

# Comparison of PostgreSQL and MySQL

February 11, 2025

## 1 Similarities

Both are SGBDR and support

- Structured Query Language (SQL)
- JSON data storage
- Support real-time transactions
- Capability of managing sessions

## 2 Differences and Strengths of Each Database

### 2.1 PostgreSQL

**Key Features:**

- Advanced Query Processing: Handles complex, analytical queries efficiently.
- Supports simultaneous transactions without locks or traffic congestion.
- Custom Data Types and Object-Oriented Features (allowing inheritance, polymorphism ).
- Stored Procedures and Query Reusability (USE: dynamically update user rankings with stored procedure())
- Can execute stored procedures in Python, C, and other languages (example: writing bot player logic directly in data base (using random fct, or playing algo like select choice from list of choices)) .
- Supports powerful extensions like AI-related features, and long-term memory for AI applications (useful for bot player).
- Efficient JSONB Indexing: Uses JSONB (binary JSON format) for fast and indexed queries on semi-structured data. (for our project we don't really need semi structured data, all cards have the same attributes)

### **What PostgreSQL does better**

- better for analytics and AI based bots
- vector extensions for mem storage (allows AI-powered decision)
- better concurrency control
- extensions
- stored procedures

## **2.2 MySQL**

### **Key Features:**

- Fast, easy-to-use, easy to set-up
- Performant in web-based applications with high volumes of simple queries.

### **What MySQL does better**

- .supports in-memory tables using MySQL memory engine -i fast tmp storage (stores tmp data in RAM instead of writing it to disk for ultra-fast access like matchmaking queue system, insert, select and delete rapidly without permanent storage)

RM: alternative if we use Postgresql REDIS ( open source cache) ((use: store data into a redis cache instance and make the retrieval of the data from RAM from the server that runs redis service) (redis extension to comm with psq then create virtual table linked to redis) When to Choose MySQL

## **3 Final Recommendation**

PostgreSQL is the better choice for our project, it provides more flexibility, better AI capabilities, and advanced data handling for a multiplayer card game. MySQL is an alternative if we prioritize simplicity, speed, ease of use, quick deployment.