Leveraging GenAI to create databases across MySQL and NoSQL platforms.

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The report examines GenAI's capabilities to assist users in creating databases in MySQL and NoSQL platforms. The NoSQL platform choosen is MongoDB. GenAI tool used was chatGPT 4.0. chatGPT 4.0 provided correct and complete code for both platforms.

1 Problem Statement

To assist GenAI's ability with the databases we have choosen the task of creating a database for the simplified version of the popular video game "Pokemon". The simplified version is described as follows :

Pokemon can have one or two 'types,' which decide whether they're more effective or less effective against other Pokemon types. Every pokemon has a primay type; some also have a secondary type.

The game involves using moves to attack other Pokemon, and each move has a certain power and type. Every move has a set of Pokemon who are capable of learning it; and every Pokemon has a set of moves it can learn.

At the very least, we'd need database tables to store Pokemon, Type, and Move. However, 'Pokemon' and 'Move' have a classic many-to-many relationship. How do you deal with this?

Create all the tables needed. (5) With the following details, populate the tables: (5) Bulbasaur is a pokemon of Grass type. Charmander is a pokemon of Fire type. Squirtle is a pokemon of Water type. Eevee is a pokemon of Normal type Pidgey is a pokemon of the Normal/Flying type. Bulbasaur can learn Tackle, Vine Whip, and Return. Charmander can learn Tackle, Ember, and Return. Squirtle can learn Tackle, Water Gun, and Return. Eevee can learn Tackle, Headbutt, and Return. Pidgey can learn Tackle, Wing Attack, and Return. Tackle has 35 power and is Normal type. Water Gun has 40 power and is Water type. Ember has 40 power and is Fire type. Vine Whip has 40 power and is Grass type. Wing attack has 65 power and is Flying type. Headbutt has 70 power and is Normal type. Return has 100 power and is Normal type. Fire is powerful against Grass but weak to Water. Grass is powerful against Water but weak to both Fire and Flying. Water is powerful against Fire but weak to Grass. Normal is not weak to anything but not powerful against anything either. Flying is powerful against Grass and has no weaknesses. Write a query that returns all the pokemon who can learn 'Return'. (5) Write a query that returns all the moves in the game that are powerful against Grass. (5)

2 MySQL

The prompt given to chatGPT was the exact problem statement mentioned in the report. The answers were straight forward and correct with adequate explanation. The code was given in sections which could be copied to the clipboard easily. Sections provided included : code for creating each table, code for populating each table and queries. The codes provided yielded the desired output.

3 NoSQL

The prompt given to ChatGPT matched the problem statement in the report exactly. However it provided the code for MySQL databases. When asked to provide code for MongoDB, chatGPT provided the code for MongoDB. The responses were accurate, straightforward, and included adequate explanations. The code was divided into easily copyable sections, including code for creating each table, populating each table, and executing the queries. The provided code sections yielded the desired output.

4 Conclusion

The GenAI tool chatGPT could perform the tasks with ease without much user interference. However it didn't provide any instructions on how to download MySQL or MongoDB as well as the code for switching to the correct database. If chatGPT 4.0 is given the perfect and well detailed problem statement, it yields the correct output but does exactly what is asked for and assumes that users have the previous knowledge of software tools being leveraged.