Smart Internz Data Analytics Project

A Comprehensive Analysis of The IT Sector Salaries and Roles

Team No: 99

Team members:

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1. Introduction

The Information Technology (IT) sector is a dynamic and rapidly evolving industry that plays a crucial role in today's digital age. With the increasing reliance on technology in various sectors, IT professionals are in high demand, making it an attractive field for job seekers. This comprehensive analysis aims to provide an in-depth exploration of IT sector salaries and roles. By examining the various job positions within the IT industry and the corresponding salary ranges, we can gain insights into the earning potential and career opportunities available to professionals in this field.

1.1 Overview

This analysis explores the factors that influence IT salaries, such as job experience, educational qualifications, geographic location, and specialized skills. Understanding these factors will help professionals and aspiring individuals make informed decisions about their career paths and potential earning prospects. And this analysis will shed light on the evolving nature of IT roles, reflecting the industry's response to emerging technologies and market demands. We will discuss traditional IT roles, such as software engineers, network administrators, and database administrators, as well as emerging roles like data scientists, cloud architects, and cybersecurity specialists. By understanding the current and future trends in IT roles, individuals can align their skill sets with the demands of the industry.

1.2 Purpose

This comprehensive analysis will serve as a valuable resource for professionals, job seekers, and individuals interested in the IT sector. By delving into the salaries and roles within the industry, we can gain a deeper understanding of the potential career paths, earning potential, and factors that drive the IT job market. Understanding these factors will help professionals and aspiring individuals make informed decisions about their career paths and potential earning prospects.

2. Literature Survey

2.1 Existing problem

Author	Title	Purpose/ Research Question	Methodology	Key Findings
Loth	Visual Analytics with Tableau	To Provide overview of Tableau's features and capabilities for visual analysis	Literature review	Describes the key features of Tableau, including its data connectors, drag-and-drop interface, ad interactive visualizations
Correll and Heer	Tableau Public an Overview and Case Study	To examine the use of Tableau Public for data visualization and analysis	Case study	Describes the use of Tableau Public to create a visualization of Twitter data related to Hurricane Sandy
Wang et al	Tableau Public for Data visualization and Analysis	To explore the use of Tableau Public as a tool for data visualization and analysis	Case study	Describes the use of Tableau Public to analyze and visualize data on the performance

				of social media campaigns
Stangl et al	Exploring the Impact of Tableau Public on Data Visualization and Communication	To assess the impact of Tableau Public on data visualization and communication	Survey	Found that Tableau Public can facilitate collaboration and communication among stakeholders and increase the impact of data-driven stories
Wongsuphasawat et al	Tableau Public a Case Study in open Data Visualization	To examine the use of Tableau Public for open data visualization	Case study	Describes the use of Tableau Public to create interactive visualizations of open data related to transportation in Seattle
Johnson et al	Using Tableau Public for Interactive Data Visualization in Education	To explore the use of Tableau Public for interactive data visualization in education	Case study	Describes the use of Tableau Public to create interactive visualizations of data related to student performance in a college course

2.2 Proposed solution

Data Visualization: Create interactive and informative visualizations using Tableau Public, such as bar charts, scatterplots, and heat maps. Use relevant variables to compare salaries across different job titles, industries, and locations. You can also use calculated fields and Tableau's built-in statistical functions to analyze salary trends and patterns.

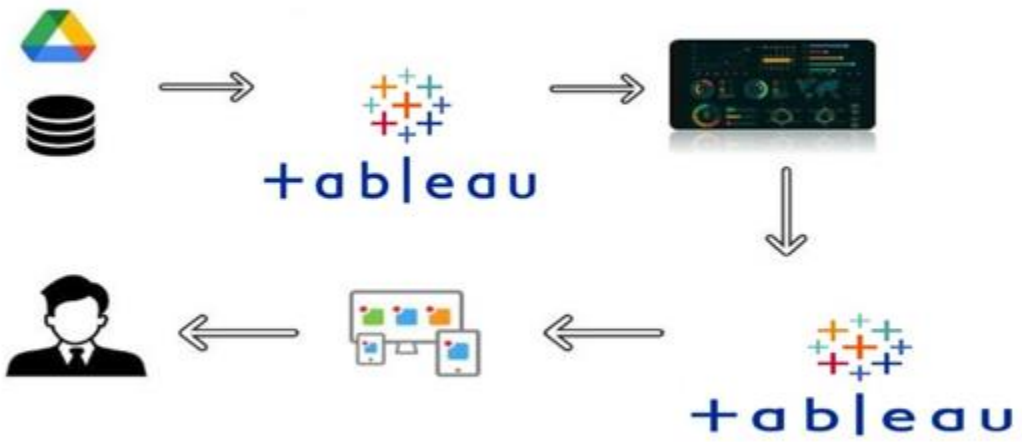
Dashboard Creation: Create a dashboard in Tableau Public that showcases your visualizations and provides an overview of your findings. Use the dashboard to highlight key insights, such as the highest paying job titles or industries, and to provide interactive filters that allow users to explore the data in more detail. You can also include a narrative that provides context and interpretation of your findings.

Sharing and Collaboration: Share your dashboard on Tableau Public or other platforms to make it accessible to a wider audience. You can also collaborate with others to obtain feedback and insights on your analysis, which can help improve the accuracy and relevance of your findings.

Overall, this proposed solution involves a combination of data collection, data visualization and dashboard creation using Tableau Public. The final result is a comprehensive analysis of salary that provides insights and recommendations for different stakeholders, such as job seekers, employers, and policy makers.

3. Theoretical Analysis

3.1 Block diagram



3.2 Hardware / software designing

Softwares -Tableau , Notepad++,Visual Studio Code

4. Experimental investigation

In order to gain deeper insights into salary trends and factors influencing salaries, we conducted an experimental analysis using Tableau Public. The analysis involved the following steps:

Data Selection and Preprocessing: We collected salary data from multiple reliable sources, including industry reports and publicly available datasets. The data encompassed a diverse range of industries, job roles, and geographic locations. The collected data was cleaned and preprocessed to ensure consistency and accuracy.

Exploratory Data Analysis: To understand the distribution and characteristics of the salary data, we performed exploratory analysis using Tableau Public. We created visualizations such as

histograms, box plots, and bar charts to examine the overall salary distribution, identify outliers, and detect any patterns or trends.

Segmentation and Comparison: We segmented the salary data based on key variables such as industry, job level, and education. Using Tableau's grouping and filtering capabilities, we compared salaries across different segments to uncover variations and insights. Interactive visualizations, such as stacked bar charts and tree maps, allowed us to explore salary differences between groups.

Geographical Analysis: Leveraging Tableau's mapping capabilities, we conducted a geographical analysis to examine salary differences across various locations. By visualizing average salaries on a map, we identified regional variations and explored factors that may contribute to these differences.

Temporal Analysis: To understand salary trends over time, we performed a temporal analysis using Tableau. Time series visualizations, such as line charts and area charts, were created to identify any significant changes or patterns in salaries. This analysis provided valuable insights into the evolving salary landscape.

Dashboard Creation: We integrated all the visualizations into an interactive and user-friendly dashboard using Tableau Public. The dashboard allowed stakeholders to explore the salary data from various perspectives, apply filters, and drill down into specific segments or regions of interest. The inclusion of tooltips and interactivity enhanced the user experience and facilitated a more comprehensive analysis.

Data explanation:
https://drive.google.com/file/d/1ph4ZJFs2OTLd2aFIsG_ohGf1Y3bYGOUY/view?usp=sharing

Data importing:
https://drive.google.com/file/d/13-3Yh8E-I2cqF1Dn0_FxONCE9R20V03_/view?usp=sharing

Kpi 1:

https://drive.google.com/file/d/1cuJzAdhRybTAe7tvBOYcEiG0I4w2rbQF/view?usp=sharing

Kpi 2:

https://drive.google.com/file/d/1m0N3fUm-E1KLHKerBylfl27Qoxlfk66a/view?usp=sharing

Map:

https://drive.google.com/file/d/1VADsyKqWdYQ9ibw3Za9d1iLPRKQnxhFj/view?usp=sharing

Horizontal bar chart:

https://drive.google.com/file/d/13-HYnbfJnMJDvR-g2WMwqou6avyjiGrY/view?usp=sharing

Scatter plot:

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Bar chart:

https://drive.google.com/file/d/1vDFVC6lChsnRfHIYpB6Lv3C2B9_cX9FX/view?usp=sharing

pie chart:

https://drive.google.com/file/d/1ffAPfGFHn2MqTugxnozQhM4ynMT1mfVA/view?usp=sharing

bubble chart:

https://drive.google.com/file/d/1kqYCBQiW9QiaQM_FmCXq5VYjYE-DA7SC/view?usp=sharing

dashboard 1:

https://drive.google.com/file/d/1XTc-WZy9kzdOSpH8PehBmR6ewFJPVe5r/view?usp=sharing

dashboard 2:

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Story Explanation:

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Website creation:

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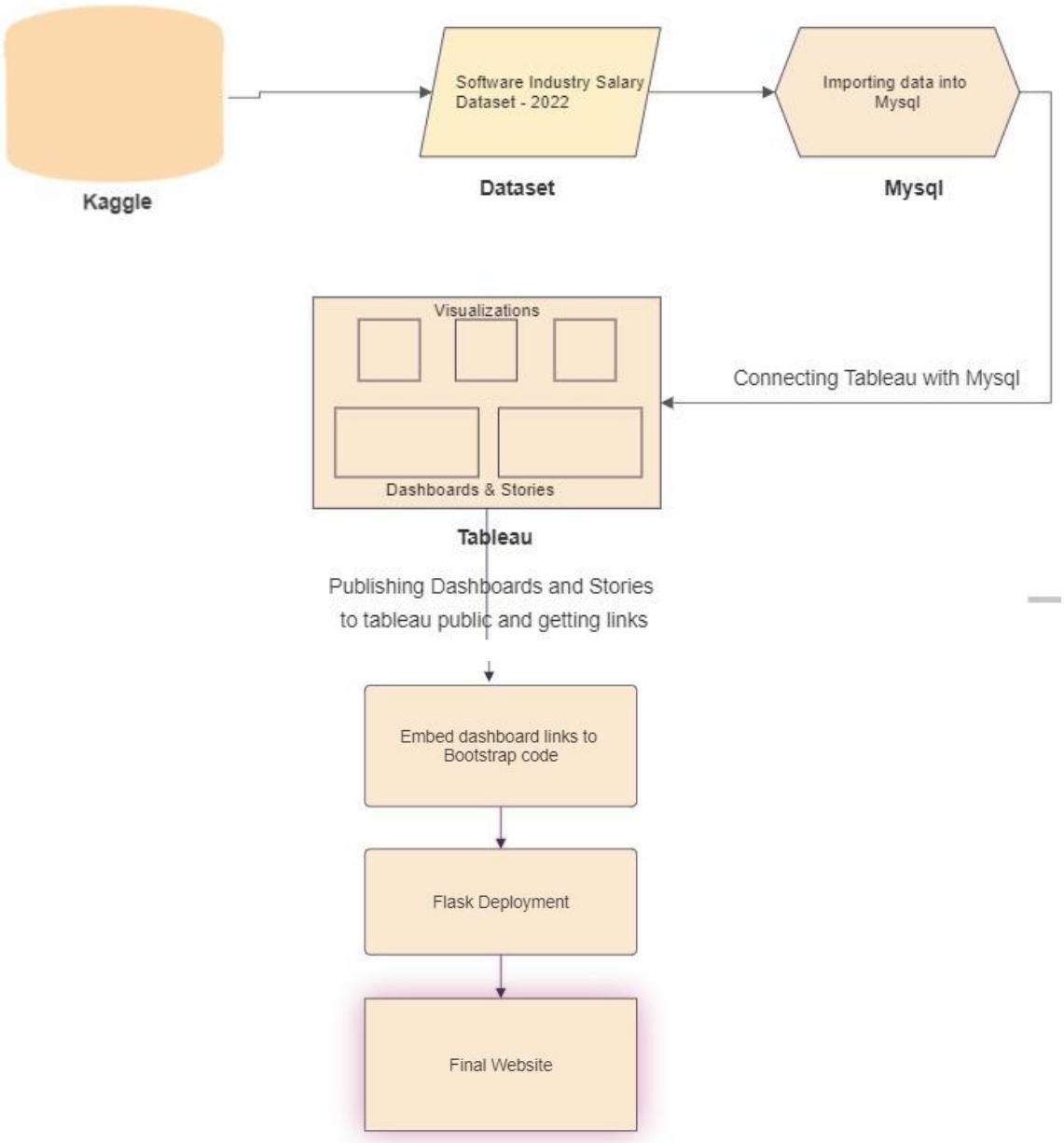
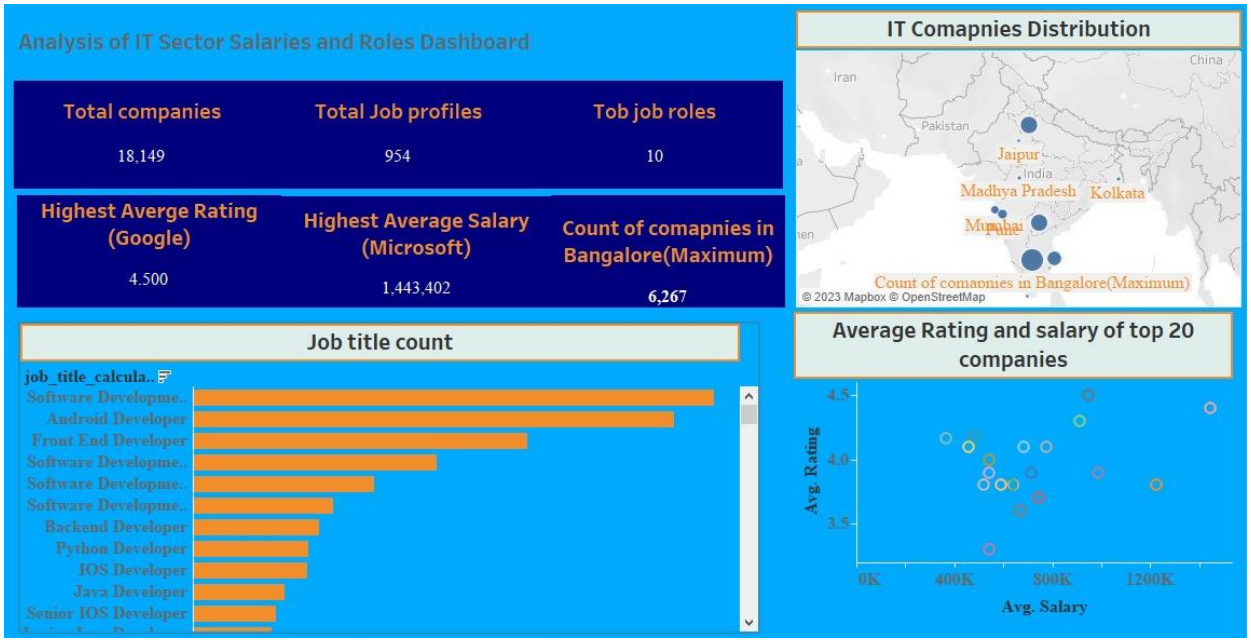
5. Flow chart



6. Results


Analysis of IT Sector Salaries and Roles Dashboard
Total companies
18,149
Total Job profiles
954
Tob job roles
10
Highest Averge Rating (Google)
4.500
Highest Average Salary (Microsoft)
1,443,402
Count of comapnies in Bangalore(Maximum)
6,267
IT Comapnies Distribution
China
Iran
Pakistan
Jaipur
India
Madhya Pradesh
Kolkata
Mumbai
Pune
Count of comapnies in Bangalore(Maximum)
© 2023 Mapbox © OpenStreetMap
Job title count
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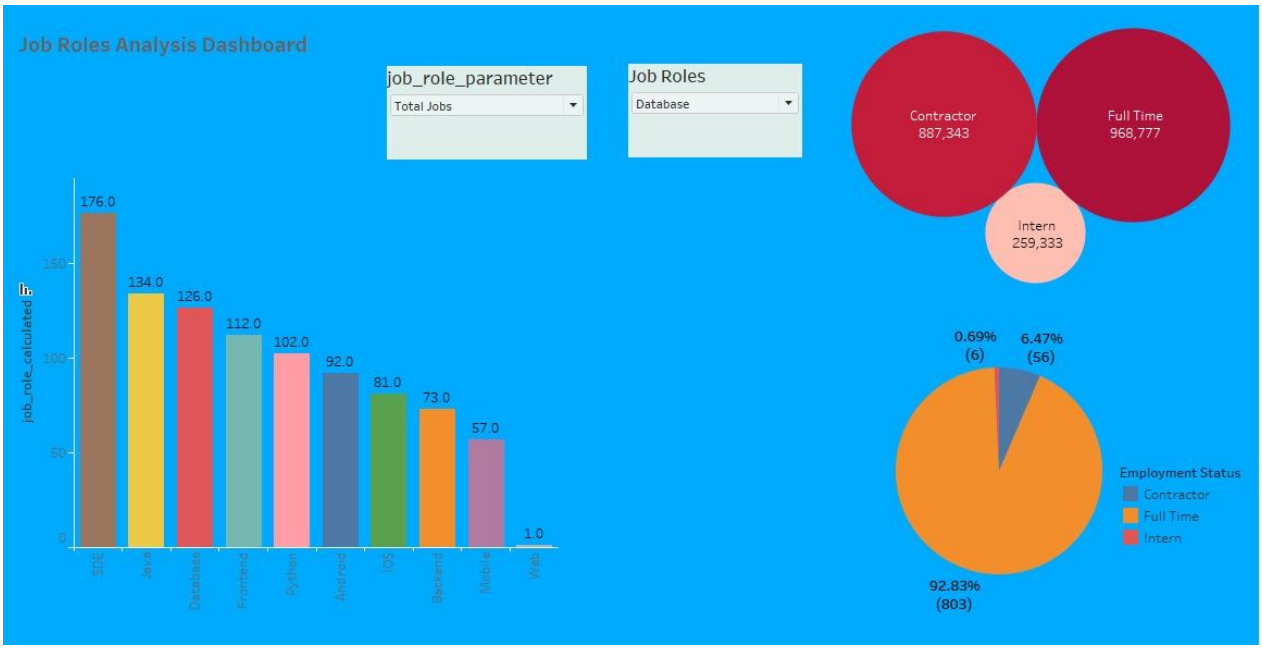
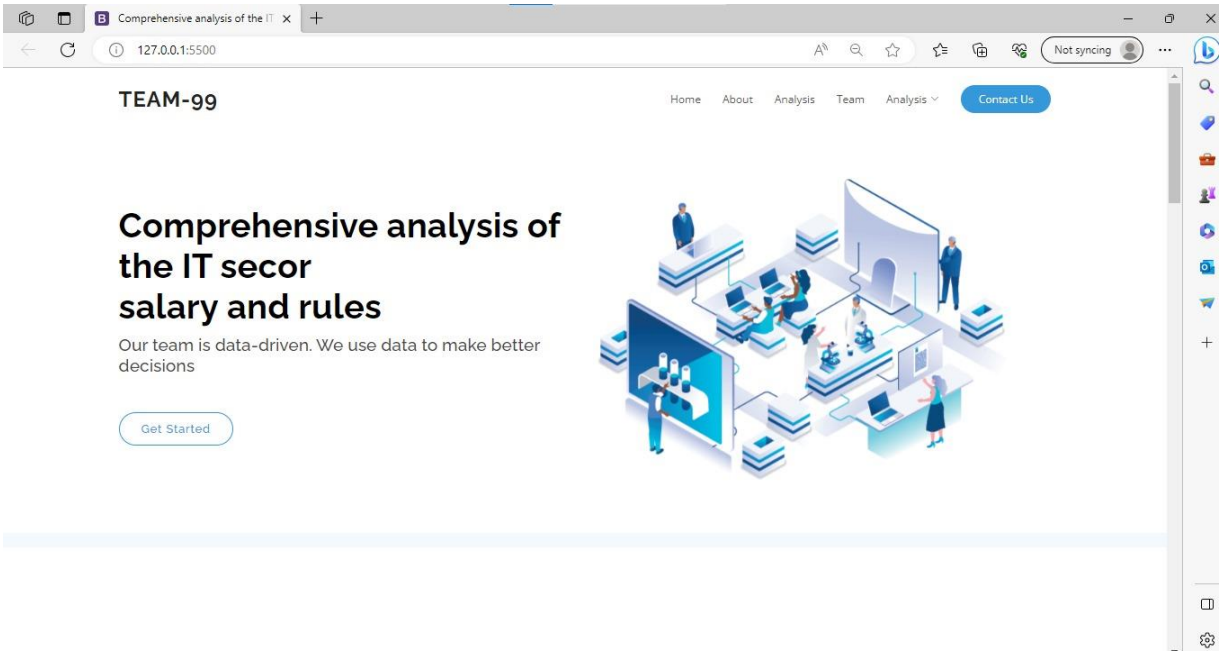
Software Developme..
Android Developer
Front End Developer
Software Developme..
Software Developme..
Software Developme..
Backend Developer
Python Developer
IOS Developer
Java Developer
Senior IOS Developer
Average Rating and salary of top 20 companies
Avg. Rating
4.5
4.0
3.5
0K
400K
800K
1200K
Avg. Salary


Job Roles Analysis Dashboard
job_role_parameter
Total Jobs
Job Roles
Database
Contractor
887,343
Full Time
968,777
Intern
259,333
job_role_calculated
176.0
134.0
126.0
112.0
102.0
92.0
81.0
73.0
57.0
1.0
SDE
Java
Database
Frontend
Python
Android
IOS
Backend
Mobile
Web
0.69%
(6)
6.47%
(56)
92.83%
(803)
Employment Status
Contractor
Full Time
Intern


Comprehensive analysis of the IT
127.0.0.1:5500
Not syncing
TEAM-99
Home
About
Analysis
Team
Analysis
Contact Us
Comprehensive analysis of the IT secor salary and rules
Our team is data-driven. We use data to make better decisions
Get Started


Analysis of IT sector salaries and roles
This visualization shows Top 10 Companies Average Salary Distribution
This Visualization shows the Companies highest Salary
This Visualization shows the IT Sector job roles ratings
This visualization shows the status based on that salaries
Company Name
Avg. Salary
1000K
800K
600K
400K
200K
0K
600,000
500,000
144,000
500,000
240,000
240,000
200,000
600,000
800,000
996,000
4CRisk.ai
4lio
4spl Technologies..
99AppDev
360degr..
A2N Academ..
Aakash In formatics
Aarif & As sociates
Aaryan Industries
AB Solution..
Company Name
4CRisk.ai
4lio
4spl Technologies In..
99AppDev
360degreeinfo
A2N Academy (India)
Aakash Informatics
Aarif & Associates
Aaryan Industries
AB Solutions Lab

7. Advantages and Disadvantages

7.1 Advantages:

1. User-Friendly Interface: Tableau Public offers a user-friendly and intuitive interface, making it accessible to users with varying levels of technical expertise. It allows users to create interactive visualizations and dashboards without extensive coding knowledge.
2. Wide Range of Data Sources: Tableau Public supports a wide range of data sources, including spreadsheets, databases, cloud services, and web data connectors. This versatility allows users to easily connect to their data, regardless of its location or format.
3. Interactive and Dynamic Visualizations: Tableau Public enables the creation of highly interactive and dynamic visualizations. Users can easily apply filters, drill down into specific data points, and interact with the visualizations to gain deeper insights. This interactivity enhances the storytelling capability of the data.

7.2 Disadvantages:

1. Data Security Limitations: As Tableau Public is a cloud-based platform, data security can be a concern for organizations working with sensitive or confidential data. Since Tableau Public visualizations are publicly accessible, it may not be suitable for datasets that require strict privacy or compliance measures.
2. Limited Data Size and Storage: Tableau Public has limitations on data size and storage. The maximum file size for publishing to Tableau Public is restricted, and there is a storage limit for the data uploaded to the platform. Large datasets may require data preprocessing or down sampling to fit within these limitations.
3. Dependency on Internet Connection: Tableau Public operates as a cloud-based platform, which means a reliable internet connection is necessary to access and work on your visualizations. In cases of poor or unstable internet connectivity, it can hinder the user experience and productivity.

8. Applications

The experimental analysis conducted using Tableau Public provides valuable insights into salary trends, distributions, and factors influencing salaries. These insights can be applied in various practical scenarios, including:

Human Resources and Talent Management: The analysis can assist human resources departments in benchmarking salaries and compensation packages within their industry or specific job roles. It can help organizations ensure that their salary offerings are competitive and aligned with market trends, thereby attracting and retaining top talent.

Career Planning and Salary Negotiation: Individuals can leverage the analysis findings to make informed decisions about their career paths and salary expectations. They can gain insights into the salary ranges for different job roles, industries, or geographic locations, enabling them to negotiate better compensation packages.

Workforce Analytics: Organizations can use the analysis to understand salary distributions and trends within their workforce. This information can guide strategic workforce planning, budgeting, and resource allocation decisions.

Government and Policy Decisions: Policymakers and government agencies can utilize the analysis to assess income disparities across regions or industries. The findings can inform the formulation of fair and equitable policies related to minimum wage, labor market regulations, or industry-specific salary standards.

Business Strategy and Market Analysis: Companies can incorporate salary analysis insights into their market research and competitive analysis. It can help them understand the salary landscape within their industry, identify potential gaps or opportunities, and adjust their business strategies accordingly.

9. Conclusion

The experimental analysis conducted using Tableau Public provided valuable insights into salary trends, distributions, and factors influencing salaries. The visualizations and interactive dashboard created through this analysis serve as powerful tools for decision-makers, researchers, and individuals seeking to understand and navigate the complex landscape of salaries in different industries and regions.

10. Future scope

The future scope of using Tableau Public for salary analysis involves expanding its capabilities to provide customized benchmarking, real-time updates, predictive analytics, industry-specific insights, and geographical comparisons. These advancements would enhance decision-making processes, empower individuals, and facilitate a better understanding of salary dynamics in different industries and regions.

11. Bibliography

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https://www.datacamp.com/community/tutorials/visual-analytics-tableau

[2] Correll, M., & Heer, J. (2018). Tableau Public: An Overview and Case Study. Retrieved from

https://idl.cs.washington.edu/papers/tableau-public

[3] Wang, X., et al. (2016). Tableau Public for Data Visualization and Analysis. Retrieved from

https://journals.sagepub.com/doi/10.1177/2374289516634635

[4] Stangl, D., et al. (2020). Exploring the Impact of Tableau Public on Data Visualization and Communication. Retrieved from

https://journals.sagepub.com/doi/10.1177/2374289520913639

[5] Wongsuphasawat, K., et al. (2012). Tableau Public: A Case Study in Open Data Visualization. Retrieved from

https://dl.acm.org/doi/abs/10.1145/2207676.2207739

[6] Johnson, D., et al. (2016). Using Tableau Public for Interactive Data Visualization in Education. Retrieved from

https://www.tandfonline.com/doi/abs/10.1080/19322909.2016.1146199

Appendix:

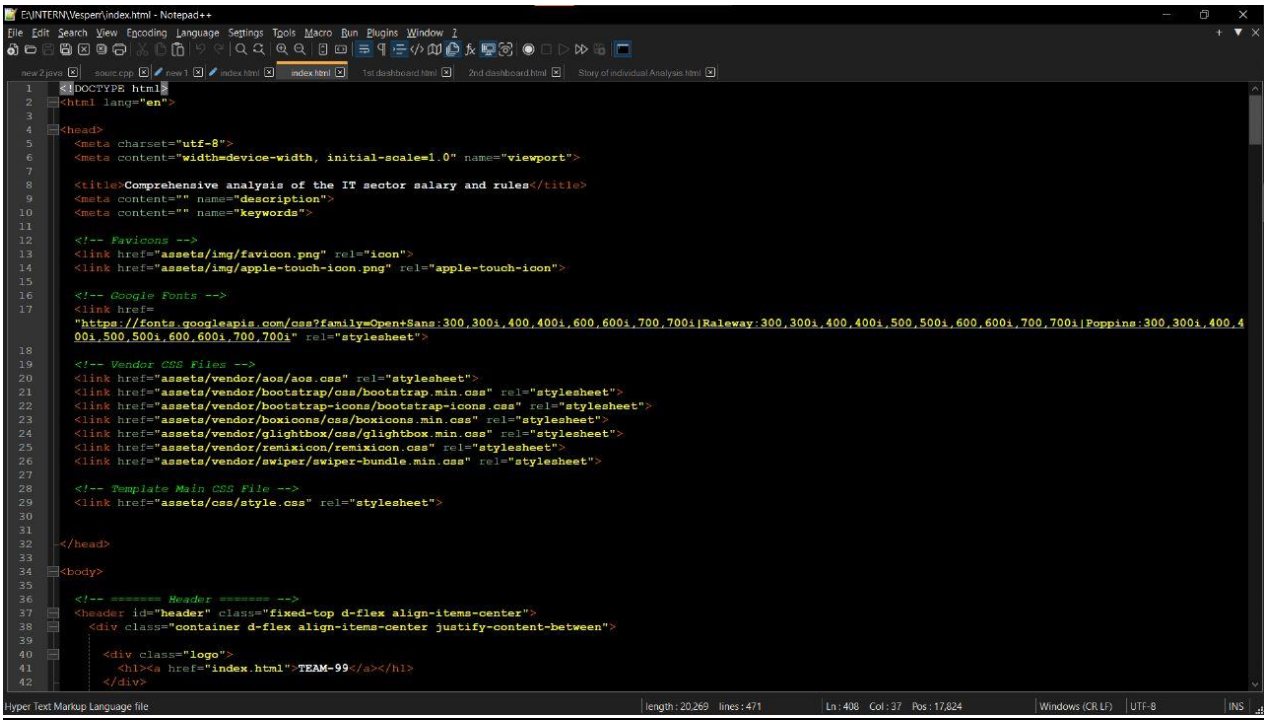
Flask:

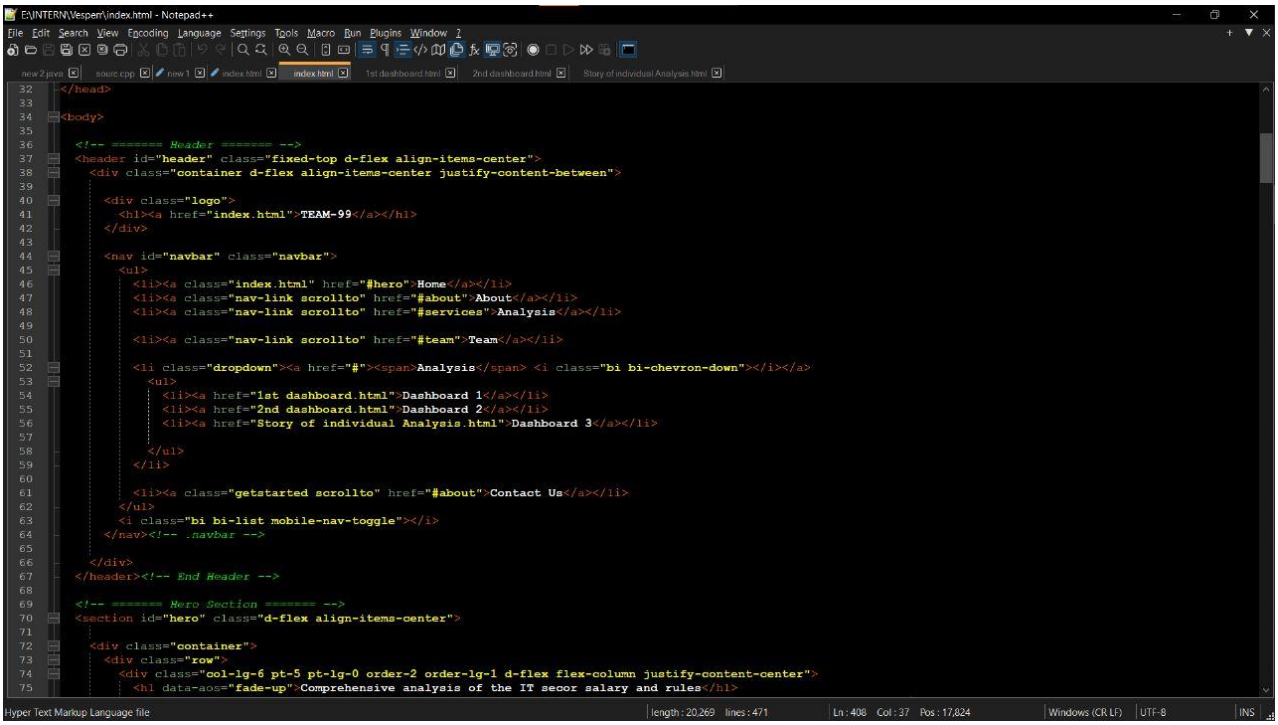
```
from flask import Flask, render_template


app = Flask(name)


@app.route('/dashboard')
def dashboard():
    return render_template('dashboard.html')
```

Index.html:

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File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Hyper Text Markup Language file
length : 20,269 lines : 471
Ln : 408 Col : 37 Pos : 17,824
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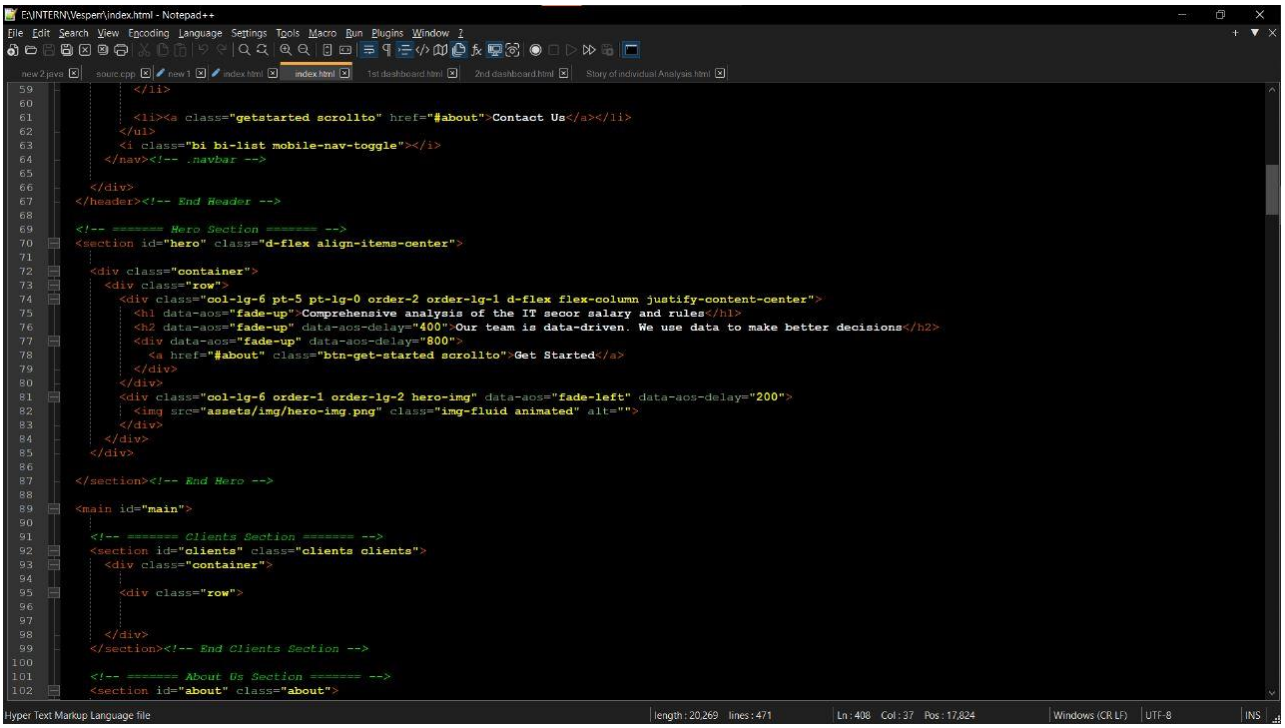
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File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Hyper Text Markup Language file
length : 20,269 lines : 471
Ln : 408 Col : 37 Pos : 17,824
Windows (CR LF)
UTF-8
INS

Script for embedding the Dashboard into website: