Employee Layoffs Analysis

USING SQL

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Introduction

Background:

The dataset pertains to employee layoffs, which is a critical aspect of workforce management. Analyzing layoff data helps organizations understand the factors leading to layoffs and make informed decisions to minimize future layoffs. The data set was taken from Kaggle-a website for data analysts, scientists and machine learning enthusiasts.

Problem Statement:

The analysis seeks to answer the following questions: Which companies made the layoffs? How much percentage of employees were laid off from each company? How does location and stage factor into the layoff patterns? What is the relation between funds raised by a company and the number of employees laid off?

Objectives:

1. To identify the main companies responsible for layoffs.
2. To examine the distribution of layoffs across different countries and cities.
3. To assess any patterns related to stage and layoffs.
4. To explore the relationship between funds raised and layoffs.

Data Collection and Description

Data Source:

The dataset was provided in a CSV file named layoffs.csv, which includes records of employee layoffs. The SQL script named Employee_Layoffs_Project.sql was used for analysis.

Data Structure:

The dataset includes records such as Company, Location, Industry, total number of employees laid off, Laid off employees as a percentage of total employees in the company, Date of layoff, Country and funds raised by the company in millions.

This dataset contains data on approximately 2,362 employees from various companies around the globe.

	A	B	C	D	E	F	G	H	I	J
1	company	location	industry	total_laid_off	percentage_lai	date	stage	country	funds_raised_millions	
2	Atlassian	Sydney	Other	500	0.05	3/6/2023	Post-IPO	Australia	210	
3	SiriusXM	New York City	Media	475	0.08	3/6/2023	Post-IPO	United States	525	
4	Alerzo	Ibadan	Retail	400	NULL	3/6/2023	Series B	Nigeria	16	
5	UpGrad	Mumbai	Education	120	NULL	3/6/2023	Unknown	India	631	
6	Loft	Sao Paulo	Real Estate	340	0.15	3/3/2023	Unknown	Brazil	788	
7	Embark Trucks	SF Bay Area	Transportation	230	0.7	3/3/2023	Post-IPO	United States	317	
8	Lendi	Sydney	Real Estate	100	NULL	3/3/2023	Unknown	Australia	59	
9	UserTesting	SF Bay Area	Marketing	63	NULL	3/3/2023	Acquired	United States	152	
10	Airbnb	SF Bay Area		30	NULL	3/3/2023	Post-IPO	United States	6400	
11	Accolade	Seattle	Healthcare	NULL	NULL	3/3/2023	Post-IPO	United States	458	
12	Indigo	Boston	Other	NULL	NULL	3/3/2023	Series F	United States.	1200	
13	Zscaler	SF Bay Area	Security	177	0.03	3/2/2023	Post-IPO	United States	148	
14	MasterClass	SF Bay Area	Education	79	NULL	3/2/2023	Series E	United States	461	
15	Ambev Tech	Blumenau	Food	50	NULL	3/2/2023	Acquired	Brazil	NULL	
16	Fittr	Pune	Fitness	30	0.11	3/2/2023	Series A	India	13	
17	CNET	SF Bay Area	Media	12	0.1	3/2/2023	Acquired	United States	20	
18	Flipkart	Bengaluru	Retail	NULL	NULL	3/2/2023	Acquired	India	12900	

Data processing

Data Cleaning:

The SQL code performed various data cleaning steps, including removing duplicate rows, standardizing data, handling columns with null values by adding or removing data, deleting rows which were not required for analysis. No data from external sources were integrated; the analysis was based solely on the provided dataset.

```
5 •  SELECT COUNT(*) FROM layoffs;
6 •  SELECT distinct COUNT(*) FROM layoffs;
```

- The difference between the two gives us the number of duplicate rows=5

```
14
15 • WITH CTE AS
16 (
17     SELECT COMPANY, INDUSTRY, TOTAL_LAID_OFF, `DATE`, COUNTRY, funds_raised_millions, STAGE,
18         ROW_NUMBER() OVER(PARTITION BY COMPANY, INDUSTRY, TOTAL_LAID_OFF, `DATE`, COUNTRY, funds_raised_millions, STAGE) AS ROW_NUM
19     FROM layoffs
20 )
21
22 SELECT * FROM CTE
23 WHERE ROW_NUM > 1;
24
```

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

COMPANY	INDUSTRY	TOTAL_LAID_OFF	DATE	COUNTRY	funds_raised_millions	STAGE	ROW_NUM
Cazoo	Transportation	750	2022-06-07	United Kingdom	2000	Post-IPO	2
Hibob	HR	70	2020-03-30	Israel	45	Series A	2
Wildlife Studios	Consumer	300	2022-11-28	Brazil	260	Unknown	2
Yahoo	Consumer	1600	2023-02-09	United States	6	Acquired	2

- Row number was assigned and duplicate rows were found out by using the common table expression.

```
58
59 •  SELECT T1.COMPANY, T1.INDUSTRY, T2.INDUSTRY
60    FROM layoffs AS T1
61    JOIN LAYOFFS AS T2
62        ON T1.COMPANY = T2.COMPANY
63    WHERE T1.INDUSTRY IS NULL
64    AND T2.INDUSTRY IS NOT NULL;
65
66
67 •  UPDATE layoffs AS T1
68    JOIN LAYOFFS T2
69        ON T1.COMPANY = T2.COMPANY
70    SET T1.INDUSTRY = T2.INDUSTRY
71    WHERE T1.INDUSTRY IS NULL
72    AND T2.INDUSTRY IS NOT NULL;
73
```

- There were some columns where the industry was not mentioned or had a null value….we joined the main table to itself and checked for data in other rows and then assigned values to the missing rows of industry column

```sql
SELECT *
FROM layoffs
WHERE total_laid_off IS NULL
AND percentage_laid_off IS NULL;


DELETE
FROM layoffs
WHERE total_laid_off IS NULL
AND percentage_laid_off IS NULL;
```

We deleted the rows which had no data of employees laid off and percentage using simple queries.

Exploratory Data Analysis (EDA)

Descriptive Statistics: The SQL code generated key descriptive statistics, such as the maximum number of laid-off employees by a single company and the distribution of layoffs across different companies and countries.

Trends and Patterns: The SQL code identified patterns, such as higher layoffs in specific industries or during certain time periods, which are crucial for understanding the dynamics of layoffs in any organization.

```sql
SELECT Company,total_laid_off FROM layoffs
order by total_laid_off desc;
SELECT *
FROM layoffs
WHERE funds_raised_millions IS NOT NULL
ORDER BY funds_raised_millions DESC;
```

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

Company	total_laid_off
Google	12000
Meta	11000
Microsoft	10000
Amazon	10000
Ericsson	8500

11000

layoffs 18

- This query shows that google as a company has fired 12000 employees on a **single day**.(maximum)

```
order by total_laid_off desc;
SELECT *
FROM layoffs
WHERE funds_raised_millions IS NOT NULL
ORDER BY funds_raised_millions DESC;

SELECT distinct COMPANY, funds_raised_millions
FROM layoffs
WHERE funds_raised_millions IS NOT NULL
```

company	location	industry	total_laid_off	percentage_laid_off	DATE	stage	country	funds_raised_millions
Netflix	SF Bay Area	Media	30	NULL	2022-09-14	Post-IPO	United States	121900
Netflix	SF Bay Area	Media	300	0.03	2022-06-23	Post-IPO	United States	121900
Netflix	SF Bay Area	Media	150	0.01	2022-05-17	Post-IPO	United States	121900
Netflix	SF Bay Area	Media	25	NULL	2022-04-28	Post-IPO	United States	121900
Meta	SF Bay Area	Consumer	11000	0.13	2022-11-09	Post-IPO	United States	26000

- This query shows that Netflix tops the list in fundraising. It has raised about 121.9 billion dollars.

```
SELECT LOCATION, SUM(total_laid_off) AS SUM_LAID
FROM layoffs_distinct
GROUP BY LOCATION
ORDER BY SUM_LAID DESC;
```

LOCATION	SUM_LAID
SF Bay Area	125631
Seattle	34743
New York City	29364
Bengaluru	21787
Amsterdam	17140
Stockholm	11217
Boston	10785
Sao Paulo	9081
Austin	8980
Chicago	6419
Los Angeles	6415
London	6177
Singapore	5995
Mumbai	5915
Gurugram	5376

- This query shows that maximum number of layoffs took place in SF Bay Area with 125631 employees being laid off.

```
SELECT *
FROM LAYOFFS
WHERE  percentage_laid_off = 1
ORDER BY funds_raised_millions DESC;
```

company	location	industry	total_laid_off	percentage_laid_off	DATE	stage	country	funds_raised_millions
Britishvolt	London	Transportation	206	1	2023-01-17	Unknown	United Kingdom	2400
Quibi	Los Angeles	Media	NULL	1	2020-10-21	Private Equity	United States	1800
Deliveroo Australia	Melbourne	Food	120	1	2022-11-15	Post-IPO	Australia	1700
Katerra	SF Bay Area	Construction	2434	1	2021-06-01	Unknown	United States	1600
BlockFi	New York City	Crypto	NULL	1	2022-11-28	Series E	United States	1000
Aura Financial	SF Bay Area	Finance	NULL	1	2021-01-11	Unknown	United States	584

- The maximum percentage of employees being laid off as a percentage of total employees in the company is 1 percent and the company which has raised the most funds laying off 1 percent of employees is **<u>BritishVolt.</u>**

```
142 •  SELECT company, SUM(total_laid_off)
143    FROM LAYOFFS
144    GROUP BY company
145    ORDER BY 2 DESC
146    LIMIT 10;
147
```

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

company	SUM(total_laid_off)
Amazon	18150
Google	12000
Meta	11000
Salesforce	10090
Philips	10000
Microsoft	10000

Result 39

- Amazon tops the list in laying off maximum number of employees being 18150 overall.

```
156
157 •  SELECT country, SUM(total_laid_off)
158    FROM LAYOFFS
159    GROUP BY country
160    ORDER BY 2 DESC;
161
```

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

country	SUM(total_laid_off)
United States	258159
India	35993
Netherlands	17220
Sweden	11264
Brazil	10691
Germany	8701

Result 41

- Most number of layoffs took place in United States Of America

```
161
162 •  SELECT YEAR(date), SUM(total_laid_off)
163    FROM LAYOFFS
164    GROUP BY YEAR(date)
165    ORDER BY 1 DESC;
166
```

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

YEAR(date)	SUM(total_laid_off)
2023	127277
2022	161711
2021	15823
2020	81068
NULL	500

127277

- Most number of Employees were laid off in the year 2023.

```
166
167 •  SELECT industry, SUM(total_laid_off)
168    FROM LAYOFFS
169    GROUP BY industry
170    ORDER BY 2 DESC;
```

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

industry	SUM(total_laid_off)
Consumer	47082
Retail	43613
Other	36289
Transportation	34498
Finance	28344
Healthcare	25953

Result 44

- Consumer Industry has fired maximum number of employees(47082)

```
172
173 •  SELECT stage, SUM(total_laid_off)
174    FROM LAYOFFS
175    GROUP BY stage
176    ORDER BY 2 DESC;
```

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

stage	SUM(total_laid_off)
Post-IPO	204882
Unknown	41016
Acquired	29176
Series C	20017
Series D	19225
Series B	15311

Result 45

- Most number of layoffs were made by companies who are already listed and are in -post ipo stage.

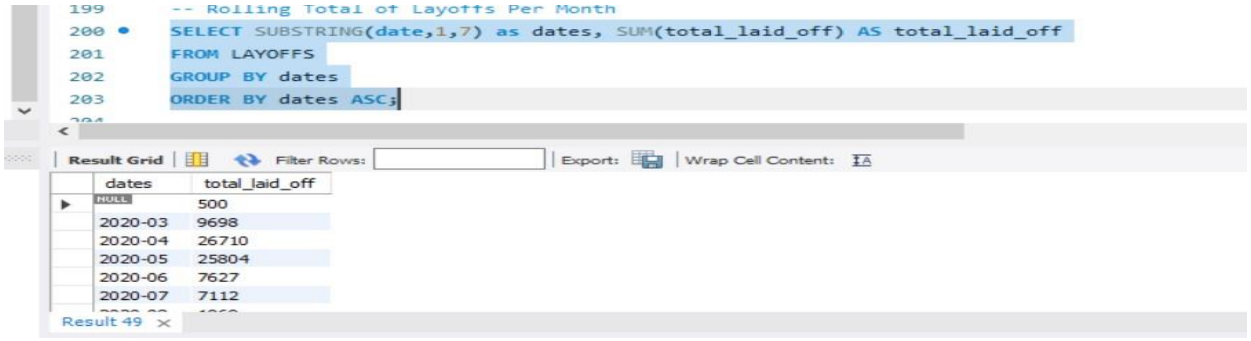
```
183 • WITH Company_Year AS
184   (
185     SELECT company, YEAR(date) AS years, SUM(total_laid_off) AS total_laid_off
186     FROM LAYOFFS
187     GROUP BY company, YEAR(date)
188   )
189   , Company_Year_Rank AS (
190     SELECT company, years, total_laid_off, DENSE_RANK() OVER (PARTITION BY years ORDER BY total_laid_off DESC) AS ranking
191     FROM Company_Year
192   )
193   SELECT company, years, total_laid_off, ranking
194   FROM Company_Year_Rank
```

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
Bytedance	2021	3600	1
Katerra	2021	2434	2
Zillow	2021	2000	3

Result 46

- This query ranks the top 3 companies year wise from 2020 to 2023.



```
199     -- Rolling Total of Layoffs Per Month
200     SELECT SUBSTRING(date,1,7) as dates, SUM(total_laid_off) AS total_laid_off
201     FROM LAYOFFS
202     GROUP BY dates
203     ORDER BY dates ASC;
```

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

dates	total_laid_off
NULL	500
2020-03	9698
2020-04	26710
2020-05	25804
2020-06	7627
2020-07	7112

Result 49

- This query gives us layoffs month wise across 3 years from 2020-23.

KEY FINDINGS

- Most Number of employees fired at once-**12000-Google**
- Company which has raised maximum number of funds-**Netflix(121.9 Billion USD)**
- Maximum number of layoffs took place in **SF Bay Area (California) with 125631 employees** being laid off.
- The maximum percentage of employees being laid off as a percentage of total employees-**1 percent**
  - **Britishvolt** is the company that fired 1% of its employees and raised the most funds among companies that fired 1% of their employees.
- **Amazon** tops the list in laying off maximum number of employees being 18150 overall.
- Most number of layoffs took place in **United States Of America**
- Most number of Employees were laid off in the year **2023.**
- Consumer Industry has fired maximum number of **employees-47082**
- Most number of layoffs were made by companies who are already **listed and are in -post ipo stage**

YEAR	Highest Number of Layoffs	Second Highest Number of Layoffs	Third Highest Number of Layoffs
2020	Uber-7525	Booking.com-4375	Groupon-2800
2021	Bytedance-3600	Katerra-2434	Zillow-2000
2022	Meta-11000	Amazon-10150	Cisco-4100
2023	Google-12000	Microsoft-10000	Ericsson-8500

CONCLUSION

Summary:

The SQL code provided a comprehensive analysis of employee layoff data, highlighting key trends and areas of concern. The findings can inform strategic decisions for more job opportunities.

Implications:

The analysis underscores the importance of continuous monitoring of workforce dynamics and the need for proactive measures to address factors leading to layoffs.