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Lab 1

1. Data vs. Information

A database used by Gold's Gym will likely store data about its members (member ID, name, address, phone number, DOB, membership type, payment information), employees (employee ID, name, address, phone number, DOB), membership plans (type, price, payment frequency), and its gym locations (address, phone number). These elements of data alone hold limited meaning unless given context and organized accordingly. For example, member ID alone is nothing more than a line of numbers and as a result holds limited value by itself. However, when all member data is organized in a cohesive manner, the result is a useful piece of "information" on any Gold's Gym member. In a similar way, an example of data would be a random phone number stored in the database, whereas an example of "information" would be a table storing the information on any given employee, including the mentioned phone number. Without context and the necessary organization of data, information cannot be formed, ultimately limiting the usefulness of any database in general. As such, it is not in the data itself that a company such as Gold's Gym would find value, rather it is in the structuring of such data that true value is found.

2. Data Models

In the hierarchical database model, data is organized into a tree-like structure with a single root linking all other data. Data is accessed by starting at the root and working down through the tree in order to reach the target data. As a result, this model is inefficient in supporting complex relationships, since many-to-many relationships will likely exist ultimately increasing the risk of data redundancy. In an attempt to address these problems, the network database was developed. Unlike the hierarchical model, data can be accessed from anywhere within the network by starting in any node and working forward or backwards as needed. Despite the quicker access network data models provided, issues arise when making changes to the database structure since these relationships are fully defined and locked in. The relational data model, however, provided solutions to issues from both of these models. Relational databases have no problems with many-to-one or many-to-many relationships. Their records are built as multiple tables, rather than tree structures, and each record on a table has a unique identifier. The relational model is also more flexible since changes to the database can be made on the fly and there is less of a likelihood of data redundancy. Based on this information, XML does not appear to be a more effective data storage model due to the fact that XML data is hierarchical. The relational model is inherently more flexible than XML due to the fact that the relational model allows for many-to-many relationships of arbitrary complexity and XML does not. This, however, would likely depend on the situation since there are many factors that may influence data model choice.

Works Cited

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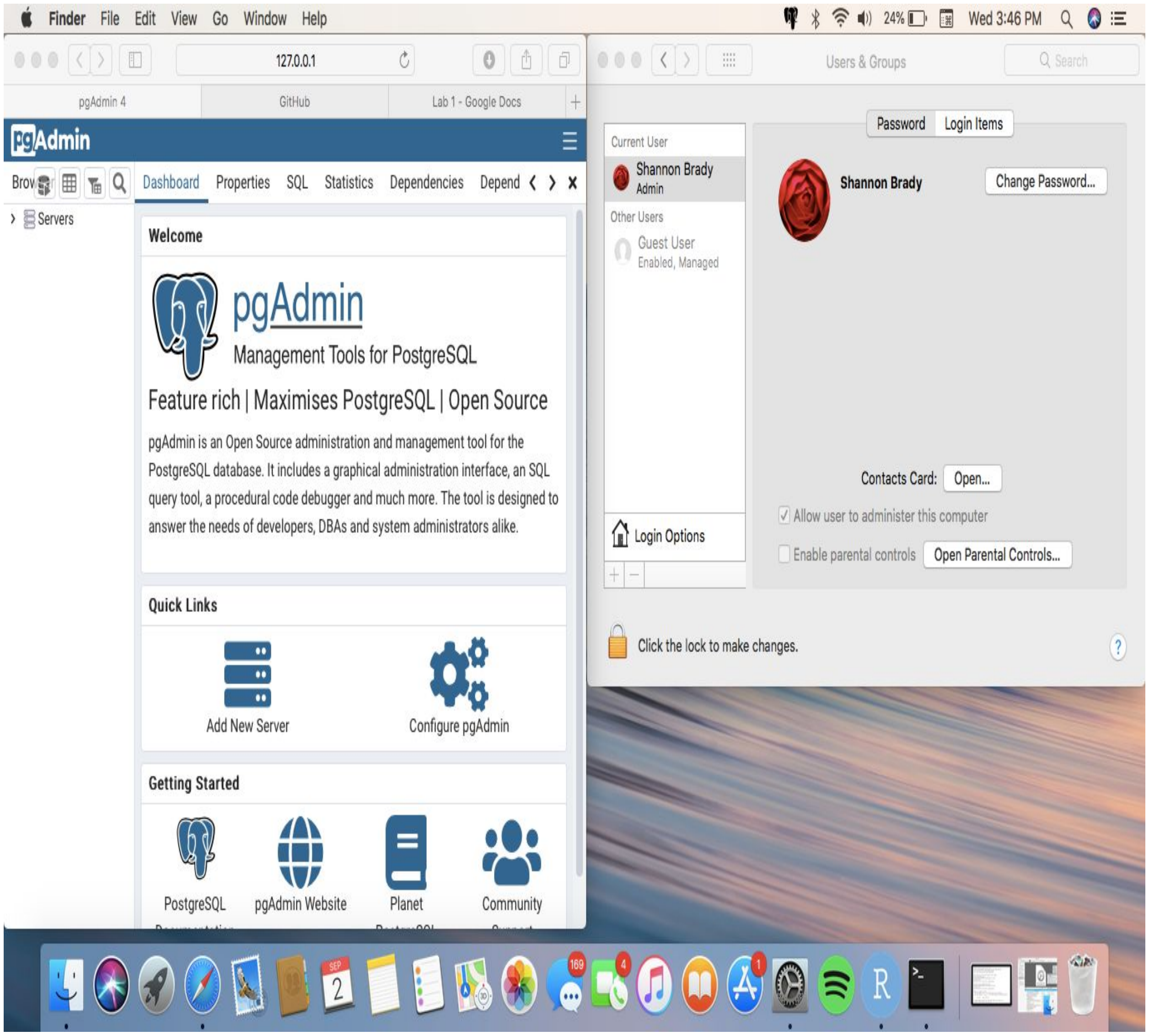

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