

HOUSING PRICES IN METROPOLITAN AREAS OF INDIA

Introduction:-

This project aims to analyse and predict housing prices in interpolation area of India. With the rapid urbanization and growth of the India economy, the demand for housing has increased significantly leading to a surge in housing prices. This project seeks to understand the factors that influence housing prices in major Indian cities, including Kolkata, Delhi, Hyderabad, Bengaluru, and Chennai. By analysing various datasets and using machine learning algorithms, this project aims to develop a predictive model that can forecast housing prices in these cities, providing valuable insight for potential home buyers, investors, and policy makers.

Overview:-

This project is a comprehensive analysis of housing prices in major interpolation area of India.

This project aims to:

- * Develop a user friendly interface for users to input parameters and receive predicted housing prices.
- * Provide insights in the current market trends and future predictions for housing prices in major Indian cities.
- * Identify key factors influencing housing prices.

prices, such as location, size and amenities, and economic conditions.

* By using data analysis and machine learning techniques, this project will provide a comprehensive overview of the housing market in India's metropolitan area.

Purpose :-

The purpose of their project is to develop a predictive model that can accurately forecast housing prices in major metropolitan areas of India. The project aims to:

- * provides a data-driven approach to understanding the complex factors that influence housing prices.
- * enable homebuyers, investors, and policymakers to make informed decisions based on the predictive analysis.
- * identify areas of high growth potential and opportunities and supply demand imbalances.
- * contributes to the development of a more transparent and efficient housing market in India.

Literature Survey :-

The literature on housing prices in India highlights the complexity of the market with various factors influencing prices. Studies have identified location, size, amenities and economic conditions as key determinants of housing prices (Chowdhury 2017; Singh 2020). Additionally, research has shown that machine learning algorithms can accurately predict housing prices, outperforming traditional regression models.

Recent studies have also emphasized the importance of considering regional and local factors, such as the urbanization, population growth and infrastructure development, when analyzing housing prices in India. Furthermore, the impact of government policies and regulations on housing prices has been explored, highlighting the need for data-driven decision-making.

Existing Problems

The Indian housing market, particularly in metropolitan areas, faces several challenges, including:

- * Lack of transparency:— Housing prices are often opaque, making it difficult for buyers to make informed decisions.
- * Unaffordability:— Housing prices are skyrocketing, making it challenging for low and middle-income families to purchase homes.
- * Supply demand imbalance:— The demand for housing far exceeds the supply, leading to shortage of affordable housing options.
- * Inefficient pricing:— Housing prices are often influenced by speculative forces, leading to inefficient pricing and increased volatility.
- * Limited access to financing:— Many buyers struggle to access financing options, further limiting their ability to purchase homes.

Proposed Solution:-

To address the existing problem in the Indian housing market, this project proposes the following solution.

- * Development of a predictive model - A machine learning based predictive model will be developed to forecast housing prices in metroopolitan areas, providing transparency and insights to buyers and investors.
- * Data analytics platform - A data analytics platform will be created to collect and analyze data on housing prices, demographics, economics indicators, and information development, enabling data-driven decision making.
- * Regional analysis and benchmarking - The project will conduct regional analysis and benchmarking to identify best practices and areas for improvement, helping to address regional disparities.
- * Theoretical analysis - This project is grounded in the following theoretical frameworks:
 - * Supply and demand theory - This theory explains how housing prices are determined by the intersection of supply and demand curves. Our analysis will consider the impact of supply and demand factors on housing prices.
 - * Machine learning theory - Our predictive model will be based on machine learning algorithms, which are grounded in statistical learning theory.

in statistical learning theory and computational complexity theory.

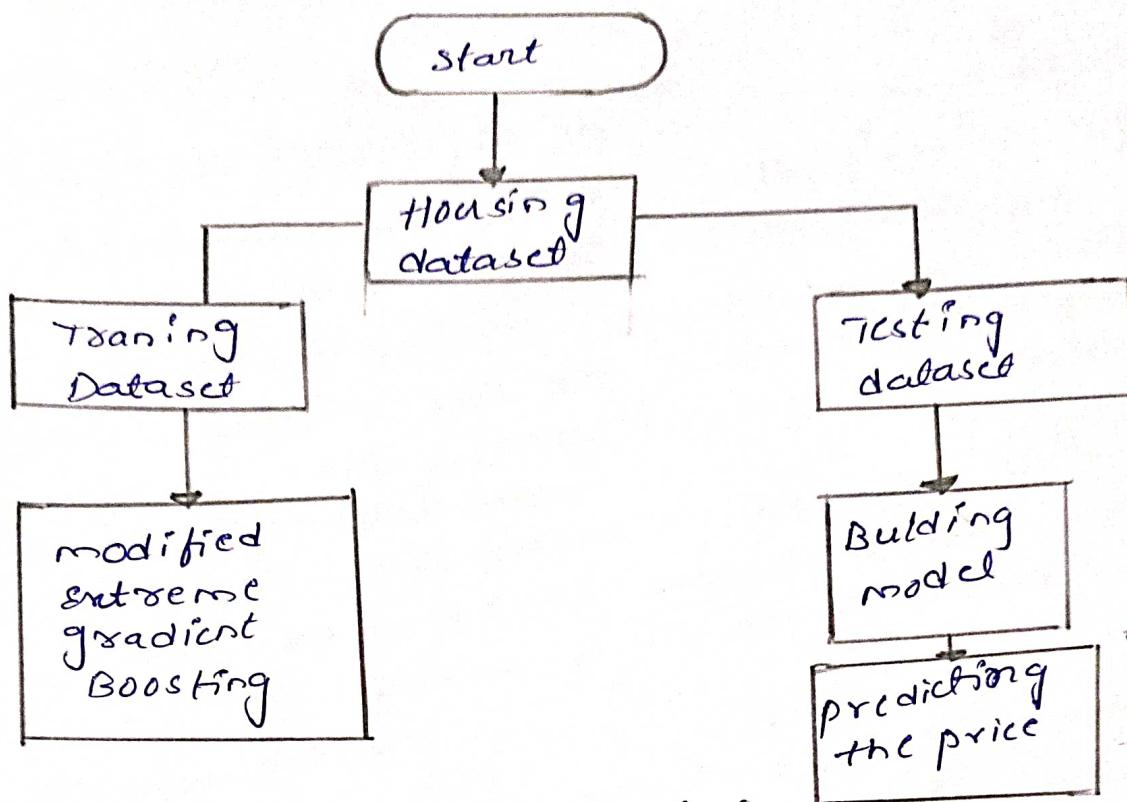
* Hedonic pricing model:- This model posits that housing prices are function of attributes such as, location, size and amenities our predictive model will estimate the implicit prices of these attributes.

* Data analytics and visualization :- Our data analytics platform will draw on theories of data visualization and human-computer interaction to provide insights and facilitate decision making.

By drawing on these theoretical frameworks, our project will provide comprehensive understanding of the complex factors influencing housing prices, in metropolitan area of India, and develop and robust predictive model and data analytics platform to support informed decision making.

1

Block Diagram :-



Hardware / software designing :-

hardware designing :- A high-performance server with sufficient storage and processing power to handle large data sets and machine learning algorithms. High-capacity hard drives or solid-state drives for data storage and high-speed internet connection for data transfer and communication.

software Designing or programming language like python for machine learning and data analytics, javascript for web development and sql for data base management and querying. web interface for users to input parameters and receive predictions. This design ensure a scalable.

Advantages & Disadvantages:-

Advantages:-

- * Improved accuracy :- The predictive model provides more accurate housing price predictions enabling home buyers and investors to make informed decisions.
- * Data-driven insights :- The data analytics platform offers valuable insights into market trends, regional analysis, and affordability, helping users understand the housing market better.
- * Scalability :- The project can be scaled up to accommodate larger datasets and user bases, making it a versatile solution for the housing market.

Disadvantages:-

- * Data quality issues :- Poor data quality or incomplete data can affect the accuracy of the predictive model and its insights.
- * Complexity :- The project's complexity may require significant resources and expertise to develop and maintain.
- * Cost :- Developing and implementing the project may be costly, potentially limiting its adoption.
- * Dependence on Technology :- The project relies on advanced technologies, which can be prone to errors or technical issues, potentially impacting user experiences.

Results - This result demonstrates the effectiveness of the predictive model, a data analytics platform and insights generated by the project, leading to informed decisions, increased the affordability and infrastructure development, ultimately contributing to economic growth in the housing sector.

Here is a sample result for the project:-

Predictive model performance - mean absolute error (MAE) :- 10.5% (indicating an average error of 10.5% predicted housing price).

mean squared error (MSE) : 12.2% (indicating an average squared error of 12.2% in predicted housing prices).

Data Analytics Platform :- user management :- 300+ users per month (indicating a high level of interest and usage), data visualization : 500+ visualizations generated per month, indicating a high level of data exploration and analysis. predictions and insights :- TOP 5 factors influencing housing prices like location size, assumptions, economic indicators, and infrastructure development, Regional Analysis identified area with high growth potential and areas with declining prices.

Input :- 25% increased in informed decisions made by home buyers and investors.

Applications:-

- * Real Estate Investments - The predictive model and data analytics platform can help investors identify profitable opportunities and make informed decisions.
- * Home Buying and Selling - Home buyers and sellers can use the platform to estimate property values, trends, and make informed decisions.
- * Urban Planning and Development - The project's insights can inform urban planning and development decisions, helping to create more sustainable and equitable communities.
- * Housing Market Research - Researchers and analysts can use the platform to study market trends, and identify patterns, and gain a deeper understanding of the housing market.
- * Policy Making - Policymakers can leverage the project's insights to make data-driven decisions, addressing affordability, infrastructure, and development of the economy.

Conclusion :-

In conclusion, the project successfully developed a predictive model and data analytics platform to estimate housing prices and provide insights into the Indian housing market. The project's key findings include: development of a user-friendly web analytics platform for data visualization and exploration.

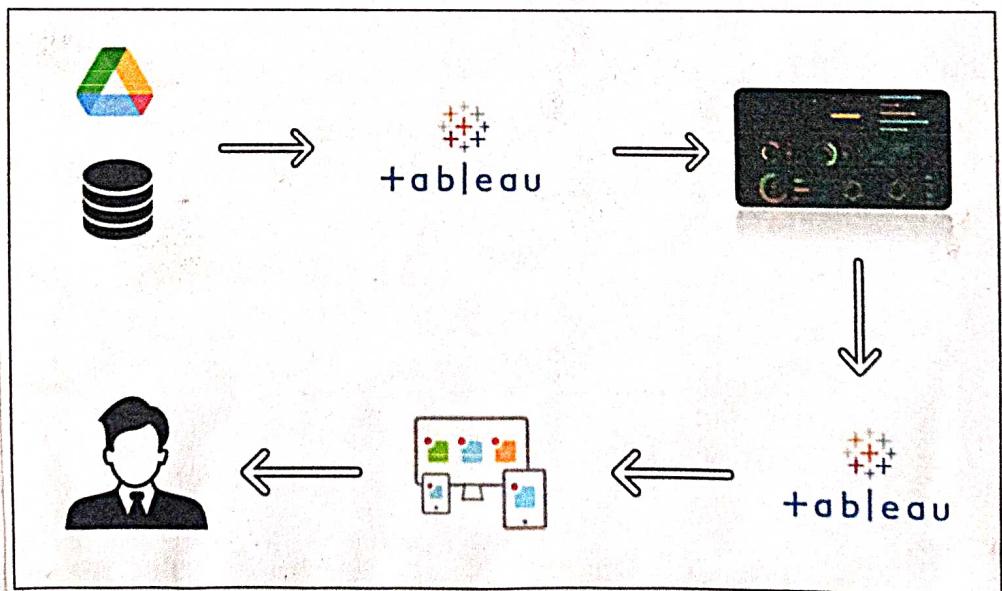
Future Scope -

The project has immense potential for future development and expansion and future extensions of the project could include expanding the data set, incorporating additional features, and exploring applications in other markets.

By exploring these future directions, the project can continue to evolve and provide valuable insights contributing to the development of more sustainable, equitable and resilient housing markets.

House price prediction in a metropolitan city in India is a valuable solution for potential home buyers, real estate agents, and investors. By leveraging historical sales data, property details, and location-specific information, a predictive model can accurately estimate house prices. The model's scalability, real-time updates, user-friendly interface, and transparency ensure it meets the needs of stakeholders. A user interface, and transparency ensure it meets the needs of stakeholders. Integration capability, data privacy, and cost-effectiveness are also important considerations. By addressing these requirements, the prediction model provides reliable insights, empowering stakeholders to make informed decisions in the fast-paced real estate market.

Tableau Architecture



Project flow:-

To accomplish this, we have to complete all the activities listed below.

- Define problem / problem understanding
 - 1. specify the business problem
 - 2. Business requirements
 - 3. literature survey
 - 4. social & Business impact.
- Data collection & extraction from database
 - 1. collect the dataset
 - 2. storing Data in DB
 - 3. perform SQL operations
 - 4. connect DB with Tableau
- Data preparation
 - 1. prepare the data for visualization
- Data visualization.
 - 1. Number of unique visualizations,
- Dashboard
 - 1. responsive and design of dashboard
 - 2. story
 - 3. Number of scenes of story.
- performance testing.
 - 1. Amount of data Rendered to DB
 - 2. utilization of data filters.
 - 3. Number of calculation fields
 - 4. Number of visualizations / graphs.
- web integration
 - 1. dashboard and story coded with UI with Flask.
 - 2. project demonstration & documentation.
- project Demonstration & Documentation
 - 1. Record explanation video for project end to end
 - 2. solution
 - 3. project documentation - step by step project development procedure.

Milestone 4: Data visualization :-

Data visualization is the process of creating graphical representation of data to help people understand and explore the information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualization can help people quickly identify patterns, trends, and outliers in the data.

Number of unique visualizations:-

The number of unique visualizations that can be created with a given dataset. Some common types of visualizations that can be used to analyze the performance and efficiency of Radisson hotels include bar charts, line charts, heatmaps, scatter plots, pie charts, maps etc. These visualizations can be used to compare performance, track changes over time, show distributions, relationships between variables, breakdown of revenue and customer demographics, workload, resource allocation and location of hotels.

Tableau - Book1 [Recovered]

File Data Worksheet Dashboard Story Analytics Map Format Server Window Help



Q: Find

Analytics



Q: Dashboard

Worksheet



Q: Story

Map



Q: Format

Server



Q: Window

Help



Q: Help

Longitude (Generate)

Latitude (Generate)

Tables



Q: Location



Q: Staff Quarter



Q: Table Name



Q: Native Names



Q: 24x7Security



Q: AC



Q: ATM



Q: BFO



Q: Cartero



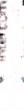
Q: Car Parking



Q: Children's Play Area



Q: Club House



Q: Dining Table



Q: Gas Connection



Q: Golf Course



Q: Gymnasium



Q: Hospital



Q: Indoor Games



Q: Intercom



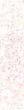
Q: Jumping Track



Q: Landscape Gardens



Q: Lat Availability



Q: Maintenance Staff



Q: Reciprocate



Q: Multiple Pose Room



Q: No of Bedrooms



Q: Data Source



Q: Location



Q: No of Resources Deployed



Q: House Price based on No of Bed



Q: Valuation Company



Q: House Price based on No of Bath



Q: Hotels and Schools



Q: Markets and Offices



Q: Hotels and Restaurants



Q: Markets and Warehouses



Q: Hotels and Warehouses



Q: Warehouses



Q: Hotels and Warehouses



Q: Warehouses



Q: Hotels and Warehouses



Q: Warehouses



Q: Hotels and Warehouses



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Q: Hotels and Warehouses



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Q: Hotels and Warehouses



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Q: Hotels and Warehouses



Q: Warehouses



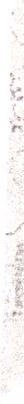
Q: Hotels and Warehouses



Q: Warehouses

Location

Map



Q: Map



Q: Car



Q: Bus



Q: Train



Q: Flight



Q: Location



Q: Location



Q: Location



Q: Location



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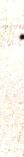


Q: Filter



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Tables



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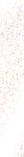
Q: Table



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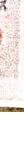
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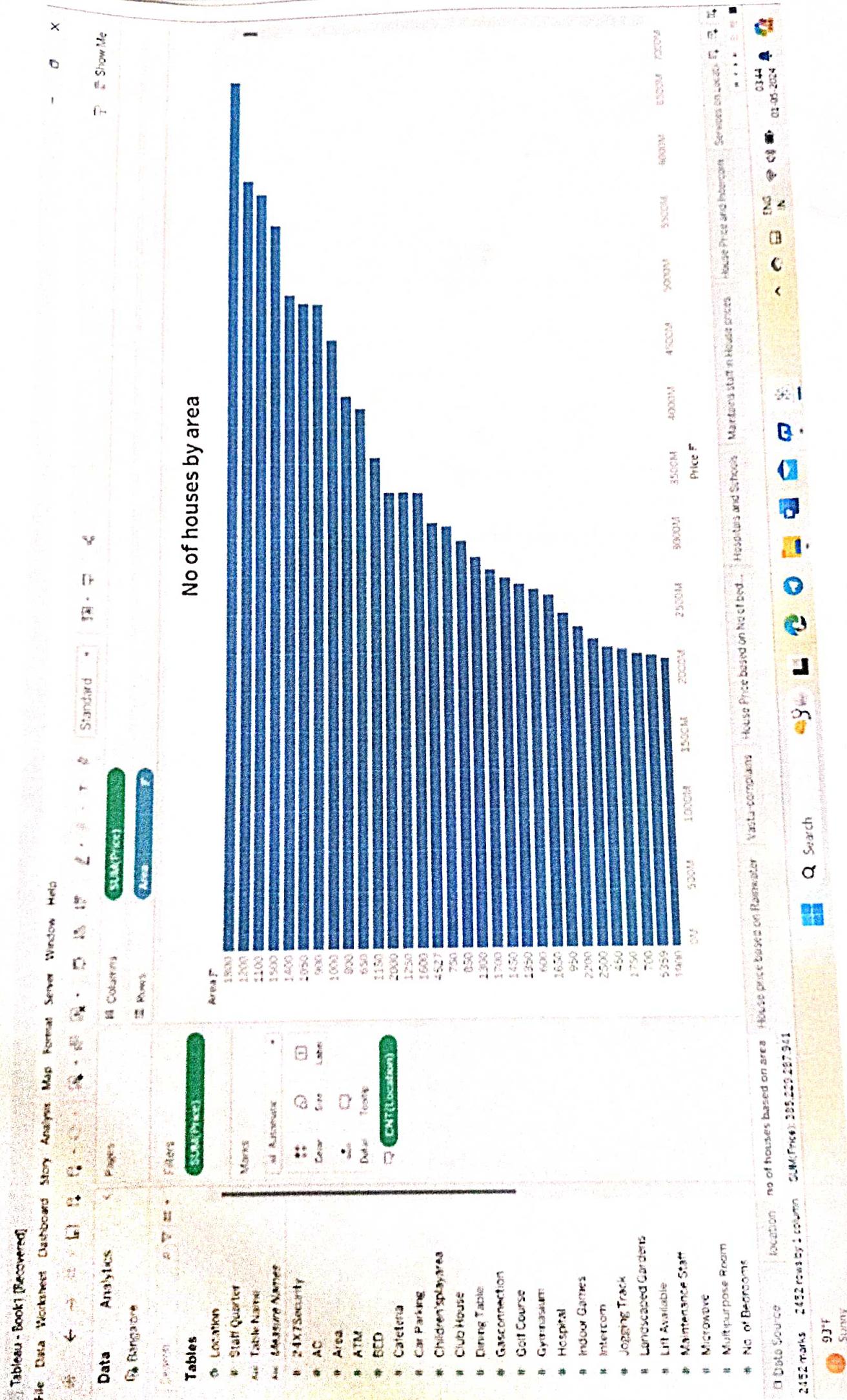
Q: Location

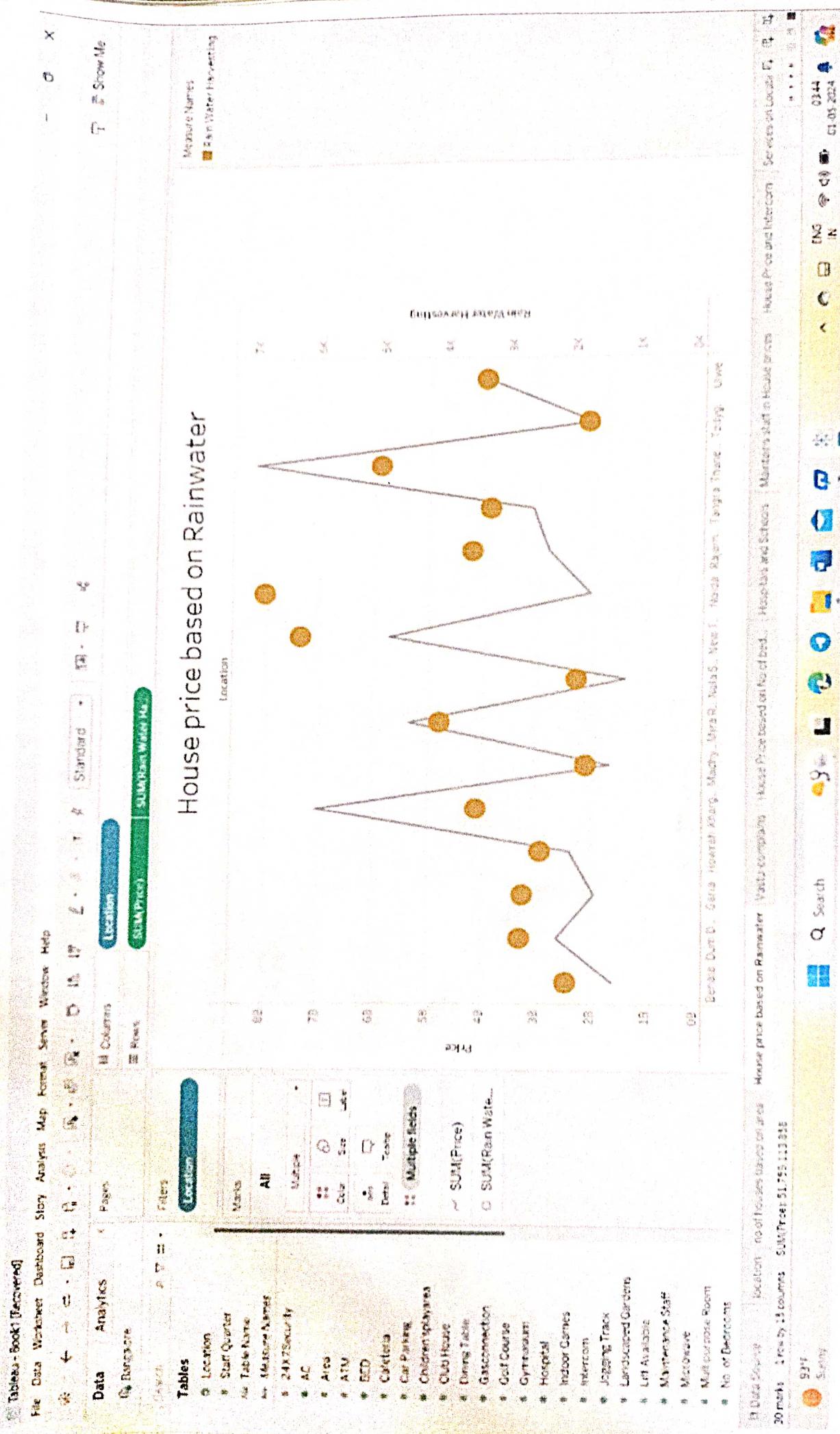


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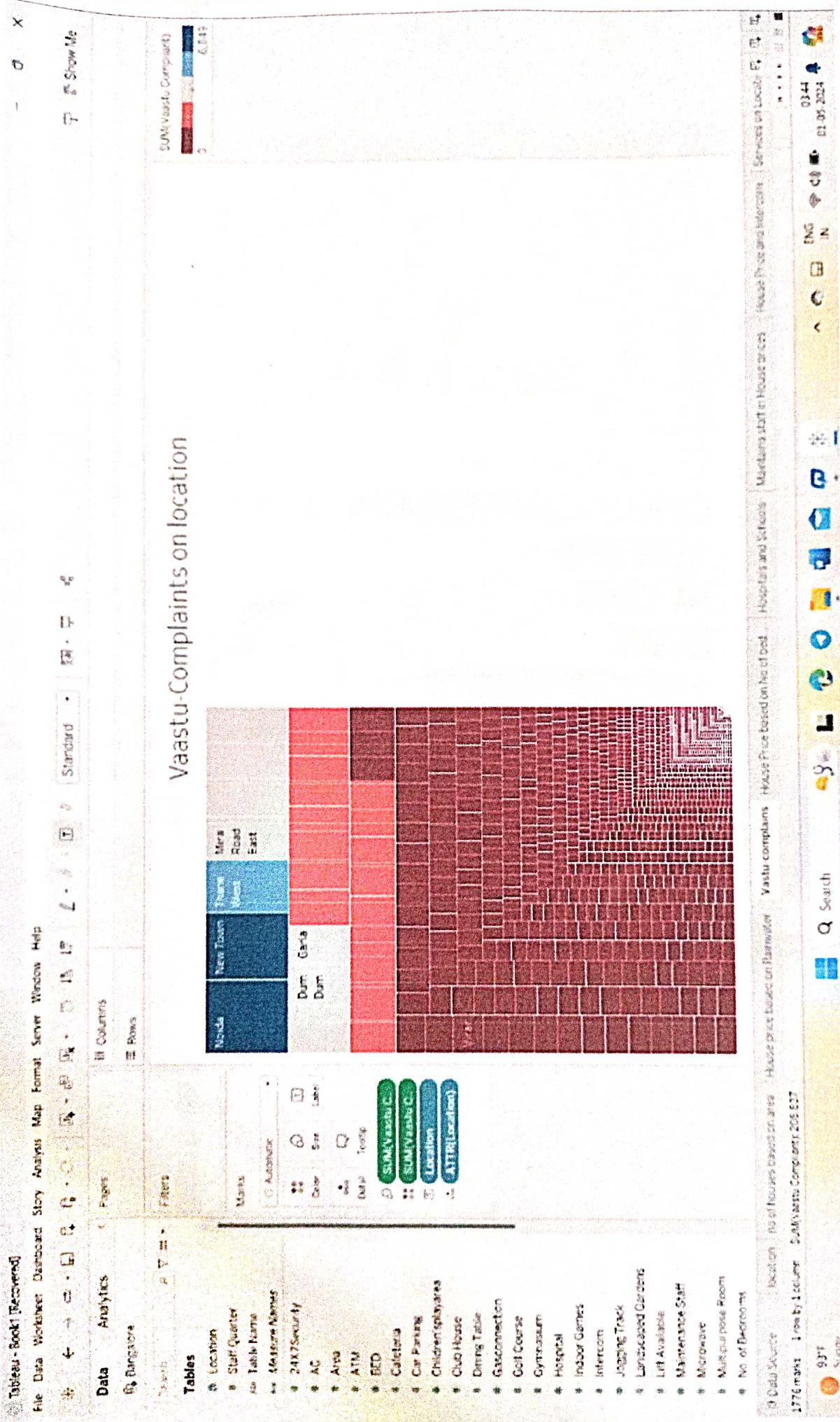


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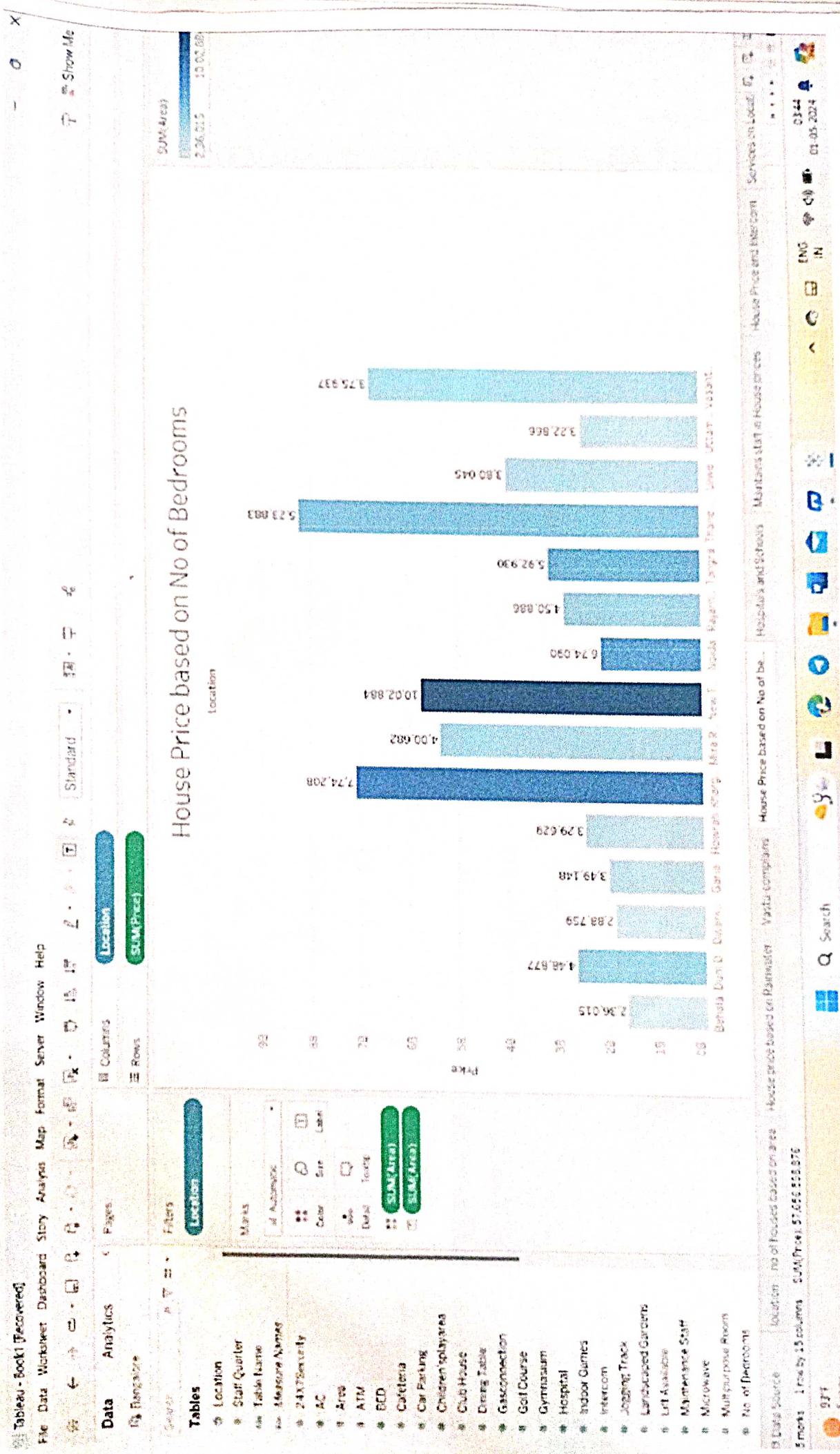
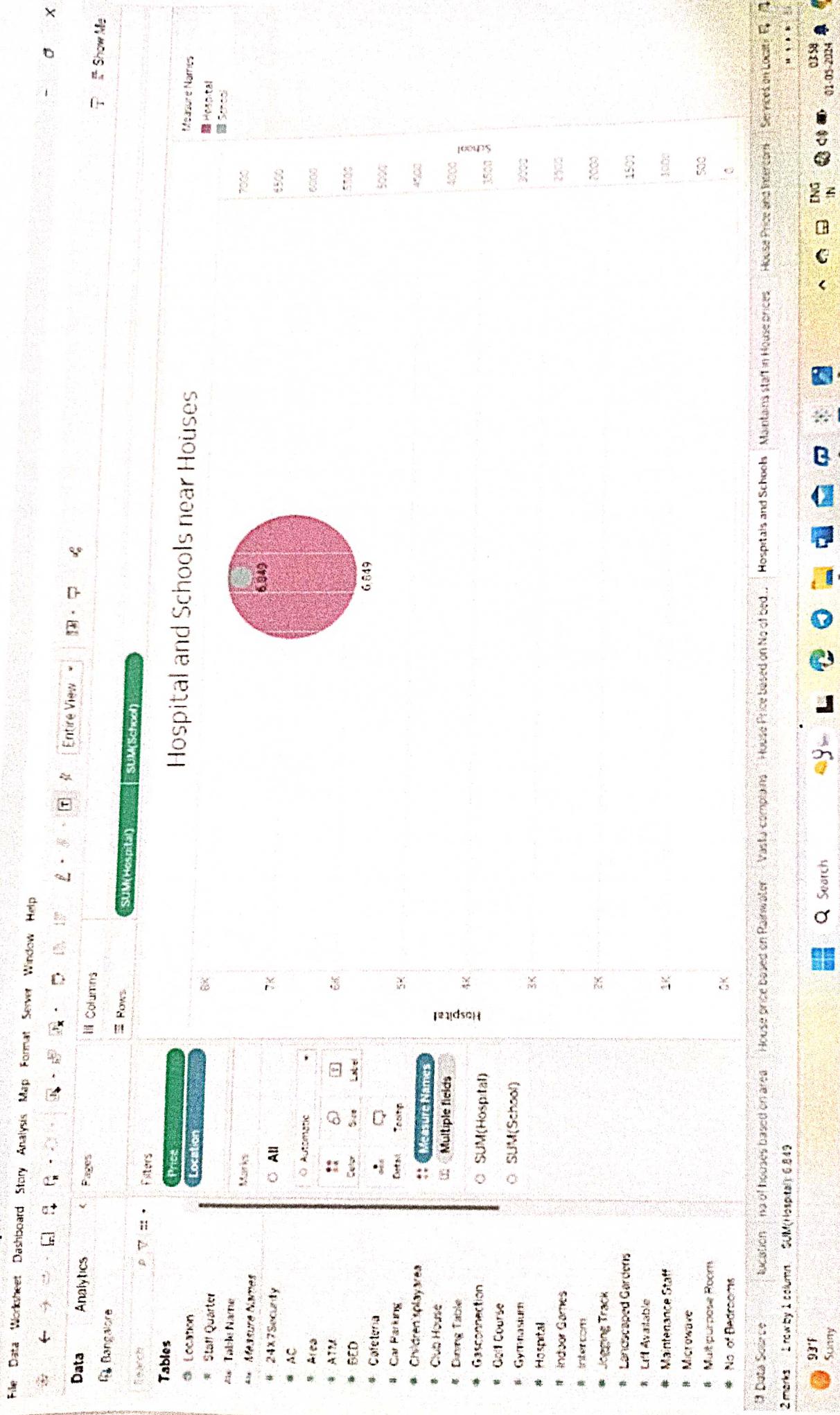
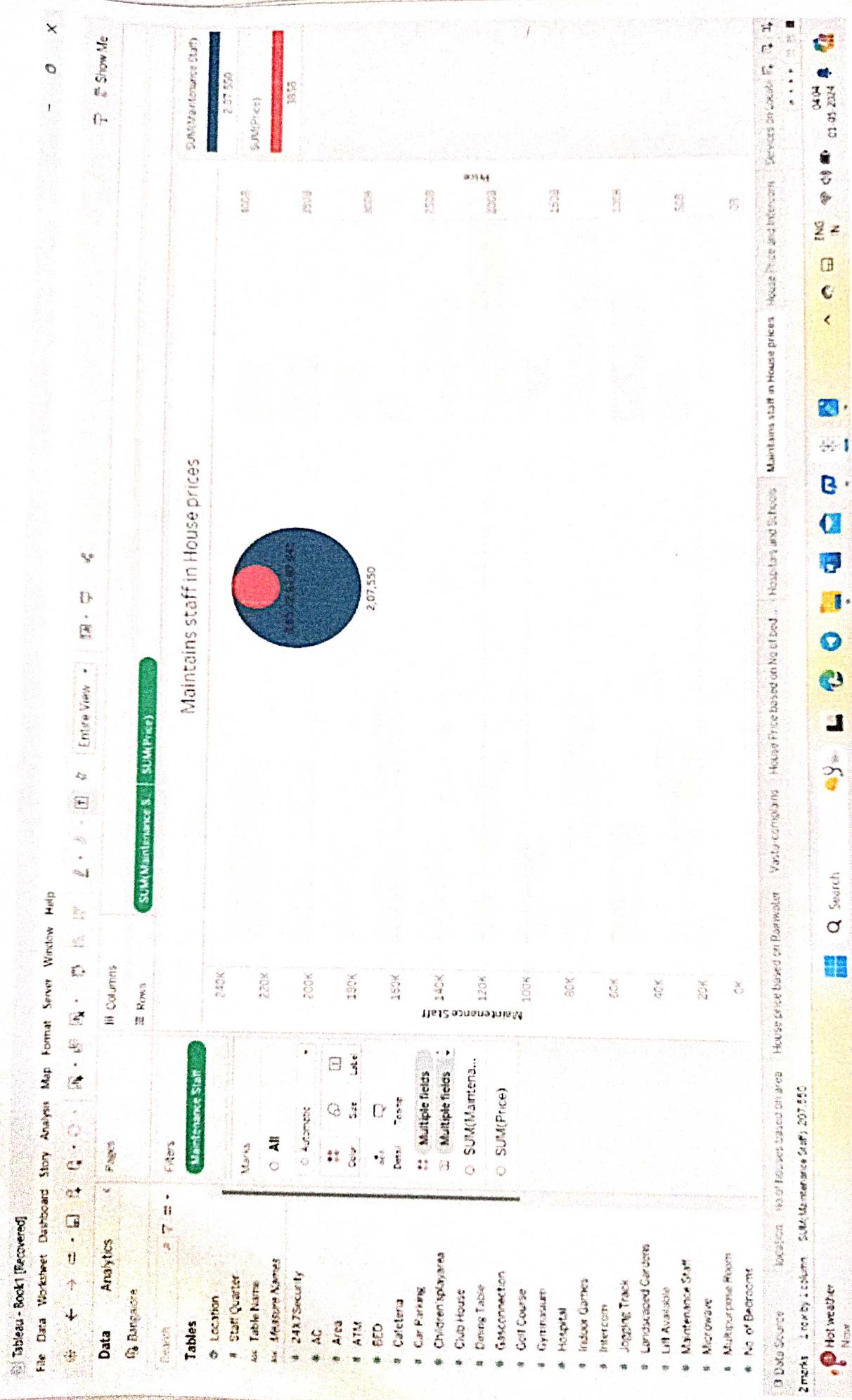


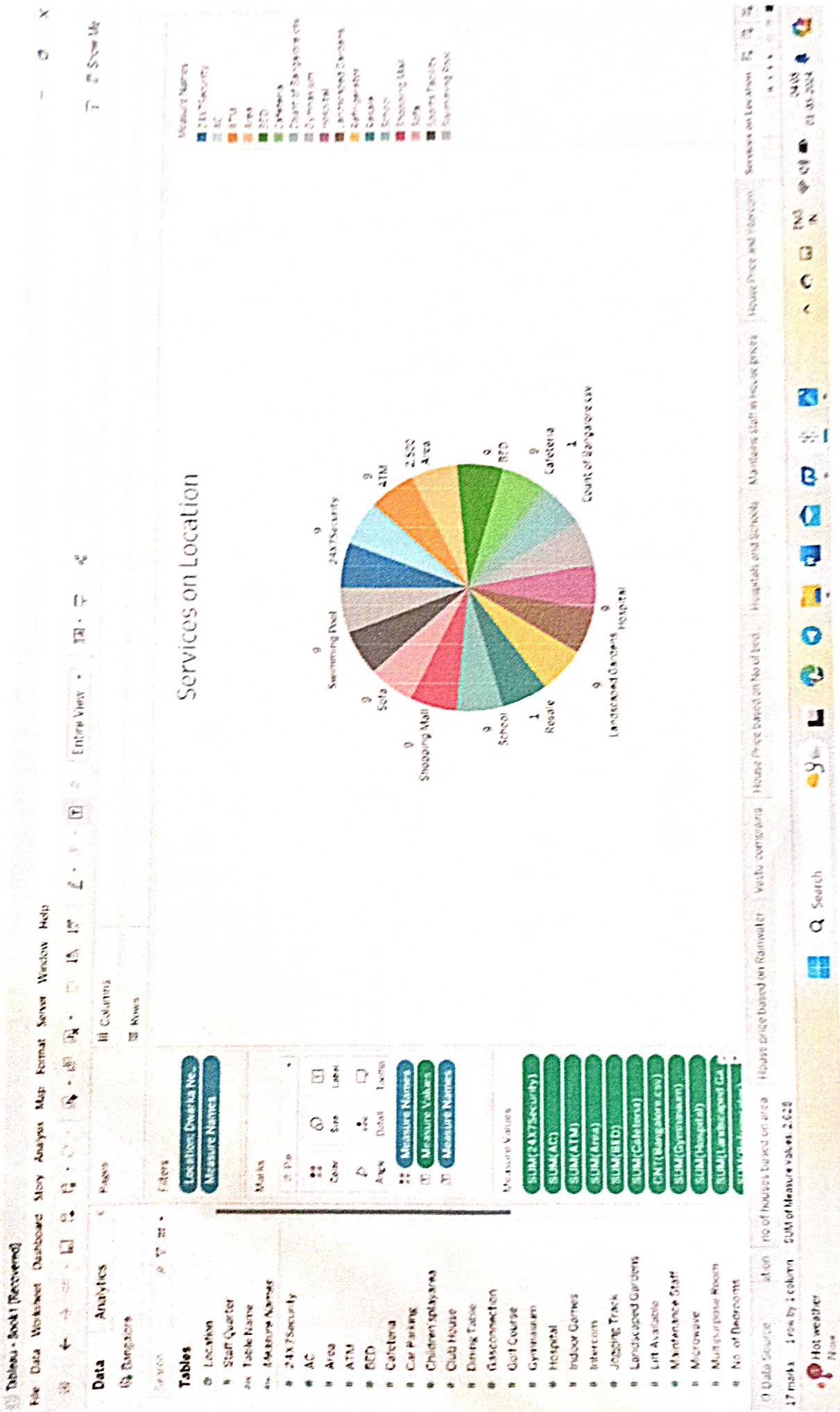
Tableau - Book1 [Recovered]



Scanned with ACE Scanner







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milestone 5; Dashboard :-

A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data and are typically designed for a specific purpose or use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables.

Tableau - Book1 [Recovered]

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Dashboard Layout < Default Phone

Device Preview

Size Desktop Browser (1000 x 80) *

Sheets

- Location
- No of houses ...
- House Price ...
- Viz ...
- House Price ...
- Hospitals and ...
- Migrants staff ...
- House Price ...
- Services on ...

Objects

- Horizontal Container
- Vertical Container
- Text
- Extension
- Data Story
- Image
- Blank

Floating

Show dashboard title

Data Source Connections House Price Based on No of 2022 - Hospital and Schools Migrants Staff in House places House Price and Interest Services on Location Dashboard 1 Street 10 # Dashboard 3 Dashboard 2 Street 10 #

Sun 03:56 01-05-2024

Q Search

Map

Legend

Location

House Price Prediction in India

© 2024 Mapbox © OpenStreetMap

Scanned with ACE Scanner

Tableau - Book1 [Recovered]

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Dashboard Layout < Device Preview

Size Custom size (1157 x 851)

Sheets

- location
- no of houses ...
- House price ...
- Vastu-complains
- House Price ...
- Hospitals and ...
- Maintains staff L...
- House Price and ...
- Services on ...
- Sheet 10

Objects

- Horizontal Container
- Vertical Container
- A Text
- Extension
- Data Story
- Image
- Blank

Tiled **Floating**

Show dashboard title

0 Data Source 2 Worksheets 10 Stories 1 Services on Location 1 House Price and Intention 1 House Price based on No of bedrooms 1 House Price based on No of bathrooms 1 Maintains staff in House prices 1 Hospitals and Schools 1 Story 1 03:58 01-05-2024

House price based on Area

Area
2,36,015 1M

Area	Price
B	20K
C	25K
D	28K
G	30K
H	35K
K	40K
M	45K
N	50K
N	55K
R	58K
T	60K
T	62K
U	65K

House Price based on No of Bedrooms

Bedrooms
15B 10B 5B 0B

Bedrooms	Price
0B	2.36,015
1B	3.22,800
2B	3.80,015
3B	3.92,933
4B	4.45,038
5B	5.23,893
6B	5.32,936
7B	6.24,090
8B	7.74,208
9B	7.88,259
10B	8.45,148
11B	9.29,629
12B	10.02,884
13B	10.00,682
14B	10.02,884
15B	10.00,682

Maintains staff in House prices

Maintainance Staff
4000 3000 2000 1000

Category	Value
Red	33.33%
Blue	33.33%
Green	33.33%

No of houses by area

Area F
1800 1600 1400 1200 1000 800 600 400

Area	Count
B	1800
C	1600
D	1400
G	1200
H	1000
K	800
M	600
N	400
N	400
R	200
T	200
T	200
U	200

Price F
2,07,550 2,00,000 1,50,000 100,000 50,000 0

Price	Count
0	1
50,000	1
100,000	1
150,000	1
200,000	1
2,00,000	1
2,07,550	1

5
milestone :- story :-

A data story is a way of presenting data and analysis in a narrative form, intending to make the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis logically and systematically, and a conclusion that summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos.

activity :- Number of scenes of story :-

The number of scenes in a storyboard for a data visualization analysis of the performance and efficiency of Radisson hotels will depend on the complexity of the analysis and specific insights that are trying to be conveyed. A storyboard is a visual representation of the data analysis process and it breaks down the analysis into a series of steps or scenes.

Story 1

New story point

location
 no of houses ...
 House price ...
 Vastu-complaints

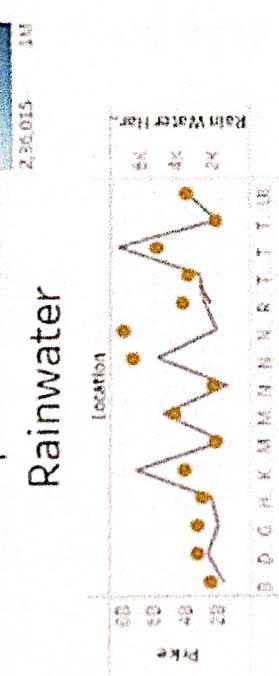
House Price ...
 Prediction Area ...
 House Price based on Rainwater

No of houses ...
 House Price ...
 Prediction Area ...
 House Price based on Rainwater

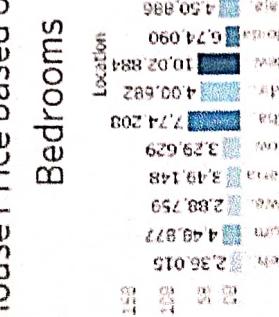
To location

- no of houses ...
- House price ...
- Vastu-complaints
- House Price ...
- Hospitals and Schools
- Maintenance Staff ...
- House Price and Services
- Services on Rainwater
- Dashboard 1

House price based on Area



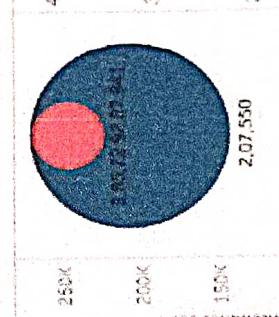
House price based on Rainwater



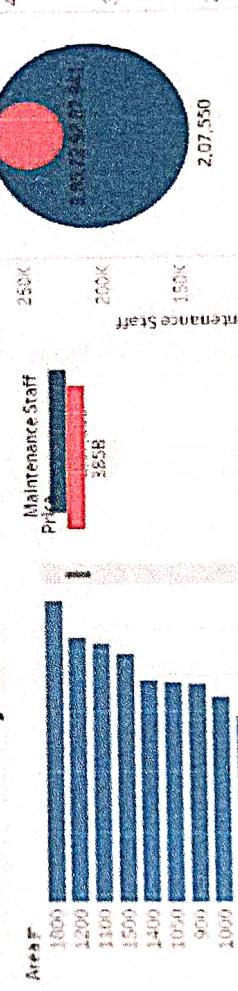
House Price based on Rainwater



Maintains staff in House price



No of houses by area



A Drag to section
 Show title

Size

Story (1016 x 564)

Data Source

Companys

House Price based on Rainwater

Hospitals and Schools

Maintenance Staff in House prices

Services on Rainwater

House Price and Services

Services on Location

Rain Water Heater

Prediction Area

House Price based on Rainwater

House Price and Services

Rain Water Heater

Prediction Area

House Price based on Rainwater

Rain Water Heater

Prediction Area

House Price based on Rainwater

Rain Water Heater

Prediction Area

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Prediction Area

House Price based on Rainwater

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Prediction Area

House Price based on Rainwater

Rain Water Heater

Prediction Area

milestone 7: web integration :-

Publishing helps us to track and monitor key performance metrics and to communicate results and programs. help a publisher stay informed, make better decisions, and communicate their performance to others.

Publishing dashboards and reports to tableau public:
go to dashboard/story. click on the share button on
the top ribbon.

Share via Tableau Server or Tableau Cloud

Server: <https://public.tableau.com>

Connect Cancel

Quick Connect

Tableau Cloud

Don't have a Tableau Server or Tableau Cloud account? Quickly create a Tableau Cloud site to share your work.

Create Site >>

give the server address of your tableau public account and click on connect.

Step 2o -

once you click on connect it will ask you for
the tableau public username and password.

tableaupublic

Email

Password

Sign In

 This site is SSL encrypted

[Forgot your password?](#)

[Don't have a profile yet?](#)

[Create one now for free](#)

Once you login into your tableau public using
the credentials, the particular visualization will be
published into the tableau public.

```
1 from flask import Flask, render_template
2
3 app = Flask(__name__)
4
5 @app.route('/')
6 @app.route('/index')
7 def index():
8     return render_template('index.html')
9
10 @app.route('/board')
11 def board():
12     return render_template('dashboard.html')
13 @app.route('/story')
14 def story():
15     return render_template('story.html')
16
17 if __name__ == '__main__':
18     app.run(debug=True)
```

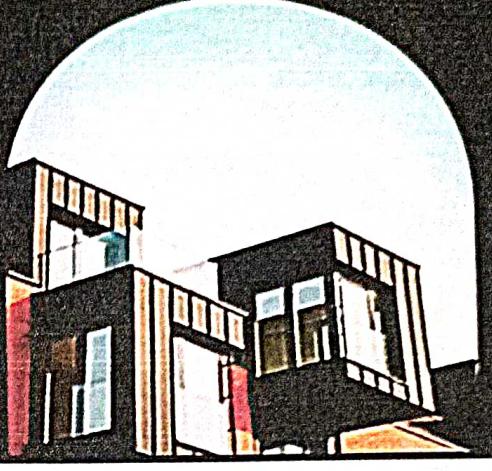
Smart Homyz

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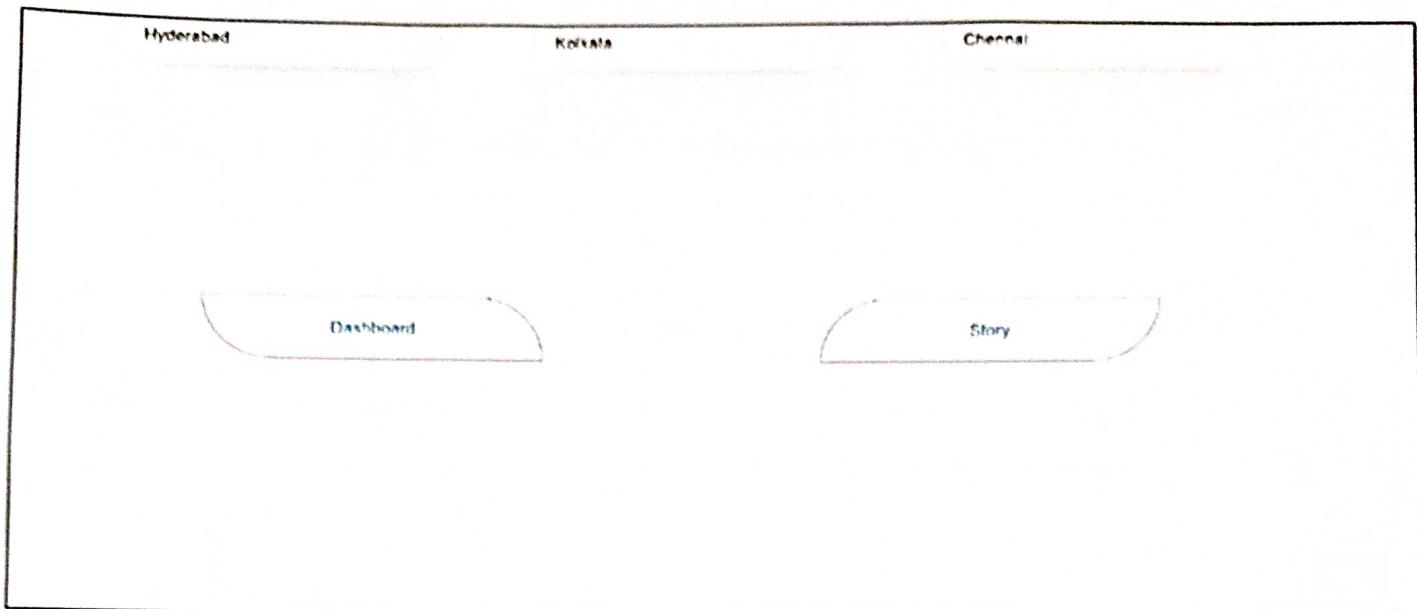
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A photograph of a modern building with a curved facade and large windows. The building features several vertical signs with text in multiple languages, possibly indicating services or directions. The overall appearance is professional and contemporary.

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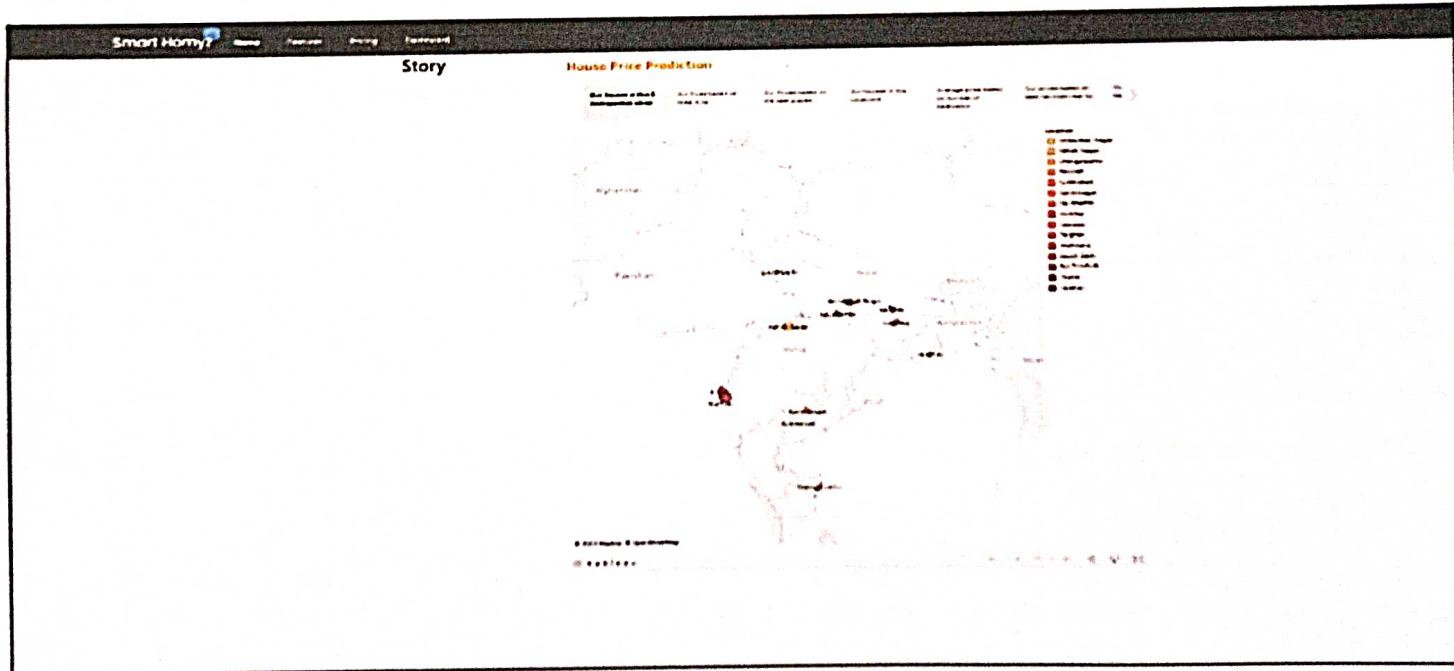
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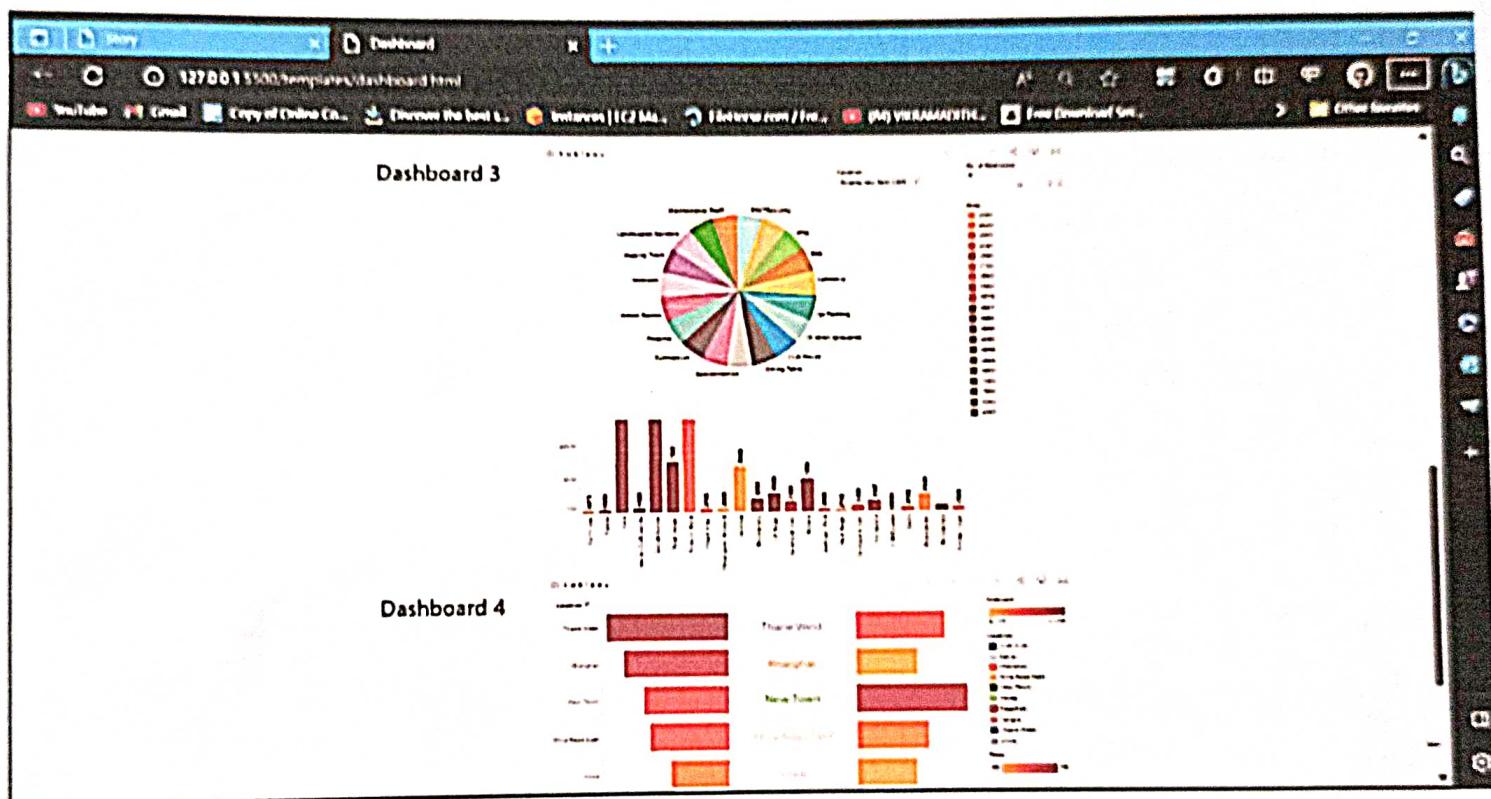
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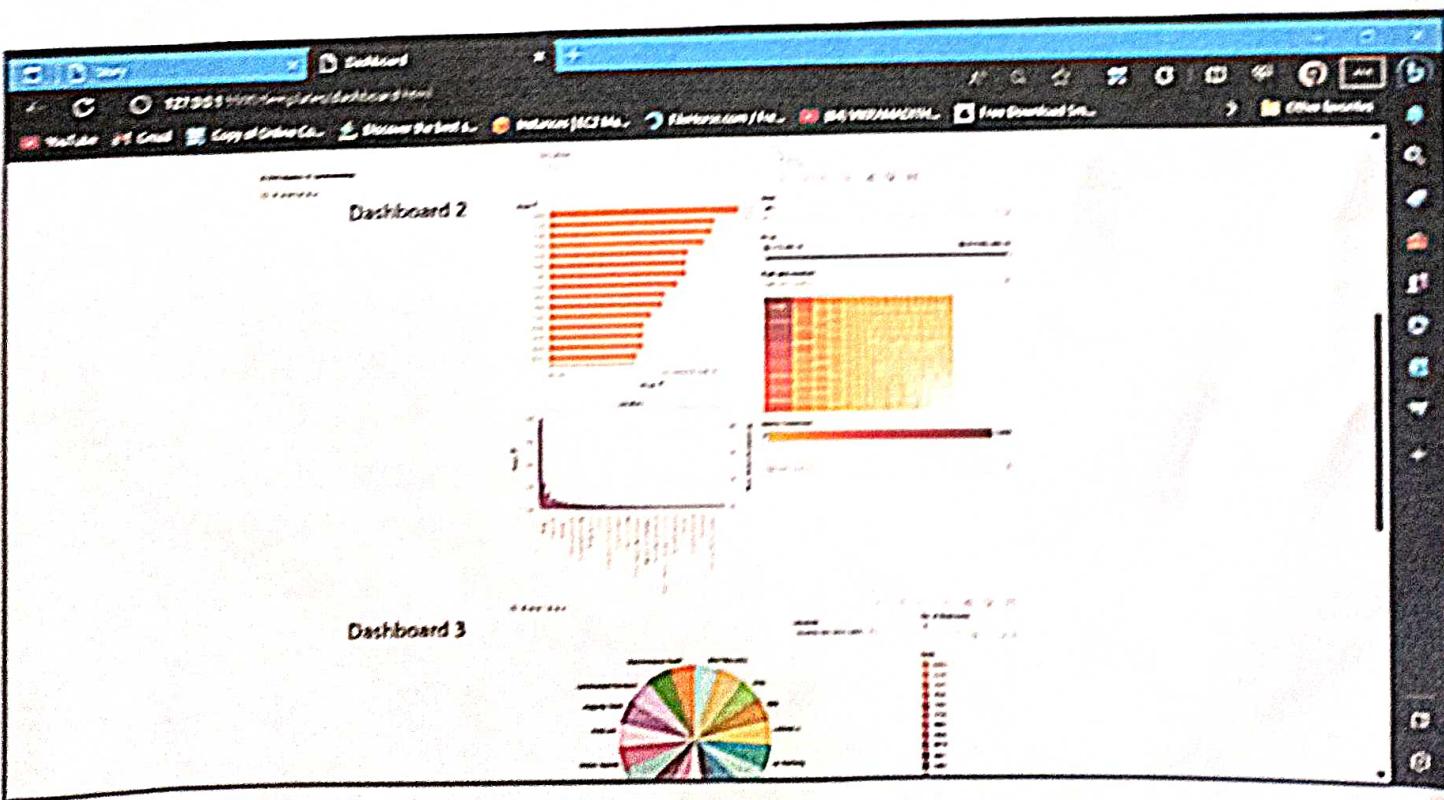
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ACTIVITY LOG FOR THE FIRST WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day - 1	<p>Introduction to Business Intelligence</p> <ul style="list-style-type: none"> • Business Intelligence • Introduction of data Analytics • Types of data analytics. 	<ul style="list-style-type: none"> • understand the fundamentals and significance of business intelligence and data analytics 	
Day - 2	<p>Introduction of Tableau.</p> <ul style="list-style-type: none"> • Introduction to Tableau • overview & features • connecting Tableau to data sources 	<ul style="list-style-type: none"> • Gain an overview of Tableau and its features. • Learn to connect Tableau to various data sources. 	
Day - 3	<p>Data extraction</p> <ul style="list-style-type: none"> • Introduction to database • creating database & table • CRUD operation on database tables. 	<ul style="list-style-type: none"> • gain an introduction to database and its features & importance in data management. 	
Day - 4	<ul style="list-style-type: none"> • Basic SQL operations 	<ul style="list-style-type: none"> • understand the fundamentals of Structured Query Language (SQL) and its role in dB. 	
Day - 5	<ul style="list-style-type: none"> • Basic SQL operations 	<ul style="list-style-type: none"> • Develop proficiency in performing data manipulation tasks such as inserting, updating and deleting records. 	
Day - 6			

WEEKLY REPORT

WEEK - 1 (From Dt..... to Dt.....)

Objective of the Activity Done: THE OBJECTIVE OF WEEK 1 WAS TO PROVIDE AN INTENSIVE INTRODUCTION TO BI, TABLEAU DATA EXTRACTION AND BASIC SQL OPERATIONS.

Detailed Report:

Day-1: Introduction to Business Intelligence:
Covered various aspects of BI including data integration, processing and ETL architecture. Explored different types of data analytics: descriptive, diagnostic, predictive, and prescriptive, along with their applications.

Day-2: Introduction to Tableau:

- Introduction of participants to Tableau's features and capabilities.
- Demonstrated how to connect Tableau to different data sources and work with flat files and spreadsheets.
- Participants practiced data visualization and analysis.

Day-3: Data Extraction:

- Provided an overview of databases and their role in data management.
- Conducted sessions on creating databases and performing CRUD operations on database tables.
- Participants learned techniques for extracting data from DB.

Day-4 & 5: Basic SQL Operations:

- Covered fundamental concepts of Structured Query Language (SQL) and its importance in database management.
- Taught basic SQL operations including querying, filtering, sorting and aggregating data.

Day-6: Participants practiced data manipulation tasks such as inserting, updating, and deleting records in database tables using SQL commands.

ACTIVITY LOG FOR THE SECOND WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day -1	Architecture of tableau. • Architecture of tableau. • Interface of tableau. • Tableau field types • Various file types.	• understand table axis architecture and components • Learn about data connection methods and sharing options	
Day -2	charts :- • Histograms • Bars • Box Plot • Line • motion • Bubble • pie	• gain an understanding of Histograms, Box plots, motion charts, pie charts, Bar charts, line charts.	
Day -3	• bubble • text table • scatter • highlighted • tree • tables. • Heat maps • maps	understand principles and applications of scatter plots, tree maps, heat maps, text tables	
Day -4	• custom charts	-understand the concept and importance of custom charts in data visualization.	
Day -5	working with metadata and Data Blending • connecting of data source • tableau data types • connections to excel	-Develop expertise in connecting tableau to diverse data source such as excel, google and PDFs for comprehensive	
Day -6			

WEEKLY REPORT

WEEK - 2 (From Dt..... to Dt.....)

Objective of the Activity Done: The objective of week 2 was to delve deeper into advanced data visualization.

Detailed Report:

Day-1: Architecture of tableau.

Explored the architecture of tableau, including its components and interface elements. Discussed Tableau field types, saving and publishing data sources and connection methods.

Day-2: charts.

- Explored various chart types including Histograms, Boxplots, motion charts, pie charts, bar charts, line charts, and Bubble charts.
- Participants gained an understanding of the principles and applications of each chart type in data visualizations.

Day-3: Advanced chart types.

- Developed into advanced chart types such as Bullet charts, scatter plots, tree maps, heat maps, sunburst tables.
- Participants learned how to effectively use each chart type for visualization different types of data and patterns.
- Acquired skills in creating, customizing, and interpreting advanced chart types for comprehensive data analysis.

Day-4: Custom charts

- Explored the concept and importance of custom charts in data visualization.
- Participants acquired skills in creating, customizing, and interpreting custom charts to effectively communicate complex data insights.

Day-5: working with metadata and data blending.

- Developed expertise in connecting Tableau to diverse data sources including Excel, cubes, and PDFs for comprehensive analysis.
- Understood Tableau data types and their implications in data visualization and analysis.

ACTIVITY LOG FOR THE THIRD WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day - 1	<ul style="list-style-type: none"> • Joins (left, right, inner, and outer) and unions. • Scaling with Null Values, cross-database joining, data extraction, data blending, refresh extraction. 	<ul style="list-style-type: none"> - Gain comprehensive understanding and practical skills in various types of joins including left, right, inner and outer joins. 	
Day - 2	<ul style="list-style-type: none"> Advanced data manipulations. • preview - mark and highlight • groups .sets. • constant sets - computed • combined sets. 	<ul style="list-style-type: none"> - masters advanced data manipulation techniques including previewing, marking, and highlighting to enhance data exploration and analysis. 	
Day - 3	<ul style="list-style-type: none"> • Bins • hierarchies • sorting and types • settings • editing axes and annotations. 	<ul style="list-style-type: none"> - learn how to utilize bins for grouping continuous data into discrete intervals. - understanding the creation and management 	
Day - 4	<ul style="list-style-type: none"> working with filters, organizing data • Filters • working with filters • dimensions and measures. 	<ul style="list-style-type: none"> - masters the addition and removal of filters to refine and focus data sets according to specific criteria. - learn techniques for filtering continuous. 	
Day - 5	<ul style="list-style-type: none"> • Filtering in tableau • Types of filters • Filtering the order of operations. 	<ul style="list-style-type: none"> - master Tableau's filtering tools for precise data manipulation. - understand Tableau's order of operations for seamless visualization. 	
Day - 6			

WEEKLY REPORT

WEEK - 3 (From Dt..... to Dt.....)

<p>Objective of the Activity Done: The object of week 3 was to deepen participants' understanding and proficiency in advanced Tableau functions.</p>
<p>Detailed Report:</p>
<p>Day 1: joins, union, and data blending</p> <ul style="list-style-type: none">- Gained comprehensive understanding and practical skills in various types of joins including left, right, inner and outer joins.- Learned advanced techniques such as dealing with Null values, cross-database joining, and data blending to handle complex data scenarios effectively.- Acquired proficiency in data extraction processes including batch extraction, incremental extraction and building.
<p>Day -2: Advanced Data manipulation.</p> <ul style="list-style-type: none">- Mastered advanced data manipulation techniques including previewing, marking and highlighting to enhance data analysis.- Developed proficiency in creating and editing groups and sets within Tableau for organizing and categorizing data.- Learned how to utilize sets for advanced data manipulation tasks including in/out operations.
<p>Day -3: Bins, Hierarchies, sorting and formatting.</p> <ul style="list-style-type: none">- Participants learned to use bins for grouping continuous data into discrete intervals and creating hierarchies for data organization.- Explored sorting options and techniques to effectively organize data for analysis.
<p>Day -4: working with filters and data organization;</p> <ul style="list-style-type: none">- Mastered the addition and removal of filters to refine and focus data based on specific criteria.- Participants gained proficiency in manipulating and controlling data visibility within Tableau visualizations using various filter techniques.
<p>Day -5: Advanced filtering in tableau :</p> <ul style="list-style-type: none">- Explored advanced filtering tools in Tableau for precise data manipulation and analysis.- Participants learned about different types of filters and their applications, including categorical.

ACTIVITY LOG FOR THE FORTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day -1	<p>calculated fields, Quick Table calculations & LOD expressions.</p> <ul style="list-style-type: none"> • calculated fields in tableau 	<ul style="list-style-type: none"> -learn how to create calculated fields in tableau for custom data analysis and visualization. -explored the versatility 	
Day -2	<ul style="list-style-type: none"> • Quick Table calculations. 	<ul style="list-style-type: none"> -utilize Tableau's quick table calculations for instant data analysis and visualization enhancements. 	
Day -3	<ul style="list-style-type: none"> • LOD Expressions in tableau 	<ul style="list-style-type: none"> -utilize Tableau's quick table calculations for instant data analysis and visualizations enhancements. 	
Day -4	<p>working with mapping, calculations and expressions.</p> <ul style="list-style-type: none"> • working on coordinate points • plotting longitude and latitude • editing unrecognized locations. 	<ul style="list-style-type: none"> -master mapping skills including coordinate points manipulation and longitude/latitude plotting for spatial data analytics. 	
Day -5	<ul style="list-style-type: none"> • working on the background image including add image • plotting points on images and generating coordinates from them. • map visualization, custom features 	<ul style="list-style-type: none"> -learn how to incorporate background images and add images in tableau for enhanced visualization. -Explore techniques for plotting points on images. 	
Day -6			

WEEKLY REPORT

WEEK - 4 (From Dt..... to Dt.....)

Objective of the Activity Done:	The objective of weekly was to delve into advanced tableau functionalities focusing on mapping, calculation, and LOD expressions.
Detailed Report:	
Day 1: Calculation fields, Quick Table calculation & LOD Expressions.	- Participants learned how to create calculated fields in tableau for custom data analysis and visualization. - explored the versatility of quick table calculations for on-the-fly data manipulation and insights. - Gained understanding of Level of Detail (LOD) expressions for advanced analytics and precision.
Day 2: Quick Table calculations.	- utilized Tableau's quick table calculations for instant data analysis and visualization enhancements. - applied LOD expressions to perform complex calculations and dynamically to compute values based on displayed data.
Day 3: LOD Expressions in tableau.	- Participants delved deeper into the use of LOD expression for advanced analytics and precision. - applied LOD expressions to perform complex calculations and achieve specific analytics goals.
Day 4: Mapping, Calculations, and Expressions.	- Participants mastered mapping skills including coordinate point manipulation and longitude/latitude plotting for spatial data analysis. - explored advanced map customization techniques such as editing unrecognized locations and utilizing geocoding options. - Developed proficiency in advanced calculations and expressions in tableau to enhance data analysis capabilities.
Day 5: Advanced mapping techniques.	- Participants learned to incorporate background images and add images in tableau for enhanced visualizations. - explored techniques for plotting points on images and generating coordinates for custom visualizations. - Gained proficiency in map visualizations and creating custom tonalities for effective spatial data analysis.

ACTIVITY LOG FOR THE FIFTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day -1	writing with parameters • creating parameters. • parameters in calculations. • using parameters with filters • column selections parameters.	- masters the creation of parameters in tableau to enhance dynamic analysis and visualization capabilities. - gain proficiency.	
Day -2	visual analytics pane • K-means cluster analysis. • Trend and reference lines. • visual analysis in tableau. • forecasting confidence interval reference lines.	- explore the visual analytics pane in tableau for advanced data exploration and visualization techniques.	
Day -3	Dashboards and stories • Building and formatting a dashboard using size objects, views, filters, and legends.	- acquire skills in building and formatting dashboards in tableau using various elements such as size objects, views, filters.	
Day -4	• creating multiple dashboards.	- gain proficiency in creating multiple dashboards within tableau for comprehensive data presentation.	
Day -5	• creating stories • including the intro of story point • adding catch visuals in stories.	- master the creation of stories in tableau, incorporating engaging introductory story points to provide context.	
Day -6			

WEEKLY REPORT

WEEK - 5 (From Dt..... to Dt.....)

Objective of the Activity Done: The objective of week 5 was to focus on advanced Tableau functionalities.
Detailed Report:
Day 1:- Working with Parameters.
- Participants mastered the creation of parameters in Tableau to enhance dynamic analysis and visualization capabilities. - Gained proficiency in integrating parameters into calculations for flexible and customizable data analysis.
- Learned to efficiently use parameters with filters for dynamic data filtering and column chart selection, providing interactive control over displayed data for enhanced analysis.
Day 2:- Visual Analytics pane.
- Explored the Visual Analytics pane in Tableau for advanced data exploration and visualization techniques. - Learned k-means cluster analysis to identify patterns and groupings within datasets. - Utilized trend and reference lines for visualizing data trends and delved into forecasting confidence.
Day 3:- Dashboards and stories.
- Acquired skills in building and formatting dashboards in Tableau using various elements such as size, shapes, views, filters, and legends for effective visualization. - Learned best practices for designing creative and impactful dashboards that effectively communicate insights to stakeholders.
Day 4:- Creating multiple Dashboards.
- Gained proficiency in creating multiple dashboards within Tableau for comprehensive data analysis. - Learned to effectively organize and manage multiple dashboards to provide a cohesive view.
Day 5:- Creating stories.
- Mastered the creation and updating of stories in Tableau, including the introduction of story cards. - Learned to dynamically present insights and findings within the narrative flow using story cards.

ACTIVITY LOG FOR THE SIXTH WEEK

Day & Date	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day -1	<ul style="list-style-type: none"> • Adding annotations with descriptions dashboards and stories. • selecting and clearing the values. 	-master the skills of adding annotations with descriptions to provide contextual information within dashboards.	
Day -2	<ul style="list-style-type: none"> Build Tableau web applications. • Introduction to flask • working with flask framework works . 	-Acquire an introduction to flask , a Python web framework , for building web applications,	
Day -3	<ul style="list-style-type: none"> • working with Bootstrap • app 	• master the use of Bootstrap , a front-end framework, for creating responsive and visually	
Day -4	<ul style="list-style-type: none"> • Building application with flask framework. 	-Acquire the skills necessary to build web applications using the flask framework , a lightweight and flexible	
Day -5	<ul style="list-style-type: none"> • Embedding Dashboard & story with web application. 	-Learn how to embed Tableau dashboards and stories into Tableau's embedding Tableau's embedding.	
Day -6			

WEEKLY REPORT

WEEK - 6 (From Dt..... to Dt.....)

Objective of the Activity Done: The object of week 6 was to focus on advanced tableau functions.

Detailed Report:

Day 1: adding Annotations and dashboards interactions

- Participants mastered the skills of adding annotations with descriptions to provide contextual information.
- Gained proficiency in implementing highlighting actions, URL actions, and filters actions and filters.
- Learned techniques to enable interactive exploration and navigation within tableau dashboards.
- Learned techniques for selecting and cleaning values dynamically, allowing.

Day - 2: Building Tableau web application with flask and Bootstrap.

- Acquired an introduction to flask, a python web framework, for building web applications, including its core concepts and functions.
- Learned technique for selecting and cleaning values dynamically, allowing users to define their data views and analysis with Tableau dashboard.

Day 3: working with Bootstrap

- Participants mastered the use of Bootstrap, a front-end framework, for creating responsive and visually appealing web interfaces.
- Learned to utilize Bootstrap components such as alerts, navigation bars, buttons, and forms to enhance the user experience of Tableau applications.

Day 4:- Building Applications with flask framework.

- Acquired the skills necessary to build web applications using the flask framework, a lightweight and flexible.
- Learned the fundamentals of flask, including routing, request handling, templates and deployment.

Day -5:- Embedding Dashboards and Stories into web Applications.

- Participants learned how to embed Tableau dashboards and stories into web applications Tableau's.

Activity Log for the seventh week

Day & Date	Brief description of the daily activity	Learning outcomes	Person Incharge & signature
Day 1	mentoring sessions		
Day 2	mentoring sessions		
Day 3	mentoring sessions		
Day 4	mentoring sessions		
Day 5	mentoring sessions		
Day 6			

activity log for the eighth week

Day 4 Date	Brief description of the daily activi- ty	Duration outco- me	person in charge sign- ature
Day 1	mentoring seniors		
Day 2	mentoring seniors		
Day 3	mentoring sessions		
Day 4	mentoring seniors		
Day 5	mentoring seniors.		