



WHAT YOU ALWAYS WANTED TO KNOW ABOUT THE TOP 40

And how to get that done with SQL

March 2025

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Introduction

The language SQL was developed in the 70's and has been the standard for communicating with relational data since 1986. Anyone with a different opinion on this I cordially invite to take the available courses SQL foundation and/or Advanced SQL. Having an appropriate language for communicating with data is especially useful if you can ask the right questions and validate the returned answers. In practice, there appears to be much room for improvement in both areas.

The question is how to implement this effectively for everyone. The answer is simple, namely choosing a common frame of reference. Something everyone recognizes, such as the Top 40. The Top 40 is the longest-running hit list in the Netherlands and was first broadcasted on January 2, 1965. Over the years, the list has proven to be a consistent overview of the Netherlands' most popular hits. The website top40.nl contains all the historical data. That should be enough for a set of fun questions. Next steps are an application equipped with a web crawler, search functionality, updating capabilities, a unified data model and a supporting database for the data. Check.

The syntax of SQL has expanded quite a bit with a number of new elements since the first draft. This has made it an even more powerful language for working with data. The modern approach to working with data is more set-based, where previously the thinking was primarily row-based. Thinking from data sets makes answering the questions in this document more manageable. In quality terms, more readable, maintainable, provable and efficient.

This document has no active version control, it is always what it is and at the time of writing. The questions in this document are arranged according to a subjective classification of difficulty. That difficulty may be about translating the question, pulling together data-sets, formatting results, or a combination of these factors. Therefore, the following chapters are named warm-ups, go-getters and sweaters. For each challenge, the following questions apply:

1. What is the answer to the question?
2. How do you prove that the answer is correct?
3. Does the answer follow an efficient solution path?

Whereas the above questions all belong to the DQL category, for those who want to reach further, an extra chapter has been set aside at the end of this document for additional questions about the consequences of modelling changes. You can answer those questions with other three letter abbreviations. More precisely with DCL, DDL and/or DML.

It is intended that this document will continue to grow with all sorts of fun challenges that contribute to the understanding and the practical use of the SQL-language. Where you have questions, answers, opinions or other things to share you can reach me through the regular channels. So please get in touch, especially about validating answers, or their efficiency. Even better when you come up with challenging new questions on this topic. Thanks in advance for the contributions that led to this version.

"SQL is the language to communicate with relational data."

Peter Dijkshoorn
Management consultant



Top 40 puzzles

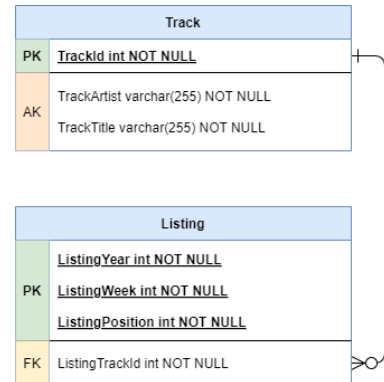
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The case

The model

It is important that we all understand the same thing. Questions sometimes seem simple, are frequently ambiguous, and answering them often raises new questions. In that respect, this document resembles our reality with clients and/or in projects. Important difference is that here we come up with questions and answers ourselves. Therefore, ask your questions and make it a little clearer for everyone.

In the table Track you will find the numbers of artists. An artist is a person, group, or collaboration of artists. In the table Listing you find listings of tracks that have been in the Top 40. The model allows that a track has not had a listing. There are questions in this document about this property. Each listing applies to a year and week number of issue and the position for that issue. A weekly listing consists of year and week number of issue according to the format 'YYYY-WW', such as 1987-06, including leading zero for the week number. Each weekly list consists of exactly 40 tracks. A track can never appear multiple times in the same weekly list. However, a track can have multiple listings in different weekly lists. Each position in a weekly list is unique to that release, and each listing in a weekly list belongs to exactly one track.



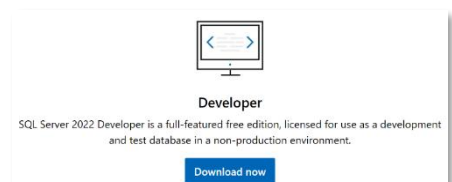
The primary key for Track consists of the attribute TrackId, for Listing of ListingYear, ListingWeek and ListingPosition. The alternate key for Track consists of TrackArtist and TrackTitle, for Listing it consists of ListingYear, ListingWeek and ListingTrackId. The model has one referring key and that is ListingTrackId of Listing which points to TrackId of Track. All attributes in this model are mandatory. Piece of cake.

An entrant is a track that had no listing in the weekly list prior. The first time you are an entrant, a subsequent time you are a returner. There are questions about returners in this document. Keep in mind that a weekly list does not correspond 1-to-1 with the weeks of a year.

In several places you read about points. In each issue, these are assigned to listings in the Top 40. For example, there are 40 points for the number 1 descending to 1 point for the number 40. With that point score, songs and artists can be compared.

The technique

The script for the structure and data is written for SQL server and with possible minor modifications will also be suitable for other database management systems. Installation support is at the request of yours truly.



Track Week Year Login		
trackartist	tracktitle	Find
Artist	Titel	Hoes
Never	Appeared In The Top 40	
The Beatles	I Feel Fine	
Lucille Starr	The French Song (Quand Le Soleil...)	

The web app for managing this collection was created using HTML, Bootstrap, CSS, Javascript, Paint, Maven, JSTL, JSP, XML, Apache Commons, Java EE, Spring, Tomcat, JDBC and SQL Server

Warm-ups

W01 Number of artists

How many different artists have appeared in the Top 40 so far?

W02 Number of tracks

How many different tracks have appeared in the Top 40 so far?

W03 Number of weeks at 1

Show the top 10 artists who have been at number 1 most often. When multiple artists have finished ex aequo, the alphabetical order of artist applies.

W04 Favourite artist

With which tracks has your favorite artist appeared in the Top 40, with or without other artists?

W05 Halfway

How many artists have been in the Top 40 but never made the top 20?

W06 Weak lists

How many weekly lists are in the Top 40 database?

W07 Love

Thatcher said 'Spring is in the air' to Urban. He replied 'Why should I? John Paul Young (1977), Steve Allen (1987) and Nico Landers (1994) sang about 'Love Is In The Air'. There have been many songs in the past that were about love, or at least had that in their title. How language-sensitive are you to find more than 1,000 tracks that are about love?

W08 Average artists

On average, how many tracks have appeared in the Top 40 for each artist? Round your answer to two decimal places.

W09 Unique titles

How many unique titles have had a spot in the Top 40 in 1969?

W10 Average position

What is the top 10 tracks with the highest average position per listing and rounded to two decimal places?

W11 Never in top 30, long in Top 40

Which tracks have been in the Top 40 for more than 10 weeks, but never made the top 30? In addition to artist and title, show how long they have been in the Top 40, what their highest position was and what year they entered.

W12 Format

The current year is several weeks away. Which weekly charts have we already had? You may consult the Internet for the answer, but you may not hard-code the year. The formatting will look like the picture on the right.

WeeklyList
2025-01
2025-02
2025-03
2025-04
2025-05

W13 Wolverines

Some artists continue to score hits every year. Which artists have managed to score a hit in the Top 40 in more than 20 years?

W14 Summer numbers

When the days get longer and temperatures rise, it is usually a sign that summer is coming. How many songs have appeared in the Top 40 whose artist or title contains the word “summer” and how many points have they accumulated?

W15 Eight days a week

The very first Top 40 was broadcast on Saturday, January 2, 1965. The Beatles were at the top with the song “I Feel Fine. 26 weeks later they were also on top, this time with the song 'Ticket To Ride'. What was the date when this Top 40 aired?

W16 Least popular

Average tracks score more than 150 points during their stay in the Top 40. Which tracks achieved a total of exactly 1 point and in which weekly chart did they achieve that score?

W17 Max short stay

What comes quickly often goes quickly. The Top 40 is no exception to the rule in this regard. Which track gained the most points with the fewest number of weeks of listing?

W18 Seasonal influences

One quarter is not the other. In which quarter, on average, do tracks stay at No. 1 the longest? Do you have a logical explanation for this? To answer, use the following assumptions:

- A quarter lasts 13 weekly charts.
- The last quarter may have one more or one less weekly chart.
- A track can be at #1 in multiple quarters.

W19 Pre-zero's

Coincidence or not? How many tracks had their first entry in the last century? What does this number say about the average number of first entrants per weekly list?

Go-getters

K01 Number of weeks at 1 ex aequo

Show the top 10 artists who have been at number 1 most often. Make visible when multiple artists have finished ex aequo, as in the example below.

Ranking	TrackArtist	NumberOfWeeksOn1
5	ABBA	24
6	Madonna	20
6	The Rolling Stones	20

K02 Best scoring tracks

Which tracks achieved a total of more than 1,000 points? Sort the answer so that the best scoring track is at the top and the years of listing are sorted ascending and comma space separated in one column. See below for an example of part of the answer.

TrackArtist	TrackTitle	ListingYears	TotalPoints
Avicii	Wake me up!	2013, 2014, 2018	1100
Dave Berry	This Strange Effect	1965, 1966	1095
Major Lazer x DJ Snake feat. Mø	Lean on	2015	1076

K03 Decades

The decade for the 90's is from 1-1-1990 to 1-1-2000. What is the average score of tracks by decade? Tracks listed in multiple decades are given a partial score for each decade. What do you notice, or infer from the results?

K04 Average number of entries

Determine the average number of entries per weekly list rounded to two decimal places. As a control tool for the final result, also show the total number of entrants and weeks. For the determination exclude the very first weekly list, i.e. 1965-01. This is because there is a strong suspicion that it was 40 entries.

K05 Lowest and highest number of entries

Which weekly list has the highest number of entries and which the lowest? Obviously, for this question too, weekly list 1965-01 is excluded from participation.

K06 Most top 3 listings

Determine the top 10 tracks that have been in the top 3 most often. Show which tracks they are, their position and how many top 3 listings they have had as in the example below.

Ranking	TrackArtist	TrackTitle	NumberOfTop3Listings
4	Ed Sheeran	Shape of you	18
5	Miley Cyrus	Flowers	17
5	Adele	Rolling in the deep	17

K07 Every other year

That tracks are listed in consecutive years is a normal occurrence because the end of one year seamlessly transitions into the next. An exception is when a track has listings one year apart. Which few tracks are those and what was their gap year?

K08 One hit wonders

Several artists have entered the Top 40 with only one song. Which of these artists have held the first position for 10 weeks or more, and what was the first weekly chart in which they were #1? Display the information as in the example below.

TrackArtist	TrackTitle	NumberOfWeeksOnChart	FirstWeekOn1	NumberOfWeeksOn1
Gustavo Lima	Balada	23	2012-19	13
David Guetta & Bebe Rexha	I'm Good (Blue)	33	2022-39	12
Michel Teló	Ai Se Eu Te Pego! Nooossaa!	29	2012-02	11

K09 Spread your wings

Create a spread chart of the positions at which all former number one hits entered the Top 40 in their time. When you are up to it add a graphical representation for the number of years. And if it's your day also add a column for the years of first entry, preferably in chronological order. What things stand out to you? What could explain them?

ListingPosition	NumberOfYear	Graphical	Years
11	14	-----	1967, 1972, 1974, 1975, 1976, 1983, 1989, 1993, 2000, 2003, 2004, 2007, 2015, 2018
12	11	-----	1970, 1974, 1977, 1989, 1993, 1996, 1998, 1999, 2004, 2006, 2015
13	12	-----	1972, 1973, 1978, 1984, 1998, 2000, 2002, 2003, 2005, 2007, 2008, 2011

K10 Top 3 highest entrants

Some tracks enter the Top 40 higher than others. What is the sum of the number of points of the three highest entrants in the past 10 weeks?

K11 In between years

Some tracks return to the Top 40 years after their first listing, often because of their death or the track's inclusion in a movie. What is the top 10 tracks with the most intermediate years? Show the tracks with their position relative to other tracks and the number of intervening years.

Ranking	TrackArtist	TrackTitle	BetweenYears
4	George Baker Selection	Little Green Bag	29
4	Elvis / Elvis Presley	Suspicious Minds	29
6	Michael Jackson	Billie Jean	26

K12 Unique number of points

Each listing of a track gets a number of points, 40 for the first position to 1 for the lowest position. Adding up all the points for each listing gives you the total number of points for that track. Show which tracks achieved a unique number of points according to the example below:

TrackArtist	TrackTitle	NumberOfPoints
Shocking Blue	Mighty Joe	573
Adele	make you feel my love	579
The Beach Boys	Sloop John B	587

K13 3 to the power of 3

Which artists held top 3 positions with at least 3 tracks in the same year? In your answer, show the artist, the year and the number of tracks that made it to the top 3.

TrackArtist	ListingYear	NumberOfTop3TracksInOneYear
DJ Paul Elstak	1995	3
Charly Lownoise & Mental Theo	1996	3
Party Animals	1996	3

K14 Connections

Find a favorite artist of yours who has been in the Top 40 in at least 2 connections with other artists and show in which years there were listings. Use the same formatting for the answer as the example below.

TrackArtist	Years
Lady Gaga & Bradley Cooper	2018, 2019
Lady Gaga & Bruno Mars	2024, 2025
Lady Gaga and Beyoncé	2010

K15 Changing positions

Examine a favorite artist's tracks to see how often they rose, stayed the same, or fell. For this question, keep in mind that an artist can exist in different compositions. Use the example below to format your answer.

TrackArtist	TrackTitle	NumberOfTimesAscender	NumberOfTimesEqualizer	NumberOfTimesDescender
Armin van Buuren feat. Mr Probz	Another you	5	3	10
Armin van Buuren & Avian Grays feat. Jordan Shaw	Something Real	7	2	7
Armin Van Buuren & Chef'Special	Larger Than Life	7	4	8

K16 Sitters

Some tracks are sedentary in the Top 40 in the sense that they stay at the same position throughout their stay. Which tracks did so for more than 2 weeks? Sort your answer so that it shows the tracks with the highest position first and format it as in the example below:

TrackArtist	TrackTitle	HighestPosition	NumberOfWeeks
Rowwen Hèze	De Peel In Brand	34	3
Skunk Anansie	Weak	35	3
The Supremes	I Hear A Symphony	35	3

K17 Unique top teens

Every track gets a chance to enter the top 10. Thus, if you limit the number of times a track can be in the top 10 to a maximum of 1, you can be in the top 10 for a maximum of 10 weeks. That's a challenge that hasn't happened yet. Which track comes closest and in which weekly charts was it at which position?

K18 Graphical cases

The course of a track's visit to the Top 40 can also be represented with some creativity. Use a more or less graphic overview to show how a track has walked through the Top 40 in a way that is equal to or better than the example below:

```
declare @artist varchar(64) = 'The Beach Boys'
declare @title  varchar(64) = 'Sloop John B'
```

WeeklyList	Position
The Beach Boys	Sloop John B
1966-16	-----
1966-17	----- -----
1966-18	--- -----
1966-19	- -----
1966-20	-----

K19 Old artists

You can debunk the fairy tale that artists don't last long in this world with the answer to this question. What are the top 10 artists that span the greatest amount of time? Keep in mind that several artists come to an equal number of years.

Ranking	TrackArtist	NumberOfYears
6	The Rolling Stones	38
6	Elvis	38
8	Michael Jackson	37

K20 Misconnected

In their page on the history of the Top 40, the creators claim that artist "Doris D and The Pins" with the song "Shine Up" is the 250th single to reach the No. 1 position. For those who have the correct data know that this is incorrect. How many singles reaching the No. 1 position is it? Can you explain the difference?

K21 Same out as in

Tracks enter the Top 40 and at some point they leave the Top 40 again. This gives them a last position. Some tracks re-enter x time later, the so-called re-entrants. Which tracks re-entered at the same position as they had previously left the Top 40?

TrackArtist	TrackTitle	WeeklyList	ListingPosition	PreviousWeeklyList	PreviousPosition
Steve Miller Band	The Joker	1990-39	34	1973-48	34
Clannad	Theme From Harry's Game	1993-23	37	1983-42	37
Freddie Mercury	The Great Pretender	1992-49	29	1987-18	29

K22 Top 40 weekly list

Over the past nearly 60 years, a new Top 40 list has appeared almost every week. For the older among us, that used to be a printed copy, where today everything is electronic. Create a function that, for a given weekly list, lists the 40 listings in the correct order. In the result, show the information below:

select * from WeeklyList(2024,10)				
ListingPosition	PreviousWeeklyList	NumberOfWeeks	TrackArtist	TrackTitle
1	-	1	Joost	Europapa
2	1	18	Noah Kahan	Stick Season
3	6	3	Beyoncé	Texas Hold 'em

K23 Top x annual overview

Similar to the previous question, yet slightly different. At the end of the year people tend to compose popularity rankings. The Top 40 people follow this behaviour by making year, decade, or 'whatever else you would like to rank' list. For this challenge, create a function that for any given year returns the top given tracks in a descending order of earned points in that specific year. The highest position is taken by the highest number of points in that year. Equality is not always desired so, when tracks finish with equal points, the alphabetical ordering of artist and title is decisive for the ranking. Show the information as in the following example.

select * from YearOverview(2023,10)					
Ranking	TrackArtist	TrackTitle	NumberOfPoints	HighestPosition	NumberOfWeeks
3	Nothing But Thieves	Overcome	770	6	33
4	Calvin Harris & Ellie Goulding	Miracle	760	2	24
5	Maan ft. Goldband	Stiekem	734	2	24

K24 Fast Eddie

One song is not the other. Some rise quickly to the first position, some slowly and some get stuck on the way there. For this question, we are looking for speed. Which artist has reached the first position most often within 2 weeks? How often, with which tracks and when was that?

K25 Average tracks

An average track scores somewhere between 150 and 200 points during its stay in the Top 40. Exactly which tracks achieved the average number of points and in which weekly chart was their first listing?

K26 Everything odd

Every listing in the Top 40 is an achievement when you consider that millions of different tracks have now been released. It is even more special when a track holds only odd positions in the Top 40 and does so only in odd weeks of odd years. For which tracks is this the case and what are the corresponding years, weeks and positions?

K27 Hangin' on a string

Some tracks have occupied the lowest position of a weekly list more often than not. With one statement, how can you retrieve only the tracks that this has happened most often?

K28 'Effe wachte, nog effe wachte'

Free interpretation to the Pizza Song by André van Duin. There are artists who produce tracks at a fast pace. There are also artists who take their time before the next Top 40 listing. There can be several reasons behind this. In response, we are looking for the top 10 artists with the most weekly chart space between two consecutive tracks. See below for an example of the desired output:

Ranking	TrackArtist	PreviousTrackTitle	PreviousToWeeklyList	TrackTitle	FromWeeklyList	WeeklyListDifference
7	Roy Orbison	Too Soon To Know	...1966-41	You Got It	1989-03...	1151
8	The Righteous Brothers	Soul & Inspiration	...1966-21	You've Lost That Lovin' Feeling	1988-15...	1131
9	Tony Joe White	Groupy Girl	...1970-17	Good In Blues	1992-08...	1124

K29 Often top 10 and never at 1

Reaching the top position in the Top 40 is a challenge faced by fewer than 700 artists over the past 60 years. Yet artists who never climbed the honorary podium may have had many good scoring hits. Which artists have had more than seven Top 10 hits and no number one listing?

K30 With increasing decline

By decades, what is the average number of weeks by which tracks rose to their highest position in the Top 40 or fell from their highest position to the exit? Is there a trend measured over decades?

K31 Evenly frequent

Each listing of a track is a change, or not, from its previous listing. So you can determine for each track how often it has risen, fallen, or stayed the same. For this question, we are looking for the tracks that have done so as often and at the same time as often as possible. For the top 10 that did that, also show the sequential positions they held, as in the example below:

TrackArtist	TrackTitle	NumberOfTimes	Positions
Jason Derülo	whatcha say	5	35, 20, 16, 16, 15, 12, 14, 16, 17, 17, 17, 17, 29, 39
Mark' Oh	Tears Don't Lie	4	30, 10, 3, 2, 2, 2, 2, 3, 3, 7, 16, 31
Linda, Roos & Jessica	Alles Of Niets	4	25, 11, 7, 7, 7, 5, 5, 5, 7, 15, 26, 34

Sweaters

Z01 73

Sheldon's favorite number from “Big Bang Theory” is 73. For this question, show which tracks were in the top 3 73 weeklists ago. Of those tracks, also show what their point total was up to that point and what point total they eventually reached. The example below is from a little longer ago:

WeeklyList	ListingPosition	TrackArtist	TrackTitle	SubtotalPoints	TotalPoints
2023-37	1	Dua Lipa	Dance The Night	479	659
2023-37	2	Peggy Gou	It Goes Like Nanana	443	550
2023-37	3	Post Malone	Chemical	644	801

Z02 Repeating entrants

Which tracks entered the Top 40 more than twice, or had repeat entry status two or more times? For each track, show in which weekly charts the entry was and at which position. For the front row only, show the artist and title, as in the example below.

TrackArtist	TrackTitle	WeeklyList	ListingPosition
Steppenwolf	Born To Be Wild	1968-40	40
		1973-30	25
		1990-43	28
Ronnie Tober	Iedere Avond	1965-07	33
		1965-20	39
		1965-23	38

Z03 Bottom 5

Finds all tracks that entered the top 10 and were later in the “bottom 5” (position 36 or lower) at least once. Show the weekly list and position for these tracks in the specified order in the following situations and show the result as in the example below:

1. First entry
2. Listings in the bottom 5
3. Very last listing

TrackArtist	TrackTitle	Situation	WeeklyList	ListingPosition
Avicii	Wake me up!	1. EntrantInTop10	2013-26	8
		2. Bottom 5	2014-07	40
		3. LastWeeklyList	2018-20	40
The Common Linnets	Calm after the storm	1. EntrantInTop10	2014-20	3
		2. Bottom 5	2014-13	36
		2. Bottom 5	2014-15	39
		3. LastWeeklyList	2014-29	40

Z04 Unissued weekly lists

Don't be tempted by the length of the question. In what weeks has the Top 40 weekly chart not appeared since the first one in 1965?

To answer this question, assume that:

- the first broadcast dates from January 2, 1965
- we follow the SQL server definition of weeks.

Z05 High-low in multiple years

Many tracks have had Top 40 listings in different years. Which tracks have had listings in more than two years, both in the Top 10 and above the Top 20, and what were the corresponding positions in each year? Complete your answer as in the example below.

TrackArtist	TrackTitle	ListingYear	HighestPosition	LowestPosition
Percy Sledge	My Special Prayer	1969	1	32
		1974	7	32
		1975	3	40

Z06 Multiple Listings

Which artists had positions in the Top 40 with more than two tracks at the same time, with all these tracks reaching the top 3 at any given time? In your answer, show the information below.

WeeklyList	TrackArtist	TrackTitle	ListingPosition	HighestPosition
1974-20	Mud	The Cat Crept In	3	2
	Mud	Tiger Feet	9	1
	Mud	Dyna-Mite	34	1
2011-19	Adele	Set fire to the rain	3	1
	Adele	Rolling in the deep	10	1
	Adele	Someone like you	22	3

Z07 Collaboration

It is a well-known fact that many artists release tracks in collaboration with other artists. Therefore, let's limit this question to unique artists whose names consist of two parts separated by a space. So how many collaborations with other unique artists can you find in the history of the Top 40? The following example shows the collaborations if we were to look only at Bryan Adams and Barbra Streisand.

TrackArtist
Barbra Streisand and Don Johnson
Bryan Adams featuring Melanie C.
Bryan Adams with Tina Turner

Z08 Corresponding positions

Each listing for an artist's track applies to a particular position. Thus, you can produce a record of the number of times an artist has held a particular position. Create a function that produces this. Then choose two artists and note which positions they have been in equally often. For example, as shown below.

Artist	Artist	ListingPosition	NumberOfTimes
Queen	U2	18	9
Queen	U2	37	5
Queen	U2	38	2

Z09 Group positions

Artists can release tracks in multiple collaborations. You can then group each listing of a track into a series of positions, such as first 10 positions, next 10, etc. Create an overview that shows for any artist which tracks were made with whom, when they first entered and how many weeks they were within the following position groups respectively:

- Position 1 to 10
- Position 11 to 20
- Position 21 t/m 30
- Position 31 to 40
- Total number of weeks

Can you also get this summary done with a pivot function? The example below applies to Tate McRae:

TrackArtist	TrackTitle	FirstEntrant	WeeksInTop10	WeeksInTop20	WeeksInTop30	WeeksInTop40	WeeksInTotal
Tiësto feat. Tate McRae	10:35	2022-47	0	14	4	1	19
Tate McRae	Greedy	2023-38	19	4	2	1	26
Tate McRae	Exes	2023-48	0	3	4	1	8

Z10 Equal ranking

Every weekly list holds exactly 40 positions. So when a track enters for the first time it does so at a position between 1 and 40. There are also annual lists. In these lists, a track has a certain ranking based on the points it achieved in that year. Which tracks entered the Top 40 at a certain position and reached exactly the same position on the annual list in a year other than the year of first entry?

TrackArtist	TrackTitle	WeeklyList	Ranking	YearOverview
Soul II Soul	Get A Life	1989-51	22	1990
Kate Winslet	What If	2001-51	29	2002
Anouk	One Word	2005-48	26	2006

Z11 Return to sender

Returners in the Top 40 are often seen when an artist dies, or when a movie or serie is released that re-introduces the “old” track. The success of these returners varies widely. Some tracks ripe in time, others don’t. Which tracks achieved the first higher position than ever before in their latest return?

TrackArtist	TrackTitle	FirstWeeklyListAtHigherPosition
Steve Miller Band	The Joker	1990-41
Steppenwolf	Born To Be Wild	1990-44
Sniff 'n' The Tears	Driver's Seat	1991-29

Z12 About exceeding

Some artists punch above their weight with the release of a new track. They never reach a higher position than the position they enter the Top 40. Do you know which tracks had that experience? Perhaps more than you might think. For each track, when did it occur and at what position did they enter? For the answer to this question, exclude the first and last weekly lists of the Top 40 and all tracks that spent only 1 week in the Top 40.

TrackArtist	TrackTitle	WeeklyList	ListingPosition	NumberOfWeeks
Sandy Coast	We'll Meet Again	1966-35	39	2
The Sandpipers / Digno Garcia y Sus Carios	Guantanamera	1966-41	4	11
The Easybeats	Friday On My Mind	1967-03	3	7

Z13 Oeuvre score

As artists release more tracks by themselves or in collaborations, they accumulate more Top 40 points. Choose a random artist who has scored multiple hits in multiple years, but who has also not collected any points for years. For that artist, show the accumulation of score over the complete period in which the artist has been active and then also in a scale from 1 to 100. Complicated question, simple example:

Year	RunningPoints	Progress
Now	13,552	Ed Sheeran
2011	267
2012	1,009
2013	1,081
2014	2,272
2015	2,878

Z14 To be or not to be in the top 10

Every track that has ever been in the Top 40 has reached a top position. Some tracks reached the top 10, while others did not. For all years, list the number of tracks that did or did not perform. For the simplicity of the query, using the rotation function pivot in the answer is a good tip. Of course, it can be done differently. Costs a little more coding and is less pretty, although that is subjective.

ListingYear	InTop10	NotInTop10
1991	117	229
1992	114	242
1993	99	224

Z15 Retro one

On average, few tracks reach the No. 1 position in the Top 40. Even fewer repeat it again later, while having been in other positions in the meantime. Which tracks have conquered the No. 1 position more than once and when did this happen to them?

TrackArtist	TrackTitle	UpToFirstPositions
The Weeknd	Blinding Lights	2020-03, 2020-07, 2020-18
Major Lazer x DJ Snake feat. MØ	Lean on	2015-15, 2015-24
Dvbbs & Borgeous	Tsunami	2013-40, 2013-44

Z16 3x3

Many artists who have success with a track release a successor soon after, hoping that it will also score well in the Top 40. There even once was an artist who had 3 different tracks in the top 3 in the same or in a **successive** weekly list. Which artist was that with which tracks, and for each track, please indicate which weekly charts this applied to?

Z17 Oeuvre overview

A large number of artists release multiple tracks and it regularly happens that the same track is in the Top 40 for several periods. First, write a function that lists all tracks and consecutive periods of listing in the Top 40 for any artist. Then, using a selection, make the chronological order visible as in the example below:

TrackArtist	TrackTitle	FromWeeklyList	ToWeeklyList
Ronnie Tober	Iedere Avond	1965-07	1965-18
Ronnie Tober	Geweldig	1965-10	1965-14
Ronnie Tober	Iedere Avond	1965-20	1965-21

Z18 Declining popularity

Most tracks that have ever entered the Top 40 for a consecutive period show the same behavior. They enter, rise through to their top position, possibly stay there for a while and then move (slowly) towards the exit. What are the

top 10 tracks that have been slowest toward the exit? Please note that the period towards the exit starts after a track has left the top position and only counts if the track holds an equal or lower position all subsequent weeks.

Z19 Staying high

It has been noted before that some artists produce tracks by the assembly line. Whether they are then all equally successful and score a top 10 listing is, of course, highly questionable. That's what makes this challenge fun. What is the top 10 artists who had one or more songs in the top 10 for the longest continuous period of time as of when? Format your answer as in the example below:

Ranking	TrackArtist	WeeklyList	ConsecutiveWeeklyLists
6	The Beatles	1965-31	30
7	The Black Eyed Peas	2009-29	27
7	Gotye feat. Kimbra	2011-35	27

Why aren't "The Beatles" at the first position?

Z20 Monthly review

Each track in the Top 40 has had a first entry in some month. Create a top 12 of first entries per month and put the month with the highest number first. Can you explain the results?

MonthOfEntry	NumberOfFirstEntrants
June	1263
April	1253
September	1227

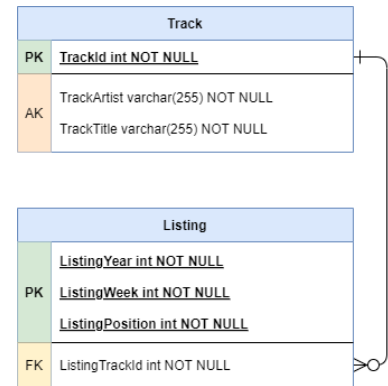
Das Model

Kraftwerk never made it into the Top 40 with this track. Too bad, because this song was way ahead of its time. Apparently at that time they were mostly on the Autobahn, probably in traffic jams. I did see positive feedback from Måneskin and RuPaul who even used the word Supermodel.

M01 Split artists

Sometimes you look around and let your mind wander... In the music world there are also plenty of weird types walking around, sometimes even with split personalities. That's indirectly what this question is about.

Artists release tracks independently, but sometimes as a team. The model shown here does not capture connections between artists and tracks. The product owner of our Top40 team has proposed a model extension that does give us that capability. We will implement this extension in sprints.



M01a Structure

Make an outline of the new data model. Keep in mind the notation method of the existing model. What DDL can you use to transform the existing model into the new model?

M01b Manipulation

Data models provide the structure, with DML you can manipulate the data of a model. Which DML statements can you use to make the proposed changes to the data model?

M01c Access

Gifts are beautiful. This Top 40 movement is transparent. So we don't need DCL modifications.