Research Document

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Project Music trivia game

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# Introduction

# Research questions

**Main question:**

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

**Sub-questions:**

*The strategy and methodology for the FHICT can be found at this link:* [*https://ictresearchmethods.nl/*](https://ictresearchmethods.nl/) *Methods and* [*https://cmdmethods.nl/*](https://cmdmethods.nl/)*.*

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

* **Strategy: Library**
* **Methodology: Literature Study, Community Research**

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

* **Strategy: Field, Library**
* **Methodology: Document Analysis, Community Research**

1. **What** **is the storage size of the two chosen databases for the free version?**

* **Strategy: Field, Workshop**
* **Methodology: Document Analysis, Prototyping**

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

* **Strategy: Library, Workshop, Showroom**
* **Methodology: Literature Study, Prototyping, Gap Analysis, Benchmark Test**

1. **How does the performance of the chosen databases compare?**

* **Strategy: Library Workshop Showroom**
* **Methodology: Literature Study, Prototyping, Gap Analysis, Benchmark Test**

# Sub-questions result

## Which databases should be considered for a comparison test?

I need to decide which databases to compare for this project due to time constraints. The ideal criteria for selecting databases to compare include:

* The database must be popular.
* The database must have a free version available.
* The databases must be of different types from each other.
* The database must have a cloud-based option.

Additionally, I’ll limit the maximum number of comparisons to three.

### Types of databases

I’m going to write down all the databases type that I found and summarize them and decide which types of databases to do a comparison test based on this project.

* **Relational databases**

Relational databases are a type of database that store and provide access to data points that are related to one another. They are based on the relational model, an approach to managing data using a structure and language consistent. Relational databases are fundamental in many applications and industries due to their structured approach to data management and robust querying capabilities.

The relational databases are:

1. MySQL
2. PostgreSQL
3. MariaDB
4. SQLite

* **NoSQL databases**

NoSQL databases (Not Only SQL databases) are a category of database management systems that do not adhere strictly to the traditional relational database model. They are designed to handle a wide variety of data models, including key-value, document, column-family, and graph formats. NoSQL databases are particularly well-suited for large-scale data storage and for applications requiring flexible, scalable, and high-performance data management.

NoSQL databases are increasingly popular due to their ability to handle diverse data types, scale efficiently, and provide high performance for specific use cases.

**Document-oriented Databases:**

MongoDB

CouchDB

**Key-Value Stores:**

Redis

Amazon DynamoDB

Riak

**Column-family Stores:**

Apache Cassandra

HBase

**Graph Databases:**

Neo4j

Amazon Neptune

ArangoDB

* **Object-oriented databases**

Object-oriented databases (OODBMS) are databases that integrate object-oriented programming principles with database technology to store and manage complex data. They are designed to handle data as objects, similar to how data is managed in object-oriented programming languages. This approach aims to provide a seamless integration between application programming and database management, allowing objects to be stored persistently without the need for conversion to a relational format.

They object-oriented databases are:

1. SQLite
2. Berkeley DB
3. H2

* **Cloud databases**

Cloud databases are databases that run on cloud computing platforms, providing various advantages such as scalability, accessibility, and reduced infrastructure management overhead. They can be fully managed by cloud service providers or partially managed by the user. Cloud databases can follow different database models, including relational, NoSQL, and others, and they offer the flexibility to meet diverse application needs.

The cloud databases are:

1. Amazon RDS
2. Google Cloud Spanner
3. Microsoft Azure SQL Database

* **Embedded databases**

Embedded databases are database management systems (DBMS) that are integrated directly into an application, providing data storage and retrieval functionality within the application itself. Unlike traditional DBMSs, which run as separate services, embedded databases run as a part of the application, eliminating the need for separate database management processes. They are designed to be lightweight, fast, and require minimal configuration, making them ideal for use in applications where performance and resource constraints are critical.

The embedded databases are:

1. SQLite
2. Berkeley DB
3. H2

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

## What is the storage size of the two chosen databases for the free version?

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

## How does the performance of the chosen databases compare?

# Conclusion to the main question