SQL as a Second Language

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SQL as a Second Language (SASL) was a course that I taught many moons ago. It is being revisited now to help answer some SQL questions brought up by those whose are taking their SQL Skills to the next level.

A PDF version of this web site is available at this Link

1. Introduction

This SQL As a Second Language version will use the Teradata SQL syntax.

Examples

> A teacher, a really good teacher, is never a giver of truth; he is a guide, a pointer to truth
>
> — Bruce Lee

1.1. Chinook Database

The training database will be the Chinook database on music record sales.

Reference: https://github.com/lerocha/chinook-database

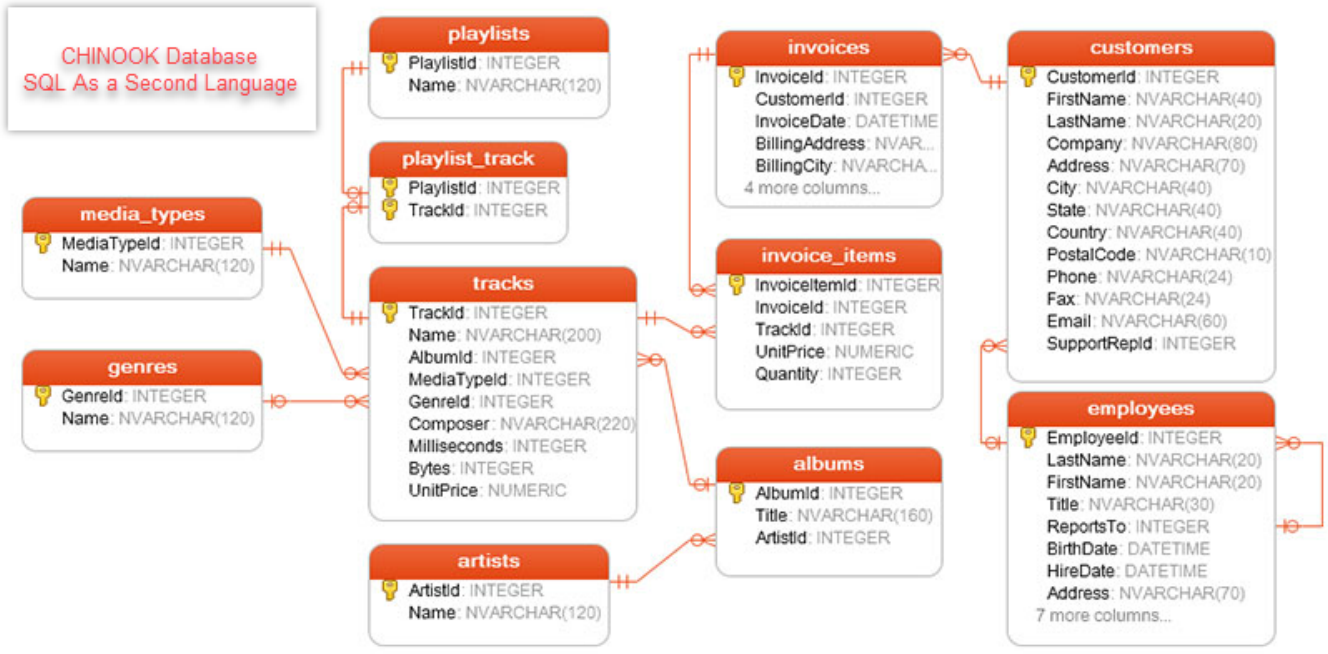

Figure 1. Chinook Database Diagram

2. Questions

How can I get a count of the number of rows in some of the tables of a database?

View this query tableCounts

How can a get a list of the objects (Tables, View, Procedures) for a specific database?

View This query dbObjects

How can I find out the columns and metadata about a specific object (Table, View)?

View this query tableColumns

How can I find where a specific column exist in a database?

View this query findColumn

How can I best use "Prompts" in SQL Assistant?

unlinked

3. Queries

3.1. tableCounts

SQL Example

```
/*
=== tableCounts - Count rows in all Chinook tables

==== TOPICS

* Aggragate function count.
* UNION multiple queries.
* Sorting aka order by.

==== TIPS

* Use single quote (') to denote text.
* Use doble-quotes for renaming objects.
* Indent and one column per row.
* Put commas at the begining of the 2nd column.
* UNION allows joining of multiple queries, same number and data type of column.
* First query in union determine sizes and names of columns.
* Start small and build on to query.
* Order by can be by the ordinal number of the column
  (Column 1 is tableName, Column 2 is Rows)
*/

Select
    'Album          ' as tableName
    , count(*) as "Rows" from Album

UNION
Select
    'Artist' as tableName
    , count(*) from Artist

UNION
Select
    'Customer' as tableName
    , count(*) from Customer

UNION
Select
    'Employee' as tableName
    , count(*) from Employee

UNION
Select
    'Genre' as tableName
    , count(*) from Genre

UNION
```

```
Select
    'Invoice' as tableName
    , count(*) from Invoice

UNION
Select
    'Invoice Line' as tableName
    , count(*) from InvoiceLine

UNION
Select
    'Media Type' as tableName
    , count(*) from MediaType

UNION
Select
    'Playlist' as tableName
    , count(*) from Playlist

UNION
Select
    'Playlist Track' as tableName
    , count(*) from PlaylistTrack

UNION
Select
    'Track' as tableName
    , count(*) from Track

Order by 2 desc
```

① First query in union determine sizes and names of columns.

② count(*) is an aggregate function

③ Order by can be by the ordinal number of the column (Column 1 is tableName, Column 2 is Rows)

SQL download link click here

Table 1. Results

tableName	Rows
Playlist Track	8715
Track	3503
Invoice Line	2240
Invoice	412
Album	347
Artist	275
Customer	59

tableName	Rows
Genre	25
Playlist	18
Employee	8
Media Type	5

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3.2. dbObjects

SQL Example

```
/*
=== dbObjects - Get a list of all the objects in a specific database

==== TOPICS

* This is a Teradata specific command

==== TIPS

* Change the database name from `chinook` to the database you are interested in
*/

help database chinook
```

SQL download link click here

Table 2. Results

Table/View/Macro name	Kind	Comment	Protection	Creator Name	Commit Option	Transaction Log	Table/View/Macro Dictionary Name	Table/View/Macro SQL Name	Table/View/Macro Name UEscape	Creator Dictionary Name	Creator SQL Name	Creator Name UEscape
Album	T	NULL	N	WINDUSER	N	Y	Album	Album		WINDUSER	WINDUSER	
Artist	T	NULL	N	WINDUSER	N	Y	Artist	Artist		WINDUSER	WINDUSER	
Customer	T	NULL	N	WINDUSER	N	Y	Customer	Customer		WINDUSER	WINDUSER	
Employee	T	NULL	N	WINDUSER	N	Y	Employee	Employee		WINDUSER	WINDUSER	
Genre	T	NULL	N	WINDUSER	N	Y	Genre	Genre		WINDUSER	WINDUSER	
Invoice	T	NULL	N	WINDUSER	N	Y	Invoice	Invoice		WINDUSER	WINDUSER	
InvoiceLine	T	NULL	N	WINDUSER	N	Y	InvoiceLine	InvoiceLine		WINDUSER	WINDUSER	
mComedyList	M	NULL	F	DBC	N	Y	mComedyList	mComedyList		DBC	DBC	

Table/View/Macro name	Kind	Comment	Protection	Creator Name	Commit Option	Transaction Log	Table/View/Macro Dictionary Name	Table/View/Macro SQL Name	Table/View/Macro Name UEscape	Creator Dictionary Name	Creator SQL Name	Creator Name UEscape
MediaType	T	NULL	N	WINDUSER	N	Y	MediaType	MediaType		WINDUSER	WINDUSER	
Playlist	T	NULL	N	WINDUSER	N	Y	Playlist	Playlist		WINDUSER	WINDUSER	
PlaylistTrack	T	NULL	N	WINDUSER	N	Y	PlaylistTrack	PlaylistTrack		WINDUSER	WINDUSER	
Track	T	NULL	N	WINDUSER	N	Y	Track	Track		WINDUSER	WINDUSER	
vComedyTrack	V	NULL	F	DBC	N	Y	vComedyTrack	vComedyTrack		DBC	DBC	

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3.3. tableColumns

SQL Example

```
/*
=== tableColumns - Get a list of all the columns for a specific table or object in a
known database

==== TOPICS

* This is a Teradata specific command

==== TIPS

* Change the database name from `chinook` to the database you are interested in
*/

help table chinook.invoice
```

SQL Download link click here

Table 3. Results

ColumnName	Type	Comment	Nullable	Format	Title	MaxLength	DecimalTotalDigits	DecimalFractionalDigits	RangeLow	RangeHigh	UpperCase	Table/View?	DefaultValue	CharType	IdColType	UDTName	Temporal	ColumnDictionaryName	ColumnSQLName	ColumnNameUEscape	DictionaryTitle	SQLTitle	TitleUEscape	UDTDictionaryName	UDTSQLName	UDTNameUEscape
InvoiceId	I	NULL	N	-(10)9	NULL	4	NULL	NULL	NULL	NULL	N	T	NULL	NULL	GD	NULL	N	InvoiceId	InvoiceId		NULL	NULL	NULL	NULL	NULL	NULL
CustomerId	I	NULL	N	-(10)9	NULL	4	NULL	NULL	NULL	NULL	N	T	NULL	NULL	NULL	NULL	N	CustomerId	CustomerId		NULL	NULL	NULL	NULL	NULL	NULL

Column Name	Type	Comment	Nullable	Format	Title	MaxLength	DecimalTotalDigits	DecimalFractionalDigits	RangeLow	RangeHigh	UpperCase	Table/View?	DefaultValue	CharType	IdColType	UDTName	Temporal	ColumnDictionaryName	ColumnSQLName	ColumnNameUEscape	DictionaryTitle	SQLTitle	TitleUEscape	UDTDictionaryName	UDTSQLName	UDTNameUEscape
InvoiceDate	DA	NULL	N	yyyy-mm-dd	NULL	4	NULL	NULL	NULL	NULL	N	T	NULL	NULL	NULL	NULL	N	InvoiceDate	InvoiceDate		NULL	NULL	NULL	NULL	NULL	NULL
BillingAddress	CV	NULL	Y	X(70)	NULL	70	NULL	NULL	NULL	NULL	N	T	NULL	1	NULL	NULL	N	BillingAddress	BillingAddress		NULL	NULL	NULL	NULL	NULL	NULL
BillingCity	CV	NULL	Y	X(40)	NULL	40	NULL	NULL	NULL	NULL	N	T	NULL	1	NULL	NULL	N	BillingCity	BillingCity		NULL	NULL	NULL	NULL	NULL	NULL
BillingState	CV	NULL	Y	X(40)	NULL	40	NULL	NULL	NULL	NULL	N	T	NULL	1	NULL	NULL	N	BillingState	BillingState		NULL	NULL	NULL	NULL	NULL	NULL
BillingCountry	CV	NULL	Y	X(40)	NULL	40	NULL	NULL	NULL	NULL	N	T	NULL	1	NULL	NULL	N	BillingCountry	BillingCountry		NULL	NULL	NULL	NULL	NULL	NULL
BillingPostalCode	CV	NULL	Y	X(10)	NULL	10	NULL	NULL	NULL	NULL	N	T	NULL	1	NULL	NULL	N	BillingPostalCode	BillingPostalCode		NULL	NULL	NULL	NULL	NULL	NULL

Column Name	Type	Comment	Nullable	Format	Title	MaxLength	Decimal Total Digits	Decimal Fractional Digits	RangeLow	RangeHigh	UpperCase	Table/View?	Default value	CharType	IdColType	UDTName	Temporal	Column Dictionary Name	Column SQLName	Column Name UEscape	Dictionary Title	SQLTitle	Title UEscape	UDT Dictionary Name	UDTSQLName	UDTName UEscape
Total	D	NULL	N	----------.99	NULL	8	10	2	NULL	NULL	N	T	NULL	NULL	NULL	NULL	N	Total	Total		NULL	NULL	NULL	NULL	NULL	NULL

ColumnType defined the data type of a column. Reference: [ColumnType]

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3.4. findColumn

SQL Example

```
/*
=== findColumn - Find out what objects (Table, View) where a specific named column
exist

==== TOPICS

* This is a Teradata specific command
* The list of columns are the ones that are the most important,
there are many other columns available. Use a single column name (*) to see them all.

==== TIPS

* CoumnTypes Reference:
http://developer.teradata.com/doc/connectivity/tdnetdp/14.00/webhelp/DataTypeMappings.
html
* Replace `CustomerID` with the column you are interested in

*/

select
    ColumnName
    ,DatabaseName
    ,TableName
    ,ColumnFormat
    ,ColumnType
    ,ColumnLength
from dbc.columnsX
where ColumnName = 'CustomerID'
```

SQL Download link click here

Table 4. Results

ColumnName	DatabaseName	TableName	ColumnFormat	ColumnType	ColumnLength
CustomerId	Chinook	Invoice	-(10)9	I	4
CustomerId	Chinook	Customer	-(10)9	I	4

The ColumnType identifies the data type of the column. Reference: Column Type

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4. Reference

4.1. Column Type

ColumnType reference table.

Table 5. ColumnType

ColumnType Abbrev	ColumnType Description
A1	ARRAY
AN	MULTI-DIMENSIONAL ARRAY
AT	TIME
BF	BYTE
BO	BLOB
BV	VARBYTE
CF	CHARACTER
CO	CLOB
CV	VARCHAR
D	DECIMAL
DA	DATE
DH	INTERVAL DAY TO HOUR
DM	INTERVAL DAY TO MINUTE
DS	INTERVAL DAY TO SECOND
DY	INTERVAL DAY
F	FLOAT
HM	INTERVAL HOUR TO MINUTE
HS	INTERVAL HOUR TO SECOND
HR	INTERVAL HOUR
I	INTEGER
I1	BYTEINT
I2	SMALLINT
I8	BIGINT
JN	JSON
MI	INTERVAL MINUTE
MO	INTERVAL MONTH
MS	INTERVAL MINUTE TO SECOND
N	NUMBER
PD	PERIOD(DATE)
PM	PERIOD(TIMESTAMP WITH TIME ZONE)

ColumnType Abbrev	ColumnType Description
PS	PERIOD(TIMESTAMP)
PT	PERIOD(TIME)
PZ	PERIOD(TIME WITH TIME ZONE)
SC	INTERVAL SECOND
SZ	TIMESTAMP WITH TIME ZONE
TS	TIMESTAMP
TZ	TIME WITH TIME ZONE
UT	UDT Type
XM	XML
YM	INTERVAL YEAR TO MONTH
YR	INTERVAL YEAR
++	TD_ANYTYP

5. Document History

Table 6. Document History

Date	Version	Author	Description
12/21/2018	V2.1d	JHRS	Added vsCode snippet for quick query insert added Reference section
12/20/2018	V2.1c	JHRS	Attempting standard document template
12/17/2018	V2.1b	JHRS	Initial version