SQL Project

-- Exploratory Data Analysis (EDA)--

This project utilizes SQL to analyze data on employee layoffs within a company. Here we are going to explore the data and find trends or patterns or anything interesting like outliers.

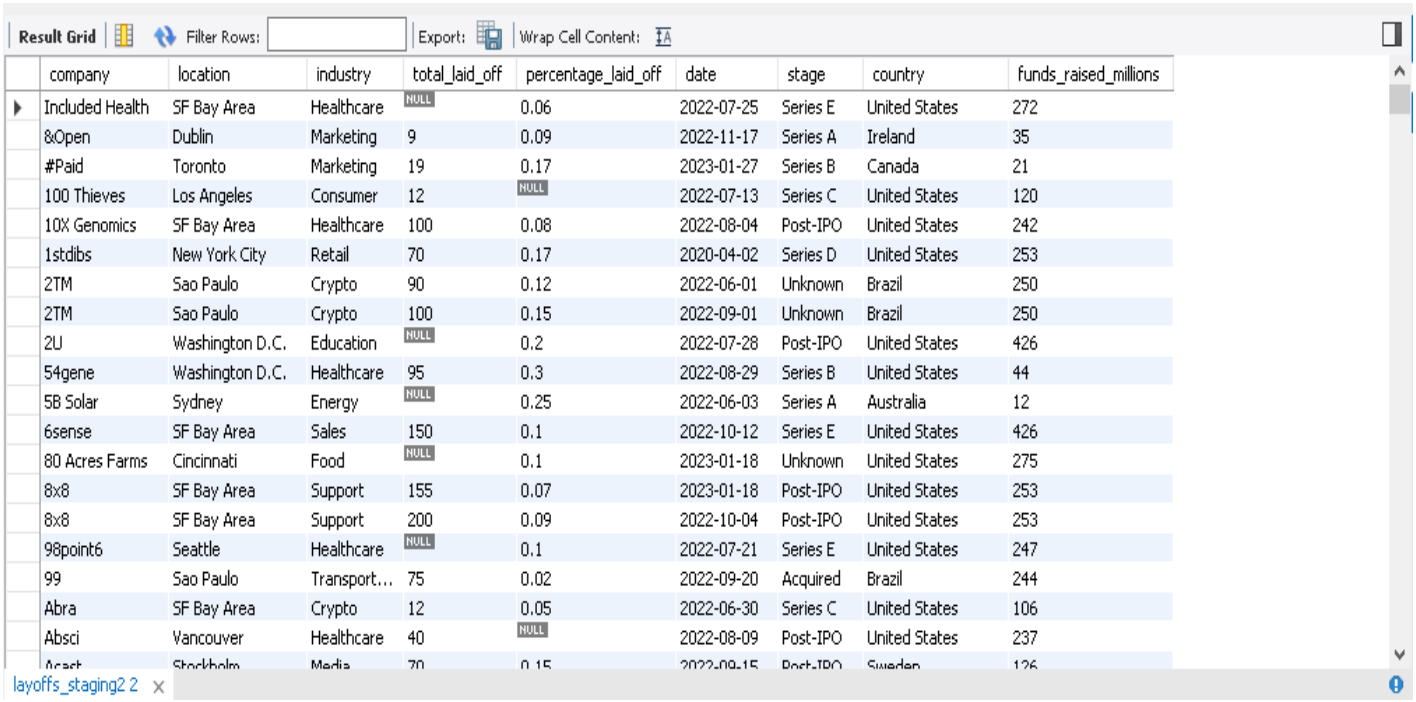
One will gain experience in:

- **Identifying trends and patterns in workforce data.**
- **Communicating data-driven insights and recommendations.**

==========

```
-- This query retrieves the data of a table.

Select *
from layoffs_staging2;
```



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

company	location	industry	total_laid_off	percentage_laid_off	date	stage	country	funds_raised_millions
Included Health	SF Bay Area	Healthcare	NULL	0.06	2022-07-25	Series E	United States	272
&Open	Dublin	Marketing	9	0.09	2022-11-17	Series A	Ireland	35
#Paid	Toronto	Marketing	19	0.17	2023-01-27	Series B	Canada	21
100 Thieves	Los Angeles	Consumer	12	NULL	2022-07-13	Series C	United States	120
10X Genomics	SF Bay Area	Healthcare	100	0.08	2022-08-04	Post-IPO	United States	242
1stdibs	New York City	Retail	70	0.17	2020-04-02	Series D	United States	253
2TM	Sao Paulo	Crypto	90	0.12	2022-06-01	Unknown	Brazil	250
2TM	Sao Paulo	Crypto	100	0.15	2022-09-01	Unknown	Brazil	250
2U	Washington D.C.	Education	NULL	0.2	2022-07-28	Post-IPO	United States	426
54gene	Washington D.C.	Healthcare	95	0.3	2022-08-29	Series B	United States	44
5B Solar	Sydney	Energy	NULL	0.25	2022-06-03	Series A	Australia	12
6sense	SF Bay Area	Sales	150	0.1	2022-10-12	Series E	United States	426
80 Acres Farms	Cincinnati	Food	NULL	0.1	2023-01-18	Unknown	United States	275
8x8	SF Bay Area	Support	155	0.07	2023-01-18	Post-IPO	United States	253
8x8	SF Bay Area	Support	200	0.09	2022-10-04	Post-IPO	United States	253
98point6	Seattle	Healthcare	NULL	0.1	2022-07-21	Series E	United States	247
99	Sao Paulo	Transport...	75	0.02	2022-09-20	Acquired	Brazil	244
Abra	SF Bay Area	Crypto	12	0.05	2022-06-30	Series C	United States	106
Absci	Vancouver	Healthcare	40	NULL	2022-08-09	Post-IPO	United States	237
Acast	Stockholm	Media	70	0.15	2022-09-15	Post-IPO	Sweden	126

layoffs_staging2 2

```sql
/*This query provides you to find the peak instance of employee layoffs within the timeframe covered by the data.
This can indicate the most severe period of workforce reduction.*/

Select MAX(total_laid_off)
from layoffs_staging2;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

MAX(total_laid_off)
12000

```sql
/*This query provides you to find the highest number of employees laid off within a dataset
when the percentage of employee layoffs is 100%*/

Select MAX(total_laid_off)
from layoffs_staging2
where percentage_laid_off =1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

MAX(total_laid_off)
2434

```sql
-- Looking at Percentage to see how big these layoffs were

SELECT MAX(percentage_laid_off),  MIN(percentage_laid_off)
FROM layoffs_staging2
WHERE  percentage_laid_off IS NOT NULL;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

MAX(percentage_laid_off)	MIN(percentage_laid_off)
1	0

```sql
/*This query provides you to find the specific layoffs
where 1 (representing 100%) of employees were laid off from a company
where the entire workforce was laid off.*/

Select *
from layoffs_staging2
where percentage_laid_off =1
order by total_laid_off desc;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

company	location	industry	total_laid_off	percentage_laid_off	date	stage	country	funds_raised_millions
Katerra	SF Bay Area	Construction	2434	1	2021-06-01	Unknown	United States	1600
Butler Hospitality	New York City	Food	1000	1	2022-07-08	Series B	United States	50
Deliv	SF Bay Area	Retail	669	1	2020-05-13	Series C	United States	80
Jump	New York City	Transportation	500	1	2020-05-07	Acquired	United States	11
SEND	Sydney	Food	300	1	2022-05-04	Seed	Australia	3
HOOQ	Singapore	Consumer	250	1	2020-03-27	Unknown	Singapore	95
Stoqo	Jakarta	Food	250	1	2020-04-25	Series A	Indonesia	NULL
Stay Alfred	Spokane	Travel	221	1	2020-05-20	Series B	United States	62
Britishvolt	London	Transportation	206	1	2023-01-17	Unknown	United Kingdom	2400
Planetly	Berlin	Other	200	1	2022-11-04	Acquired	Germany	5
Crejo.Fun	Bengaluru	Education	170	1	2022-06-30	Seed	India	3

layoffs_staging2 6

```sql
-- This query provides you to find the date range of employee layoffs in the given data.

Select min(`date`), max(`date`)
from layoffs_staging2;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

min(`date`)	max(`date`)
2020-03-11	2023-03-06

```sql
/*This query provides you to find the total number of employees laid off at each company and
shows which companies experienced the most overall layoffs.*/

Select Company, sum(total_laid_off)
from layoffs_staging2
group by company
order by 2 desc;
```

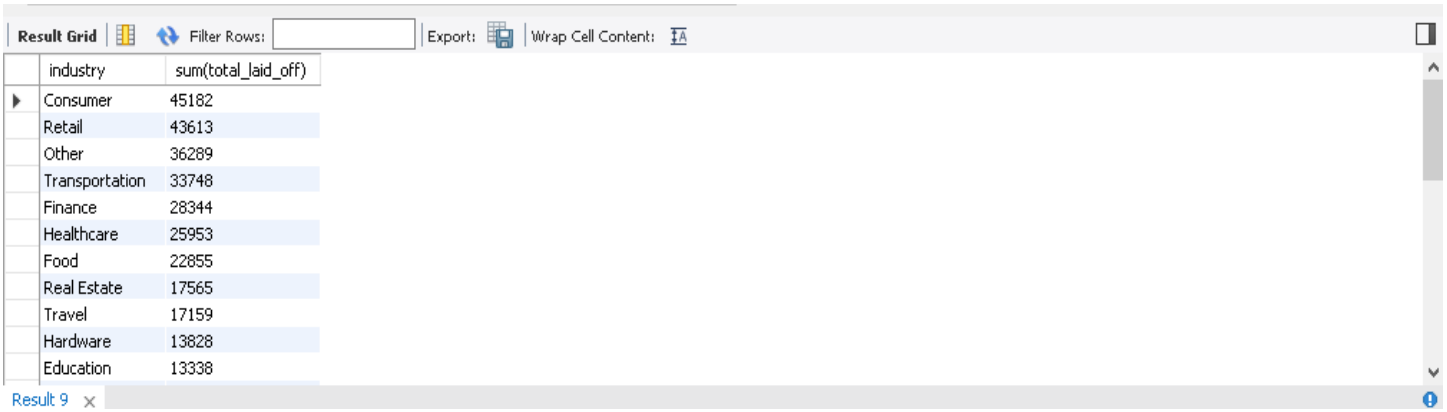
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Company	sum(total_laid_off)
Amazon	18150
Google	12000
Meta	11000
Salesforce	10090
Microsoft	10000
Philips	10000
Ericsson	8500
Uber	7585
Dell	6650
Booking.com	4601
Cisco	4100

Result 7

```sql
/*This query provides you to find the total number of employees laid off within each industry sector and
shows which industries experienced the most overall layoffs.*/

Select industry, sum(total_laid_off)
from layoffs_staging2
group by industry
order by 2 desc;
```



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

industry	sum(total_laid_off)
Consumer	45182
Retail	43613
Other	36289
Transportation	33748
Finance	28344
Healthcare	25953
Food	22855
Real Estate	17565
Travel	17159
Hardware	13828
Education	13338

Result 9

```sql
/*This query provides you to find the total number of employees laid off within each country and
shows which countries experienced the most overall layoffs.*/

Select country, sum(total_laid_off)
from layoffs_staging2
group by country
order by 2 desc;
```

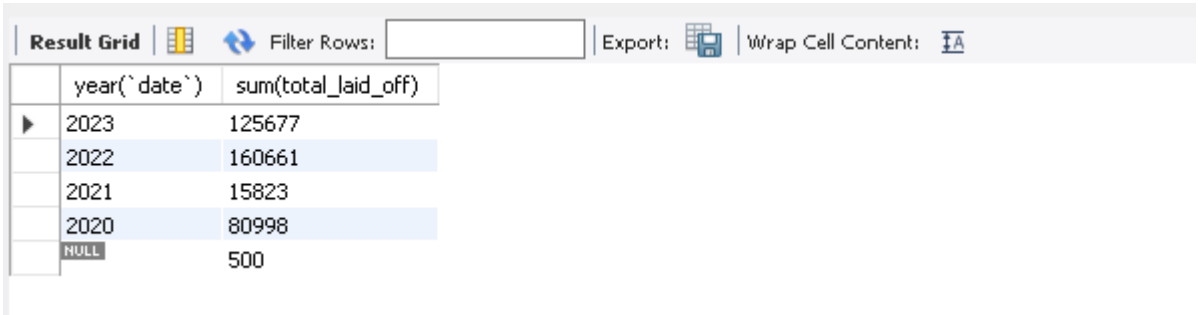
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

country	sum(total_laid_off)
United States	256559
India	35993
Netherlands	17220
Sweden	11264
Brazil	10391
Germany	8701
United Kingdom	6398
Canada	6319
Singapore	5995
China	5905
Israel	3638

Result 10

```sql
/*This query groups layoffs by the year they occurred and
calculates the total number of employees laid off for each year.*/

select year(`date`), sum(total_laid_off)
from layoffs_staging2
group by year(`date`)
order by 1 desc;
```



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

year(`date`)	sum(total_laid_off)
2023	125677
2022	160661
2021	15823
2020	80998
NULL	500

```sql
-- The given SQL query provides insights into layoff trends monthly within your dataset.

select substring(`date`, 1, 7) as `month`, sum(total_laid_off)
from layoffs_staging2
where substring(`date`, 1, 7) is not null
group by `month`
order by 2 desc;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

month	sum(total_laid_off)
2023-01	84714
2022-11	53451
2023-02	36493
2020-04	26710
2020-05	25804
2022-10	17406
2022-06	17394
2022-07	16223
2022-08	13055
2022-05	12885
2022-12	10329
2020-03	9628
2020-06	7627
2020-07	7112
2021-01	6813
2022-09	5881
2022-03	5714

```sql
-- This query shows which companies had the most layoffs in a particular year.

Select Company, year(`date`), sum(total_laid_off)
from layoffs_staging2
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Company	year(`date`)	sum(total_laid_off)
Google	2023	12000
Meta	2022	11000
Amazon	2022	10150
Microsoft	2023	10000
Ericsson	2023	8500
Amazon	2023	8000
Salesforce	2023	8000
Uber	2020	7525
Dell	2023	6650
Philips	2023	6000
Booking.c...	2020	4375

```sql
/*This query shows the accumulation of layoffs over time.
Rolling Total of Layoffs Per Month with CTE*/

with Rolling_Total as
(
select substring(`date`, 1, 7) as `month`, sum(total_laid_off) as total_off
from layoffs_staging2
where substring(`date`, 1, 7) is not null
group by `month`
order by 1 asc
)
select `month`, total_off, sum(total_off) over(order by `month`) as rolling_total
from Rolling_Total;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

month	total_off	rolling_total
2020-03	9628	9628
2020-04	26710	36338
2020-05	25804	62142
2020-06	7627	69769
2020-07	7112	76881
2020-08	1969	78850
2020-09	609	79459
2020-10	450	79909
2020-11	237	80146
2020-12	852	80998
2021-01	6813	87811
2021-02	868	88679
2021-03	47	88726
2021-04	261	88987
2021-06	2434	91421
2021-07	80	91501
2021-08	1867	93368
2021-09	161	93529
2021-10	22	93551
2021-11	2070	95621
2021-12	1200	96821
2022-01	510	97331
2022-02	3685	101016
2022-03	5714	106730
2022-04	4128	110858
2022-05	12885	123743
2022-06	17394	141137
2022-07	16223	157360
2022-08	13055	170415
2022-09	5881	176296
2022-10	17406	193702
2022-11	53451	247153
2022-12	10329	257482
2023-01	84714	342196
2023-02	36493	378689
2023-03	4470	383159

```sql
-- This query identifies the companies with the top 5 highest layoff totals within each year.

with company_year(company, years, total_laid_off) as
(
Select Company, year(`date`), sum(total_laid_off)
from layoffs_staging2
group by company, year(`date`)
), Company_Year_Rank as
(select *, dense_rank() over(partition by years order by total_laid_off desc) as ranking
from company_year
where years is not null
)
select *
from Company_Year_Rank
where ranking <= 5;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

company	years	total_laid_off	ranking
Uber	2020	7525	1
Booking.com	2020	4375	2
Groupon	2020	2800	3
Swiggy	2020	2250	4
Airbnb	2020	1900	5
Bytedance	2021	3600	1
Katerra	2021	2434	2
Zillow	2021	2000	3
Instacart	2021	1877	4
WhiteHat Jr	2021	1800	5
Meta	2022	11000	1
Amazon	2022	10150	2
Cisco	2022	4100	3
Peloton	2022	4084	4
Carvana	2022	4000	5
Philips	2022	4000	5
Google	2023	12000	1
Microsoft	2023	10000	2
Ericsson	2023	8500	3
Amazon	2023	8000	4
Salesforce	2023	8000	4
Dell	2023	6650	5

Layoff Trends and patterns:

Key insights:

Note: Kindly note down that It's possible that there were layoffs before or after the date range (from 2020/03/11 to 2023/03/06) given but we consider the data in the layoffs_staging2 table that we have.

- There are both types of companies with 100% layoff (This indicates the most severe layoff event in terms of workforce reduction proportion.) and 0% layoff (This indicates the no layoff event in terms of workforce reduction proportion.)
- Identified the company name "Katerra" (location: SF Bay Area) with the highest number of layoffs where the entire workforce was laid off.
- The most overall (total number of employees) layoffs are experienced in the following each sector:
  Company: Amazon
  Industry: Consumer
  Country: United States
- According to the data given,2022 is the year when the maximum layoffs are seen but there is 2023 year which could experience the most at the end of the year as we have only three-month data of 2023 year.
- There are specific months (Jan, Nov, Feb) with higher layoff activity. This can indicate seasonality in layoffs, where certain times of the year are more likely to see workforce reductions.
- There is a significant jump in respondents between December 2022 and January 2023.
- There are spikes in the number of laid-off in May 2022, June 2022, and November 2022. It is possible that these months correspond to periods of increased promotion of the survey.
- ‘Google’ laid-off the most employees in 2023 with a total of 12,000.
- ‘Meta’ laid-off the second-most employees in 2022 with a total of 11,000.
- ‘2022’ appears to be the year with the most layoffs.