INDIANA UNIVERSITY
BLOOMINGTON

Bloomington Service Request Management

Final project submitted as a part of Applied Database Technologies (DSCI-D 532), M.S. Data Science at Indiana University, Bloomington

Under the guidance of:

Dr. Olga Scrivner

Team 11 - Member Names:

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- Meet Palod
- Shiva Pendum

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1. Introduction

The City of Bloomington thrives on efficient service delivery to its residents. To understand and address community needs, analyzing service requests is crucial. This project delves into service request data obtained from the City of Bloomington Open Data website
https://data.bloomington.in.gov/. Our objective is to utilize this data to gain valuable insights into the nature and distribution of service requests within the city.

Through this analysis, we aim to achieve the following:

- **Summarize service request data:**: We will provide key metrics that quantify the volume and characteristics of service requests.
- **Analyze temporal trends**: By examining service requests across timeframes, we can identify potential seasonal variations or recurring issues.
- **Visualize service request locations:** An interactive dashboard will be created to pinpoint the geographical distribution of service requests across Bloomington.

This comprehensive approach will offer a clear understanding of service request patterns within the city. The resulting insights can be leveraged by policymakers and public service departments to optimize resource allocation, prioritize service needs, and ultimately, enhance the overall well-being of Bloomington's residents.

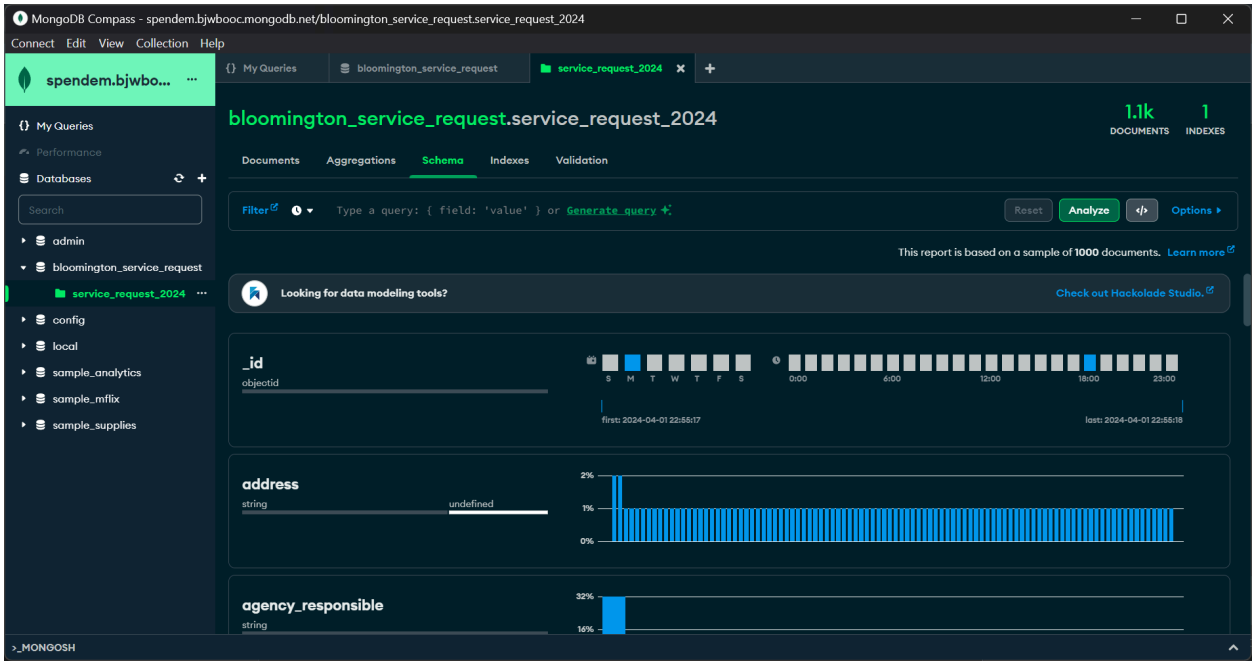
2. Database Schema

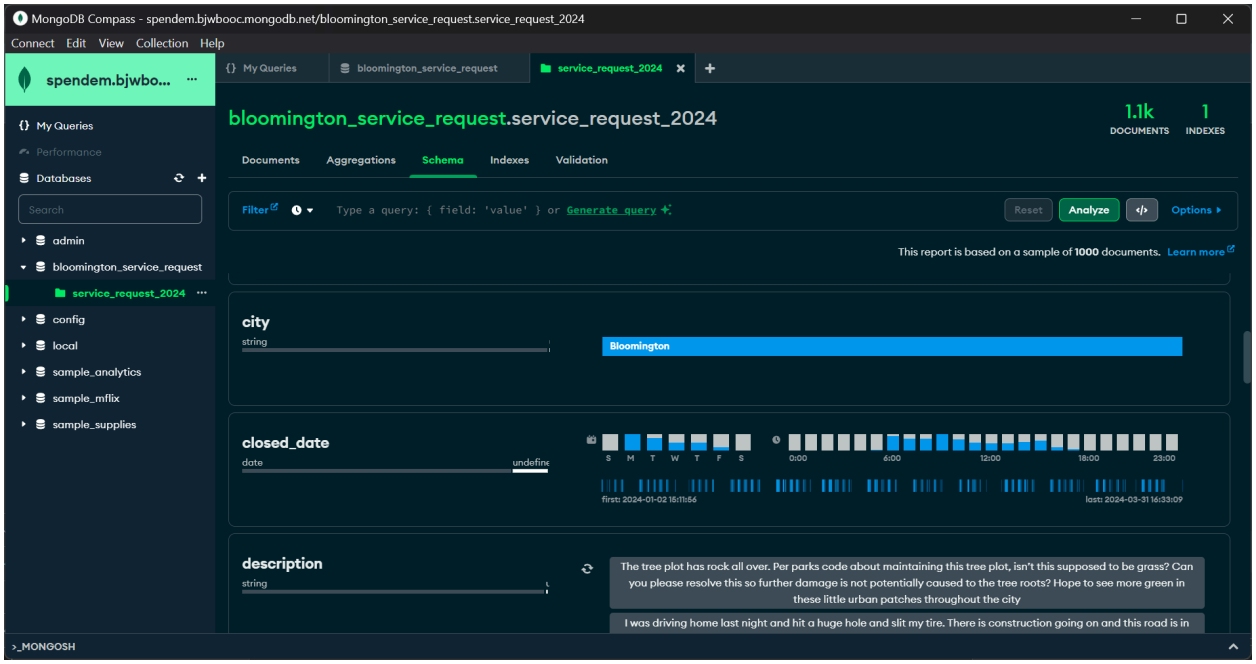
The dataset for this project is in JSON format, containing information about service requests submitted to the City of Bloomington. Since it has no nested structure, we can expect it to be a collection of flat records, each record representing a single service request.

Each record likely consists of key-value pairs, where the keys represent specific attributes associated with the service request and the values provide the corresponding details. These attributes could potentially include:

- Unique identifier: A unique identifier for each service request.
- Service type: The type of service requested (e.g., street repair, graffiti removal, park maintenance).
- Location: Information about the location of the service request, possibly including address, latitude, and longitude.
- Date/Time: The date and time the service request was submitted.
- Status: The current status of the service request (e.g., submitted, pending, completed).
- Additional details: Any other relevant information associated with the service request, depending on the specific type.

We decided to use MongoDB to analyze this data. The following screenshots show the schema of our dataset.

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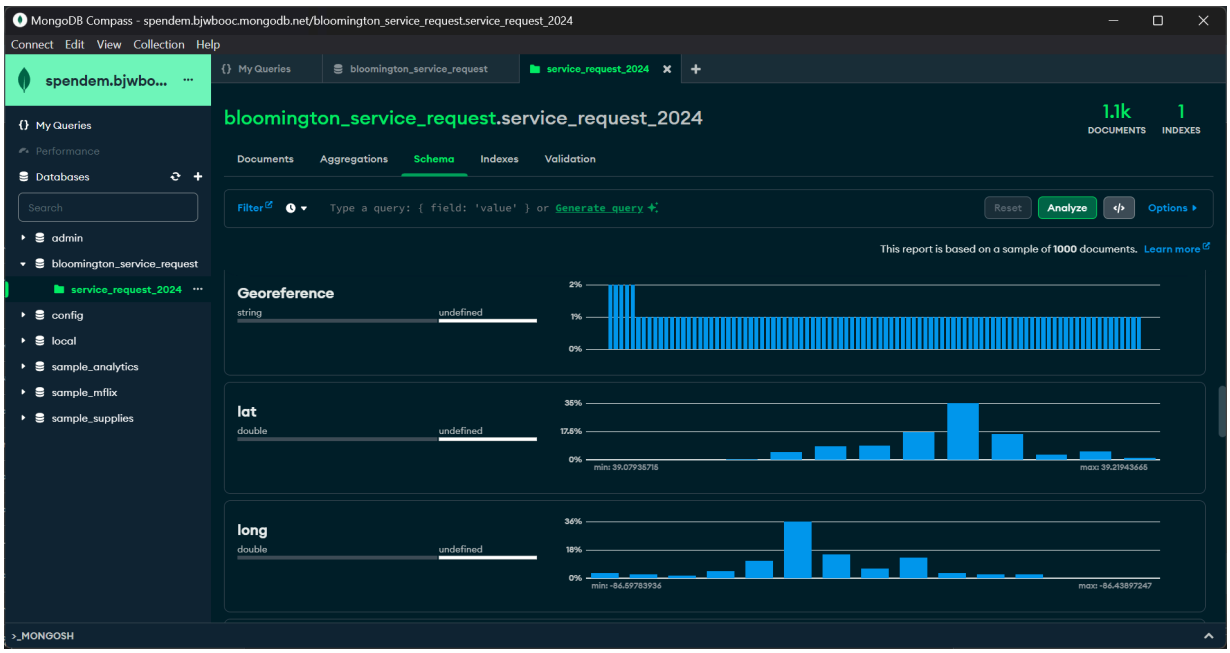
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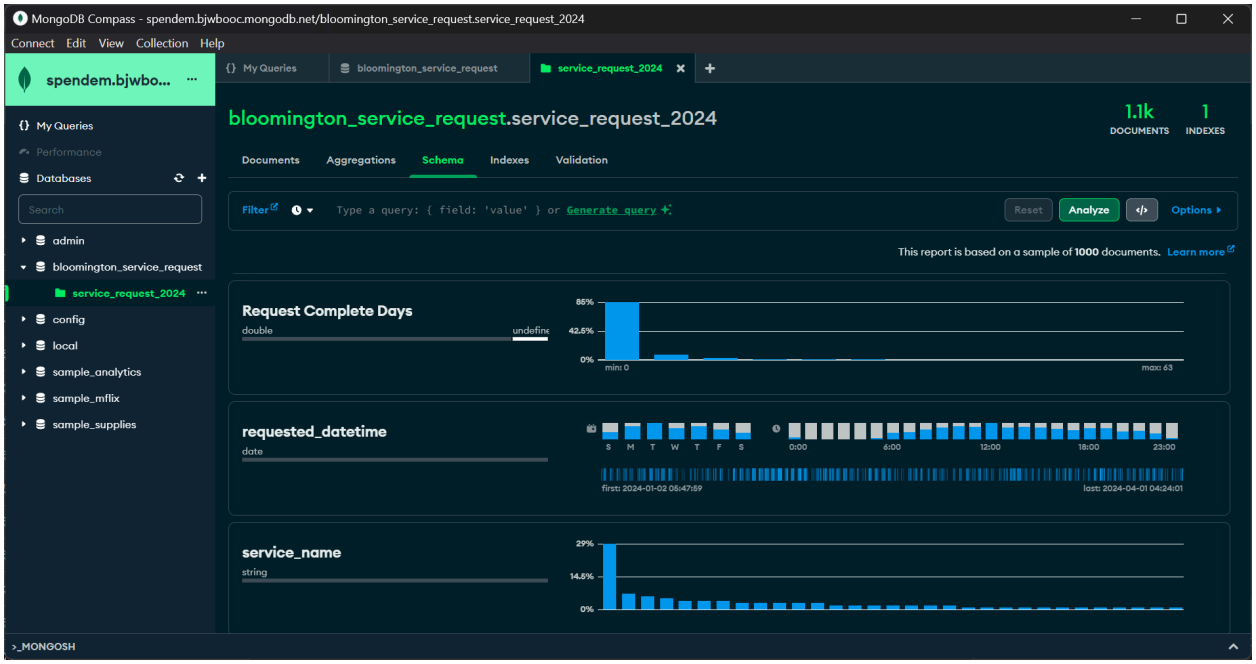
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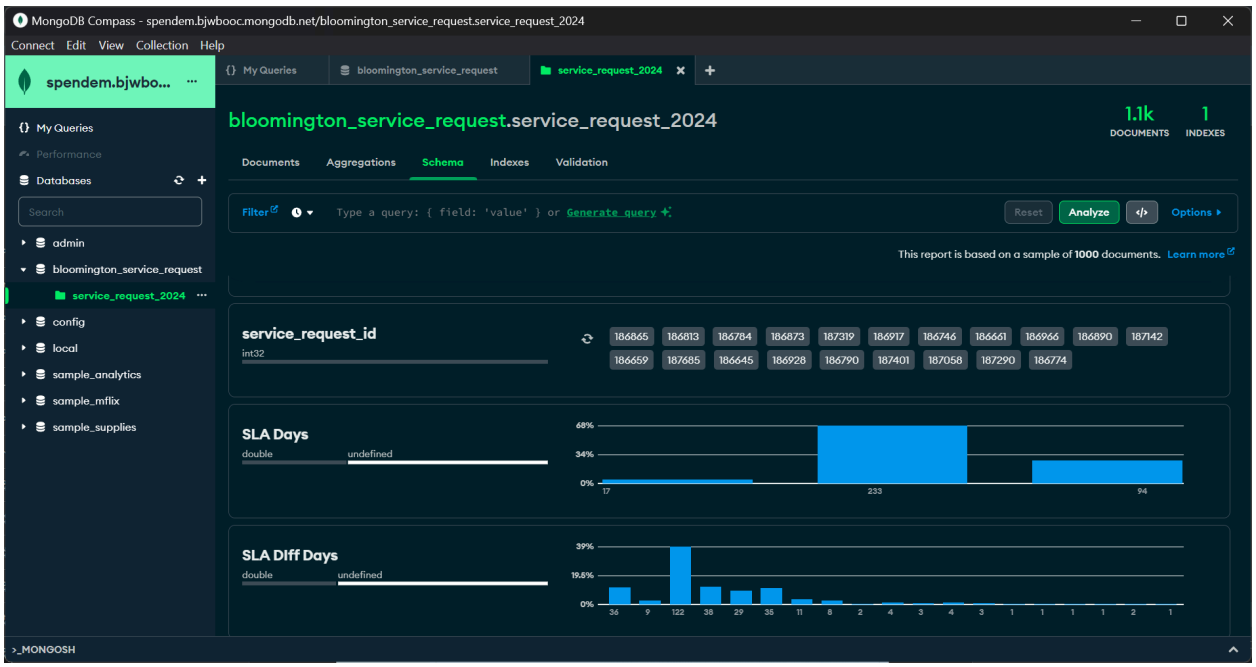
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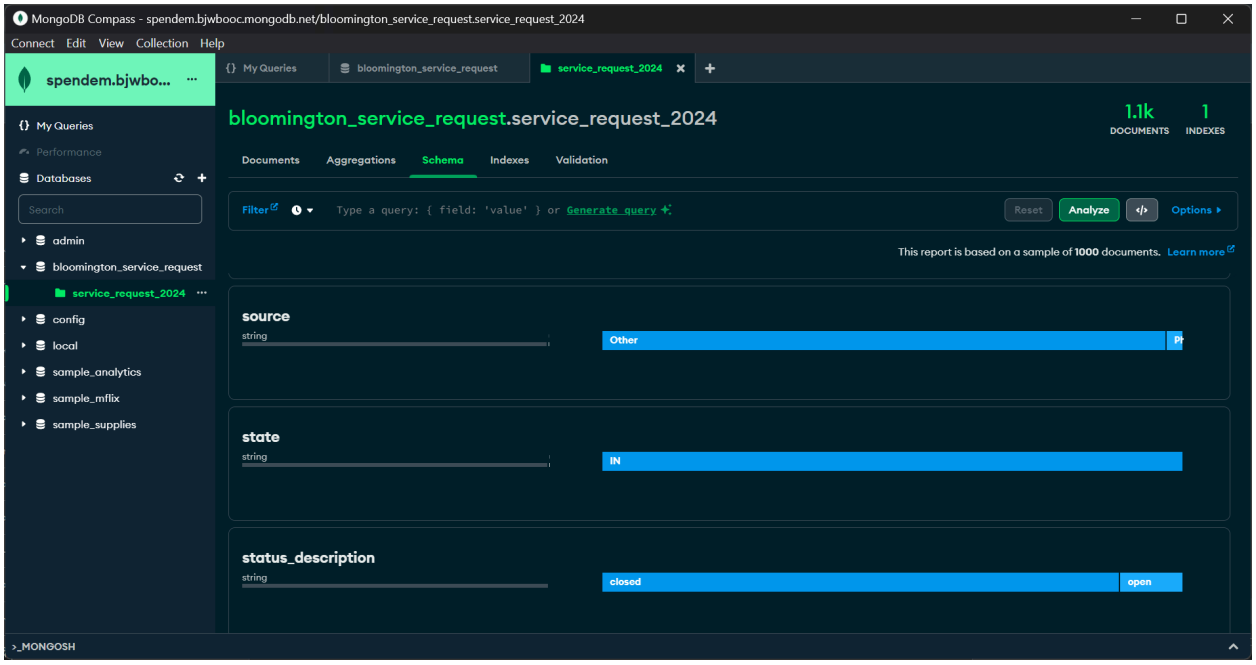
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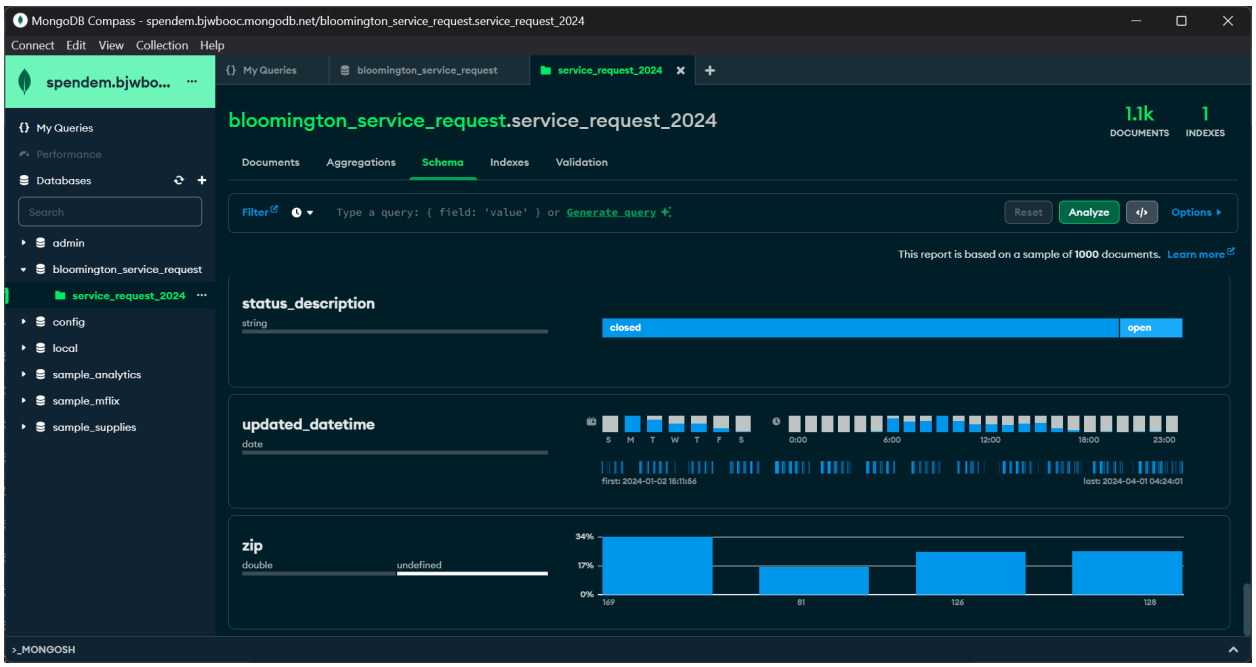
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3. Database Design

Since we're working directly with the JSON data and not storing it in a relational database, the concept of traditional database constraints won't be directly applicable to this project.

4. About the code

Please refer to this link to learn more about the code and see EDA and visualization. We have also performed the CRUD operations within the same notebook. The main purpose of the project is to maintain and update the database when service requests are created/updated. But we have also done some EDA to gain insights on requests so far.

https://github.com/advait22d/BloomingtonServiceRequestDashboard

5. Contribution Summary

Name	**Tasks**	**Average Time Spent(per Milestone)**
Shiva Kumar Pendem	Loaded Data in MongoDB. Worked on “Create” operation of CRUD. Did EDA for Count of service requests by service type.	4 hr
Meet Palod	Filtered Data for the year 2024. Worked on delete and read functionality of CRUD. Did EDA for the count of Service Requests by Source	3 hr
Advait Hirlekar	Obtained Data from the website. Worked on Update functionality of CRUD. Did EDA for Count of Service Requests by Agency	3 hr