Research Plan

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Project: Music trivia game

Problem and opportunity

The issue is that I'm unsure which databases suit my web app solution. The goal is to retrieve data with zero downtime, especially during high user traffic periods. Additionally, I'm interested in experimenting with alternatives to the usual MySQL and Microsoft SQL Server. This will provide me with an opportunity to explore different databases and identify one that aligns well with my web application.

Research questions and methodology

Main question:

What kind of storage solution fits for storing and using large files in a music trivia web-based game?

Sub-questions:

1. Which databases should be considered for a comparison test?
2. Which of the chosen databases is easy to implement on the web?
3. What is the storage size of the chosen databases for the free version?
4. Among the chosen databases, which one offers greater scalability for free?
5. How does the performance of the chosen databases compare?

Methodology

1. Which databases should be considered for a comparison test?

Methodology: Literature Study, Community Research

This is to study the databases to find information about them and decide which ones to make a test on. Researching the community's input also helps in determining which databases to test. . With numerous databases available, I must ensure they support the technologies utilized in the application, such as the frontend and backend. Additionally, due to time constraints for this semester, I aim to limit my selection to no more than two databases for testing.

Result: this is aimed to selecting the databases to do a test on.

The estimated time for this sub-question is around 1 to 2 weeks.

2. Which of the chosen databases is easy to implement on the web?

Methodology: Document Analysis, Community Research

This involves looking into the documentation to understand how to implement the database connection within the application, typically available on the official website of the respective database. Additionally, seeking input from the community can be beneficial when encountering challenges in implementing the database connection, which may occur from time to time.

Result: This is aimed at selecting the databases to test.

The estimated time for this sub-question is around 1 to 3 days.

3. What is the storage size of the chosen databases for the free version?

Methodology: Document Analysis, Prototyping

This entails reviewing the documentation to understand how to populate each of the database that are chosen using SQL syntax or other syntaxes in order to examine its data storage capacity for the free version. Additionally, creating a prototype within the application allows for testing it directly from the application.

Result: This is aimed at comparing the storage size of the chosen databases for the free version.

The estimated time for this sub-question is around 1 day.

4. Among the chosen databases, which one offers greater scalability for free?

Methodology: Literature Study, Prototyping, Gap Analysis, Benchmark Test

This involves looking into a tool for conducting scalability tests on the database and study how it functions. Subsequently, using the prototypes created for the databases to evaluate their scalability through a comparison test utilizing the scalability testing tool. Analyzing the gaps in the tested databases, particularly weaknesses in scalability for the free version of the databases. Additionally, comparing the scalability of the selected database in its free version.

Result: This is aimed at selecting the best scalability of the chosen database for the free version.

The estimated time for this sub-question is around 1 to 2 weeks.

5. How does the performance of the chosen databases compare?

Methodology: Literature Study, Prototyping, Gap Analysis, Benchmark Test

This entails identifying a method for conducting performance tests on the selected databases by studying the information on how to do it. Utilizing the prototypes, conducting performance tests on the database prototypes. Analyzing the gaps in the prototypes, such as the performance of the selected databases, and conducting benchmark testing by comparing the performance of the selected databases.

Result: This aims to select the best performance from the chosen databases.

The estimated time for this sub-question is around 5 to 8 days.

Estimated time

The estimated completion time for the research would be around week 15.

Deliverables

What is going to be delivered for this research:

- Research plan
- Research document
- Research report
- The chosen database that is being use for the individual project.