

Data Management Project

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Dataset Introduction

Initial Dataset Source: [Kaggle](#)

Initial Data Handling:

- **Datasets Loaded:** job_postings.csv renamed as Company.csv and converted to JSON for being loaded in MySQL
- **Merging Datasets:** The job-related datasets were merged based on primary key and foreign keys.
- **Handling Missing Data:** The missing data in various columns was addressed. Categorical columns were filled with "NULL", numerical columns with zeros, and others based on context.

Analysis: Unveiling Data Insights



EDA

Exploring Data & Generating Tables on Existing Data

Data Quality Assessment

Checking for outliers and messy or unstructured data/errors

Dataset Implementation

Formulating Dataset in MySQL to observe patterns after cleaning

Data Exploration

Data Exploration Stage for In-Depth Analysis

Trends

Identifying unique trends and patterns and creating visualizations

Data Dictionary



Data Exploration

Data Exploration Stage for In-Depth Analysis



Table: Job

Contains detailed information about job postings.

Column Name	Data Type	Description
job_id	INT	Unique identifier for each job posting.
company_id	INT	Identifier for the company posting the job (Foreign Key).
title	VARCHAR(255)	Title of the job posting.
description	TEXT	Detailed description of the job posting.
salary_id	INT	Identifier for the salary range of the job (Foreign Key).
location_id	INT	Identifier for the location of the job (Foreign Key).
work_type_id	INT	Identifier for the type of work (Foreign Key).
experience_level_id	INT	Identifier for the required experience level for the job (Foreign Key).

Data Dictionary



Table: CompanyDetails

Contains detailed information about various companies

Column Name	Data Type	Description
company_id	INT	Unique identifier for each company.
company_name	VARCHAR(255)	Name of the company.
industry	VARCHAR(30)	Sector in which the company operates.
description	VARCHAR(1500)	Detailed description of the company.



Data Exploration

Data Exploration Stage for In-Depth Analysis

Data Dictionary



Table: Location

Stores location information relevant to job postings.

Column Name	Data Type	Description
location_id	INT	Unique identifier for each location.
location_name	VARCHAR(255)	Name or description of the location.

Data Exploration Stage for In-Depth Analysis

Data Dictionary



Table: WorkType

Details the types of work categories available, such as full-time/ part-time/ contract etc.

Column Name	Data Type	Description
work_type_id	INT	Unique identifier for each work type.
work_type_name	VARCHAR(255)	Name of the work type (e.g., Full-time).



Data Exploration

Data Exploration Stage for In-Depth Analysis

Data Dictionary



Table: SalaryRange

Defines the different ranges of salary for job postings.

Column Name	Data Type	Description
salary_id	INT	Primary Key
min_salary	DECIMAL(10, 2)	Salary Amount in USD
max_salary	DECIMAL(10, 2)	Salary Amount in USD



Data Exploration

Data Exploration Stage for In-Depth Analysis

Data Dictionary



Table: ExperienceLevel

Defines the different levels of experience required for job postings.

Column Name	Data Type	Description
experience_level_id	INT	Unique identifier for each experience level.
experience_level_name	VARCHAR(255)	Name of the required experience level (e.g., Entry-level).



Data Exploration

Data Exploration Stage for In-Depth Analysis

Entity Relations

- 1 **Job to CompanyDetails:**
A many-to-one relationship with a line connecting job.company_id to CompanyDetails.company_id.
- 2 **Job to SalaryRange:**
A many-to-one relationship with a line connecting job.salary_id to SalaryRange.salary_id.
- 3 **Job to WorkType:**
A many-to-one relationship with a line connecting job.work_type_id to WorkType.work_type_id.
- 4 **Job to Location:**
A many-to-one relationship with a line connecting job.location_id to Location.location_id.
- 5 **Job to ExperienceLevel:**
A many-to-one relationship with a line connecting job.experience_level_id to ExperienceLevel.experience_level_id.

Business Queries & Insights



Insight

Full-time positions are significantly more common than internships or remote work within the job postings dataset.



Business Question

Count the number of job postings for each type of work.

Result Grid		Filter Rows:	Search	Export:
work_type_name	job_count			
Full-time	90			
Internship	1			
Remote	3			

Business Queries & Insights



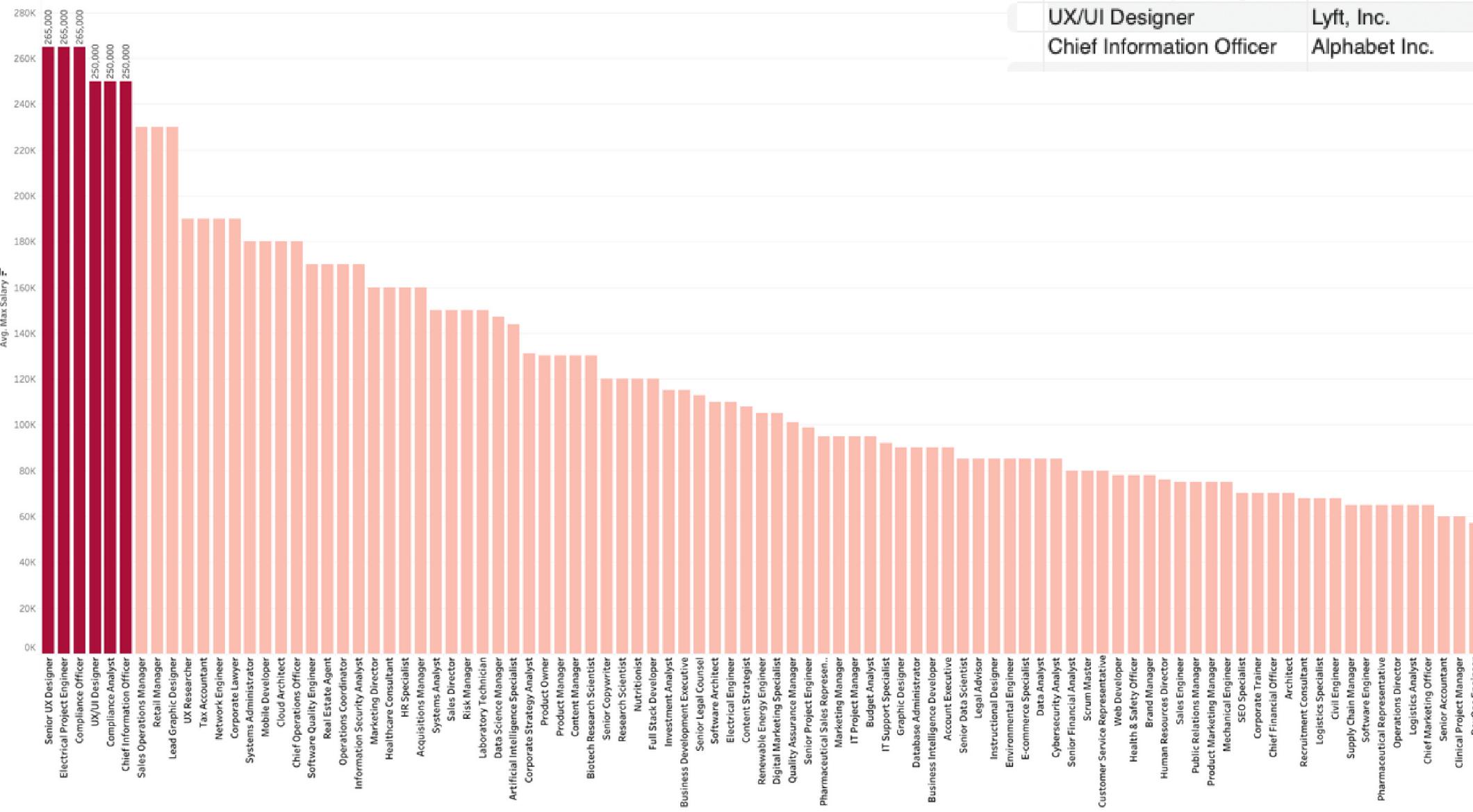
Insight

Top Managerial and Executive roles mainly comprise of the top 5 highest paying jobs, and are mostly Fortune-500 based companies.



Business Question

Identify the top 5 highest-paying jobs.



Result Grid	Filter Rows:	Search	Export:
title	company_name	max_salary	
Compliance Officer	Palantir Technologies Inc.	265000.00	
Senior UX Designer	Amazon.com Inc.	265000.00	
Electrical Project Engineer	Walmart Inc.	265000.00	
UX/UI Designer	Lyft, Inc.	250000.00	
Chief Information Officer	Alphabet Inc.	250000.00	

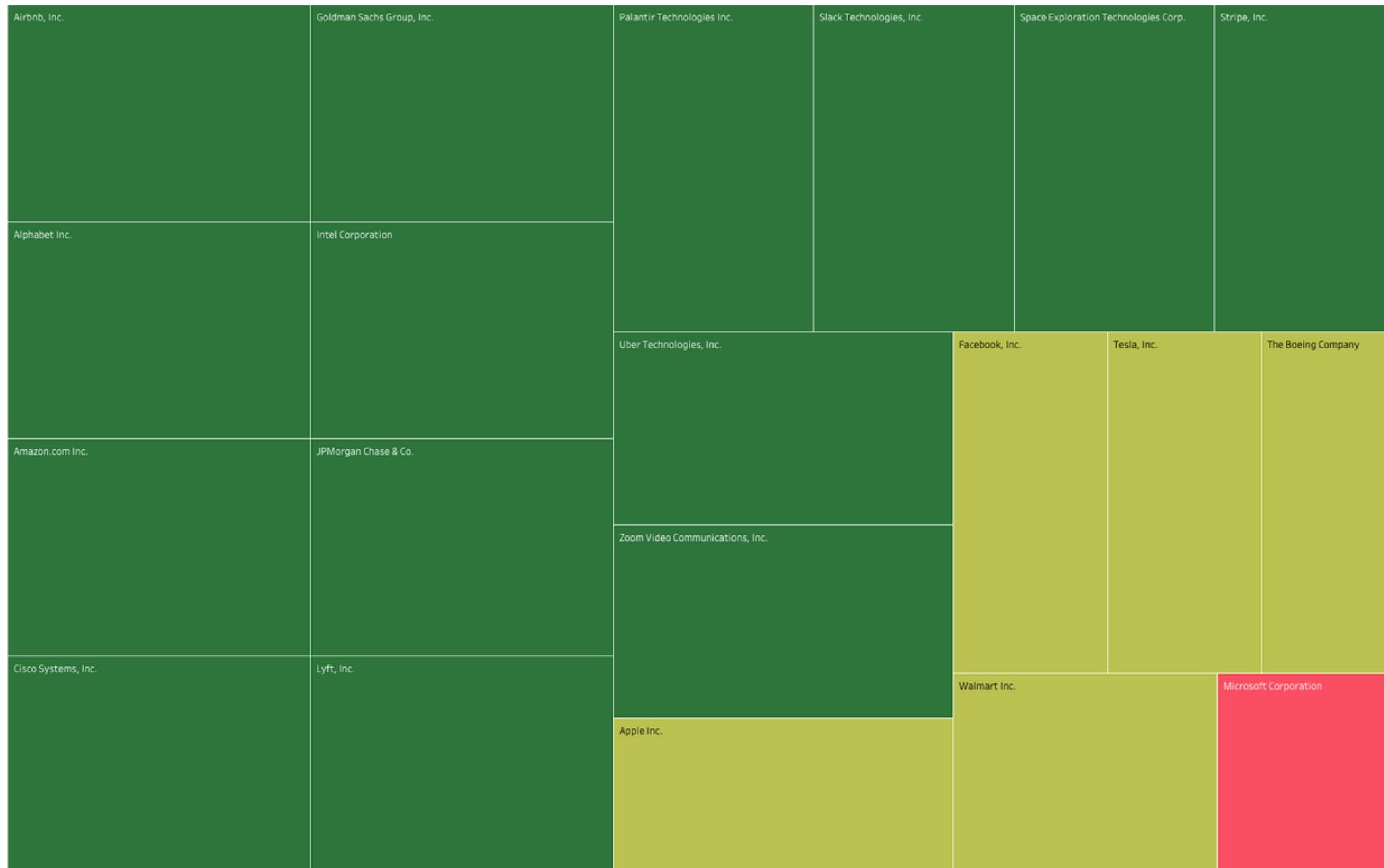
Business Queries & Insights



Business Question

Determine the top companies with the most job openings.

Companies With Most Job Openings



Result Grid		Filter Rows:	Search
company_name	job_openings		
Alphabet Inc.	5		
Amazon.com Inc.	5		
Cisco Systems, Inc.	5		
Intel Corporation	5		
JPMorgan Chase & Co.	5		
Goldman Sachs Group, Inc.	5		
The Boeing Company	5		
Space Exploration Technologies Corp.	5		
Stripe, Inc.	5		
Zoom Video Communications, Inc.	5		
Slack Technologies, Inc.	5		
Uber Technologies, Inc.	5		
Airbnb, Inc.	5		
Lyft, Inc.	5		
Palantir Technologies Inc.	5		
Apple Inc.	4		
Microsoft Corporation	4		
Tesla, Inc.	4		
Facebook, Inc.	4		
Walmart Inc.	4		



Insight

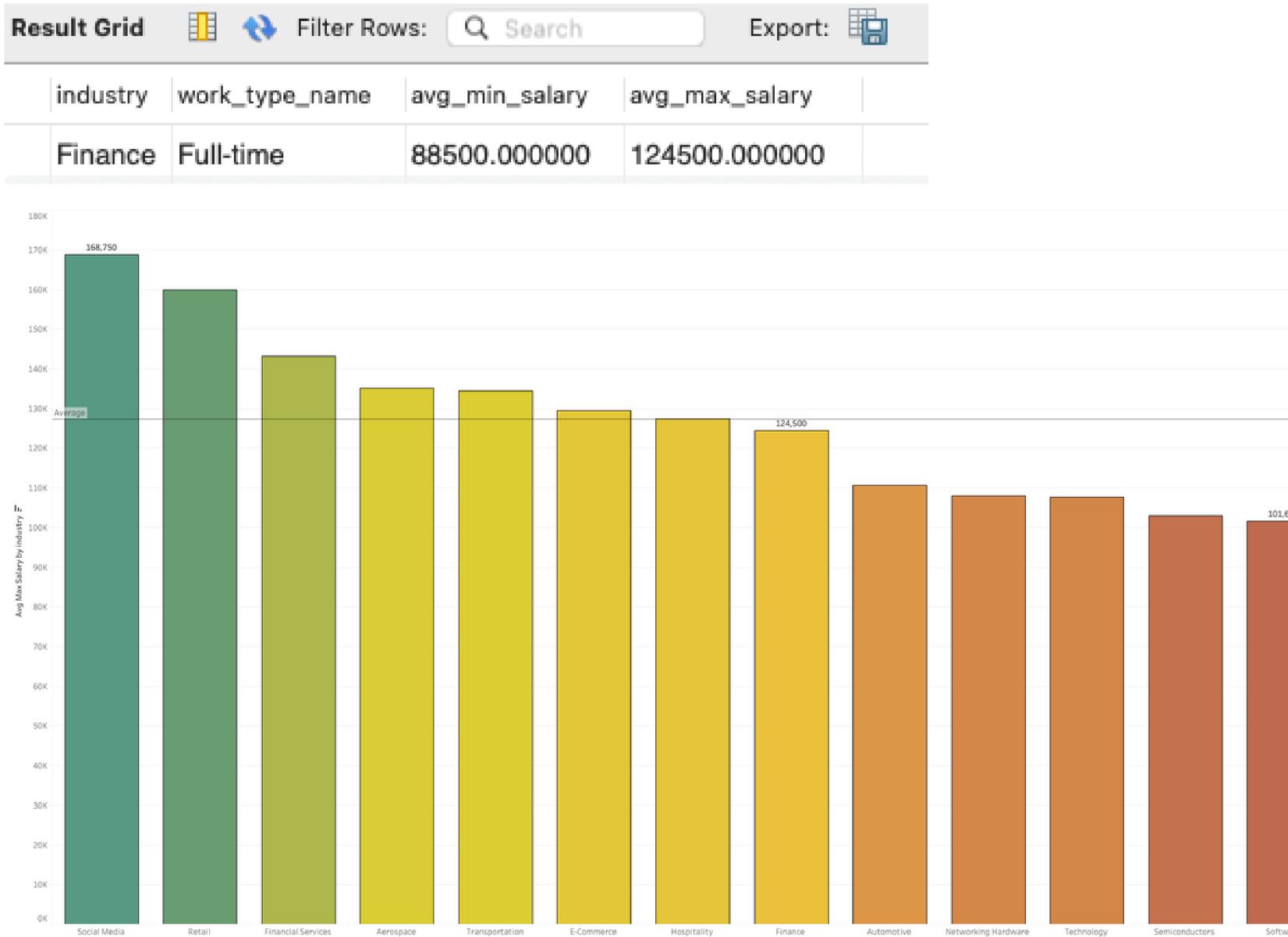
Most of the Fortune-500 tech Companies tend to have the highest job openings in the dataset.

Business Queries & Insights



Business Question

Calculate the average salary range for jobs in work types within the Finance industry.



Insight

Avg Max Salary for Finance is just below the average line in terms of all industries.

Business Queries & Insights



Insight

The data indicates that cities like San Francisco, CA, and New York, NY, host companies offering some of the highest average maximum salaries for jobs, reflecting the competitive, high-cost-of-living urban landscapes where talent acquisition costs are at a premium.



Business Question

Find job titles and companies with the highest average max salary in each city.

location_name	company_name	title	average_max_salary
Philadelphia, PA	Slack Technologies, Inc.	DevOps Engineer	57000.000000
Chicago, IL	Apple Inc.	Clinical Project Manager	60000.000000
Washington, DC	Cisco Systems, Inc.	Senior Accountant	60000.000000
Atlanta, GA, Los Angeles, CA	The Boeing Company	Supply Chain Manager	65000.000000
Boston, MA	Walmart Inc.	Operations Director	65000.000000
Chicago, IL	Apple Inc.	Chief Marketing Officer	65000.000000
New York, NY, Los Angeles, CA, San Fr...	Alphabet Inc.	Software Engineer	65000.000000
New York, NY, Los Angeles, CA, San Fr...	Cisco Systems, Inc.	Pharmaceutical Representative	65000.000000
New York, NY, Los Angeles, CA, San Fr...	Cisco Systems, Inc.	Logistics Analyst	65000.000000
Phoenix, AZ	Uber Technologies, Inc.	Logistics Specialist	68000.000000
Phoenix, AZ	Microsoft Corporation	Recruitment Consultant	68000.000000
Portland, OR	Lyft, Inc.	Civil Engineer	68000.000000
Dallas, TX	Palantir Technologies I...	Architect	70000.000000
Dallas, TX	Palantir Technologies I...	SEO Specialist	70000.000000
Dallas, TX	Space Exploration Tec...	Chief Financial Officer	70000.000000
Miami, FL	Zoom Video Communica...	Corporate Trainer	70000.000000
Miami, FL	Amazon.com Inc.	Mechanical Engineer	75000.000000
Miami, FL	Zoom Video Communica...	Public Relations Manager	75000.000000
Miami, FL	Amazon.com Inc.	Sales Engineer	75000.000000
Phoenix, AZ	Uber Technologies, Inc.	Product Marketing Manager	75000.000000
Phoenix, AZ	Uber Technologies, Inc.	Human Resources Director	78000.000000
Las Vegas, NV	Palantir Technologies I...	Brand Manager	78000.000000
San Jose, CA	Airbnb, Inc.	Web Developer	78000.000000
San Jose, CA	Tesla, Inc.	Health & Safety Officer	78000.000000
Philadelphia, PA	Apple Inc.	Scrum Master	80000.000000
Philadelphia, PA	Slack Technologies, Inc.	Customer Service Represent...	80000.000000
San Jose, CA	Airbnb, Inc.	Senior Financial Analyst	80000.000000
Houston, TX	Alphabet Inc.	Cybersecurity Analyst	85000.000000
Houston, TX	Stripe, Inc.	Legal Advisor	85000.000000
Houston, TX	Alphabet Inc.	Instructional Designer	85000.000000
Los Angeles, CA	Microsoft Corporation	Machine Learning Engineer	85000.000000
Philadelphia, PA	Slack Technologies, Inc.	E-commerce Specialist	85000.000000
San Francisco, CA, Los Angeles, CA	Intel Corporation	Environmental Engineer	85000.000000
San Francisco, CA, Los Angeles, CA	Intel Corporation	Senior Data Scientist	85000.000000
San Francisco, CA, Los Angeles, CA	Amazon.com Inc.	Data Analyst	85000.000000
San Diego, CA	Goldman Sachs Grou...	Database Administrator	90000.000000
San Diego, CA	Slack Technologies, Inc.	Business Intelligence Developer	90000.000000
San Diego, CA	Slack Technologies, Inc.	Account Executive	90000.000000
San Diego, CA	Intel Corporation	Graphic Designer	90000.000000
Dallas, TX	Space Exploration Tec...	IT Support Specialist	92000.000000
Chicago, IL	JPMorgan Chase & Co.	IT Project Manager	95000.000000
Chicago, IL	JPMorgan Chase & Co.	Budget Analyst	95000.000000
Chicago, IL	Apple Inc.	Marketing Manager	95000.000000
Seattle, WA	Tesla, Inc.	Pharmaceutical Sales Repres...	95000.000000
San Jose, CA	Airbnb, Inc.	Senior Project Engineer	99000.000000
Houston, TX	Stripe, Inc.	Quality Assurance Manager	101000.000000
Los Angeles, CA	Microsoft Corporation	Renewable Energy Engineer	105000.000000
San Diego, CA	Intel Corporation	Digital Marketing Specialist	105000.000000

location_name	company_name	title	average_max_salary
San Jose, CA	Airbnb, Inc.	Senior Project Engineer	99000.000000
Houston, TX	Stripe, Inc.	Quality Assurance Manager	101000.000000
Los Angeles, CA	Microsoft Corporation	Renewable Energy Engineer	105000.000000
San Diego, CA	Intel Corporation	Digital Marketing Specialist	105000.000000
Portland, OR	Lyft, Inc.	Content Strategist	108000.000000
Denver, CO	JPMorgan Chase & Co.	Electrical Engineer	110000.000000
Seattle, WA	Tesla, Inc.	Software Architect	110000.000000
Miami, FL	Zoom Video Communica...	Senior Legal Counsel	113000.000000
Austin, TX	Goldman Sachs Grou...	Investment Analyst	115000.000000
Atlanta, GA, Los Angeles, CA	Facebook, Inc.	Business Development Execu...	115000.000000
Denver, CO	Uber Technologies, Inc.	Nutritionist	120000.000000
Denver, CO	Uber Technologies, Inc.	Full Stack Developer	120000.000000
Austin, TX	JPMorgan Chase & Co.	Research Scientist	120000.000000
Los Angeles, CA	Facebook, Inc.	Biotech Research Scientist	130000.000000
Los Angeles, CA	Goldman Sachs Grou...	Content Manager	130000.000000
Los Angeles, CA	Goldman Sachs Grou...	Product Owner	130000.000000
Los Angeles, CA	Microsoft Corporation	Product Manager	130000.000000
Las Vegas, NV	Palantir Technologies I...	Corporate Strategy Analyst	131000.000000
New York, NY, Los Angeles, CA, San Fr...	Alphabet Inc.	Artificial Intelligence Specialist	144000.000000
San Francisco, CA, Los Angeles, CA	Amazon.com Inc.	Data Science Manager	147000.000000
Boston, MA	Stripe, Inc.	Risk Manager	150000.000000
Boston, MA	Stripe, Inc.	Laboratory Technician	150000.000000
Boston, MA	Walmart Inc.	Sales Director	150000.000000
San Diego, CA	Intel Corporation	Systems Analyst	150000.000000
Boston, MA	Walmart Inc.	Healthcare Consultant	160000.000000
Seattle, WA	The Boeing Company	Marketing Director	160000.000000
Tesla, Inc.	The Boeing Company	HR Specialist	160000.000000
Seattle, WA	The Boeing Company	Acquisitions Manager	160000.000000
Denver, CO	JPMorgan Chase & Co.	Information Security Analyst	170000.000000
Washington, DC	Zoom Video Communica...	Software Quality Engineer	170000.000000
Washington, DC	Zoom Video Communica...	Real Estate Agent	170000.000000
Washington, DC	Cisco Systems, Inc.	Operations Coordinator	170000.000000
Austin, TX	Facebook, Inc.	Cloud Architect	180000.000000
Austin, TX	Space Exploration Tec...	Systems Administrator	180000.000000
Austin, TX	Space Exploration Tec...	Chief Operations Officer	180000.000000
Washington, DC	Cisco Systems, Inc.	Mobile Developer	180000.000000
Washington, DC	Airbnb, Inc.	Corporate Lawyer	190000.000000
Washington, DC	Airbnb, Inc.	Tax Accountant	190000.000000
Dallas, TX	Goldman Sachs Grou...	Network Engineer	190000.000000
Dallas, TX	Space Exploration Tec...	UX Researcher	190000.000000
Atlanta, GA, Los Angeles, CA	The Boeing Company	Business Analyst	230000.000000
Atlanta, GA, Los Angeles, CA	Lyft, Inc.	Lead Graphic Designer	230000.000000
Atlanta, GA, Los Angeles, CA	Lyft, Inc.	Retail Manager	230000.000000
Houston, TX	Stripe, Inc.	Sales Operations Manager	230000.000000
New York, NY, Los Angeles, CA, San Fr...	Alphabet Inc.	Chief Information Officer	250000.000000
Portland, OR	Facebook, Inc.	Compliance Analyst	250000.000000
Portland, OR	Lyft, Inc.	UX/UI Designer	250000.000000
Las Vegas, NV	Walmart Inc.	Electrical Project Engineer	265000.000000
Las Vegas, NV	Palantir Technologies I...	Compliance Officer	265000.000000
San Francisco, CA, Los Angeles, CA	Amazon.com Inc.	Senior UX Designer	265000.000000

Business Queries & Insights



Business Question

Identify the companies offering job openings in all available work types.

Result Grid		Filter Rows:	<input type="text"/> Search
company_name			



Insight

No Company has offered job openings in **all** the available work types in the dataset.

Business Queries & Insights



Business Question

Determine the average salary range for companies with more than 4 job postings.

Result Grid	Filter Rows:	Search	Export:
company_name	average_min_salary	average_max_salary	
Alphabet Inc.	83800.000000	125800.000000	
Amazon.com Inc.	86400.000000	129400.000000	
Cisco Systems, Inc.	76000.000000	108000.000000	
Intel Corporation	75000.000000	103000.000000	
JPMorgan Chase & Co.	82000.000000	118000.000000	
Goldman Sachs Group, Inc.	95000.000000	131000.000000	
The Boeing Company	104000.000000	147000.000000	
Space Exploration Technologies Corp.	106400.000000	142400.000000	
Stripe, Inc.	99200.000000	143200.000000	
Zoom Video Communications, Inc.	83600.000000	119600.000000	
Slack Technologies, Inc.	62400.000000	80400.000000	
Uber Technologies, Inc.	63800.000000	91800.000000	
Airbnb, Inc.	92200.000000	127400.000000	
Lyft, Inc.	117200.000000	177200.000000	
Palantir Technologies Inc.	82800.000000	122800.000000	



Insight

Almost all the Fortune-500 companies in the dataset have more than 4 job postings and have a very high average range in terms of min and max salary.

Business Queries & Insights



Business Question

Find the top 3 companies with the highest retention rate for employees based on long-term job postings.

Result Grid Filter Rows: Search

company_name	long_term_postings	ranked
Alphabet Inc.	5	1
Amazon.com Inc.	5	1
Cisco Systems, Inc.	5	1



Insight

In the absence of duration of posting data, we can infer potential retention through indirect measures, like the number of long-term job postings, assuming that long-term postings imply stable positions which could indicate a higher retention rate.

Business Queries & Insights



Business Question

Calculate the ratio of job postings to the number of companies in each industry (job density) and determine the industry with the highest job density.

industry	postings_count	companies_count	job_density
E-Commerce	5	1	5.0000
Networking Hardware	5	1	5.0000
Semiconductors	5	1	5.0000
Finance	10	2	5.0000
Aerospace	10	2	5.0000
Financial Services	5	1	5.0000
Software	10	2	5.0000
Transportation	10	2	5.0000
Hospitality	5	1	5.0000
Technology	18	4	4.5000
Automotive	4	1	4.0000
Social Media	4	1	4.0000
Retail	4	1	4.0000



Insight

In the job market, industries such as E-Commerce, Networking Hardware, and Semiconductors are currently experiencing a high job density ratio, suggesting a robust hiring trend or fewer companies accounting for a larger share of job postings within these sectors.

Business Queries & Insights



Insight

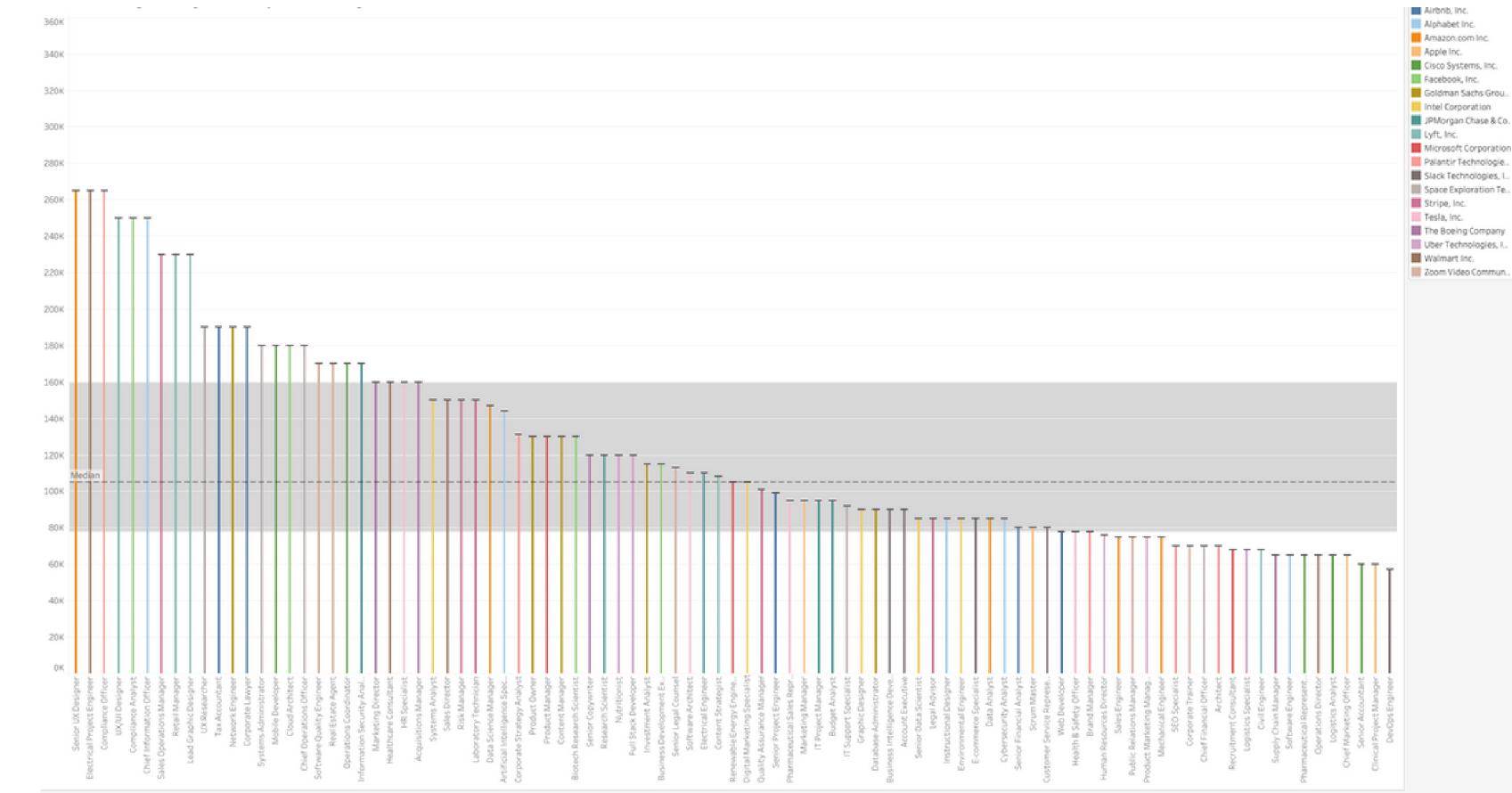
Dataset presents a diverse range of specialized roles across various top-tier companies, potentially indicating competitive salaries above industry averages for these positions due to the high-value skill sets they require.



Business Question

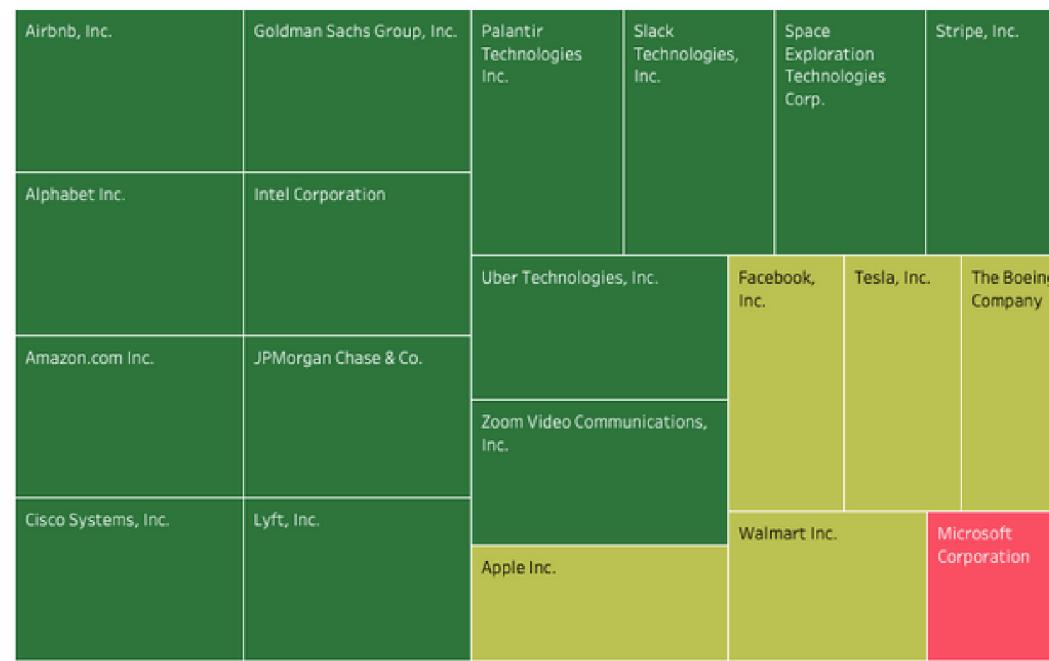
Identify job titles and their respective companies for jobs with salaries above the average salary for their respective industries.

title	company_name
Corporate Lawyer	Airbnb, Inc.
Tax Accountant	Airbnb, Inc.
Artificial Intelligence Specialist	Alphabet Inc.
Chief Information Officer	Alphabet Inc.
Data Science Manager	Amazon.com Inc.
Senior UX Designer	Amazon.com Inc.
Operations Coordinator	Cisco Systems, Inc.
Mobile Developer	Cisco Systems, Inc.
Cloud Architect	Facebook, Inc.
Compliance Analyst	Facebook, Inc.
Network Engineer	Goldman Sachs Group, Inc.
Product Owner	Goldman Sachs Group, Inc.
Content Manager	Goldman Sachs Group, Inc.
Digital Marketing Specialist	Intel Corporation
Systems Analyst	Intel Corporation
Information Security Analyst	JPMorgan Chase & Co.
UX/UI Designer	Lyft, Inc.
Lead Graphic Designer	Lyft, Inc.
Retail Manager	Lyft, Inc.
Product Manager	Microsoft Corporation
Compliance Officer	Palantir Technologies Inc.
Corporate Strategy Analyst	Palantir Technologies Inc.
UX Researcher	Space Exploration Technologies Corp.
Chief Operations Officer	Space Exploration Technologies Corp.
Systems Administrator	Space Exploration Technologies Corp.
Sales Operations Manager	Stripe, Inc.
Risk Manager	Stripe, Inc.
Laboratory Technician	Stripe, Inc.
HR Specialist	Tesla, Inc.
Business Analyst	The Boeing Company
Marketing Director	The Boeing Company
Acquisitions Manager	The Boeing Company
Electrical Project Engineer	Walmart Inc.
Senior Legal Counsel	Zoom Video Communications, Inc.
Software Quality Engineer	Zoom Video Communications, Inc.
Real Estate Agent	Zoom Video Communications, Inc.

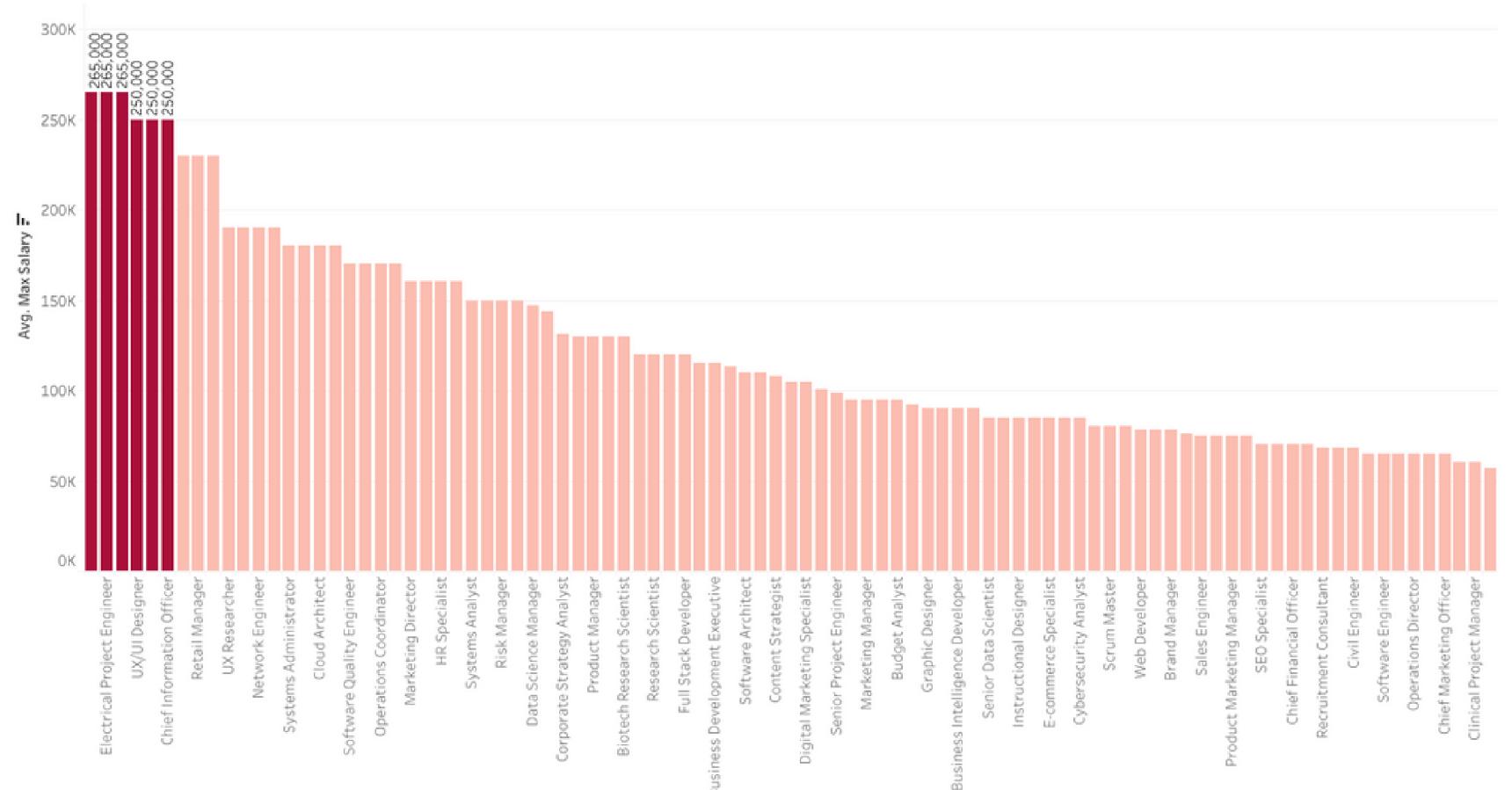


Dashboard Overview

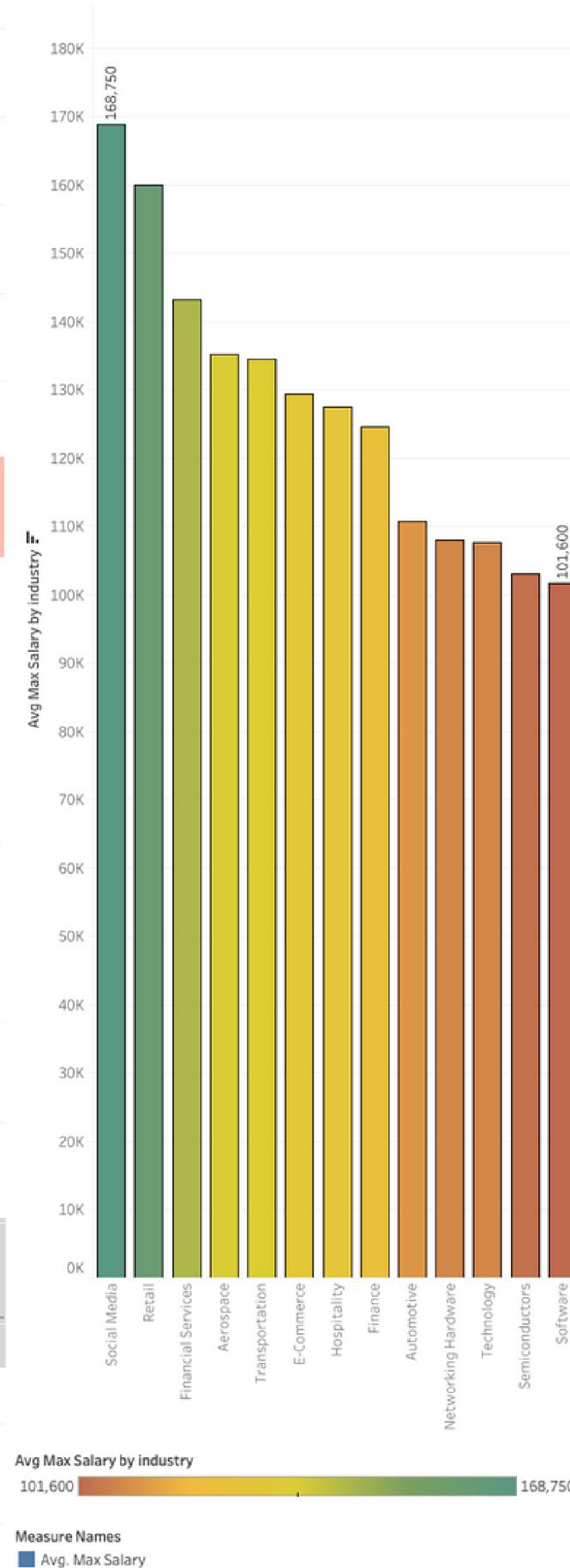
Companies With Most Job Openings



Top Highest Paying Jobs



Average Max Salary by Industry



Count of Job Id

3,000

Job Titles with Highest Avg Max Salary Based on Region

