Intro to SQL and Databases Bootcamp

Student Handout

Valeri Analytics

Instructor: Michael Valeri

Handout 1: valerianalytics database schema

ALBUMS TABLE SCHEMA

field/column	data type	sample data
row	integer	1
artist	text	ed Hot Chili Peppers
album	text	Californication
release date	date	6/8/1999
genre	text	Rock
plays	integer	120
rating	numeric(10,2)	4
org price	money	$11.99
market value	numeric(10,2)	3.2
burned	boolean	FALSE
playable	boolean	TRUE

NORTH_KOREAN_MISSLE_TESTS TABLE SCHEMA

field/column	data type	sample data
row_id	integer	5
date_launched	date	9/1/1984
date_entered	date	12/23/2016
launch_time_utc	date	(null)
missle_name	varchar	Scud-B
missle_type	varchar	SRBM
launch_authority	varchar	(null)
facility_name	varchar	Tonghae Satellite
facility_location	varchar	Hwadae County
facility_other_name	varchar	Musudan-ri
facility_latitude	float	40.8499966
facility_longitude	float	129.666664
landing_location	varchar	(null)
apogee	varchar	200 km
distance_traveled	varchar	(null)
confirmation status	varchar	Confirmed
test outcome	varchar	Failure
additional info	varchar	(null)

PRODUCTS TABLE SCHEMA

field/column	data type	sample data
item no	integer	904616
category_name	text	TEQUILA
item description	text	Jose Cuervo
vendor	integer	305
vendor name	text	Mhw Ltd
bottle size	integer	750
pack	integer	12
inner pack	integer	1
age	text	(null)
proof	text	40
list date	timestamp	2/11/2009
bottle_price	money	$9.77
shelf_price	numeric(10,2)	14.66
case cost	numeric(10,2)	117.22

COUNTIES TABLE SCHEMA

field/column	data type	sample data
county	text	Adair
population	integer	7682

STORES TABLE SCHEMA

field/column	data type	sample data
store	integer	2106
name	text	Hillstreet News and Tobacco
store_status	text	A
store_address	text	217 CollegeCedar Falls, IA
address_info	text	(null)

SALES TABLE SCHEMA

field/column	data type	sample data
date	timestamp	6/27/2014
convenience store	text	Y
store	integer	4771
county number	county number	57
county	text	Linn
category	text	1081600
category name	text	WHISKEY LIQUEUR
vendor no	text	421
vendor	text	Sazerac Co. Inc.
item	integer	64858
description	text	Fireball Cinnamon Whiskey
pack	integer	1
liter_size	integer	3000
state btl cost	money	29.72
btl_price	money	44.58
bottle_qty	integer	1
total	numeric(10,2)	44.58

Draw the ERD (Entity Relationship Diagram) between all the tables in 'valerianalytics' db

Handout 3: Albums Table

INT	text	text	date	text	int	numeric	money	numeric	boolean	boolean
Row	Artist	Album	Release_Date	Genre	Plays	Rating	Org_Price	Market_Value	Burned	Playable
1	Red Hot Chili Pe	Californication	6/8/1999	Rock	120	4	$11.99	3.2	0	1
2	Red Hot Chili Pe	By the Way	7/9/2002	Rock	100	3.5	$11.99	4	1	0
3	Kanye West	College Dropout	2/10/2004	Rap	200	5	$10.99	5	0	1
4	Kanye West	Late Registrati	8/30/2005	Rap	300	4	$9.99	7	0	1
5	Kanye West	Graduation	9/11/2007	Rap	250	4	$0.00	1.75	1	1
6	Papa Roach	Infest	4/25/2000	Rock	75	3.5	$11.99	0.5	0	0
7	Kid Cudi	Man on the Moon	9/15/2009	Rap	40	4	$10.99	6	0	0
8	Ratatat	Ratatat	4/20/2004	Electron	60	5	$9.99	6	0	(null)
9	Ratatat	Classics	8/22/2006	Electron	400	4	$0.00	12.99	(null)	0
10	Dragonforce	Sonic Firestorm	5/11/2004	Rock	500	5	$2.99	0.01	1	(null)
11	(null)	Summer Mix 08	(null)	(null)	1000	5	$0.00	0	1	1
12	(null)	Party Mix 07	(null)	(null)	4000	5	$0.00	0	1	1
13	Common	Be	5/24/2005	Rap	2000	4.5	$0.00	15	1	1
14	T.I.	Paper Trail	9/26/2008	Rap	300	4	$0.00	6.99	1	0
15	Children of Bod	Children of Bod	(null)	Metal	150	3	$0.00	0	(null)	0

	Plays	Rating	Org_Price	Market_Value
Sum	9,495	63.5	80.9	68.4
Avg	633.0	4.2	5.4	4.6
Min	40	3.0	–	–
Max	4,000	5.0	12.0	15.0

Handout 4: Basic Syntax of SQL

		Definition
1	SELECT	
2	FROM	
3	WHERE	
4	GROUP BY	
5	HAVING	
6	ORDER BY	
7	LIMIT	

Key Takeaways: Basic Syntax of SQL

__Handout 4: SQL Functions__

	What does it do?	Where can I use it?	Example
__1 AS__			
__2 DISTINCT__			
__3 TO_CHAR()__			
__4 LIKE__			
__5 LOWER()__			
__6 UPPER()__			
__7 COUNT()__			
__8 SUM()__			
__9 MIN()__			
__10 CAST()__			

Handout 5: Filtering with the WHERE Clause   *(It's going to be ok, just follow this matrix 1-->2-->3)*

USE CASE	OPERATOR	DESCRIPTION	STEP 2: Choose use case	STEP 3: Choose data type of column				
		Step 1: Choose Condition		BOOLEAN EXAMPLE	CHARACTER EXAMPLE	NUMERIC EXAMPLE	DATE EXAMPLE	DATE WITH TO_CHAR EXAMPLE
1	=	Equal (single criteria)	You want to filter on 1 column on 1 condition	PLAYABLE = TRUE	ALBUM = 'Californication'	ORG_PRICE = 9.99	RELEASE_DATE = '2004-02-10'	TO_CHAR(RELEASE_DATE, 'YYYY') = '2009'
	>	Greater than (single criteria)				ORG_PRICE > 9.99	RELEASE_DATE > '2004-02-10'	TO_CHAR(RELEASE_DATE, 'YYYY') > '2009'
	<	Less than (single criteria)				ORG_PRICE < 9.99	RELEASE_DATE < '2004-02-10'	TO_CHAR(RELEASE_DATE, 'YYYY') < '2009'
	>=	Greater than or equal (single criteria)				ORG_PRICE >= 9.99	RELEASE_DATE >= '2004-02-10'	TO_CHAR(RELEASE_DATE, 'YYYY') >= '2009'
	<=	Less than or equal (single criteria)				ORG_PRICE <= 9.99	RELEASE_DATE <= '2004-02-10'	TO_CHAR(RELEASE_DATE, 'YYYY') <= '2009'
	<> or !=	Not equal		PLAYABLE != FALSE	ALBUM != 'Californication'	ORG_PRICE != 9.99	RELEASE_DATE != '2004-02-10'	TO_CHAR(RELEASE_DATE, 'YYYY') != '2009'
	LIKE	Look for a specified pattern in a column			ARTIST LIKE '%K'			
	NOT LIKE	Look for a specified pattern in a column (Not Like)			ARTIST NOT LIKE '%K'			
2	BETWEEN	Between two numeric values or dates (multiple criteria)	You want to filter between two ranges (numeric or date)			ORG_PRICE BETWEEN 9.99 AND 12.99	RELEASE_DATE BETWEEN '2001-01-01' AND '2009-01-01'	TO_CHAR(RELEASE_DATE, 'YYYY') BETWEEN '2009' and '2011'
3	AND	Logical operator AND	You want to filter on multiple columns	PLAYABLE = TRUE AND GENRE = 'Rap'	ARTIST = 'Kanye West' AND PLAYABLE = TRUE	9.99	RELEASE_DATE >= '2001-01-01' AND RELEASE_DATE <= '2009-01-01'	(same as left)
	OR	Logical operator OR		PLAYABLE = TRUE OR GENRE = 'Metal'	ARTIST = 'Kanye West' OR RATING = 5	9.99	RELEASE_DATE >= '2001-01-01' OR GENRE = 'Electronic'	(same as left)
4	IS	Logical operator for (null) records	You are looking for null values in a column	PLAYABLE IS NULL	ARTIST IS NULL	ORG_PRICE IS NULL	RELEASE_DATE IS NULL	(same as left)
	IS NOT	Logical operator for not (null) records		PLAYABLE IS NOT NULL	ARTIST IS NOT NULL	ORG_PRICE IS NOT NULL	RELEASE_DATE IS NOT NULL	(same as left)
5	IN	Equal (multiple criteria)	You want to filter on 1 column with multiple conditions	BURNED IN (TRUE, FALSE)	ALBUM IN ('Californication', 'By the Way')	ORG_PRICE IN (9.99, 12.99)	RELEASE_DATE IN ('2012-01-01', '2017-01-02')	TO_CHAR(RELEASE_DATE, 'YYYY') IN ('2009', '2011')
	NOT IN	Not equal (multiple criteria)		BURNED NOT IN (TRUE, FALSE)	ALBUM NOT IN ('Californication', 'By the Way')	ORG_PRICE NOT IN (9.99, 12.99)	RELEASE_DATE NOT IN ('2012-01-01', '2017-01-02')	TO_CHAR(RELEASE_DATE, 'YYYY') NOT IN ('2009', '2011')

Key Takeaways: Filtering with the WHERE Clause

Handout 6: Aggregations and GROUP BY and Fix the Code

Key Takeaways: Aggregations and Group BY

Key Takeaways: Fix the Code