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Database Management

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### Data versus Information

Data can be any bit or byte that is supposed to mean something, but just because it is supposed to mean something doesn't mean anything unless you have any sort of context describing the data's purpose or use. When lacking all context or other description of the data it's useless because most modern computer applications don't directly work off of or use basic machine code to complete their tasks. And without context that would come from either the sender of data or from another application that uses basic machine code to translate into higher level data or actual information most modern applications are unusable because the data they would receive doesn't make sense. No one logs into Facebook using the ASCII definitions of letters because Facebook is expecting letters not numbers when someone is trying to log in to their account. Information is data that makes sense and that is useful, the number 635 as data, the number 635 next to a phrase saying "amount" in a banking application make sense because that describes the money left in your account that you can use. Data can be a large amount of things but without context or description it's useless, with it data becomes information and information is useful and valuable.

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## Data Models

Early on in the development of database management systems in the 1960s before relational database systems, the data models most commonly found were the hierarchical and network models. The hierarchical model is organized in to a tree like structure where data is stored as records and linked to each other and each record holds a group of fields and each field only holds one value. The network model is structured as to allow for records to have multiple parents and multiple children and ends up as a graph like setup. Hierarchical and network data models lack support for high level query languages, and the query languages that it supported allowed users to jump between data elements but you had to follow through the structure of the model from each data element. Also the models themselves were non-flexible and cumbersome to use and program queries for them.

Relational database systems organize data as tables, where databases are tables of tables, tables are tables of relational data. Relational database systems were an improvement and became the norm because they support high level query languages and allow the user to be flexible and rapidly respond to queries. This allowed users and programmers of relational databases to be much more quick and efficient in the programming efforts.

XML is a modeling language used to mark files and documents and have the documents be stored in collections and have those collections of XML marked files be used as a database. XML seems to be like the file systems that existed before hierarchical and network models, but

implement aspects of high level query languages. XML is weird it feels like a step back to file systems after database management had evolved in to using relational database systems but uses what makes relational systems flexible.

File Edit Plugins View Tools Help



Object browser

- Server Groups
  - Servers (1)
    - PostgreSQL 9.5 (localhost:5432)
      - Databases (1)
      - Tablespaces (2)
      - Group Roles (0)
      - Login Roles (1)

Properties

Statistics

Dependencies

Dependents

Database	Owner	Comment
 postgres	postgres	to query, or not to query: that is the question