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| --- | --- |
| Data Set | Scale of Measurement |
| Genotype | Norminal |
| Temperature | Interval |
| Socio-economic status | Ordinal |
| Gender | Nominal |
| Income level | Ordinal |
| Credit score | Rank |
| Race | Nominal |
| Satisfaction rating | Ordinal |
| Weight | Ratio |
| Political party | Nominal |

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| **Array data structure** | **List data structure** | **Dictionary data structure** |
| An array data structure is a data structure consisting of a collection of elements (values or variables), each identified by at least one array index or key. | A list or sequence is an abstract data type that represents a countable number of ordered values, where the same value may occur more than once. | This is an abstract data type storing items, or values. A value is accessed by an associated key. Basic operations are new, insert, find and delete. |
| Items in an array are accessed by position (often a number) and hence have an order. | Lists allow only sequential access. | Items in a dictionary are accessed by key and are unordered. |
| An array is stored such that the position of each element can be computed from its index tuple by a mathematical formula. | Lists are a basic example of containers, as they contain other values. If the same value occurs multiple times, each occurrence is considered a distinct item. | A dictionary has a set of keys and each key has a single associated value. |

1. SQL has gone out of fashion lately partly due to the NoSQL movement, but mostly because SQL is often still used like 20 years ago. As a matter of fact, the SQL standard continued to evolve during the past decades resulting in the current release of 2011. An SQL database, named for the language it’s written in, Structured Query Language (SQL) is the more rigid, structured way of storing data, like a phone book. Developed by IBM in the 1970s, a relational database consists of two or more tables with columns and rows. In an SQL database like MySQL, Sybase, Oracle, or IBM DM2, SQL executes queries, retrieves data, and edits data by updating, deleting, or creating new records. SQL is a lightweight, declarative language that does a lot of heavy lifting for the relational database, acting like a database’s version of a server-side script. There were a few early prototypes built, but the model became mainstream when IBM built and marketed DB2 in 1984. By the early 1990’s, relational database systems began to be considered the standard and the only way to solve all database related problems. It didn’t matter what kind of workload one needed to support, relational databases were considered the panacea. In other words, a “one size fits all” concept evolved and stayed until mid to late 2000’s. One particular advantage of SQL is its simple-yet-powerful JOIN clause, which allows developers to retrieve related data stored across multiple tables with a single command. Another reason SQL databases remain popular is that they fit naturally into many venerable software stacks, including LAMP and Ruby-based stacks. These databases are well understood and widely supported, which can be a major advantage if you run into problems.

But researchers and technology leaders started to question the concept. They realized that for every kind of problem, there is a better ways of solving it than the traditional relational database system.

This gave rise to modern databases, an example of this is the NoSQL. NoSQL databases can prove to be a good fit for certain types of Online Transaction Processing (OLTP) workloads. They provide the ability to scale horizontally, are fault tolerant, provide a flexible schema, and can accommodate data other than relational such as JSON documents. They also support a variety of data models ranging from the most simple key-value pairs to the more sophisticated models such as document-oriented, column family and graph databases.