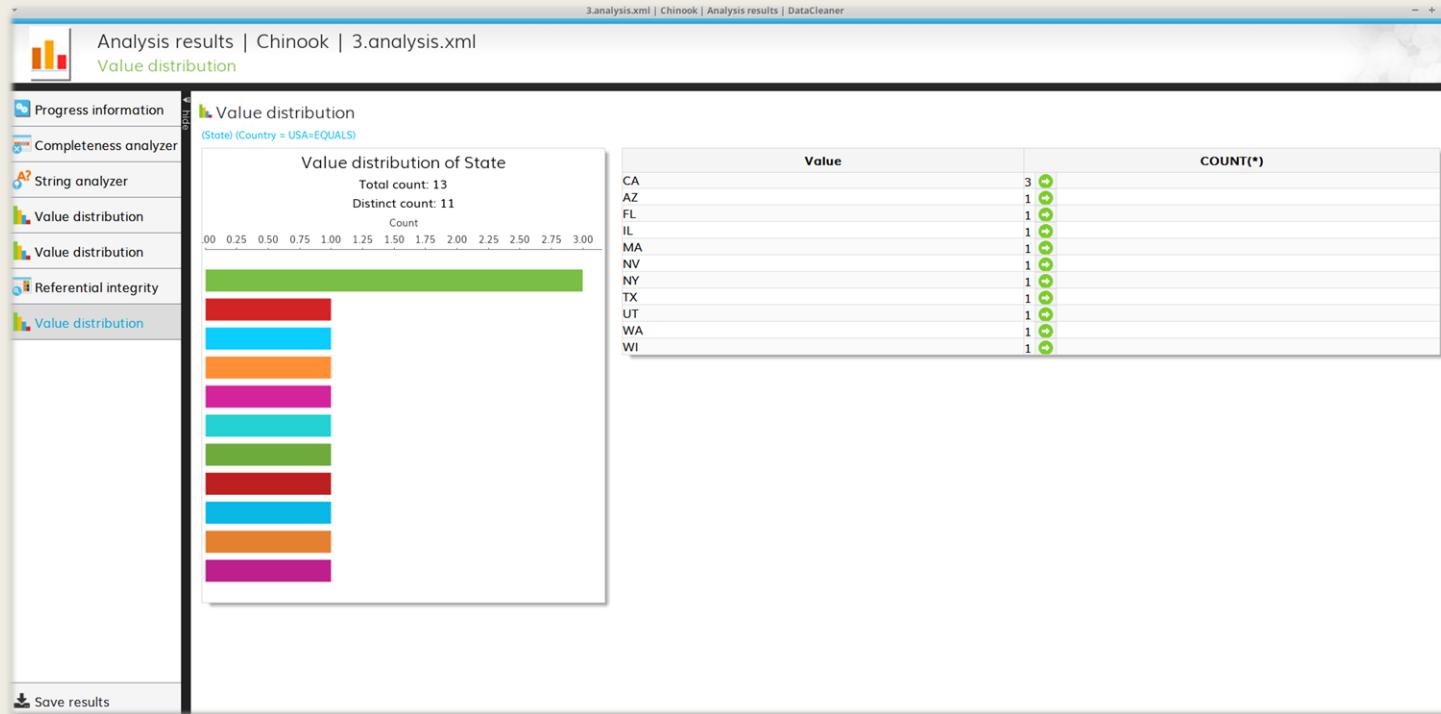
Referential Integrity

- All the customer records have a valid value stored in ‘SupportRepId’ (references the Employee Table)

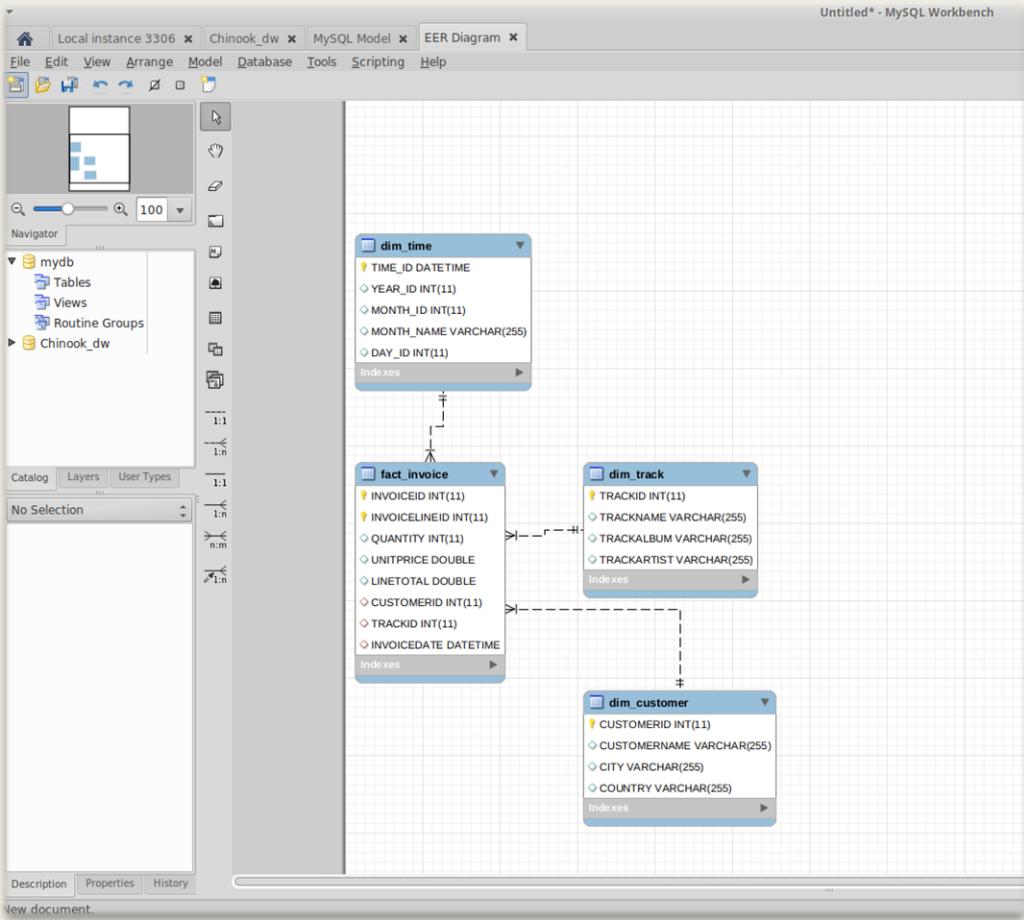


Value Distribution

- Only one state is part of more than one record (CA – California)

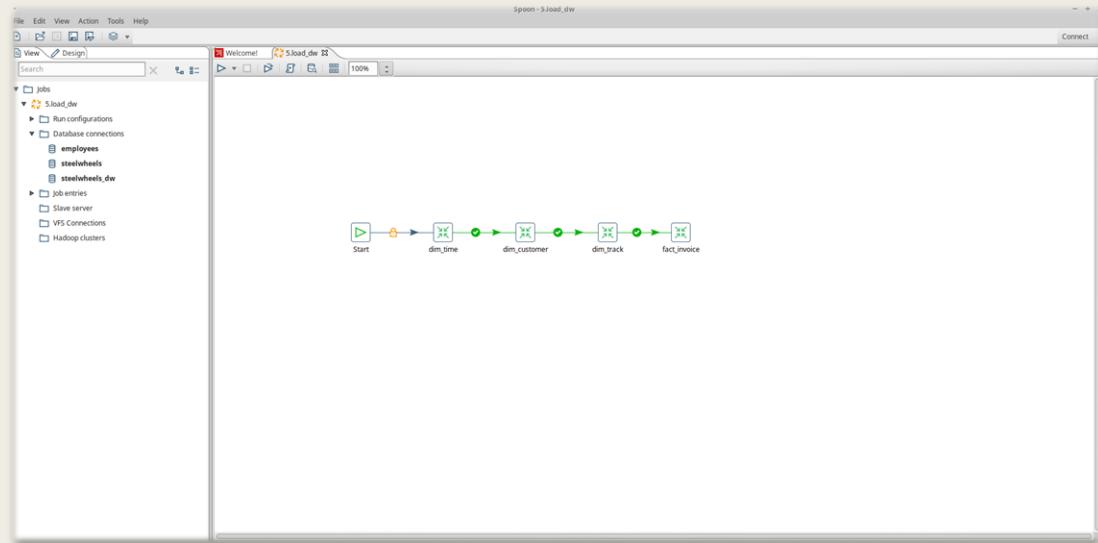


CHALLENGE 4.



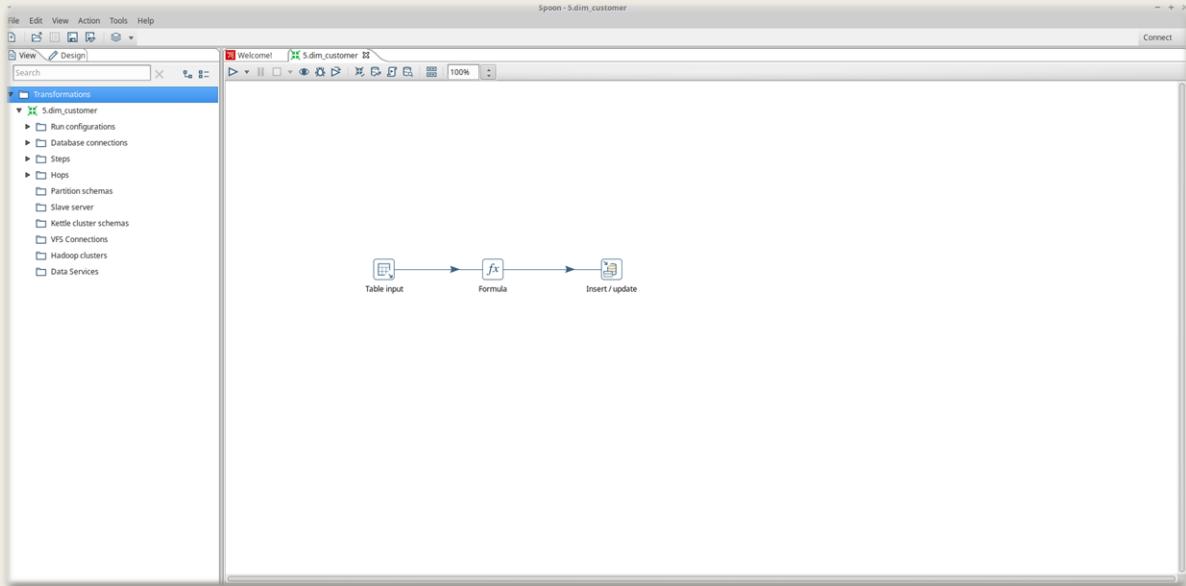
```
4.Chinook_dw.sql
1  DROP DATABASE IF EXISTS Chinook_dw;
2  CREATE DATABASE Chinook_dw;
3
4  USE Chinook_dw;
5
6  CREATE TABLE dim_track (
7      TRACKID INT,
8      TRACKNAME VARCHAR(255),
9      TRACKALBUM VARCHAR(255),
10     TRACKARTIST VARCHAR(255),
11     PRIMARY KEY (TRACKID)
12 );
13
14
15  CREATE TABLE dim_customer (
16      CUSTOMERID INT,
17      CUSTOMERNAME VARCHAR(255),
18      CITY VARCHAR(255),
19      COUNTRY VARCHAR(255),
20      PRIMARY KEY (CUSTOMERID)
21 );
22
23
24  CREATE TABLE dim_time (
25      TIME_ID DATETIME,
26      YEAR_ID INT,
27      MONTH_ID INT,
28      MONTH_NAME VARCHAR(255),
29      DAY_ID INT,
30      PRIMARY KEY (TIME_ID)
31 );
32
33  CREATE TABLE fact_invoice (
34      INVOICEID INT,
35      INVOICELINEID INT,
36      QUANTITY INT,
37      UNITPRICE DOUBLE,
38      LINETOTAL DOUBLE,
39      CUSTOMERID INT,
40      TRACKID INT,
41      INVOICEDATE DATETIME,
42      PRIMARY KEY (INVOICEID, INVOICELINEID),
43      FOREIGN KEY (TRACKID) REFERENCES dim_track (TRACKID),
44      FOREIGN KEY (CUSTOMERID) REFERENCES dim_customer (CUSTOMERID),
45      FOREIGN KEY (INVOICEDATE) REFERENCES dim_time (TIME_ID)
46 );
```

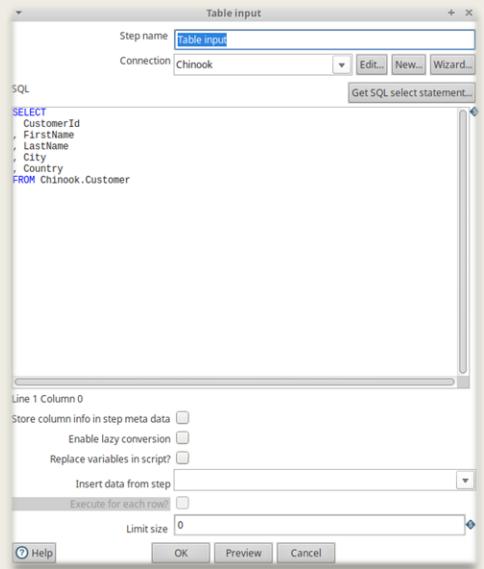
Code used to implement
Chinook_dw



CHALLENGE 5.

DIM CUSTOMER





Rows of step: Table input (59 rows)				
	CustomerID	FirstName	LastName	City
1	1	Luis	Gonçalves	São José dos Campos
2	2	Leontie	Kohler	Stuttgart
3	3	François	Tremblay	Montréal
4	4	Bjørn	Hansen	Oslo
5	5	František	Wichterlová	Prague
6	6	Helena	Hoříčková	Prague
7	7	Astrid	Gruber	Vienne
8	8	Daan	Peeters	Brussels
9	9	Kara	Nielssen	Copenhagen
10	10	Eduardo	Martini	São Paulo
11	11	Alexandre	Rocha	São Paulo
12	12	Roberto	Almeida	Rio de Janeiro
13	13	Fernanda	Ramos	Brasília
14	14	Mark	Philips	Edmonton
15	15	Jennifer	Peterson	Vancouver
16	16	Frank	Harris	Mountain View
17	17	Jack	Smith	Redmond
18	18	Michelle	Brooks	New York
19	19	Tim	Goyer	Cupertino
20	20	Dan	Miller	Mountain View
21	21	Kathy	Chase	Reno
22	22	Heather	Leacock	Orlando
23	23	John	Gordon	Boston
24	24	Frank	Ralston	Chicago
25	25	Victor	Stevens	Madison
26	26	Richard	Cunningham	Fort Worth
27	27	Patrick	Gray	Tucson
28	28	Julia	Barnett	Salt Lake City
29	29	Robert	Brown	Toronto
30	30	Edward	Francis	Ottawa
31	31	Martha	Silk	Halifax
32	32	Aaron	Mitchell	Winnipeg
33	33	Elle	Sullivan	Yellowknife
34	34	Jóão	Fernandes	Lisbon
35	35	Madalena	Sampaio	Porto

TABLE INPUT

Formula

Step name **Formula**

Fields:

New field	Formula	Value type	Length
1 FullName	CONCATENATE([FirstName]; " "; [LastName])	String	

Help **OK** **Cancel**

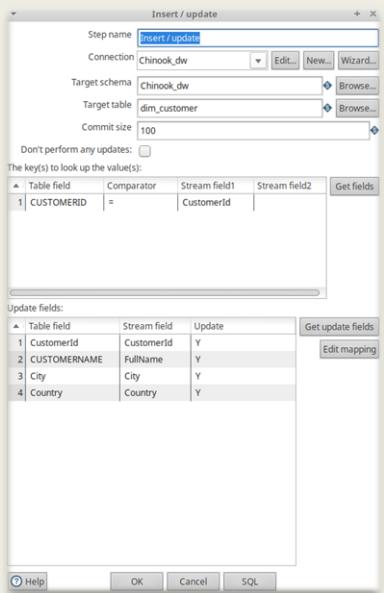
Rows of step Formula (59 rows)

#	CustomerID	FirstName	LastName	City	Country	FullName
1	Luko	Gonçalves	São José dos Campos	Brazil	Luis Gonçalves	
2	Leoni	Köhler	Stuttgart	Germany	Leonia Köhler	
3	François	Tremblay	Montréal	Canada	François Tremblay	
4	Bjørn	Hansen	Oslo	Norway	Bjørn Hansen	
5	František	Wichterlova	Prague	Czech Republic	František Wichterlova	
6	Helena	Högl	Prague	Czech Republic	Helena Högl	
7	Olaf	Götz	Västerås	Sweden	Olaf Götz	
8	Daan	Peters	Brussels	Belgium	Daan Peters	
9	Kara	Nielsen	Copenhagen	Denmark	Kara Nielsen	
10	Eduardo	Martins	São Paulo	Brazil	Eduardo Martins	
11	Alexandre	Rocha	São Paulo	Brazil	Alexandre Rocha	
12	Roberto	Almeida	Rio de Janeiro	Brazil	Roberto Almeida	
13	Fernanda	Ramos	Brasília	Brazil	Fernanda Ramos	
14	Jennifer	Philips	Edmonton	Canada	Jennifer Philips	
15	Jennifer	Peterson	Vancouver	Canada	Jennifer Peterson	
16	Frank	Harris	Mountain View	USA	Frank Harris	
17	Jack	Smith	Redmond	USA	Jack Smith	
18	Michelle	Brooks	New York	USA	Michelle Brooks	
19	Tim	Goyer	Cupertino	USA	Tim Goyer	
20	Dan	Miller	Mountain View	USA	Dan Miller	
21	Patricia	Chen	Seattle	USA	Patricia Chen	
22	Heather	Leacock	Orlando	USA	Heather Leacock	
23	John	Gordon	Boston	USA	John Gordon	
24	Frank	Ralston	Chicago	USA	Frank Ralston	
25	Victor	Stevens	Madison	USA	Victor Stevens	
26	Richard	Cunningham	Fort Worth	USA	Richard Cunningham	
27	Patrick	Gray	Tucson	USA	Patrick Gray	
28	Julia	Burnett	San Jose City	USA	Julia Burnett	
29	Robert	Brown	Toronto	Canada	Robert Brown	
30	Edward	Francis	Ottawa	Canada	Edward Francis	
31	Martha	Silk	Halifax	Canada	Martha Silk	
32	Aaron	Mitchell	Winnipeg	Canada	Aaron Mitchell	
33	Elle	Sullivan	Yellowknife	Canada	Elle Sullivan	
34	João	Fernandes	Lisbon	Portugal	João Fernandes	
35	Madalena	Sampaio	Porto	Portugal	Madalena Sampaio	

Examine preview data

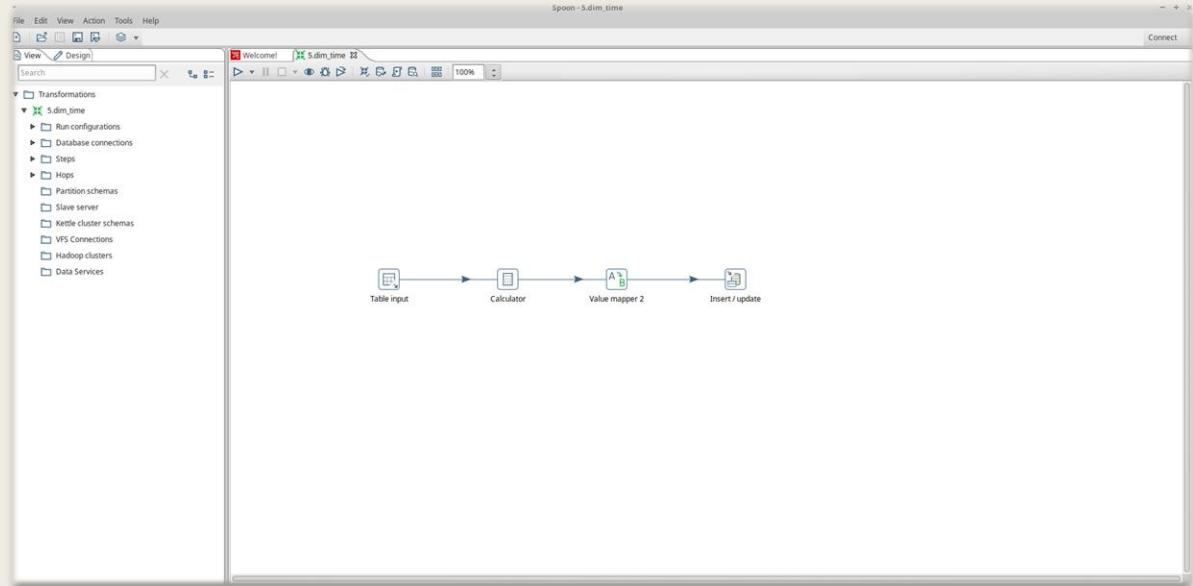
Close

FORMULA

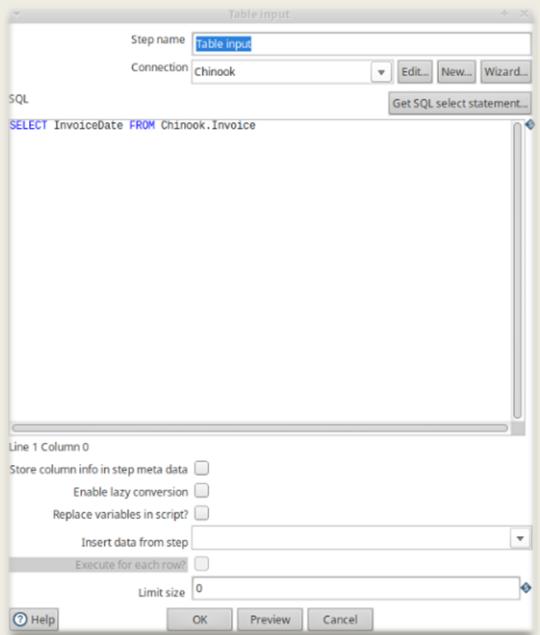


Rows of step: Insert / update (59 rows)						Examine preview Data
	CustomerId	FirstName	LastName	City	Country	FullName
1	1	Luis	Gonçalves	São José dos Campos	Brazil	Luis Gonçalves
2	2	Leonor	Köhler	Stuttgart	Germany	Leonie Köhler
3	3	François	Tremblay	Montréal	Canada	François Tremblay
4	4	Bjørn	Hansen	Oslo	Norway	Bjørn Hansen
5	5	František	Wichterlová	Prague	Czech Republic	František Wichterlová
6	6	Helena	Holý	Prague	Czech Republic	Helena Holý
7	7	Astrid	Gruber	Vienne	Austria	Astrid Gruber
8	8	Daan	Peeters	Brussels	Belgium	Daan Peeters
9	9	Kara	Nielsen	Copenhagen	Denmark	Kara Nielsen
10	10	Eduardo	Martins	São Paulo	Brazil	Eduardo Martins
11	11	Alexandre	Rocha	São Paulo	Brazil	Alexandre Rocha
12	12	Roberto	Almeida	Rio de Janeiro	Brazil	Roberto Almeida
13	13	Fernanda	Ramos	Brasília	Brazil	Fernanda Ramos
14	14	Mark	Philips	Edmonton	Canada	Mark Philips
15	15	Jennifer	Peterson	Vancouver	Canada	Jennifer Peterson
16	16	Frank	Harris	Mountain View	USA	Frank Harris
17	17	Jack	Smith	Redmond	USA	Jack Smith
18	18	Michelle	Brooks	New York	USA	Michelle Brooks
19	19	Tim	Goyer	Cupertino	USA	Tim Goyer
20	20	Dan	Miller	Mountain View	USA	Dan Miller
21	21	Kathy	Chase	Reno	USA	Kathy Chase
22	22	Heather	Leacock	Orlando	USA	Heather Leacock
23	23	John	Gordon	Boston	USA	John Gordon
24	24	Frank	Ralston	Chicago	USA	Frank Ralston
25	25	Victor	Stevens	Madison	USA	Victor Stevens
26	26	Richard	Cunningham	Fort Worth	USA	Richard Cunningham
27	27	Patrick	Gray	Tucson	USA	Patrick Gray
28	28	Julia	Barnett	Salt Lake City	USA	Julia Barnett
29	29	Robert	Brown	Toronto	Canada	Robert Brown
30	30	Edward	Francis	Ottawa	Canada	Edward Francis
31	31	Martha	Silk	Halifax	Canada	Martha Silk
32	32	Aaron	Mitchell	Winnipeg	Canada	Aaron Mitchell
33	33	Ellie	Sullivan	Yellowknife	Canada	Ellie Sullivan
34	34	João	Fernandes	Lisbon	Portugal	João Fernandes
35	35	Madalena	Sampaio	Porto	Portugal	Madalena Sampaio

INSERT / UPDATE



DIM TIME



List of step: Table input (412 rows)	
1	2009/01/01 00:00:00.000000000
2	2009/01/02 00:00:00.000000000
3	2009/01/03 00:00:00.000000000
4	2009/01/06 00:00:00.000000000
5	2009/01/11 00:00:00.000000000
6	2009/01/16 00:00:00.000000000
7	2009/01/01 00:00:00.000000000
8	2009/01/01 00:00:00.000000000
9	2009/02/02 00:00:00.000000000
10	2009/02/03 00:00:00.000000000
11	2009/02/06 00:00:00.000000000
12	2009/02/11 00:00:00.000000000
13	2009/02/16 00:00:00.000000000
14	2009/02/21 00:00:00.000000000
15	2009/03/04 00:00:00.000000000
16	2009/03/05 00:00:00.000000000
17	2009/03/06 00:00:00.000000000
18	2009/03/09 00:00:00.000000000
19	2009/03/14 00:00:00.000000000
20	2009/03/19 00:00:00.000000000
21	2009/04/04 00:00:00.000000000
22	2009/04/04 00:00:00.000000000
23	2009/04/05 00:00:00.000000000
24	2009/04/06 00:00:00.000000000
25	2009/04/09 00:00:00.000000000
26	2009/04/14 00:00:00.000000000
27	2009/04/22 00:00:00.000000000
28	2009/05/01 00:00:00.000000000
29	2009/05/05 00:00:00.000000000
30	2009/05/06 00:00:00.000000000
31	2009/05/07 00:00:00.000000000
32	2009/05/10 00:00:00.000000000
33	2009/05/15 00:00:00.000000000
34	2009/05/23 00:00:00.000000000
35	2009/06/05 00:00:00.000000000
36	2009/06/06 00:00:00.000000000

TABLE INPUT

Calculator

Step name
Calculator

Throw an error on non existing files

Fields:

New field	Calculation	Field A	Field B	Field C	Value type	Length	Precision	Remove	Conversion mask	Decimal symbol	Grouping symbol	Current
1 day_id	Day of month of date A	InvoiceDate			None		N					
2 month_id	Month of date A	InvoiceDate			None		N					
3 year_id	Year of date A	InvoiceDate			None		N					

OK Cancel Help

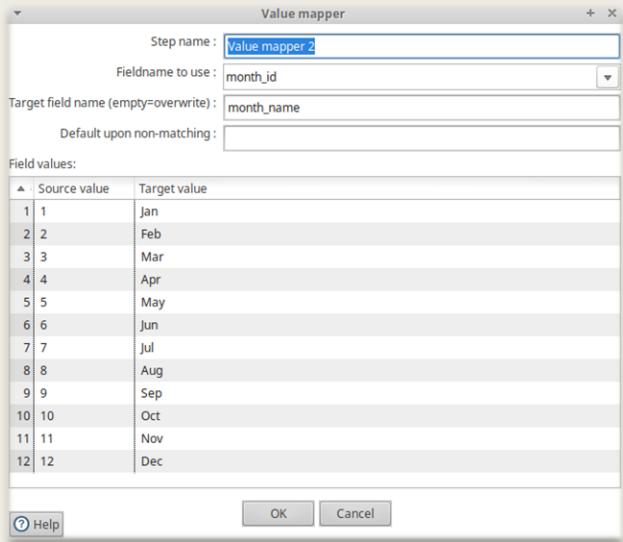
Examine preview data

Rows of step Calculator (412 rows)

InvoiceDate	day_id	month_id	year_id
2009/01/01 00:00:00	1	1	2009
2009/01/02 00:00:00	2	1	2009
2009/01/03 00:00:00	3	1	2009
2009/01/06 00:00:00	6	1	2009
2009/01/11 00:00:00	11	1	2009
2009/01/19 00:00:00	19	1	2009
2009/01/20 00:00:00	1	2	2009
2009/01/21 00:00:00	2	2	2009
2009/01/28 00:00:00	3	2	2009
2009/01/29 00:00:00	6	2	2009
2009/01/31 00:00:00	11	2	2009
2009/02/19 00:00:00	19	2	2009
2009/03/04 00:00:00	4	3	2009
2009/03/04 00:00:00	4	3	2009
2009/03/05 00:00:00	5	3	2009
2009/03/05 00:00:00	5	3	2009
2009/03/09 00:00:00	9	3	2009
2009/03/14 00:00:00	14	3	2009
2009/03/22 00:00:00	22	3	2009
2009/04/04 00:00:00	4	4	2009
2009/04/04 00:00:00	4	4	2009
2009/04/05 00:00:00	5	4	2009
2009/04/05 00:00:00	5	4	2009
2009/04/09 00:00:00	9	4	2009
2009/04/09 00:00:00	9	4	2009
2009/04/14 00:00:00	14	4	2009
2009/04/22 00:00:00	22	4	2009
2009/05/05 00:00:00	5	5	2009
2009/05/05 00:00:00	5	5	2009
2009/05/06 00:00:00	6	5	2009
2009/05/07 00:00:00	7	5	2009
2009/05/10 00:00:00	10	5	2009
2009/05/15 00:00:00	15	5	2009
2009/05/23 00:00:00	23	5	2009
2009/05/25 00:00:00	5	6	2009

Close

CALCULATOR



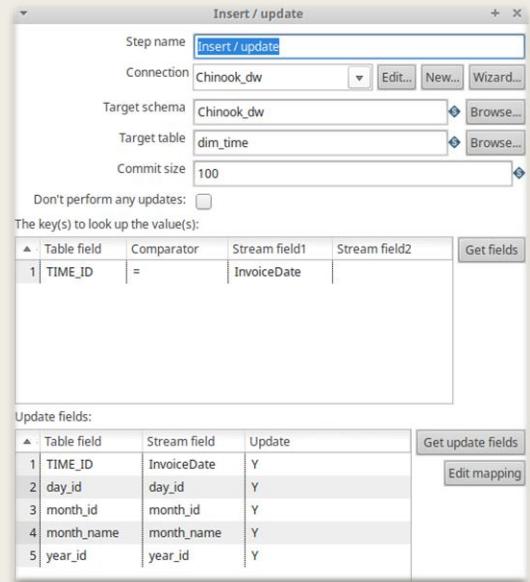
Examine preview data

Step of step Value mapper 2 (412 row)

	day_id	month_id	year_id	month_name
1	2009/01/01 00:00:00.000000000	1	1	2009 Jan
2	2009/01/02 00:00:00.000000000	2	1	2009 Jan
3	2009/01/03 00:00:00.000000000	3	1	2009 Jan
4	2009/01/06 00:00:00.000000000	6	1	2009 Jan
5	2009/01/11 00:00:00.000000000	11	1	2009 Jan
6	2009/01/14 00:00:00.000000000	19	1	2009 Jan
7	2009/01/01 00:00:00.000000000	1	2	2009 Feb
8	2009/01/01 00:00:00.000000000	1	2	2009 Feb
9	2009/02/02 00:00:00.000000000	2	2	2009 Feb
10	2009/02/03 00:00:00.000000000	3	2	2009 Feb
11	2009/02/06 00:00:00.000000000	6	2	2009 Feb
12	2009/02/11 00:00:00.000000000	11	2	2009 Feb
13	2009/02/14 00:00:00.000000000	19	2	2009 Feb
14	2009/02/04 00:00:00.000000000	4	3	2009 Mar
15	2009/03/04 00:00:00.000000000	4	3	2009 Mar
16	2009/03/05 00:00:00.000000000	5	3	2009 Mar
17	2009/03/06 00:00:00.000000000	6	3	2009 Mar
18	2009/03/09 00:00:00.000000000	9	3	2009 Mar
19	2009/03/14 00:00:00.000000000	14	3	2009 Mar
20	2009/03/21 00:00:00.000000000	22	3	2009 Mar
21	2009/04/04 00:00:00.000000000	4	4	2009 Apr
22	2009/04/04 00:00:00.000000000	4	4	2009 Apr
23	2009/04/05 00:00:00.000000000	5	4	2009 Apr
24	2009/04/06 00:00:00.000000000	6	4	2009 Apr
25	2009/04/09 00:00:00.000000000	9	4	2009 Apr
26	2009/04/14 00:00:00.000000000	14	4	2009 Apr
27	2009/04/22 00:00:00.000000000	22	4	2009 Apr
28	2009/05/01 00:00:00.000000000	5	5	2009 May
29	2009/05/03 00:00:00.000000000	5	5	2009 May
30	2009/05/06 00:00:00.000000000	6	5	2009 May
31	2009/05/07 00:00:00.000000000	7	5	2009 May
32	2009/05/10 00:00:00.000000000	10	5	2009 May
33	2009/05/15 00:00:00.000000000	15	5	2009 May
34	2009/05/23 00:00:00.000000000	23	5	2009 May
35	2009/06/05 00:00:00.000000000	5	6	2009 Jun
		4	4	2009 Jun

Close

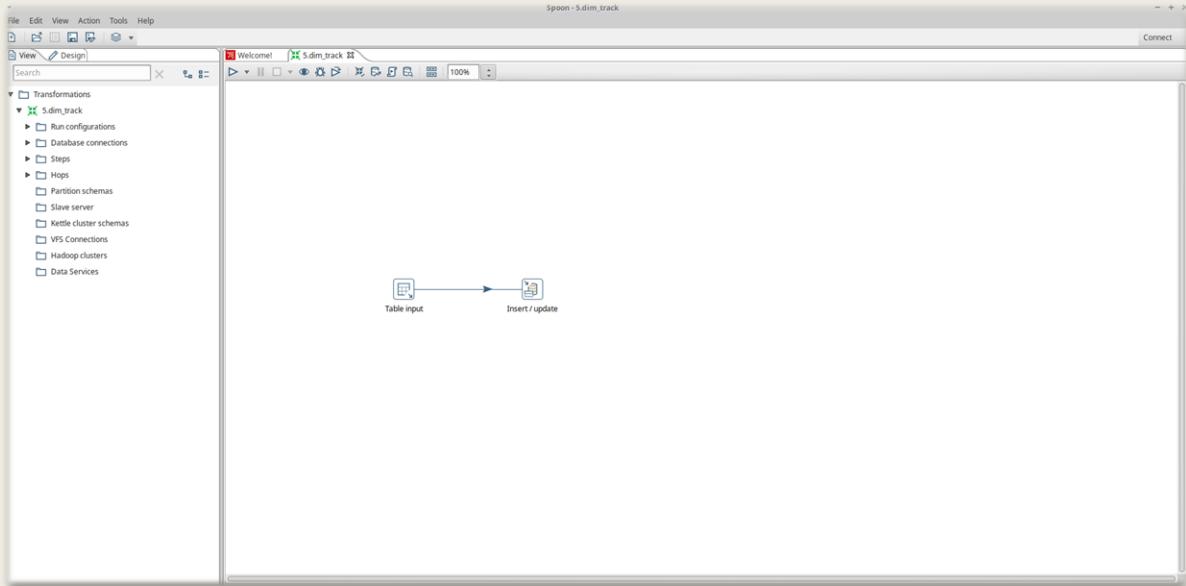
VALUE MAPPER

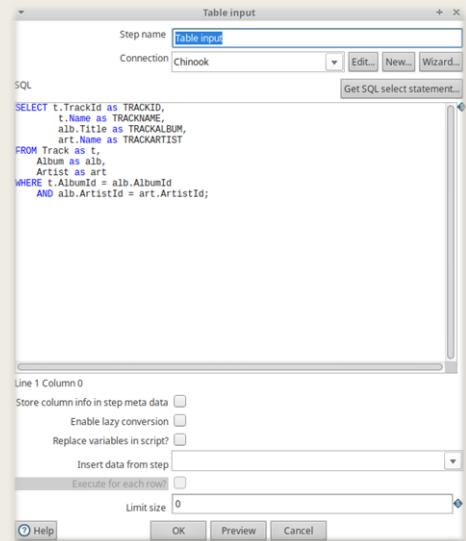


List of step: Insert / update (412 rows)					
	InvoiceDate	day_id	month_id	year_id	month_name
1	2009/01/01 00:00:00.000000000	1	1	2009	Jan
2	2009/01/02 00:00:00.000000000	2	1	2009	Jan
3	2009/01/03 00:00:00.000000000	3	1	2009	Jan
4	2009/01/06 00:00:00.000000000	6	1	2009	Jan
5	2009/01/11 00:00:00.000000000	11	1	2009	Jan
6	2009/01/12 00:00:00.000000000	12	1	2009	Jan
7	2009/01/01 00:00:00.000000000	1	2	2009	Feb
8	2009/01/01 00:00:00.000000000	1	2	2009	Feb
9	2009/02/02 00:00:00.000000000	2	2	2009	Feb
10	2009/02/03 00:00:00.000000000	3	2	2009	Feb
11	2009/02/06 00:00:00.000000000	6	2	2009	Feb
12	2009/02/11 00:00:00.000000000	11	2	2009	Feb
13	2009/02/12 00:00:00.000000000	12	2	2009	Feb
14	2009/03/04 00:00:00.000000000	4	3	2009	Mar
15	2009/03/04 00:00:00.000000000	4	3	2009	Mar
16	2009/03/05 00:00:00.000000000	5	3	2009	Mar
17	2009/03/06 00:00:00.000000000	6	3	2009	Mar
18	2009/03/09 00:00:00.000000000	9	3	2009	Mar
19	2009/03/14 00:00:00.000000000	14	3	2009	Mar
20	2009/03/22 00:00:00.000000000	22	3	2009	Mar
21	2009/04/04 00:00:00.000000000	4	4	2009	Apr
22	2009/04/04 00:00:00.000000000	4	4	2009	Apr
23	2009/04/05 00:00:00.000000000	5	4	2009	Apr
24	2009/04/06 00:00:00.000000000	6	4	2009	Apr
25	2009/04/09 00:00:00.000000000	9	4	2009	Apr
26	2009/04/14 00:00:00.000000000	14	4	2009	Apr
27	2009/04/22 00:00:00.000000000	22	4	2009	Apr
28	2009/05/01 00:00:00.000000000	5	5	2009	May
29	2009/05/01 00:00:00.000000000	5	5	2009	May
30	2009/05/06 00:00:00.000000000	6	5	2009	May
31	2009/05/07 00:00:00.000000000	7	5	2009	May
32	2009/05/10 00:00:00.000000000	10	5	2009	May
33	2009/05/15 00:00:00.000000000	15	5	2009	May
34	2009/05/23 00:00:00.000000000	23	5	2009	May
35	2009/06/05 00:00:00.000000000	5	6	2009	Jun
		4	4	2009	Jun

INSERT / UPDATE

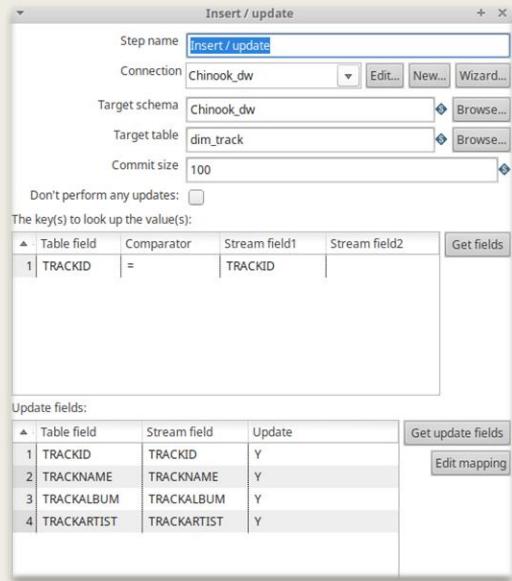
DIM TRACK





Rows of step: Table input (1000 rows)				
#	TRACKID	TRACKNAME	TRACKALBUM	TRACKARTIST
1	1	For Those About To Rock (We Salute You)	For Those About To Rock We Salute You	AC/DC
2	6	Put The Finger On You	For Those About To Rock We Salute You	AC/DC
3	7	Let's Get It Up	For Those About To Rock We Salute You	AC/DC
4	8	Inject The Venom	For Those About To Rock We Salute You	AC/DC
5	9	Snowball	For Those About To Rock We Salute You	AC/DC
6	10	Evil Walks	For Those About To Rock We Salute You	AC/DC
7	11	It's A Hard Life	For Those About To Rock We Salute You	AC/DC
8	12	Breaking The Rules	For Those About To Rock We Salute You	AC/DC
9	13	Night Of The Long Knives	For Those About To Rock We Salute You	AC/DC
10	14	Spellbound	For Those About To Rock We Salute You	AC/DC
11	2	Balls to the Wall	Balls to the Wall	Accept
12	3	Fast As A Shark	Restless and Wild	Accept
13	4	Restless and Wild	Restless and Wild	Accept
14	5	It's Gonna Be	Restless and Wild	Accept
15	15	Go Down	Let There Be Rock	AC/DC
16	16	Dog Eat Dog	Let There Be Rock	AC/DC
17	17	Let There Be Rock	Let There Be Rock	AC/DC
18	18	Bad Boy Boogie	Let There Be Rock	AC/DC
19	19	Problem Child	Let There Be Rock	AC/DC
20	20	Overdrive	Let There Be Rock	AC/DC
21	21	There's A Bad Place To Be	Let There Be Rock	AC/DC
22	22	Whole Lotta Rosie	Let There Be Rock	AC/DC
23	23	Walk On Water	Big Ones	Aerosmith
24	24	Love In An Elevator	Big Ones	Aerosmith
25	25	Rag Doll	Big Ones	Aerosmith
26	26	What It Takes	Big Ones	Aerosmith
27	27	Dude (Looks Like A Lady)	Big Ones	Aerosmith
28	28	Don't Wanna Make A Gun	Big Ones	Aerosmith
29	29	Cryin'	Big Ones	Aerosmith
30	30	Amazing	Big Ones	Aerosmith
31	31	Blind Man	Big Ones	Aerosmith
32	32	Deuces Are Wild	Big Ones	Aerosmith
33	33	The Other Side	Big Ones	Aerosmith
34	34	Crazy	Big Ones	Aerosmith
35	35	Eat The Rich	Big Ones	Aerosmith
36	36	Aw... (You're Gonna Miss Me)	Big Ones	Aerosmith

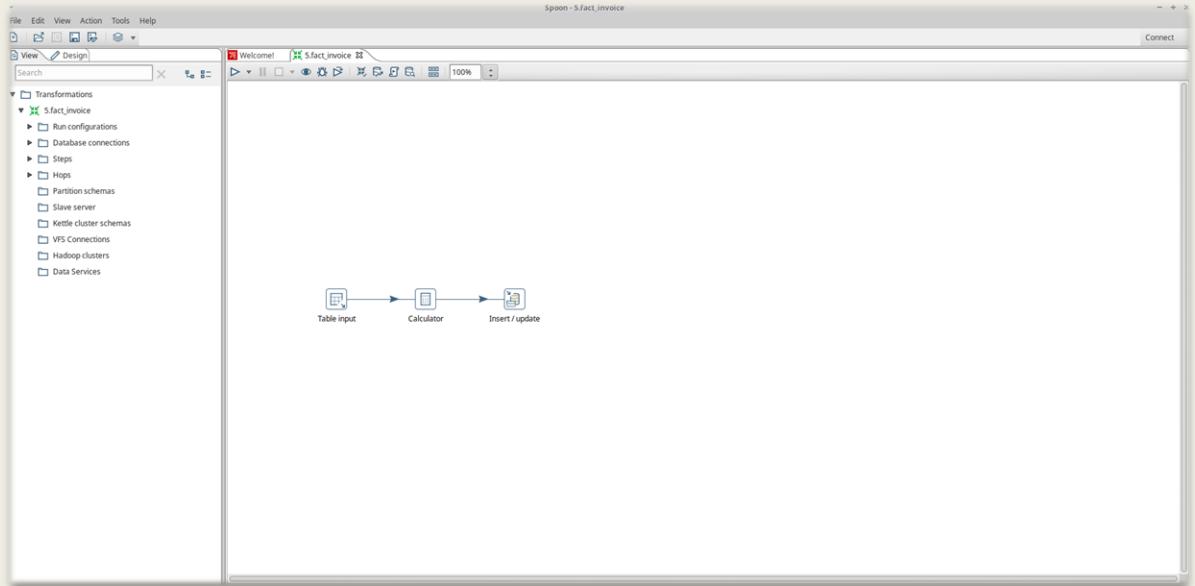
TABLE INPUT

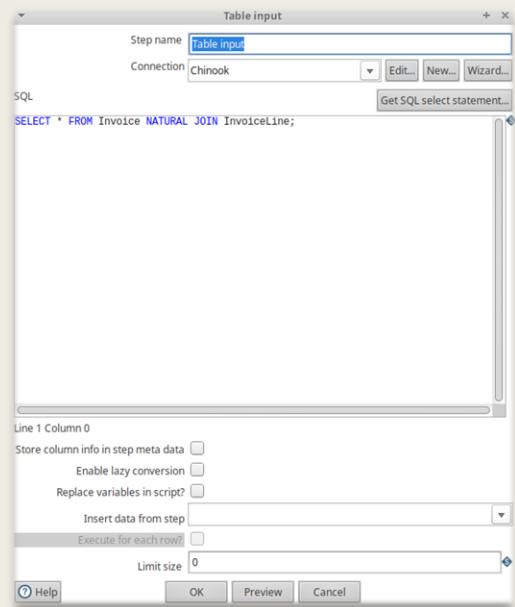


Rows of step Insert / update (1000 rows)			
	TRACKID	TRACKNAME	TRACKALBUM
1	1	For Those About To Rock (We Salute You)	For Those About To Rock We Salute You
2	6	Put The Finger On You	For Those About To Rock We Salute You
3	7	Let's Get It Up	For Those About To Rock We Salute You
4	8	Inject The Venom	For Those About To Rock We Salute You
5	9	Snowballled	For Those About To Rock We Salute You
6	10	Evil Walks	For Those About To Rock We Salute You
7	11	Die	For Those About To Rock We Salute You
8	12	Breaking The Rules	For Those About To Rock We Salute You
9	13	Night Of The Long Knives	For Those About To Rock We Salute You
10	14	Spellbound	For Those About To Rock We Salute You
11	2	Balls to the Wall	Balls to the Wall
12	3	Fast As a Shark	Restless and Wild
13	4	Restless and Wild	Accept
14	5	Restless and Wild	Accept
15	15	Go Down	Accept
16	16	Dog Eat Dog	Let There Be Rock
17	17	Let There Be Rock	AC/DC
18	18	Bad Boy Boogie	Let There Be Rock
19	19	Problem Child	Let There Be Rock
20	20	Overdrive	Let There Be Rock
21	21	There's A Bad Place To Be	Let There Be Rock
22	22	Whole Lotta Rosie	Let There Be Rock
23	23	Walk On Water	Big Ones
24	24	Love In An Elevator	Aerosmith
25	25	Rag Doll	Aerosmith
26	26	What It Takes	Aerosmith
27	27	Dude (Looks Like A Lady)	Aerosmith
28	28	Don't Wanna Make A Gun	Aerosmith
29	29	Cryin'	Aerosmith
30	30	Amazing	Aerosmith
31	31	Blind Man	Aerosmith
32	32	Deuces Are Wild	Big Ones
33	33	The Other Side	Aerosmith
34	34	Crazy	Aerosmith
35	35	Eat The Rich	Aerosmith
36	36	Ac... (truncated)	Aerosmith

INSERT / UPDATE

FACT INVOICE





rows of step: Table input (1000 rows)

	InvoiceId	CustomerId	InvoiceDate	BillingAddress	BillingCity	BillingState	BillingCountry	BillingPostalCode	Total	InvoiceLineId	TrackId	UnitPrice	Quantity
1	1	2	2009/01/01 00:00:00.000000000	Theodor-Heuss-Straße 34	Stuttgart	<null>	Germany	70174	1.98	1	2	0.99	1
2	1	2	2009/01/01 00:00:00.000000000	Theodor-Heuss-Straße 34	Stuttgart	<null>	Germany	70174	1.98	2	4	0.99	1
3	2	4	2009/01/02 00:00:00.000000000	Ullevåsveien 14	Oslo	<null>	Norway	0171	3.96	3	6	0.99	1
4	2	4	2009/01/02 00:00:00.000000000	Ullevåsveien 14	Oslo	<null>	Norway	0171	3.96	4	8	0.99	1
5	2	4	2009/01/02 00:00:00.000000000	Ullevåsveien 14	Oslo	<null>	Norway	0171	3.96	5	10	0.99	1
6	2	4	2009/01/02 00:00:00.000000000	Ullevåsveien 14	Oslo	<null>	Norway	0171	3.96	6	12	0.99	1
7	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	7	16	0.99	1
8	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	8	20	0.99	1
9	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	9	24	0.99	1
10	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	10	28	0.99	1
11	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	11	32	0.99	1
12	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	12	36	0.99	1
13	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	13	42	0.99	1
14	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	14	48	0.99	1
15	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	15	54	0.99	1
16	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	16	60	0.99	1
17	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	17	66	0.99	1
18	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	18	72	0.99	1
19	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	19	78	0.99	1
20	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	20	84	0.99	1
21	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	21	90	0.99	1
22	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	22	99	0.99	1
23	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	23	108	0.99	1
24	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	24	117	0.99	1
25	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	25	126	0.99	1
26	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	26	135	0.99	1
27	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	27	144	0.99	1
28	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	28	153	0.99	1
29	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	29	162	0.99	1
30	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	30	171	0.99	1
31	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	31	180	0.99	1
32	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	32	189	0.99	1
33	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	33	198	0.99	1
34	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	34	207	0.99	1
35	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	35	216	0.99	1

TABLE INPUT

Calculator

Step name: **Calculator**

Throw an error on non existing files

Fields:

New field	Calculation	Field A	Field B	Field C	Value type	Length	Precision	Remove	Conversion mask	Decimal symbol	Grouping symbol	Currency symbol
1 LINETOTAL	A * B	UnitPrice	Quantity		Number	2	N					

OK Cancel Help

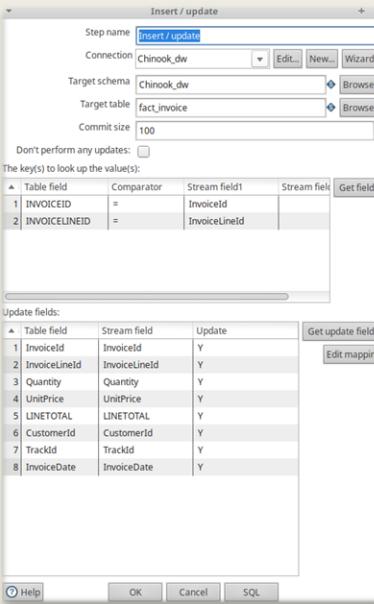
Examine preview data

Rows of step: Calculator (1000 rows)

InvoiceId	CustomerId	InvoiceDate	BillingAddress	BillingCity	BillingState	BillingCountry	BillingPostalCode	Total	InvoiceLineId	TrackId	UnitPrice	Quantity	LINETOTAL
1	1	2009/01/01 00:00:00.000000000	Theodor-Heuss-Straße 34	Stuttgart	<null>	Germany	70174	1.98	1	2	0.99	1	0.99
2	1	2009/01/01 00:00:00.000000000	Theodor-Heuss-Straße 34	Stuttgart	<null>	Germany	70174	1.98	2	4	0.99	1	0.99
3	2	2009/01/02 00:00:00.000000000	Ullevålveien 14	Oslo	<null>	Norway	0171	3.96	3	6	0.99	1	0.99
4	2	2009/01/02 00:00:00.000000000	Ullevålveien 14	Oslo	<null>	Norway	0171	3.96	4	8	0.99	1	0.99
5	2	2009/01/02 00:00:00.000000000	Ullevålveien 14	Oslo	<null>	Norway	0171	3.96	5	10	0.99	1	0.99
6	2	2009/01/02 00:00:00.000000000	Ullevålveien 14	Oslo	<null>	Norway	0171	3.96	6	12	0.99	1	0.99
7	3	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	7	16	0.99	1	0.99
8	3	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	8	20	0.99	1	0.99
9	3	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	9	24	0.99	1	0.99
10	3	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	10	28	0.99	1	0.99
11	3	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	11	32	0.99	1	0.99
12	3	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	12	36	0.99	1	0.99
13	4	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	13	42	0.99	1	0.99
14	4	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	14	48	0.99	1	0.99
15	4	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	15	54	0.99	1	0.99
16	4	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	16	60	0.99	1	0.99
17	4	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	17	66	0.99	1	0.99
18	4	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	18	72	0.99	1	0.99
19	4	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	19	78	0.99	1	0.99
20	4	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	20	84	0.99	1	0.99
21	4	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	21	90	0.99	1	0.99
22	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	22	99	0.99	1	0.99
23	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	23	108	0.99	1	0.99
24	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	24	117	0.99	1	0.99
25	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	25	126	0.99	1	0.99
26	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	26	135	0.99	1	0.99
27	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	27	144	0.99	1	0.99
28	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	28	153	0.99	1	0.99
29	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	29	162	0.99	1	0.99
30	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	30	171	0.99	1	0.99
31	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	31	180	0.99	1	0.99
32	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	32	189	0.99	1	0.99
33	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	33	198	0.99	1	0.99
34	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	34	207	0.99	1	0.99
35	5	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	35	216	0.99	1	0.99

Close Stop Get more rows

CALCULATOR



Rows of step: Insert / update (1000 rows)

	InvoiceId	CustomerId	InvoiceDate	BillingAddress	BillingCity	BillingState	BillingCountry	BillingPostalCode	Total	InvoiceLineId	TrackId	UnitPrice	Quantity	LINETOTAL
1	1	2	2009/01/01 00:00:00.000000000	Theodor-Heuss-Straße 34	Stuttgart	<null>	Germany	70174	1.98	1	2	0.99	1	0.99
2	1	2	2009/01/01 00:00:00.000000000	Theodor-Heuss-Straße 34	Stuttgart	<null>	Germany	70174	1.98	2	4	0.99	1	0.99
3	2	4	2009/01/02 00:00:00.000000000	Ullevålsveien 14	Oslo	<null>	Norway	0171	3.96	3	6	0.99	1	0.99
4	2	4	2009/01/02 00:00:00.000000000	Ullevålsveien 14	Oslo	<null>	Norway	0171	3.96	4	8	0.99	1	0.99
5	2	4	2009/01/02 00:00:00.000000000	Ullevålsveien 14	Oslo	<null>	Norway	0171	3.96	5	10	0.99	1	0.99
6	2	4	2009/01/02 00:00:00.000000000	Ullevålsveien 14	Oslo	<null>	Norway	0171	3.96	6	12	0.99	1	0.99
7	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	7	16	0.99	1	0.99
8	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	8	20	0.99	1	0.99
9	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	9	24	0.99	1	0.99
10	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	10	28	0.99	1	0.99
11	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	11	32	0.99	1	0.99
12	3	8	2009/01/03 00:00:00.000000000	Grétrystraat 63	Brussels	<null>	Belgium	1000	5.94	12	36	0.99	1	0.99
13	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	13	42	0.99	1	0.99
14	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	14	48	0.99	1	0.99
15	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	15	54	0.99	1	0.99
16	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	16	60	0.99	1	0.99
17	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	17	66	0.99	1	0.99
18	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	18	72	0.99	1	0.99
19	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	19	78	0.99	1	0.99
20	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	20	84	0.99	1	0.99
21	4	14	2009/01/06 00:00:00.000000000	8210 111 ST NW	Edmonton	AB	Canada	T6G 2C7	8.91	21	90	0.99	1	0.99
22	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	22	99	0.99	1	0.99
23	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	23	108	0.99	1	0.99
24	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	24	117	0.99	1	0.99
25	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	25	126	0.99	1	0.99
26	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	26	135	0.99	1	0.99
27	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	27	144	0.99	1	0.99
28	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	28	153	0.99	1	0.99
29	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	29	162	0.99	1	0.99
30	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	30	171	0.99	1	0.99
31	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	31	180	0.99	1	0.99
32	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	32	189	0.99	1	0.99
33	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	33	198	0.99	1	0.99
34	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	34	207	0.99	1	0.99
35	5	23	2009/01/11 00:00:00.000000000	69 Salem Street	Boston	MA	USA	2113	13.86	35	216	0.99	1	0.99

INSERT / UPDATE

6. queries.sql

```
2 | SELECT TRACKARTIST as Artist, YEAR_ID AS Year, SUM(LINETOTAL) AS Sales
3 | FROM fact_invoice NATURAL JOIN
4 |     dim_track NATURAL JOIN
5 |     dim_time
6 | GROUP BY Artist, Year
7 | ORDER BY Sales DESC;
```

CHALLENGE 6. QUERY 1

CHALLENGE 6. QUERY 1

- Summing **Sales** grouped by **Artist** and **Year**
- Gives a perspective of how big the sales were for each Artist by Year
- Allows a comparison between Artists and Years

```
Terminal - aid@virtualbox:~  
File Edit View Terminal Tabs Help  
mysql> SELECT TRACKARTIST as Artist, YEAR_ID AS Year, SUM(LINETOTAL) AS Sales FROM fact_invoice NATURAL JOIN dim_track NATURAL JOIN dim_time GROUP BY Artist, Year ORDER BY Sales DESC LIMIT 50;  


| Artist                  | Year | Sales             |
|-------------------------|------|-------------------|
| Iron Maiden             | 2009 | 9979.199999998269 |
| Iron Maiden             | 2010 | 9840.5999999983   |
| Iron Maiden             | 2011 | 9840.5999999983   |
| Iron Maiden             | 2012 | 10000.5999999983  |
| Iron Maiden             | 2013 | 9563.39999999836  |
| U2                      | 2009 | 7626.059999998788 |
| U2                      | 2010 | 7521.029999998811 |
| U2                      | 2011 | 7521.029999998811 |
| U2                      | 2012 | 7300.169999998858 |
| U2                      | 2013 | 7300.169999998858 |
| Metallica               | 2009 | 6486.479999998039 |
| Metallica               | 2010 | 6396.389999998059 |
| Metallica               | 2011 | 6396.389999998059 |
| Metallica               | 2012 | 6396.389999998059 |
| Metallica               | 2013 | 6216.289999998099 |
| Led Zeppelin            | 2009 | 6201.35999999102  |
| Led Zeppelin            | 2010 | 6115.22999999121  |
| Led Zeppelin            | 2011 | 6115.22999999121  |
| Led Zeppelin            | 2012 | 6000.19999999121  |
| Led Zeppelin            | 2013 | 5842.96999999159  |
| Lost                    | 2009 | 5874.47999999589  |
| Lost                    | 2010 | 5792.8899999958   |
| Lost                    | 2011 | 5792.8899999958   |
| Lost                    | 2012 | 5792.8899999958   |
| Lost                    | 2013 | 5629.19999999616  |
| The Office              | 2009 | 3581.99999999404  |
| The Office              | 2010 | 3532.24999999846  |
| The Office              | 2011 | 3532.24999999846  |
| The Office              | 2012 | 3532.24999999846  |
| The Office              | 2013 | 3433.19999999846  |
| Os Paralamas Do Sucesso | 2009 | 3207.599999997616 |
| Os Paralamas Do Sucesso | 2010 | 3163.049999997714 |
| Os Paralamas Do Sucesso | 2011 | 3163.049999997714 |
| Os Paralamas Do Sucesso | 2012 | 3163.049999997714 |
| Deep Purple             | 2009 | 3136.15999999773  |
| Deep Purple             | 2010 | 3092.75999999787  |
| Deep Purple             | 2011 | 3092.75999999787  |
| Deep Purple             | 2012 | 3092.75999999787  |
| Os Paralamas Do Sucesso | 2010 | 3073.04999999791  |
| Deep Purple             | 2013 | 3073.04999999791  |
| Faith No More           | 2009 | 2993.759999998088 |
| Faith No More           | 2010 | 2952.17999999818  |
| Faith No More           | 2011 | 2952.17999999818  |
| Faith No More           | 2012 | 2952.17999999818  |
| Faith No More           | 2013 | 2860.049999993403 |
| Eric Clapton            | 2009 | 2851.1999999984   |
| Eric Clapton            | 2012 | 2811.59999999849  |
| Eric Clapton            | 2010 | 2811.59999999849  |
| Eric Clapton            | 2011 | 2811.59999999849  |
| R.E.M.                  | 2009 | 2779.91999999835  |

  
0 rows in set (1.44 sec)  
mysql>
```

6.queries.sql

```
10  SELECT TRACKALBUM as Album, COUNTRY AS Country, COUNT(*) AS Units
11  FROM fact_invoice NATURAL JOIN
12    dim_track NATURAL JOIN
13    dim_customer
14  GROUP BY Album, Country
15  ORDER BY Units DESC;
16
```

CHALLENGE 6. QUERY 2

CHALLENGE 6. QUERY 2

- Counting Units sold by Album and Country
- Counts how many copies were sold of each album in each country
- Allows the comparison of how well was each album in each country

```
File Edit View Terminal Tabs Help
Terminal - aid@virtualbox:~          + + x
mysql> SELECT TRACKALBUM AS Album, COUNTRY AS Country, COUNT(*) AS Units FROM fact_invoice NATURAL JOIN dim_track NATURAL JOIN dim_customer GROUP BY Album, Country ORDER BY Units DESC LIMIT 50;
+-----+-----+-----+
| Album | Country | Units |
+-----+-----+-----+
| The Office, Season 3 | USA | 14 |
| Prenda Minha | USA | 11 |
| Unplugged | USA | 11 |
| ChililBrazil (Disc 2) | USA | 10 |
| Arquivo II | Canada | 9 |
| Back to Black | France | 9 |
| Minha Historia | USA | 8 |
| International Superhits | Canada | 8 |
| The Best Of R.E.M.: The IRS Years | Brazil | 7 |
| Use Your Illusion I | Canada | 7 |
| Vinicius De Moraes - Sem Limite | Canada | 7 |
| Chronicle, Vol. 1 | France | 7 |
| B-Sides 1980-1990 | USA | 7 |
| A-Sides | USA | 7 |
| Vinicius De Moraes - Sem Limite | USA | 7 |
| Lost, Season 2 | Ireland | 7 |
| Black Album | USA | 6 |
| Saype Sem Limite (Disc 2) | USA | 6 |
| Use Your Illusion I | USA | 6 |
| Minha Historia | Brazil | 6 |
| Greatest Hits I | Canada | 6 |
| Body Count | France | 6 |
| Minha Historia | USA | 6 |
| Up In Smoke | India | 6 |
| Saype Sem Limite (Disc 1) | USA | 6 |
| Afroclerdelia | Ireland | 6 |
| Living After Midnight | Canada | 6 |
| Acustico MTV | Brazil | 6 |
| Garage Inc. (Disc 2) | Canada | 6 |
| The Best Of Men At Work | Brazil | 6 |
| Acustico | Canada | 5 |
| Pure Cult: The Best Of The Cult (For Rockers, Ravers, Lovers & Sinners) [UK] | USA | 5 |
| Load | United Kingdom | 5 |
| My Generation - The Very Best Of The Who | Spain | 5 |
| How To Dismantle An Atomic Bomb | France | 5 |
| Djavan Ao Vivo - Vol. 1 | Germany | 5 |
| Afroclerdelia | Brazil | 5 |
| Acustico | Canada | 5 |
| Greatest Hits | Finland | 5 |
| War | USA | 5 |
| No Prayer For The Dying | United Kingdom | 5 |
| Use Your Illusion II | USA | 5 |
| Unplugged | Germany | 5 |
| Greatest Hits | Brazil | 5 |
| New Adventures In Hi-Fi | Brazil | 5 |
| Greatest Kiss | Finland | 5 |
| The Best Of R.E.M.: The IRS Years | USA | 5 |
| Prenda Minha | Czech Republic | 5 |
| Unplugged (Live) | Canada | 5 |
| Minha Historia | Canada | 5 |
+-----+-----+-----+
0 rows in set (0.01 sec)

mysql>
```

CHALLENGE

7.

```
7.Schema.xml
1  <Schema name="Chinook dw">
2    <Cube name="Invoices" visible="true" cache="true" enabled="true">
3      <Table name="fact_invoice">
4        </Table>
5        <Dimension type="StandardDimension" visible="true" foreignKey="CUSTOMERID" name="Customer">
6          <Hierarchy name="Customer Hierarchy" visible="true" hasAll="true" allMemberName="All Customers" primaryKey="CUSTOMERID">
7            <Table name="dim_customer">
8              </Table>
9              <Level name="Country" visible="true" column="COUNTRY" type="String" uniqueMembers="false" LevelType="Regular">
10             </Level>
11             <Level name="City" visible="true" column="CITY" type="String" uniqueMembers="false" LevelType="Regular">
12               </Level>
13               <Level name="Customer Name" visible="true" column="CUSTOMERNAME" type="String" uniqueMembers="false" LevelType="Regular">
14                 </Level>
15               </Hierarchy>
16             </Dimension>
17             <Dimension type="StandardDimension" visible="true" foreignKey="TRACKID" name="Track">
18               <Hierarchy name="Track Hierarchy" visible="true" hasAll="true" allMemberName="All Tracks" primaryKey="TRACKID">
19                 <Table name="dim_track">
20                   </Table>
21                   <Level name="Track Artist" visible="true" column="TRACKARTIST" type="String" uniqueMembers="false" LevelType="Regular">
22                     </Level>
23                     <Level name="Track Album" visible="true" column="TRACKALBUM" type="String" uniqueMembers="false" LevelType="Regular">
24                       </Level>
25                       <Level name="Track Name" visible="true" column="TRACKNAME" type="String" uniqueMembers="false" LevelType="Regular">
26                         </Level>
27                       </Hierarchy>
28                     </Dimension>
29                     <Dimension type="TimeDimension" visible="true" foreignKey="INVOICEDATE" name="Time">
30                       <Hierarchy name="Time Hierarchy" visible="true" hasAll="true" allMemberName="All Years" primaryKey="TIME_ID">
31                         <Table name="dim_time">
32                           </Table>
33                           <Level name="Year" visible="true" column="YEAR_ID" type="Integer" uniqueMembers="false" LevelType="TimeYears">
34                             </Level>
35                             <Level name="Month" visible="true" column="MONTH_NAME" ordinalColumn="MONTH_ID" type="String" uniqueMembers="false" LevelType="TimeMonths">
36                               </Level>
37                               <Level name="Day" visible="true" column="DAY_ID" type="Integer" uniqueMembers="false" LevelType="TimeDays">
38                                 </Level>
39                               </Hierarchy>
40                             </Dimension>
41                             <Measure name="Sales" column="LINETOTAL" datatype="Numeric" formatString="$ #,###.##" aggregator="sum" visible="true">
42                               </Measure>
43                               <Measure name="Quantity" column="QUANTITY" datatype="Integer" formatString="#,###" aggregator="sum" visible="true">
44                                 </Measure>
45                               </Cube>
46                             </Schema>
```

CHALLENGE 8. QUERY 1

The screenshot shows the Saiku Next Generation Open Source Analytics interface. On the left, the navigation pane displays the following structure:

- Cubes: Invoices
- Measures: Sales, Quantity, Average Sales per Unit
- Calculated Measures: Average Sales per Unit
- Dimensions:
 - Customer: Customer Hierarchy (All), Country, City, Customer Name
 - Time: Time Hierarchy (All), Year, Month, Day
 - Track: Track Hierarchy (All), Track Artist, Track Album, Track Name

The main area shows a query results grid with the following columns and data:

Track Artist	Country	France			Italy			Portugal		
		Sales	Quantity	Average Sales per Unit	Sales	Quantity	Average Sales per Unit	Sales	Quantity	Average Sales per Unit
Aquaman	-	-	\$ 99	-	-	\$ 99	1	\$ 99		
Audioslave	\$ 98	2	\$ 99	-	-	-	-	-	\$ 99	
Battlestar Galactica (Classic)	-	-	-	-	-	\$ 99	1	\$ 99		
Black Sabbath	\$ 99	1	\$ 99	-	-	-	-	-	\$ 99	
Body Count	\$ 495	5	\$ 99	-	-	-	-	-	\$ 99	
Chris Cornell	\$ 99	1	\$ 99	-	-	-	-	-	\$ 99	
House Of Pain	\$ 99	2	\$ 99	-	-	-	-	-	\$ 99	
Zemiroque	-	-	-	-	-	\$ 297	3	\$ 99		
JET	-	-	-	-	-	\$ 99	1	\$ 99		
Jimi Hendrix	-	-	-	-	-	\$ 198	2	\$ 99		
Joe Satriani	-	-	-	-	-	\$ 99	1	\$ 99		
Jorge Ben	-	-	-	-	-	\$ 198	2	\$ 99		
Jota Quest	-	-	-	-	-	\$ 99	1	\$ 99		
João Suplicy	-	-	-	-	-	\$ 198	2	\$ 99		
Judas Priest	-	-	-	-	-	\$ 99	1	\$ 99		
Kiss	-	-	-	-	-	\$ 99	1	\$ 99		
Lost	\$ 597	3	\$ 199	-	-	-	-	-	-	
Metallica	\$ 891	9	\$ 99	-	-	-	-	-	-	
O Rappa	\$ 198	2	\$ 99	-	-	-	-	-	-	
Ozzy Osbourne	-	-	-	-	-	\$ 198	2	\$ 99		
Queen	-	-	-	\$ 198	2	\$ 99	-	-	-	
Scorpions	-	-	-	-	-	\$ 99	1	\$ 99		
Sir George Solti & Wiener Philharmoniker	\$ 99	1	\$ 99	-	-	-	-	-	-	
Temple of the Dog	\$ 99	1	\$ 99	-	-	-	-	-	-	
The Clash	-	-	-	\$ 99	1	\$ 99	-	-	-	
The Cult	-	-	-	\$ 297	3	\$ 99	-	-	-	
The Doors	-	-	-	\$ 99	1	\$ 99	-	-	-	
The Police	-	-	-	\$ 198	2	\$ 99	-	-	-	
The Posies	\$ 99	1	\$ 99	-	-	-	-	-	-	
The Rolling Stones	-	-	-	\$ 495	5	\$ 99	-	-	-	

CHALLENGE 8. QUERY 2

The screenshot shows the Saiku Next Generation Open Source Analytics interface. On the left, the cube editor displays a cube named 'Invoices' with a single measure 'Sales'. The dimensions used are 'Customer' (with 'Customer Hierarchy (All)' selected), 'Time' (with 'Time Hierarchy (All)' selected), and 'Track' (with 'Track Hierarchy (All)' selected). The results pane shows a table titled 'Canada' with columns for 'Country', 'Year', and years from 2009 to 2013. The table lists various artists and their track sales. The table has a header row and several data rows, each representing a different artist or band.

Track Artist / Track Album	Year	Canada				
		Sales	Sales	Sales	Sales	Sales
AC/DC - For Those About To Rock We Salute You	2009	-	\$1.99	-	-	\$2.97
Accept - Let There Be Rock	2010	-	\$1.99	-	-	\$1.99
Accept - Balls to the Wall	2011	-	\$1.99	-	-	\$1.99
Aerosmith - Big Ones	2012	-	\$1.99	-	-	\$1.99
Aerosmith - Jagged Little Pill	2013	\$1.99	\$1.99	-	-	\$1.99
Alice In Chains - Facelift	2009	\$1.99	-	-	-	-
Antal Dorati & London Symphony Orchestra - 1812 Festival Overture, Op. 49, Capriccio Italien & Beethoven's Wellington's Victory	2010	-	-	\$1.99	-	\$1.99
Antonio Carlos Jobim - Chil Brasil (Disc 2)	2011	\$1.99	\$1.99	-	-	\$1.99
Apocalyptica - Warner 25 Anos	2012	\$1.99	\$1.99	-	-	\$1.99
Aquaman - Plays Metallica By Four Cellos	2013	\$1.99	-	-	-	\$1.99
Audioslave - Audioslave	2009	\$1.99	\$2.97	-	-	\$1.99
Audioslave - Out Of Exile	2010	\$1.99	-	-	-	\$1.99
BackBeat - BackBeat Soundtrack	2011	-	\$1.99	-	-	\$1.99
Billy Cobham	2012	-	\$1.99	-	-	\$1.99

```
8.Query1.mdx
1  WITH
2  SET [~COLUMNS_Customer_Customer Hierarchy] AS
3    {[Customer].[Customer Hierarchy].[France], [Customer].[Customer Hierarchy].[Italy],
4     [Customer].[Customer Hierarchy].[Portugal], [Customer].[Customer Hierarchy].[Spain]}
5  SET [~COLUMNS_Time_Time Hierarchy] AS
6    {[Time].[Time Hierarchy].[2012]}
7  MEMBER [Measures].[Average Sales per Unit] AS
8    ([Measures].[Sales] / [Measures].[Quantity])
9  SET [~ROWS] AS
10   {[Track].[Track Hierarchy].[Track Artist].Members}
11  SELECT
12    NON EMPTY CrossJoin(NonEmptyCrossJoin([~COLUMNS_Customer_Customer Hierarchy],
13      [~COLUMNS_Time_Time Hierarchy]), {[Measures].[Sales], [Measures].[Quantity], [Measures].
14      [Average Sales per Unit]}) ON COLUMNS,
15    NON EMPTY [~ROWS] ON ROWS
16  FROM [Invoices]
```

```
9.Query1.mdx
1  WITH MEMBER Measures.[Average Sales per Unit] AS (Measures.Sales / Measures.Quantity)
2  SET [Mediterranean Countries] AS {Customer.Country.France,
3    Customer.Country.Italy,
4    Customer.Country.Portugal,
5    Customer.Country.Spain}
6  SELECT [Mediterranean Countries] * Time.[2012] * Measures.AllMembers ON COLUMNS,
7    NON EMPTY Track.[Track Artist].Members ON ROWS
8  FROM Invoices
```

CHALLENGE 9. QUERY 1

```
8.Query2.mdx
1  WITH
2    SET [~COLUMNS_Customer_Customer Hierarchy] AS
3      {[Customer].[Customer Hierarchy].[Canada]}
4    SET [~COLUMNS_Time_Time Hierarchy] AS
5      {[Time].[Time Hierarchy].[Year].Members}
6    SET [~ROWS] AS
7      Hierarchize({{[Track].[Track Hierarchy].[Track Artist].Members}, {[Track].[Track Hierarchy].[Track Album].Members}})
8  SELECT
9    NON EMPTY CrossJoin(NonEmptyCrossJoin([~COLUMNS_Customer_Customer Hierarchy],
10                           [~COLUMNS_Time_Time Hierarchy]), {[Measures].[Sales]}) ON COLUMNS,
11  NON EMPTY [~ROWS] ON ROWS
12  FROM [Invoices]
```

```
9.Query2.mdx
1  SELECT Customer.Country.Canada * Time.Year.Members * Measures.Sales ON COLUMNS,
2    NON EMPTY DESCENDANTS(Track.[Track Artist].Members, Track.[Track Album],
3    SELF_AND_BEFORE) ON ROWS
4  FROM Invoices
```

CHALLENGE 9. QUERY 2

CHALLENGE 11.

PROOF OF EXECUTION

```
Terminal - aid@virtualbox:~/Desktop/AID-2021
File Edit View Terminal Tabs Help
mysql> SELECT * FROM dim_customer LIMIT 3;
+-----+-----+-----+-----+-----+-----+
| CUSTOMERID | CUSTOMERCODE | CUSTOMERNAME | CITY | COUNTRY | VERSION | DATE_FROM | DATE_TO |
+-----+-----+-----+-----+-----+-----+
| NULL | 0 | NULL | NULL | NULL | 1 | NULL | NULL |
| 1 | 1 | Luís Gonçalves | São José dos Campos | Brazil | 1 | 1900-01-01 00:00:00 | 2200-01-01 00:00:00 |
| 2 | 2 | Leonie Köhler | Stuttgart | Germany | 1 | 1900-01-01 00:00:00 | 2200-01-01 00:00:00 |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

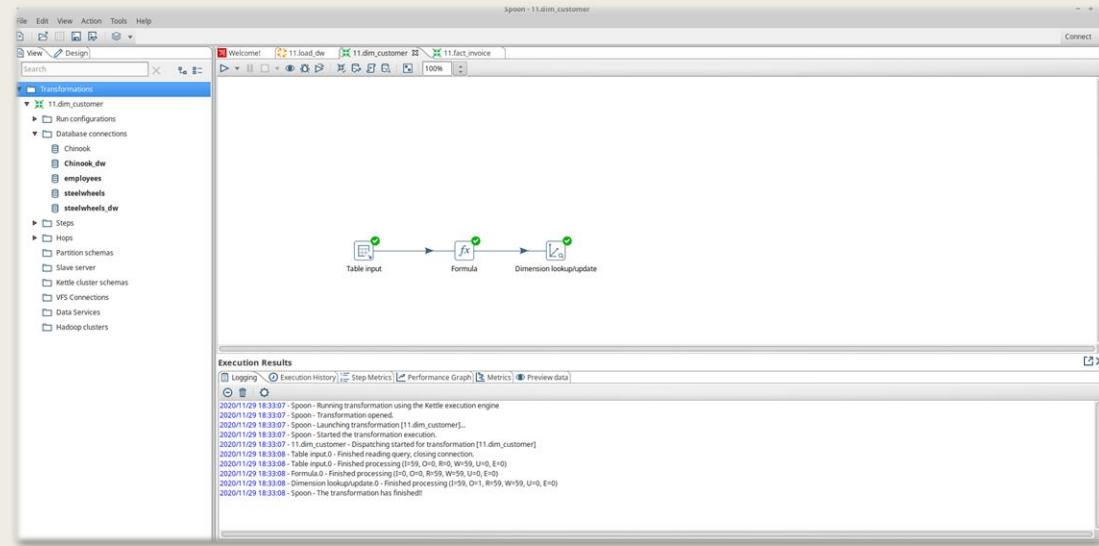
mysql> use Chinook
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
Database changed
mysql> UPDATE Customer SET COUNTRY="Portugal" WHERE CustomerId=1;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> use Chinook dw
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
Database changed
mysql> SELECT * FROM dim_customer WHERE CUSTOMERID=1;
+-----+-----+-----+-----+-----+-----+
| CUSTOMERID | CUSTOMERCODE | CUSTOMERNAME | CITY | COUNTRY | VERSION | DATE_FROM | DATE_TO |
+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Luís Gonçalves | São José dos Campos | Brazil | 1 | 1900-01-01 00:00:00 | 2020-11-29 18:29:43 |
| 1 | 62 | Luís Gonçalves | São José dos Campos | Portugal | 2 | 2020-11-29 18:29:43 | 2200-01-01 00:00:00 |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

Chinook_dw SQL

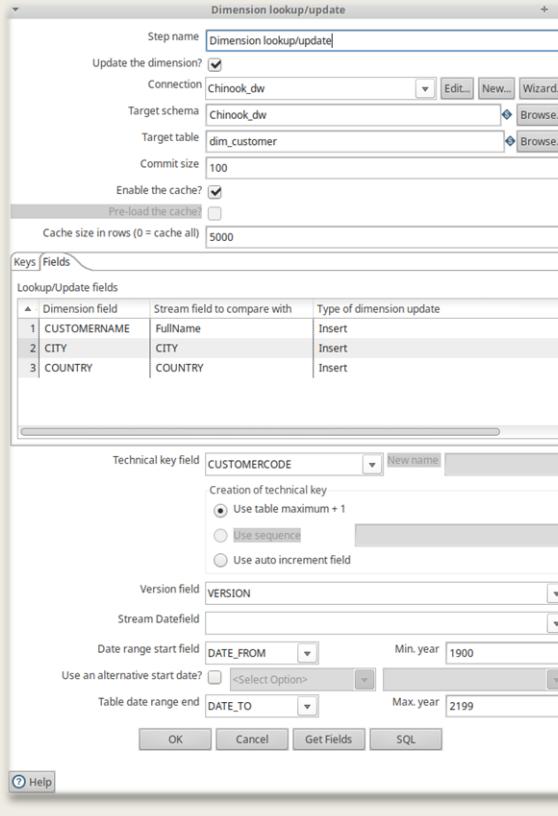
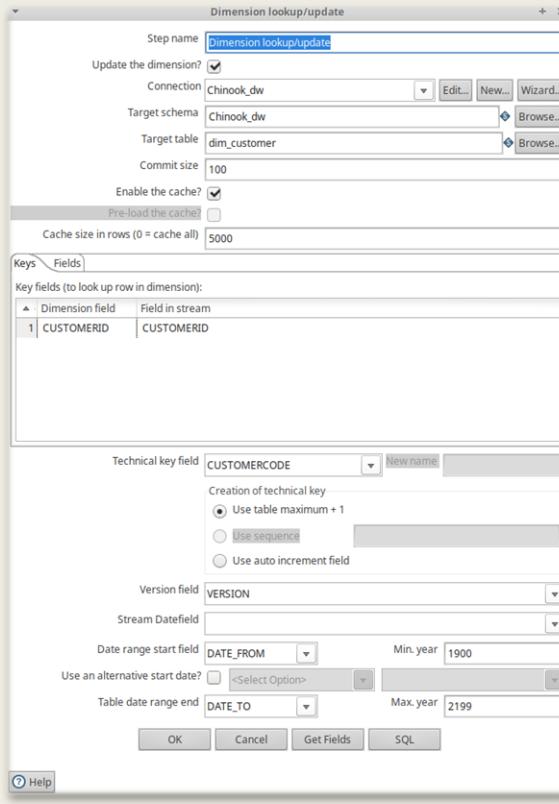
```
1 11.Chipook_dw.sql
2
3  DROP DATABASE IF EXISTS Chinook_dw;
4  CREATE DATABASE Chinook_dw;
5
6  USE Chinook_dw;
7
8  CREATE TABLE dim_track (
9    TRACKID INT,
10   TRACKNAME VARCHAR(255),
11   TRACKALBUM VARCHAR(255),
12   TRACKARTIST VARCHAR(255),
13   PRIMARY KEY (TRACKID)
14 );
15
16  CREATE TABLE dim_customer (
17    CUSTOMERID INT,
18    CUSTOMERCODE INT,
19    CUSTOMERNAME VARCHAR(255),
20    CITY VARCHAR(255),
21    COUNTRY VARCHAR(255),
22    VERSION INT,
23    DATE_FROM DATETIME,
24    DATE_TO DATETIME,
25    PRIMARY KEY (CUSTOMERCODE)
26 );
27
28  CREATE TABLE dim_time (
29    TIME_ID DATETIME,
30    YEAR_ID INT,
31    MONTH_ID INT,
32    MONTH_NAME VARCHAR(255),
33    DAY_ID INT,
34    PRIMARY KEY (TIME_ID)
35 );
36
37  CREATE TABLE fact_invoice (
38    INVOICEID INT,
39    INVOICELINEID INT,
40    QUANTITY INT,
41    UNITPRICE DOUBLE,
42    LINETOTAL DOUBLE,
43    CUSTOMERCODE INT,
44    TRACKID INT,
45    INVOICEDATE DATETIME,
46    PRIMARY KEY (INVOICEID, INVOICELINEID),
47    FOREIGN KEY (TRACKID) REFERENCES dim_track (TRACKID),
48    FOREIGN KEY (CUSTOMERCODE) REFERENCES dim_customer (CUSTOMERCODE),
49    FOREIGN KEY (INVOICEDATE) REFERENCES dim_time (TIME_ID)
50 );
```

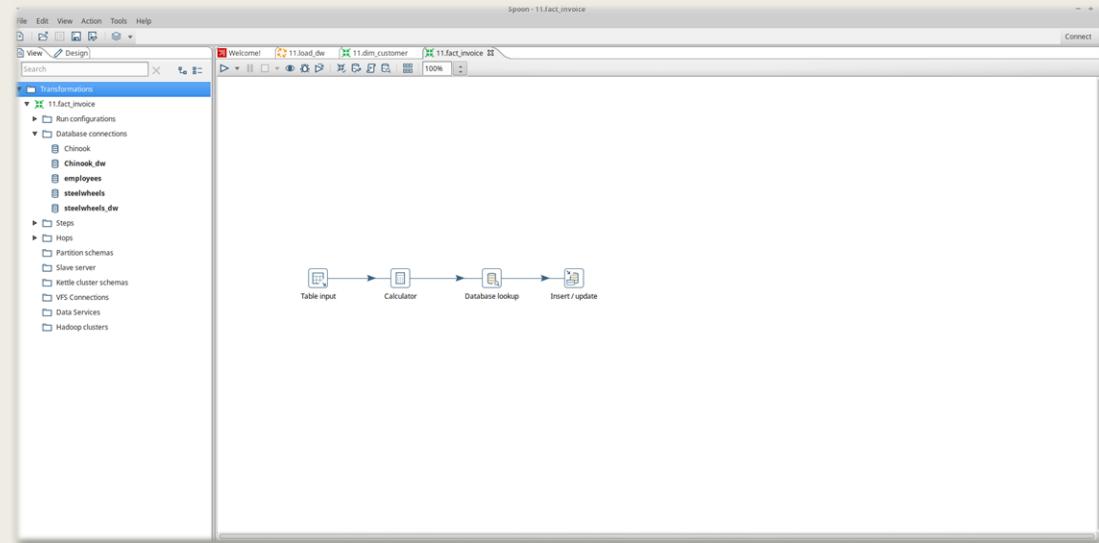


DIM_CUSTOMER

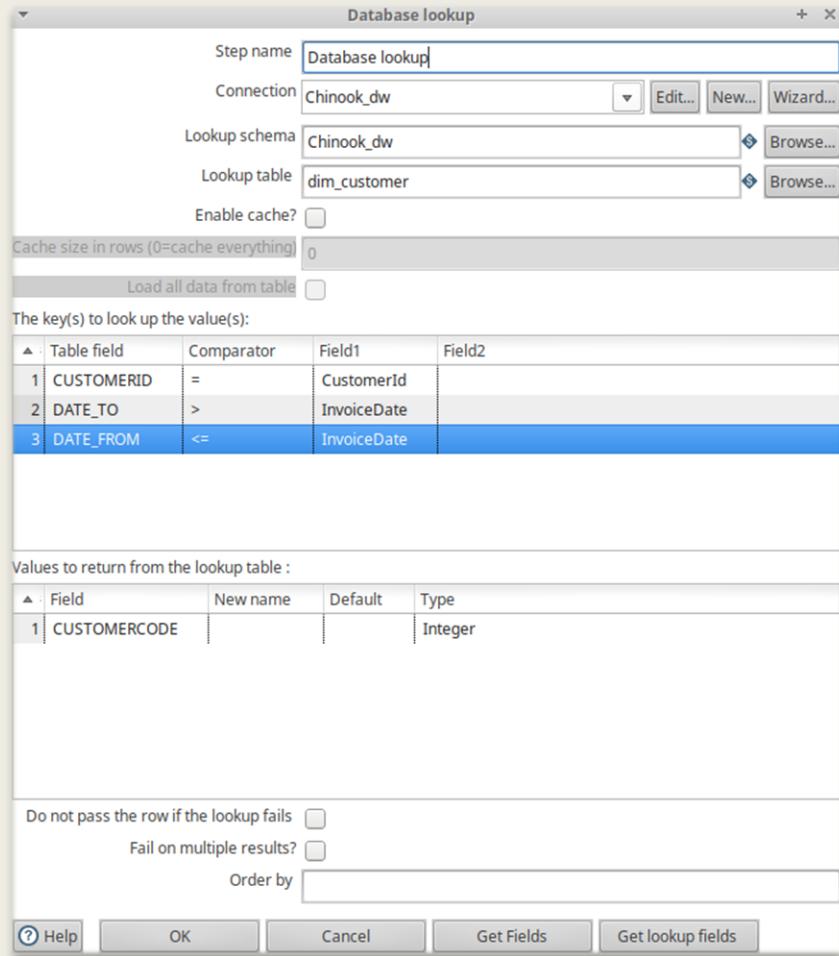
DIMENSIONAL LOOKUP / UPDATE

- The primary key of **dim_customer** was changed to **CustomerCode**
- **CustomerID** represents the person but **CustomerCode** represents the version
 - If there is an update to **CustomerName**, **City** or / and **Country** a new **Version** is created



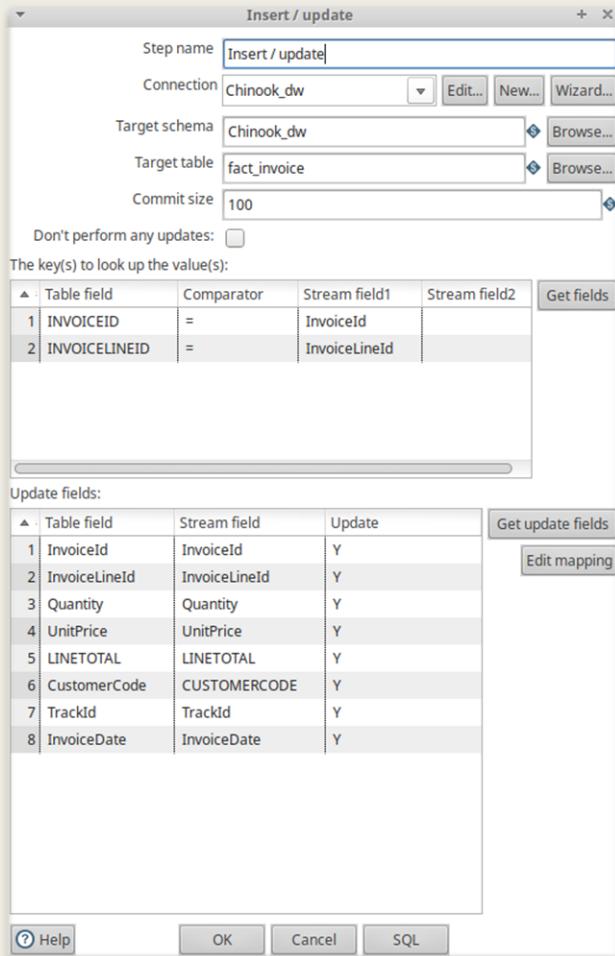


FACT_INVOICE



DATABASE LOOKUP

- We search in table **dim_customer** for the records with the same **CustomerID** as the one in the fact, and with the current date between the **DateFrom** and **DateTo**
- Our field of interest is **CustomerCode**, this is the primarykey of **dim_customer**



INSERT / UPDATE

- We changed the Update fields instead of storing the **CustomerID** we store the **CustomerCode**