Recommendations for Database Security and Optimisation

This document will provide recommendations for the Database Security and Optimisation of the foodie.com database. These are critical aspects of a database system that is crucial to ensuring efficiency and stability. Security provides a vital rule in safeguarding client data from unapproved access, ensuring that clients trust and consistent use with the business. Optimisation provides improvements to the businesses performance and efficiency by setting in motion specific strategies. The successive 10 points will delve into aspects of database security, optimisation, and backup strategies.

Security

Security is important in safeguarding sensitive data, preventing threats from cybersecurity risks, building trust with the users, and complying with regulations. The first three points will provide recommendations to ensure that foodie.com is secure from unwanted outsiders.

1. To enhance database security and to guard against potential threats, it is critical for staff members to utilise proper authentication tokens, such as passwords. Tokens provide an extra barrier between malicious operators and the database as well as remembering users who have used the correct token to enter without needing to login every time, only users with the correct access token may enter the database and it is advised to log out after any work has been done.
2. It is essential that access is tailored to each Users specific needs. Users should be provided a privilege ID and granted a scope that aligns directly with their functional requirements within the database, in this case, a riders privilege ID should be configured solely to provide access to a customer's address and orderID, so the rider knows what order to get and where to deliver it to.
3. Following on the above point, Roles can be used to efficiently hand out privileges to a group of people instead of individually assigned to every user of the database. Each role also has an Authorisation ID which can be granted to another authorisation ID such as the admin. For example, if all the riders have the role "rider" the admin can let "rider" view customers first names and all the riders will now have this access.

Optimisation

Optimisation is crucial for an improved user experience, reducing operational expenses and improved resource allocation which provides a competitive advantage is the landscape of business and technology.

4. Archiving is pivotal in keeping an organised and optimised database. Archiving should be performed for any data that is expected to remain static and is unlikely to change (such as date/time of delivery, ID's, etc). By archiving parts of foodie.com's database, the database can be used to more efficiently search for data that is changing often.
5. To improve searching for data, indexing should be implemented. It operates on a database table with the cost of additional write and storage space to maintain the index data structure. They can be used to quickly locate data without having to search every row in a database table.
6. In further optimising data retrieval efficiency, organising a table becomes instrumental. One effective method is to apply ordering, such as using ID to sort a table based in ascending order. This arrangement facilitates streamlined data retrieval operations but also enhances

the search functionality, providing a navigable framework for accessing information within the table.

7. lasty, creating queries would be an impactful way of optimising data retrieval efficiency. Having queries implemented to perform searches such as identifying the most recent additions to the database. By utilising queries, users can extract specific sets of data based on the defined criteria, efficiently retrieving relevant and up to date information.

Backup`

Backups are essential for data protection, regulatory compliance and ultimately peace of mind, they are fundamental in offering comprehensive data management, fundamentally a safety net against a variety of unforeseen circumstances that could result in significant data loss.

8. In case of a hardware failure, intentional or accidental, maintaining a backup of the database is important. A full revolving backup should be implemented bi-weekly, ideally during non-operational hours to keep to minimal user interference, ensuring all data close to up to date and secure while ensuring that it does not interfere with workflow while optimising expenses from storage.
9. In addition to performing a full backup, the owners are advised to conduct incremental backups daily. This practice ensures that storage remains current while being more time-efficient and less disrupting than full backups, as it involves copying only the data that has been changed since the last backup. A final benefit that can come from incremental backup's is that they keep a transactional log to keep a record of what has been changed since the last backup which can contain information that is vital to reverting changes to the database if needed.
10. Finally, a differential backup strategy can be used in conjunction with the above point in taking the transactional logs and executing a backup on them to prevent their deletion upon the start of the next incremental backup, providing another layer of resilience in protecting the data. Combining the data from the differential backups and the last full backup can bring the database back to its most recent state. Overall, these 3 last points used together offers a robust yet flexible framework in safeguarding data and providing a speedy recovery in multiple scenarios.

In conclusion, this document emphasizes the importance of Database Security, Optimization, and Backup Strategies for the foodie.com database. Constituting measuring such as proper authentication and bespoke access with a roles-based authorisation are important in providing an essential wall to protect sensitive data whilst bringing conformity with regulations. Establishing optimisation techniques such as archiving and index searching will contribute to a more efficient and user-friendly system, reduces operational expenses while keeping a competitive advantage in the modern technological landscape. Keeping a thorough catalogue of varying backups, such as full incremental and differential, serves as a safety net for when data is corrupted or lost in unforeseen incidents. This ensures regulatory compliance, data protection and built user trust and peace of mind. With all these recommendations effectively applied together the foodie.com database can encompass a flexible and exhaustive framework for safeguarding data, efficient retrieval, and swift recovery in divergent scenarios.