



Spotify Data Analysis

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OBJECTIVE

- ♪ To analyze and explore Spotify's track data using SQL, focusing on insights like high-stream tracks, artist productivity, and track characteristics.
- ♪ By cleaning and querying the dataset, this project aims to uncover patterns in streaming behavior, popular music attributes, and artist trends, supporting data-driven insights for decision-making and enhanced user experience on the platform.



PROBLEM STATEMENT

Basic

- 1) Retrieve the names of all tracks that have more than 1 billion streams.
- 2) List all albums along with their respective artists.
- 3) Get the total number of comments for tracks where licensed = TRUE.
- 4) Find all tracks that belong to the album type single.
- 5) Count the total number of tracks by each artist.

Intermediate :

- 6) Calculate the average danceability of tracks in each album.
- 7) Find the top 5 tracks with the highest energy values.
- 8) List all tracks along with their views and likes where official_video = TRUE.
- 9) For each album, calculate the total views of all associated tracks.
- 10) Retrieve the track names that have been streamed on Spotify more than YouTube.

Advanced

- 11) Find the top 3 most-viewed tracks for each artist using window functions.
- 12) Write a query to find tracks where the liveness score is above the average.
- 13) calculate the difference between the highest and lowest energy values for tracks in each album.
- 14) Find tracks where the energy-to-liveness ratio is greater than 1.2.
- 15) Calculate the cumulative sum of likes for tracks ordered by the number of views.





LET'S BEGIN ANALYSIS USING



1. Retrieve the names of all tracks that have more than 1 billion streams

QUERY

```
select track
from spotify
where stream > 10000000000
order by 1 DESC
LIMIT 5;
```

OUTPUT

track
Youngblood
Young, Wild & Free (feat. Bruno Mars)
Young, Wild & Free (feat. Bruno Mars)
Young Dumb & Broke
you broke me first



2. List all albums along with their respective artists.

QUERY

```
select distinct album,artist
from spotify
where album_type = 'album'
LIMIT 10;
```

OUTPUT

album	artist
Demon Days	Gorillaz
Plastic Beach	Gorillaz
Gorillaz	Gorillaz
Humanz (Deluxe)	Gorillaz
Californication (Deluxe Edition)	Red Hot Chili Peppers
Blood Sugar Sex Magik (Deluxe Edition)	Red Hot Chili Peppers
By the Way (Deluxe Edition)	Red Hot Chili Peppers
Stadium Arcadium	Red Hot Chili Peppers
The Getaway	Red Hot Chili Peppers
Get Rich Or Die Tryin'	50 Cent

3. Get the total number of comments for tracks where licensed = TRUE.

QUERY

```
select sum(comments) as Total_Comments  
from spotify  
where Licensed = 'True';
```

OUTPUT

Total_Comments
488312341



4) Find all tracks that belong to the album type single.

QUERY

```
select track
from spotify
where album_type = 'Single'
LIMIT 10;
```

OUTPUT

track
New Gold (feat. Tame Impala and Bootie Brown)
New Gold (feat. Tame Impala and Bootie Brown) - Dom Dolla Remix
Cracker Island (feat. Thundercat)
Best Friend - Remix
Lux Æterna
Screaming Suicide
Get Lucky (feat. Pharrell Williams & Nile Rodgers) - Radio Edit
Numb / Encore
Pump It Louder
Never Gonna Not Dance Again

5. Count the total number of tracks by each artist.

QUERY

```
select artist,count(track) as Total_No_Songs
from spotify
group by artist
ORDER BY 2
LIMIT 10;
```

OUTPUT

artist	Total_No_Songs
Stars Music Chile	1
back number	1
Bootie Brown	1
Vaundy	2
Mrs. GREEN APPLE	2
Jimin	3
BUMP OF CHICKEN	4
Orochi	4
Lamp	5
Mr.Children	5

6. Calculate the average danceability of tracks in each album.

QUERY

```
select album,round(avg(Danceability),6)
from spotify
group by album
ORDER BY 2 DESC
LIMIT 10;
```

OUTPUT

album	round(avg(Danceability),6)
FOR CERTAIN (Deluxe)	0.975
Funky Friday	0.975
The House Is Burning [homies begged]	0.971
N9NA	0.97
Quality Control: Control The Streets Volume 2	0.97
Aka Entre el Humo	0.967
Peru (Remix)	0.966
Street Gossip	0.964
Imdat (feat. Hadise)	0.964
Harder Than Ever	0.963



7. Find the top 5 tracks with the highest energy values.

QUERY

```
select track,max(energyLiveness) as energy
from spotify
group by track
order by energy desc
limit 10;
```

OUTPUT

track	energy
Take It	59.11392405
Verano Azul	58
Salvavidas	57.65517241
Ants Marching	54.52229299
Eres Mi Sueño - Versión Radio Edit	51.38121547
Feel My Needs - Purple Disco Machine Remix	49.23076923
Bonetrousle	48.9
Dominicana	45.52763819
Socadona (feat. Mr. Vegas)	43.77659574
Ain't It Fun	42.52380952



8. List all tracks along with their views and likes where official_video = TRUE.

QUERY

```
select track,sum(views) as total_Views,  
       sum(likes) as total_Likes  
from spotify  
where official_video = 'True'  
group by track  
limit 5;
```

OUTPUT

track	total_Views	total_Likes
Feel Good Inc.	693555221	6220896
Rhinestone Eyes	72011645	1079128
New Gold (feat. Tame Impala and Bootie Brown)	25305733	846443
On Melancholy Hill	211754952	1788577
Clint Eastwood	618480958	6197318



9. For each album, calculate the total views of all associated tracks.

QUERY

```
select album,track, sum(views)
from spotify
group by album,track
order by 3 DESC
LIMIT 10;
```

OUTPUT

album	track	sum(views)
VIDA	Despacito	16159296273
See You Again (feat. Charlie Puth)	See You Again (feat. Charlie Puth)	11547595554
Peace Is The Mission (Extended)	Lean On	9974504694
MUNAY	Calma - Remix	5322011392
This Is What You Came For	This Is What You Came For	5252059812
Swalla (feat. Nicki Minaj & Ty Dolla \$ign)	Swalla (feat. Nicki Minaj & Ty Dolla \$ign)	5162403752
CoComelon Kids Hits, Vol. 1	Wheels on the Bus	4898831101
Taki Taki (with Selena Gomez, Ozuna & Cardi B)	Taki Taki (with Selena Gomez, Ozuna & Cardi B)	4828403435
Uptown Special	Uptown Funk (feat. Bruno Mars)	4821016218
Gangnam Style (?????)	Gangnam Style (?????)	4679767471

10. Retrieve the track names that have been streamed on Spotify more than YouTube

QUERY

```
select * from (  
select track ,  
coalesce(sum(case when most_playedon = 'Youtube' then stream end),0) as streamed_in_youtube,  
coalesce(sum(case when most_playedon = 'Spotify' then stream end),0) as streamed_in_spotify  
from spotify  
group by track) santy  
where streamed_in_spotify > streamed_in_youtube and streamed_in_youtube <> 0  
limit 5;
```



OUTPUT

track	streamed_in_youtube	streamed_in_spotify
Without Me	1457351902	1666992690
Silence	22259505	2644114398
Color Esperanza 2020	89466323	1610393814
UP	95034318	534021884
Always On My Mind	82658228	126445901



11. Find the top 3 most-viewed tracks for each artist

QUERY

```
select * from (  
  select track  
    ,artist  
    ,dense_rank() over(partition by artist order by sum(views)) as dns_rnk  
  from spotify  
 group by 1,2) dense  
where dns_rnk < 4;
```

OUTPUT

track	artist	dns_rnk
THE BADDEST	(G)I-DLE	1
MY BAG	(G)I-DLE	2
HWAA	(G)I-DLE	3
(God Must Have Sp...	*NSYNC	1
Thinking Of You (I D...	*NSYNC	2
Merry Christmas, H...	*NSYNC	3
Demon (featuring \$...	\$NOT	1
KILL CUPID	\$NOT	2
SIMPLE	\$NOT	3
...And to Those I L...	\$uicideboy\$	1
Runnin' Thru the 7t...	\$uicideboy\$	2
I Dream of Chrome	\$uicideboy\$	3
Honey	070 Shake	1
Danielle (smile on m...	070 Shake	2
Guilty Conscience - ...	070 Shake	3
Sure Thing (8D spe...	11:11 Music Group	1
Past Lives	11:11 Music Group	2
Past Lives (8D Audio)	11:11 Music Group	3
Dance With Me (fea...	112	1
Only You (feat. The...	112	2
Dance With Me	112	3
Shut It	1nonly	1
Come Thru (feat. S...	1nonly	2
Step Back!	1nonly	3



12. Write a query to find tracks where the liveness score is above the average.

QUERY

```
select track,artist,liveness from
(
select avg(liveness) as a
from spotify
)as average,spotify
where liveness > a;
```

OUTPUT

track	artist	liveness
Feel Good Inc.	Gorillaz	0.613
DARE	Gorillaz	0.298
New Gold (feat. Ta...	Gorillaz	0.325
Cracker Island (feat...	Gorillaz	0.325
Dirty Harry	Gorillaz	0.672
Dani California	Red Hot Chili Peppers	0.346
Candy Shop	50 Cent	0.38
Just A Lil Bit	50 Cent	0.315
Disco Inferno	50 Cent	0.279
The Unforgiven (Re...	Metallica	0.255
One (Remastered)	Metallica	0.42
Screaming Suicide	Metallica	0.239
Yellow	Coldplay	0.234
A Sky Full of Stars	Coldplay	0.209
Hymn for the Week...	Coldplay	0.325
My Universe	Coldplay	0.328
One More Time	Daft Punk	0.332
Harder, Better, Fas...	Daft Punk	0.358
Digital Love	Daft Punk	0.342
In the End	Linkin Park	0.209
Numb	Linkin Park	0.639
Numb / Encore	Linkin Park	0.582
Bleed It Out	Linkin Park	0.61
Papercut	Linkin Park	0.623



13. calculate the difference between the highest and lowest energy values for tracks in each album.

QUERY

```
with cte as
(
  select album,
         max(energy) as Highest_energy_value,
         min(energy) as Lowest_energy_value
    from spotify
   group by album
)
select album,
       Highest_energy_value - Lowest_energy_value as Difference
  from cte
 order by 2 Desc
LIMIT 10;
```

OUTPUT

album	Difference
White Noise	0.9067500000000001
Spotify Singles - Holiday	0.8360000000000001
Spotify Singles	0.8232
UNDERTALE Soundtrack	0.816
Making Mirrors	0.8109000000000001
Everytime We Touch (Premium Edition)	0.8049999999999999
If I Can Dream: Elvis Presley with the Royal Phil...	0.787
Fallen	0.7649999999999999
CeeLo's Magic Moment	0.762
Greatest Hits	0.741

14. Find tracks where the energy-to-liveness ratio is greater than 1.2.

QUERY

```
select * from (  
  select distinct track ,  
    case when liveness = 0 then null  
    Else energy / liveness end ratio  
  from spotify ) as r  
where ratio > 1.2  
order by 2 desc  
limit 10;
```

OUTPUT

track	ratio
Take It	59.11392405063291
Verano Azul	58
Salvavidas	57.655172413793096
Ants Marching	54.52229299363058
Eres Mi Sueño - Ver...	51.38121546961326
Feel My Needs - Pur...	49.230769230769226
Bonetrousle	48.9
Dominicana	45.527638190954775
Socadona (feat. Mr...	43.77659574468085
Ain't It Fun	42.52380952380952



15. Calculate the cumulative sum of likes for tracks ordered by the number of views.

QUERY

```
with cte as
(
  select track
  ,sum(likes) over(partition by track
                  order by views desc) as likes
  from spotify
)
select track ,likes
from cte
order by 2 desc
LIMIT 10;
```

OUTPUT

track	likes
Despacito	101577278
See You Again (feat...	80295292
Boy With Luv (feat....	55176413
Despacito	50788652
lovely (with Khalid)	48852042
Lean On	48633206
See You Again (feat...	40147674
Old Town Road - Re...	37889373
Old Town Road - Re...	37889373
Taki Taki (with Sele...	37552053



THANK YOU

