PROJECT REPORT

Topic:- Financial Analysis of Banks using Tableau.

Smart Bridge Externship

TEAM 330

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GITHUB LINK:- https://github.com/aniketroyngtr/Team-330---Data-Analytics-project

1 INTRODUCTION

1.1 Overview

Financial analysis plays a crucial role in evaluating the performance and stability of banks. Traditional methods of financial analysis often involve complex spreadsheets and static reports, which can be time-consuming and limit the ability to identify patterns and trends quickly. In this project, we aim to leverage Tableau, a powerful data visualization tool, to perform a comprehensive financial analysis of banks. By using Tableau's interactive dashboards and visualizations, stakeholders such as investors, regulators, and bank management can gain valuable insights into the financial health of banks and make informed decisions.

1.2 Purpose

The purpose of this project is to provide an intuitive and visually appealing platform for financial analysis of banks using Tableau. The project aims to achieve the following objectives:

- Collect financial data from banks' annual reports, financial statements, and other reliable sources.
- Preprocess and clean the data to ensure its quality and compatibility with Tableau.
- Design and develop interactive dashboards and visualizations using Tableau's features.
- Analyze the financial data and extract meaningful insights.
- Present the findings in a concise and visually appealing manner.

2 LITERATURE SURVEY

2.1 Existing problem

The financial analysis of banks is a complex task that involves analyzing vast amounts of data. Traditional approaches to financial analysis often rely on manual data processing, which can be time-consuming and prone to errors. Additionally, the lack of visual representation hinders efficient decision-making and limits the ability to identify trends and patterns quickly.

2.2 Proposed solution

The proposed solution is to utilize Tableau, a leading data visualization tool, to overcome the limitations of traditional financial analysis methods. By leveraging Tableau's features, we aim to create dynamic and interactive dashboards that allow stakeholders to explore and analyze the financial data of banks easily. The use of Tableau's visualizations will enable users to gain a better understanding of the financial health of banks, identify trends, and make data-driven decisions effectively.

The proposed solution involves the following steps:

Data Collection: Gather financial data from various sources, such as banks' annual reports, financial statements, and online databases. This data may include information on key financial indicators, such as assets, liabilities, revenues, expenses, profitability ratios, and liquidity ratios.

Data Preprocessing: Clean and preprocess the collected data to ensure its accuracy, consistency, and compatibility with Tableau. This step may involve removing duplicate or irrelevant data, handling missing values, and standardizing the data format.

Data Modeling: Create relevant data models in Tableau to establish relationships and hierarchies within the data. This step may involve defining dimensions, measures, and calculated fields to enable effective analysis and visualization.

Data Visualization: Design and develop interactive dashboards, charts, and visualizations using Tableau's features. Tableau provides a wide range of visualization options, including bar charts, line charts, scatter plots, heat maps, and geographical maps. The visualizations can be customized to display different financial indicators, trends over time, and comparisons between banks.

Analysis and Insights: Analyze the financial data using the interactive visualizations to extract meaningful insights. Identify trends, patterns, and outliers in the data that can provide valuable information about the financial performance and stability of banks. Conduct comparative analysis between different banks or industry benchmarks to gain further insights.
Presentation of Findings: Present the findings of the financial analysis in a concise and visually appealing manner. Use appropriate labels, titles, and annotations to highlight key observations and insights. The interactive dashboards and visualizations should allow stakeholders to explore the data further and drill down into specific details if needed.
By utilizing Tableau's interactive and visual approach to financial analysis, stakeholders can gain a better understanding of the financial health of banks. They can easily explore and analyze the data, identify trends and patterns, and make informed decisions based on the insights derived from the visualizations.

3 THEORETICAL ANALYSIS

3.1 Block diagram

The project consists of the following components:

- Data Collection: Gathering financial data from banks' annual reports, financial statements, and other reliable sources.
- Data Preprocessing: Cleaning and transforming the data to ensure its quality and compatibility with Tableau.
- Data Modeling: Creating relevant data models to establish relationships and hierarchies within the data.
- Data Visualization: Developing interactive dashboards and visualizations using Tableau's features.
- Analysis and Insights: Extracting meaningful insights from the visualizations and presenting the findings.

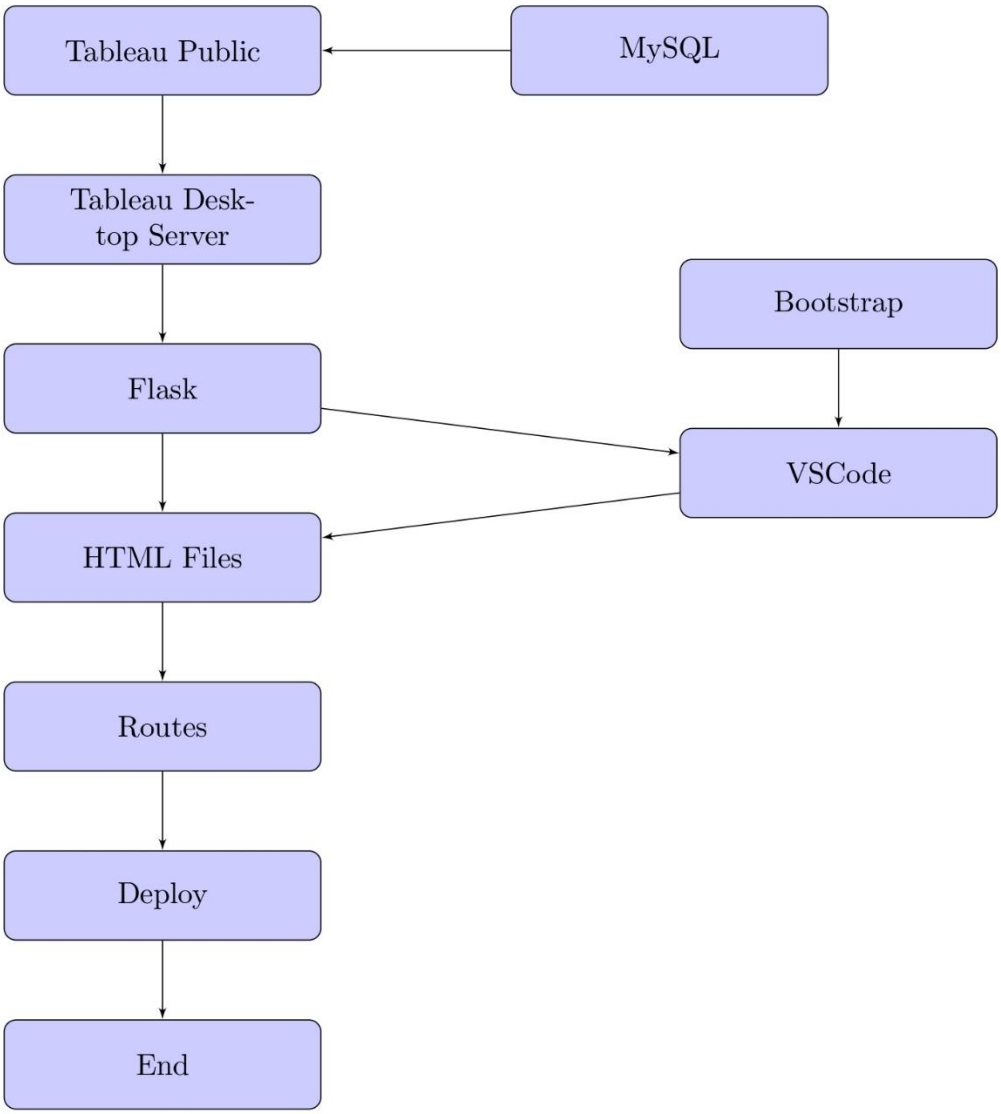


Tableau Public
MySQL
Tableau Desk-
top Server
Bootstrap
Flask
VSCode
HTML Files
Routes
Deploy
End

3.2 Hardware / Software designing

Hardware Requirements:

- Computer with suitable specifications to run Tableau smoothly.
- Adequate storage capacity to store the collected financial data.

Software Requirements:

- Tableau Desktop: Used for data preprocessing, modeling, and visualization.
- Microsoft Excel: To perform initial data cleaning and transformation if required.
- Web browser: To access online sources for collecting financial data.
- Flask: A Python web framework used for developing the web application that integrates Tableau visualizations.
- MySQL: A relational database management system used for storing and managing the financial data.\

The integration of Flask and MySQL into the solution enhances its functionality and provides additional capabilities:
Flask: Flask is a lightweight web framework in Python that allows the creation of web applications. In this project, Flask can be utilized to build a web application that incorporates the Tableau visualizations. The web application can provide a user-friendly interface for stakeholders to access and interact with the financial analysis dashboards. Flask can handle the routing, request handling, and rendering of web pages, ensuring a seamless user experience.

MySQL: MySQL is a widely used relational database management system that provides robust data storage and management capabilities. In the context of this project, MySQL can be employed to store the financial data collected from various sources. The data can be organized in appropriate tables and normalized to ensure data integrity and efficient retrieval. MySQL enables secure and efficient storage and retrieval of financial data for analysis and visualization purposes.

The integration of Flask and MySQL into the proposed solution enhances the capabilities and provides a comprehensive platform for financial analysis of banks. Flask allows the creation of a user-friendly web interface, while MySQL ensures efficient data storage and retrieval for analysis and visualization.

It is important to note that the inclusion of Flask and MySQL in the solution requires additional setup and configuration. Flask needs to be installed and configured to handle the web application, and MySQL needs to be set up as a database server and connected to the Flask application. Proper security measures and best practices should be followed during the installation, configuration, and usage of Flask and MySQL to ensure data integrity and protect against potential vulnerabilities.

By incorporating Flask and MySQL into the solution, stakeholders can access the financial analysis dashboards through a user-friendly web interface, while the financial data is securely stored and managed in a reliable database system.

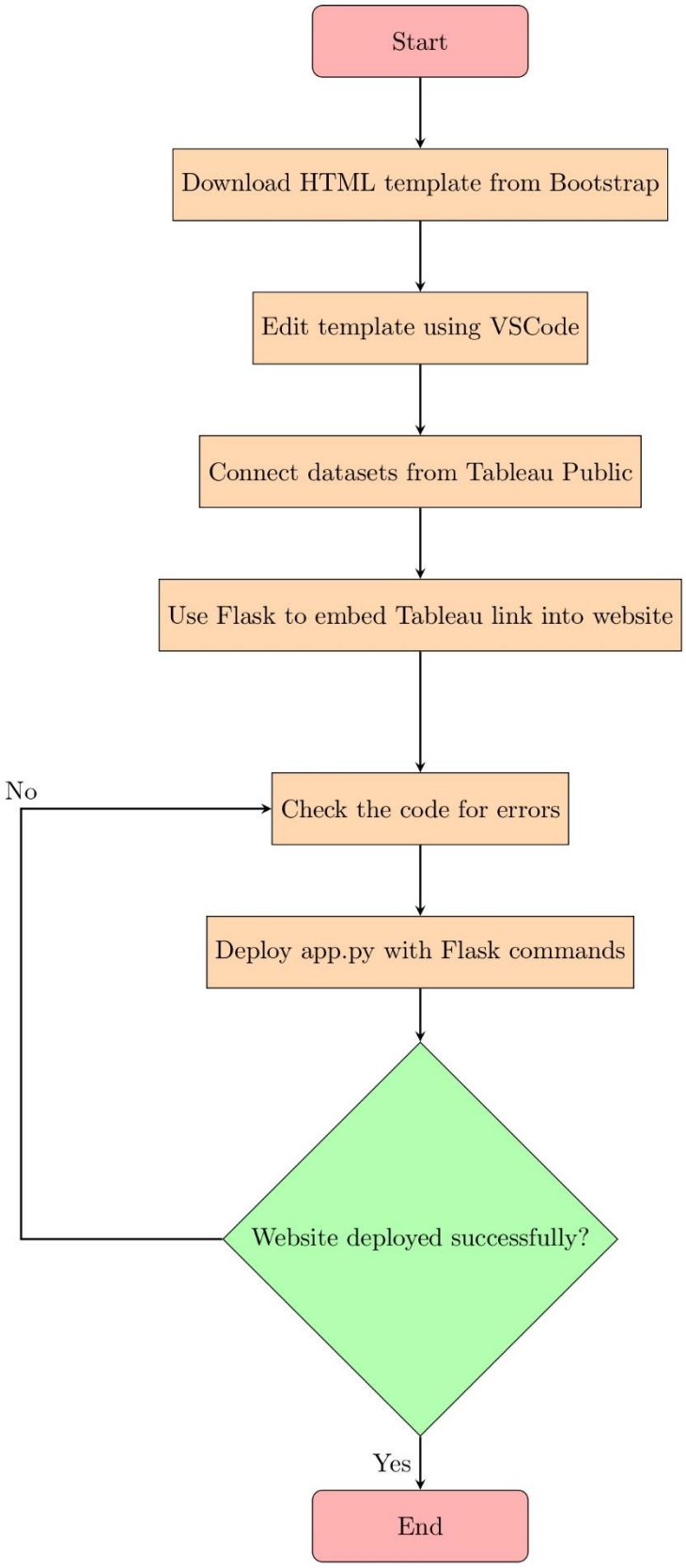
4 EXPERIMENTAL INVESTIGATIONS

During the course of this project, several experimental investigations were conducted. These investigations included:

- Collecting financial data from banks' annual reports, financial statements, and online sources.
- Preprocessing the data to ensure its accuracy and consistency.
- Creating data models in Tableau to establish relationships between different variables.
- Designing interactive dashboards and visualizations to showcase the financial analysis results.
- Iteratively refining the visualizations based on feedback and testing.

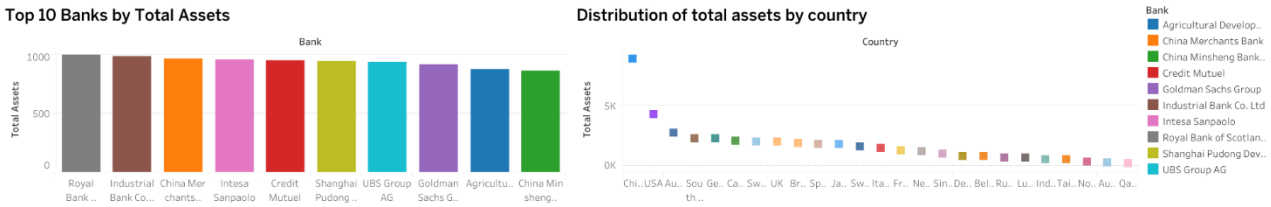
5 FLOWCHART

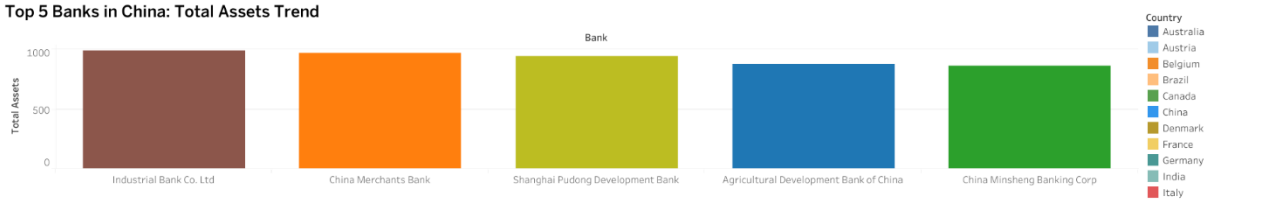
The flowchart below illustrates the control flow of the solution:

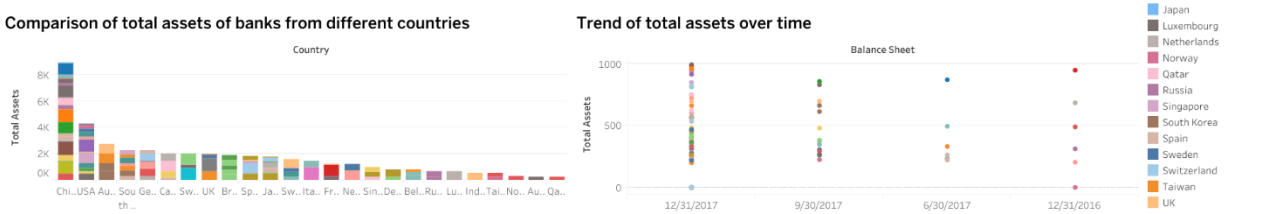


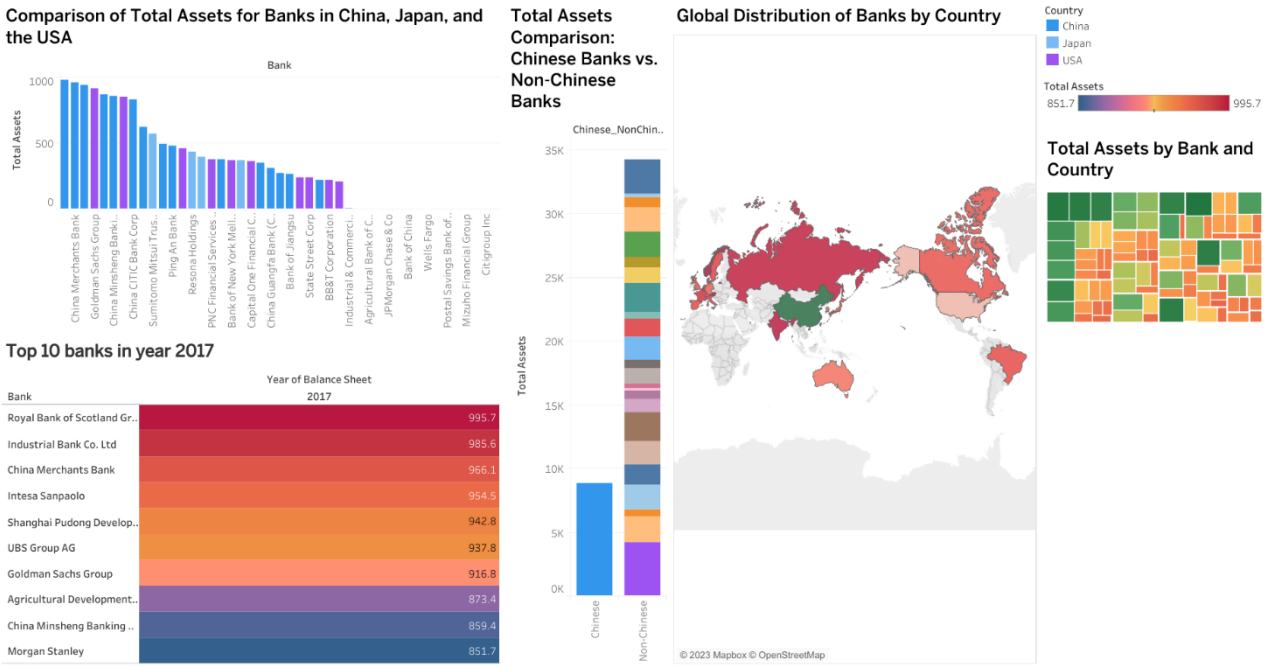
6 .RESULT

The final findings of the project include the creation of interactive dashboards and visualizations that provide a comprehensive financial analysis of banks. The screenshots of the Tableau dashboards showcasing the results are presented below:



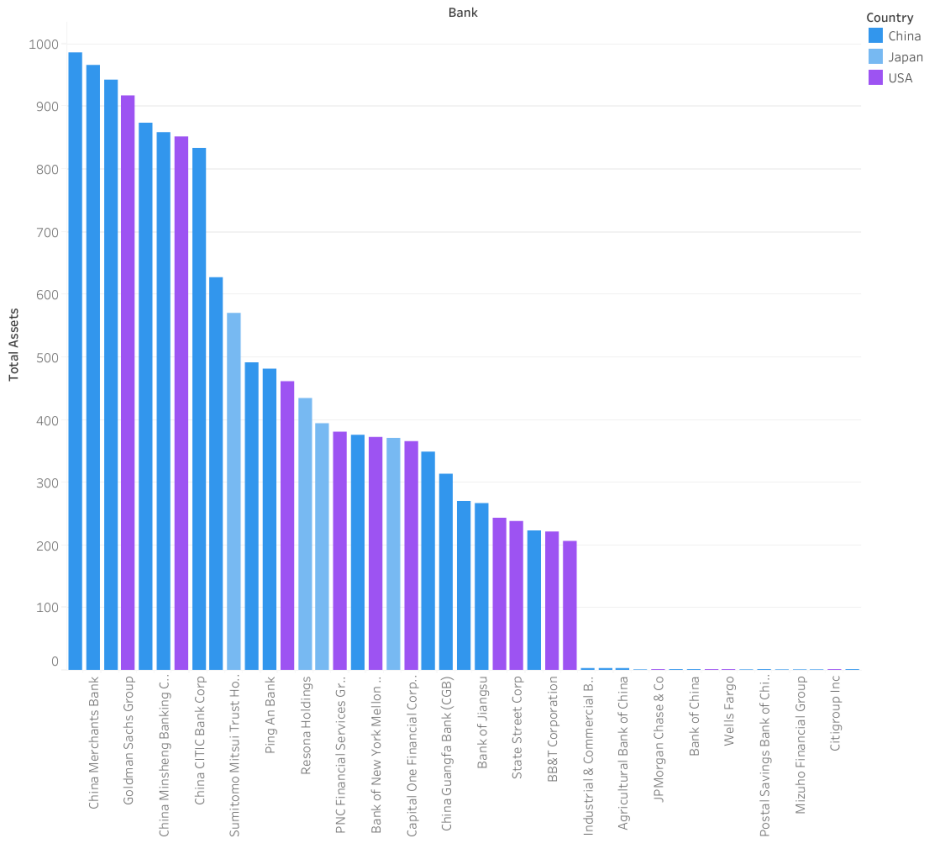






Financial analysis of Banks story 1

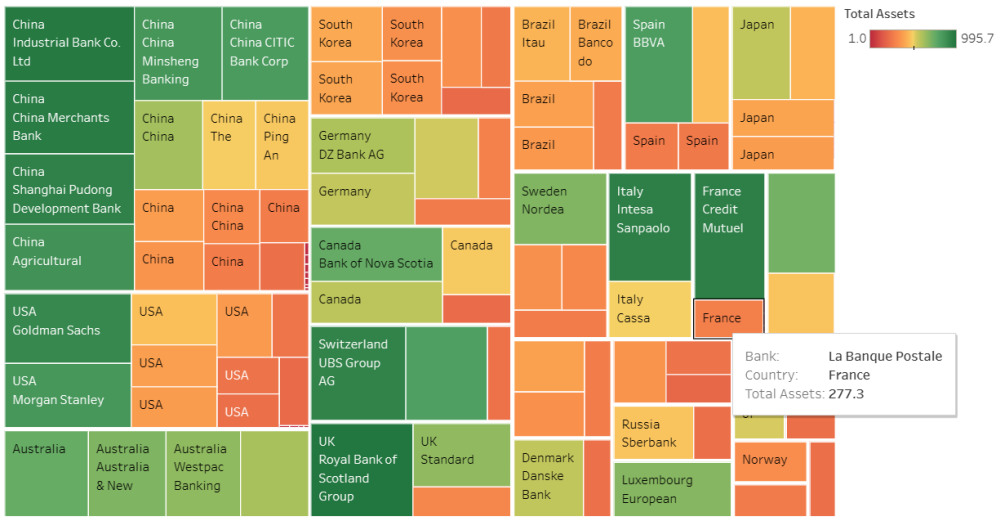
TOP 10 banks by Total Assets | Distribution of total assets by country | Trend of total assets over time | Top 5 Banks in China:Total assets | comparison of total assets of bank from d..

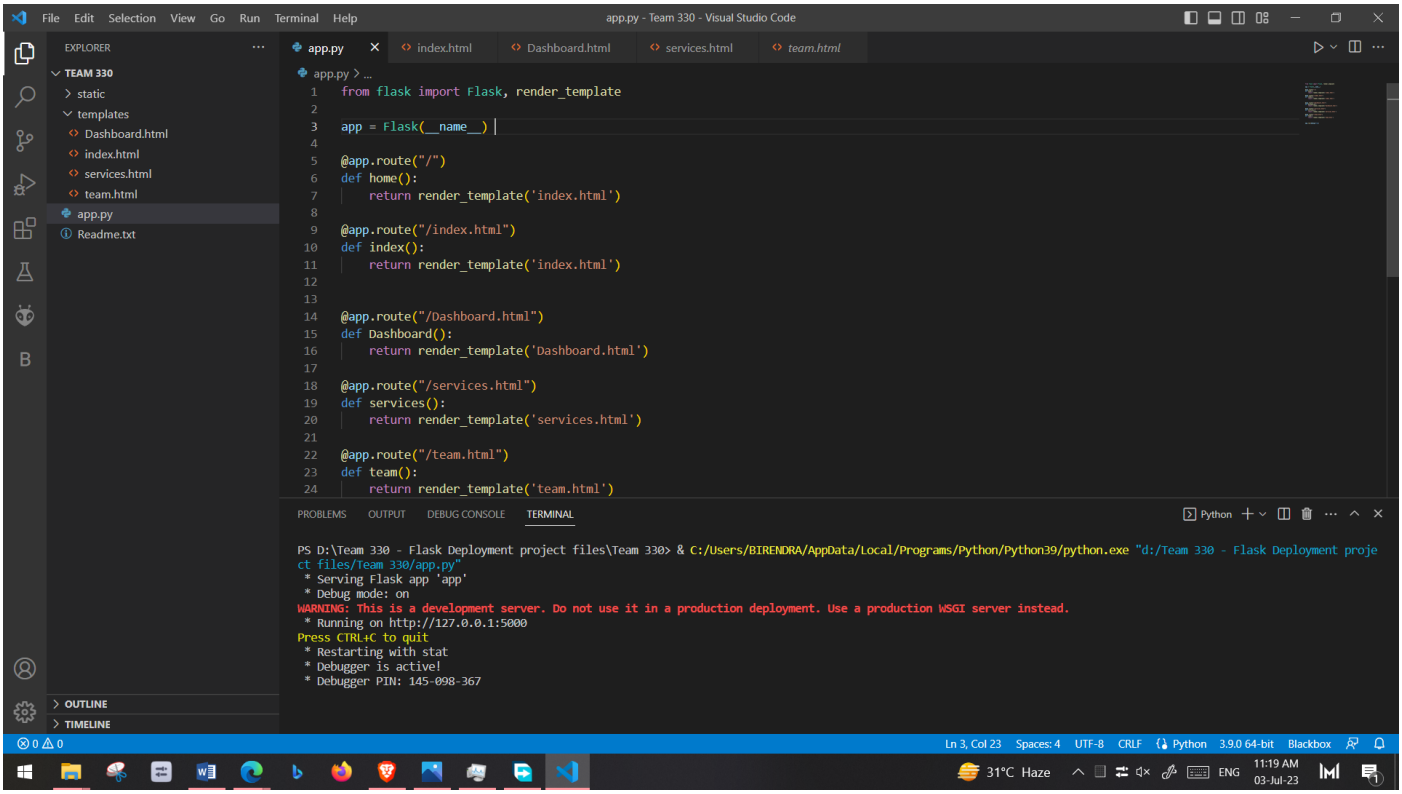


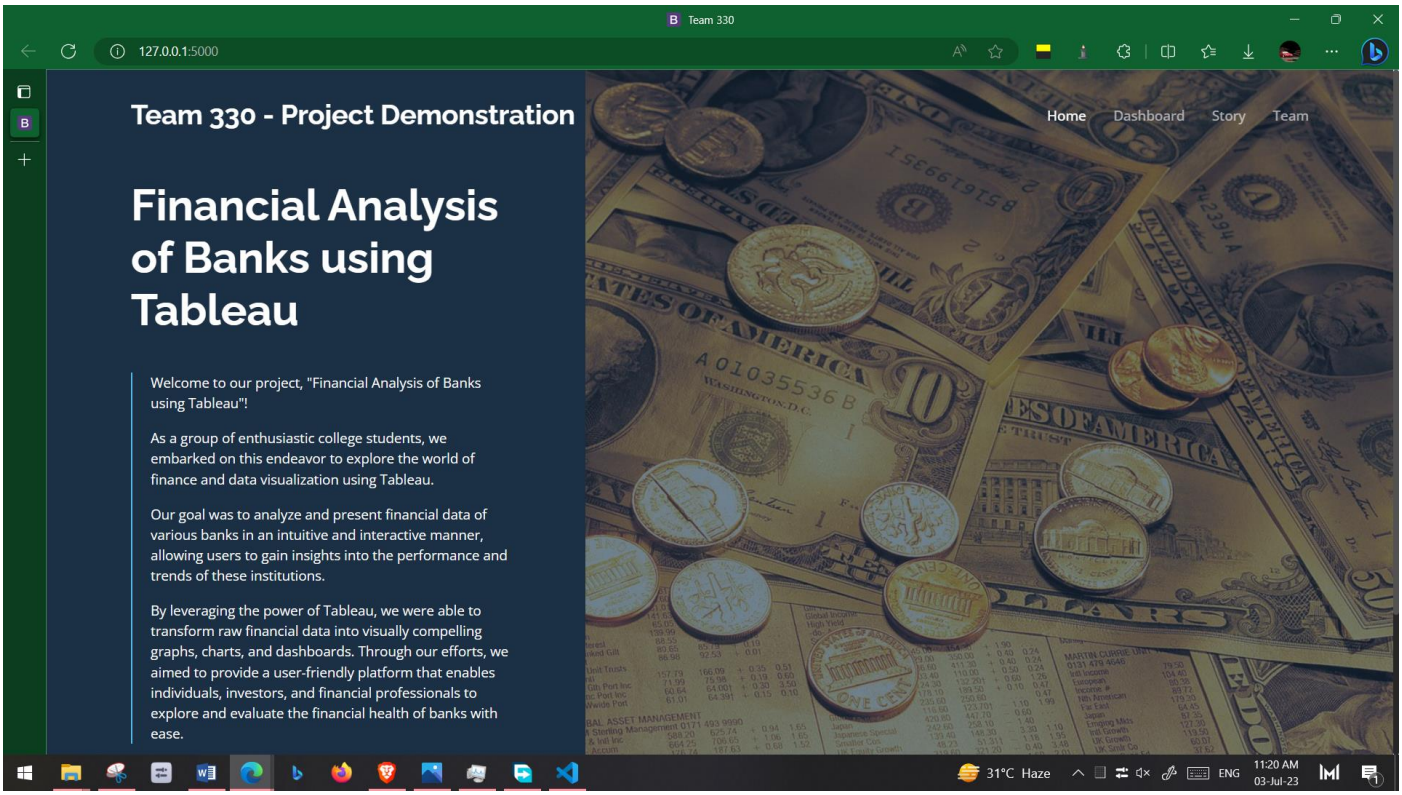
Financial analysis of Banks story 2 by MUDIT PALIWAL

Financial analysis of banks story 2

Total Assets comparison:Chinese banks vs Non chinese | Top 10 banks in year 2017 | Global distribution of banks by different countries | Total Assets by Bank and Country




File Edit Selection View Go Run Terminal Help
app.py - Team 330 - Visual Studio Code
EXPLORER
TEAM 330
static
templates
Dashboard.html
index.html
services.html
team.html
app.py
Readme.txt
app.py
index.html
Dashboard.html
services.html
team.html
app.py > ...
1 from flask import Flask, render_template
2
3 app = Flask(__name__)
4
5 @app.route("/")
6 def home():
7 return render_template('index.html')
8
9 @app.route("/index.html")
10 def index():
11 return render_template('index.html')
12
13
14 @app.route("/Dashboard.html")
15 def Dashboard():
16 return render_template('Dashboard.html')
17
18 @app.route("/services.html")
19 def services():
20 return render_template('services.html')
21
22 @app.route("/team.html")
23 def team():
24 return render_template('team.html')
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Python
PS D:\Team 330 - Flask Deployment project files\Team 330> & C:/Users/BIRENDRA/AppData/Local/Programs/Python/Python39/python.exe "d:/Team 330 - Flask Deployment project files/Team 330/app.py"
* Serving Flask app 'app'
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
* Debugger PIN: 145-098-367
OUTLINE
TIMELINE
Ln 3, Col 23 Spaces: 4 UTF-8 CRLF Python 3.9.0 64-bit Blackbox
31°C Haze
ENG
11:19 AM
03-Jul-23


Team 330
127.0.0.1:5000
Team 330 - Project Demonstration
Home Dashboard Story Team
Financial Analysis of Banks using Tableau
Welcome to our project, "Financial Analysis of Banks using Tableau"!
As a group of enthusiastic college students, we embarked on this endeavor to explore the world of finance and data visualization using Tableau.
Our goal was to analyze and present financial data of various banks in an intuitive and interactive manner, allowing users to gain insights into the performance and trends of these institutions.
By leveraging the power of Tableau, we were able to transform raw financial data into visually compelling graphs, charts, and dashboards. Through our efforts, we aimed to provide a user-friendly platform that enables individuals, investors, and financial professionals to explore and evaluate the financial health of banks with ease.
31°C Haze
ENG
11:20 AM
03-Jul-23

7 ADVANTAGES & DISADVANTAGES

Advantages of the proposed solution:

- Interactive Visualizations: Tableau allows users to interact with the financial data and gain deeper insights through dynamic visualizations.
- Time Efficiency: Tableau automates data processing tasks, reducing the time required for analysis and reporting.
- Improved Decision Making: Visual representations enable stakeholders to make informed decisions based on a better understanding of the financial data.

Disadvantages of the proposed solution:

- Learning Curve: Tableau may require a learning curve for users unfamiliar with the software, although it provides a user-friendly interface.
- Data Compatibility: Ensuring compatibility and integration of various data sources and formats may pose challenges during the initial setup.

8 APPLICATIONS

The proposed solution has various applications in the following areas:

- Investor Analysis: Investors can utilize the financial analysis dashboards to evaluate the financial performance and stability of banks before making investment decisions.
- Regulatory Compliance: Regulators can leverage the dashboards to monitor the financial health of banks and identify potential risks or compliance issues.
- Internal Management: Bank management can use the visualizations to track key financial indicators, identify areas of improvement, and develop strategies for growth and risk mitigation.

9 CONCLUSION

In conclusion, this project demonstrates the application of Tableau for financial analysis of banks. By utilizing Tableau's data visualization capabilities, stakeholders can gain valuable insights into the financial performance of banks. The interactive dashboards and visualizations enable efficient decision-making, improving transparency and accountability in the banking sector.

10 FUTURE SCOPE

The future scope of this project includes:

- Integration of Real-Time Data: Incorporating real-time data feeds to enable up-to-date financial analysis.
- Predictive Analytics: Incorporating predictive models to forecast future financial trends and potential risks.
- Benchmarking and Comparative Analysis: Providing comparative analysis of multiple banks to identify industry benchmarks and trends.

11 BIBLIOGRAPHY

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- https://coreyms.com/development/python/python-flask-tutorials-full-series
- https://realpython.com/tutorials/flask/
- https://developer.mozilla.org/en-US/docs/Web/HTML
- https://www.codecademy.com/learn/learn-flask

APPENDIX

A. Source Code

All codes have been uploaded in our github link provided as follows:

https://github.com/aniketroyngtr/Team-330---Data-Analytics-project

B. Video Explanation

All explanations for visualizations, stories, dashboards, MySql and Flask deployment are uploaded in the given link:

https://drive.google.com/drive/folders/1LNEb5vNP9i6LBBOCYgFJa0uhYGLseQuY?usp=sharing