

▼ Pivot Table for Data Warehouse

- OLTP: Online Transaction Processing
- OLAP: Online Analytical Processing

▼ Setup

```
import numpy as np
import pandas as pd
```

```
df = pd.read_csv('/content/Spotify_Youtube_Sample.csv')
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 20718 entries, 0 to 20717
Data columns (total 10 columns):
#   Column                Non-Null Count  Dtype
---  -
0   Artist                20718 non-null  object
1   Track                 20718 non-null  object
2   Album                 20718 non-null  object
3   Album_type            20718 non-null  object
4   Views                 20248 non-null  float64
5   Likes                 20177 non-null  float64
6   Comments              20149 non-null  float64
7   Licensed              20248 non-null  object
8   official_video        20248 non-null  object
9   Stream                20142 non-null  float64
dtypes: float64(4), object(6)
memory usage: 1.6+ MB
```

```
df['Artist'].unique()[:100]
```

```
array(['Gorillaz', 'Red Hot Chili Peppers', '50 Cent', 'Metallica',  
      'Coldplay', 'Daft Punk', 'Linkin Park', 'Radiohead', 'AC/DC',  
      'Black Eyed Peas', 'Michael Jackson', 'P!nk', 'Eminem',  
      'Pharrell Williams', 'Khalid', 'Shakira', 'Machine Gun Kelly',  
      'Nicky Jam', 'The Beatles', 'Pitbull', 'Sean Paul',  
      'Elvis Presley', '2Pac', 'Snoop Dogg', 'Lil Wayne', 'Sia',  
      'Fleetwood Mac', 'ABBA', 'Frank Sinatra', 'Tiësto', 'Elton John',  
      'JAY-Z', '21 Savage', 'Kanye West', 'Luis Miguel', 'Beyoncé',  
      'Daddy Yankee', 'Don Toliver', 'Camilo', 'Britney Spears',  
      'Farruko', 'Wisin & Yandel', 'Disney', 'Chris Brown', 'Tory Lanez',  
      'Mariah Carey', 'A.R. Rahman', 'Die drei ???', 'Pritam',  
      'Shreya Ghoshal', 'Pink Floyd', 'System Of A Down', 'Green Day',  
      'Ludovico Einaudi', 'Muse', 'Aerosmith', 'Slipknot', 'Oasis',  
      'The Rolling Stones', 'Hans Zimmer', 'Deftones', 'blink-182',  
      'Bob Marley & The Wailers', 'David Bowie', 'Bon Jovi', 'Dr. Dre',  
      'Creedence Clearwater Revival', 'U2', 'Nate Dogg', 'Juanes',  
      'Maná', 'Bee Gees', 'Billy Joel', 'The Notorious B.I.G.',  
      'Enrique Iglesias', 'Timbaland', 'Alejandro Sanz',  
      'Whitney Houston', 'Madonna', 'Alicia Keys', 'John Mayer',  
      'Christina Aguilera', 'Marc Anthony', 'Ricardo Arjona',  
      'Stevie Wonder', 'Ludacris', 'Plan B', 'Aventura', 'Usher',  
      'Vicente Fernández', 'Alejandro Fernández', 'T-Pain',  
      'Johann Sebastian Bach', 'Jhené Aiko', 'Alka Yagnik',  
      'Udit Narayan', 'Vishal-Shekhar', 'Bibi und Tina',  
      'Yuvan Shankar Raja', 'Bibi Blocksberg'], dtype=object)
```

▼ Create Pivot Table

```
df_pivot = df.pivot_table(values=['Views','Likes','Comments'],index=['Artist','Album'],aggfunc='sum')
df_pivot
```

		Comments	Likes	Views
Artist	Album			
\$NOT	- TRAGEDY +	3404.0	165966.666667	9158825.0
	Beautiful Havoc	13900.5	371387.500000	14683693.5
	EAT YOUR HEART OUT	735.0	19033.000000	681136.0
	Ethereal	8183.0	388334.000000	10114989.0
	Fast & Furious: Drift Tape (Phonk Vol 1)	32.0	1725.000000	76559.0
...
Øneheart	snowfall (Slowed + Reverb)	11423.0	561165.000000	15361992.0
	snowfall (Sped Up)	1361.0	66128.000000	1707355.0
	this feeling	516.0	32838.000000	856049.0
	watching the stars	216.0	13429.000000	323775.0
	watching the stars (Remixes)	16.0	2145.000000	139020.0

13955 rows x 3 columns

▼ Play with the Pivot Table

df_pivot.loc['Michael Jackson']

	Comments	Likes	Views
Album			
Bad (Remastered)	60358.5	1594227.0	2.604891e+08
Dangerous	127080.0	3085718.0	5.040573e+08
HIStory - PAST, PRESENT AND FUTURE - BOOK I	335112.0	8312571.0	9.786800e+08
Off the Wall	88325.0	2262080.0	3.254739e+08
Thriller	383891.5	8089856.5	1.103212e+09
XSCAPE	27103.5	1064408.0	1.719371e+08

```
df_pivot.loc[['Michael Jackson', 'The Beatles', 'Beyoncé']]
```

		Comments	Likes	Views
Artist	Album			
Michael Jackson	Bad (Remastered)	60358.50	1594227.0	2.604891e+08
	Dangerous	127080.00	3085718.0	5.040573e+08
	HIStory - PAST, PRESENT AND FUTURE - BOOK I	335112.00	8312571.0	9.786800e+08
	Off the Wall	88325.00	2262080.0	3.254739e+08
	Thriller	383891.50	8089856.5	1.103212e+09
	XSCAPE	27103.50	1064408.0	1.719371e+08
The Beatles	1 (Remastered)	5300.00	368291.5	4.284411e+07
	Abbey Road (Remastered)	20924.00	728453.0	8.114310e+07
	Help! (Remastered)	5938.00	475089.0	4.285668e+07
	Let It Be (Remastered)	15452.00	1075941.0	1.319251e+08
	Please Please Me (Remastered)	4309.00	490790.0	5.322836e+07
	Rubber Soul (Remastered)	8607.00	463315.0	6.322312e+07
Beyoncé	The Beatles (Remastered)	4522.00	365297.0	3.385295e+07
	4	166002.00	2623723.5	5.347308e+08
	BEYONCÉ [Platinum Edition]	129479.00	2906283.0	6.870312e+08
	Dangerously In Love	66334.00	3218858.0	6.690844e+08
	I AM...SASHA FIERCE	203892.00	6931695.0	1.357274e+09
	Perfect Duet (Ed Sheeran & Beyoncé)	70570.00	1998224.0	2.315809e+08
	RENAISSANCE	3808.25	112728.5	7.965112e+06

▼ Sort the Values

```
df_pivot.sort_values(by = 'Views', ascending= False)
```

		Comments	Likes	Views
Artist	Album			
Daddy Yankee	VIDA	4252791.0	50788626.0	8.079647e+09
Charlie Puth	See You Again (feat. Charlie Puth)	2127346.0	40147674.0	5.773798e+09
Wiz Khalifa	See You Again (feat. Charlie Puth)	2127345.0	40147618.0	5.773797e+09
Mark Ronson	Uptown Special	598916.0	20067879.0	4.821016e+09
PSY	Gangnam Style (강남스타일)	5331537.0	26399133.0	4.679767e+09
...
Camila	Resistiré	1.0	9.0	4.900000e+01
Peter Groeger	Der Kaiser von Dallas (Die einzige Wahrheit über den Mord an John F. Kennedy)	0.0	0.0	3.688889e+01
Deep Purple	Machine Head (2016 Version)	0.0	1.0	3.100000e+01

df_pivot.sort_values(by = ['Artist','Views'], ascending= False)

		Comments	Likes	Views
Artist	Album			
Øneheart	snowfall	11423.0	561165.000000	15361992.0
	snowfall (Slowed + Reverb)	11423.0	561165.000000	15361992.0
	snowfall (Sped Up)	1361.0	66128.000000	1707355.0
	this feeling	516.0	32838.000000	856049.0
	apathy	419.0	23615.000000	597163.0
...
\$NOT	Ethereal	8183.0	388334.000000	10114989.0
	- TRAGEDY +	3404.0	165966.666667	9158825.0
	SIMPLE	2317.0	95313.000000	1967700.0
	EAT YOUR HEART OUT	735.0	19033.000000	681136.0
	Fast & Furious: Drift Tape (Phonk Vol 1)	32.0	1725.000000	76559.0

13955 rows × 3 columns

```
df_pivot.sort_values(by = ['Artist','Views'], ascending= False).loc['Daddy Yankee']
```

	Comments	Likes	Views
Album			
VIDA	4252791.0	5.078863e+07	8.079647e+09
Con Calma	384865.0	1.303660e+07	2.626439e+09
LEGENDADDY	16214.0	8.849240e+05	8.708415e+07
Barrio Fino (Bonus Track Version)	4184.0	1.790017e+05	2.172502e+07
ULALA (OOH LA LA)	3837.0	2.278240e+05	9.058435e+06
Talento de Barrio	1675.0	3.271800e+04	3.647171e+06
El Cartel: The Big Boss	193.0	1.036000e+04	8.649900e+05
YHLQMDLG	1.0	1.180000e+02	1.084500e+04


```
df_pivot.sort_values(by = ['Artist','Views'], ascending= False).loc[['Coldplay', '1
```

		Comments	Likes	Views
Artist	Album			
Coldplay	Memories...Do Not Open	270444.0	10282499.0	2.118019e+09
	A Head Full of Dreams	377666.0	13515772.0	1.828242e+09
	Mylo Xyloto	343020.0	8497224.0	1.665814e+09
	A Rush of Blood to the Head	124357.0	5532787.0	1.082588e+09
	Viva La Vida or Death and All His Friends	261790.0	4370461.0	7.895815e+08
	Ghost Stories	79974.0	3741300.0	7.864046e+08
	X&Y	114460.0	2962029.0	5.662392e+08
	Parachutes	59966.5	2694138.0	4.528667e+08
	Music Of The Spheres	432726.0	8867547.0	2.546560e+08
The Beatles	Let It Be (Remastered)	15452.0	1075941.0	1.319251e+08
	Abbey Road (Remastered)	20924.0	728453.0	8.114310e+07
	Rubber Soul (Remastered)	8607.0	463315.0	6.322312e+07
	Please Please Me (Remastered)	4309.0	490790.0	5.322836e+07
	Help! (Remastered)	5938.0	475089.0	4.285668e+07
	1 (Remastered)	5300.0	368291.5	4.284411e+07
	The Beatles (Remastered)	4522.0	365297.0	3.385295e+07

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