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Managing a Web Server H16S35

3 - LAMP

- MariaDB
- VirtualHosts

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LAMP

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Linux Apache MariaDB PHP

- LAMP used to stand for Linux Apache MySQL & PHP
- The M can be MySQL, MariaDB or MongoDB
- The P can be PHP, Python or Perl
- WAMP is using windows
- LEMP is using NGINX instead of Apache

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Databases & MariaDB

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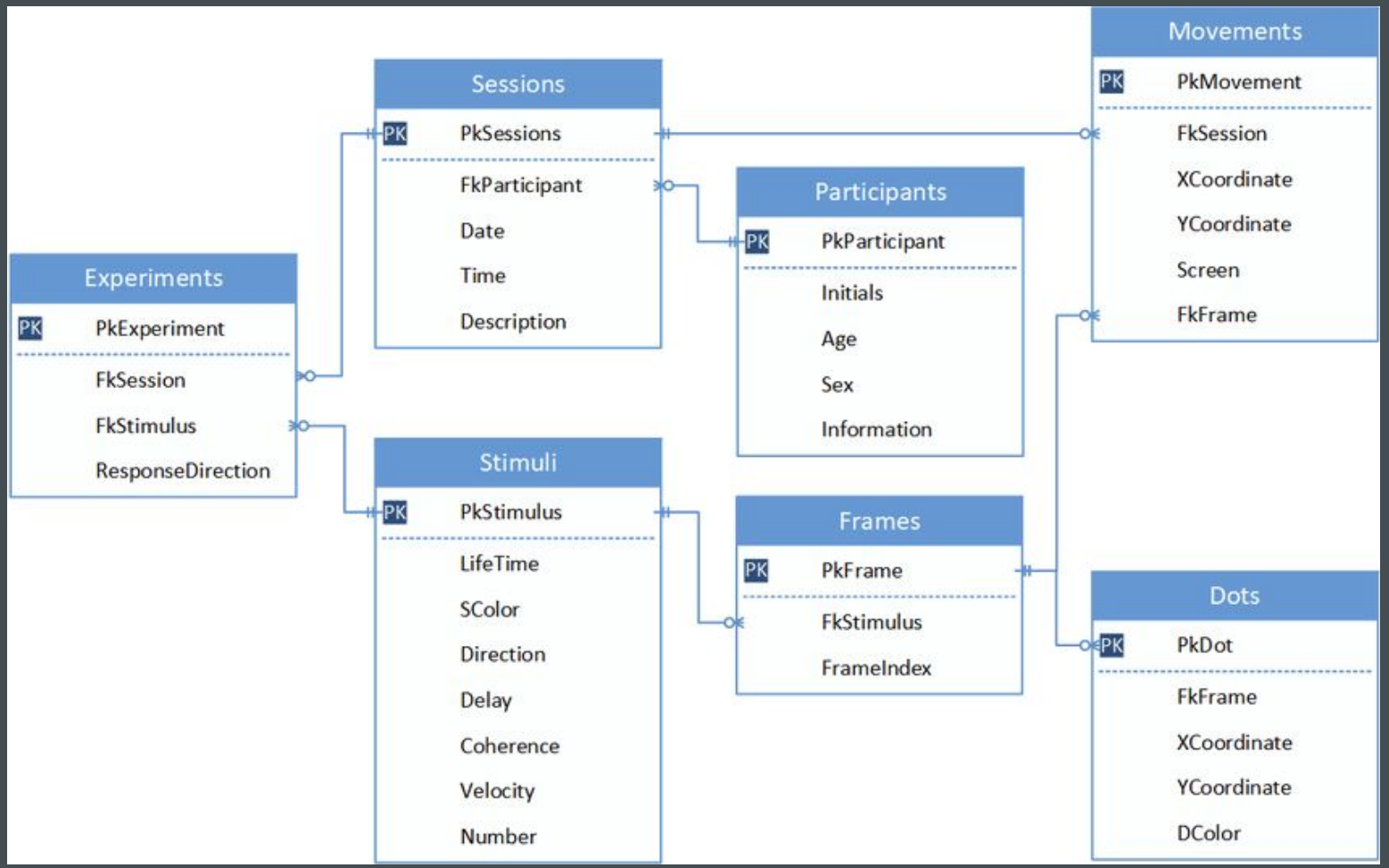
MariaDB

- One of the most popular database servers in the world, made by the original developers of MySQL and guaranteed open source
- Used by Wikipedia, WordPress.com and Google
- MariaDB turns data into structured information in a wide array of applications, ranging from banking to websites
- It is an enhanced, drop-in replacement for MySQL, used because it is fast, scalable and robust, with a rich ecosystem of storage engines, plugins and many other tools make it very versatile for a wide variety of use cases

Relational Databases

- A set of formally described tables from which data can be accessed or reassembled in many ways without having to reorganize the database tables
- The standard user and application programming interface (API) of a relational database is the Structured Query Language(SQL)
- SQL statements are used both for interactive queries for information from a relational database and for gathering data for reports
- The relational database was invented in 1970 by E. F. Codd, then a young programmer at IBM. In his paper, "A Relational Model of Data for Large Shared Data Banks"

Relational Databases

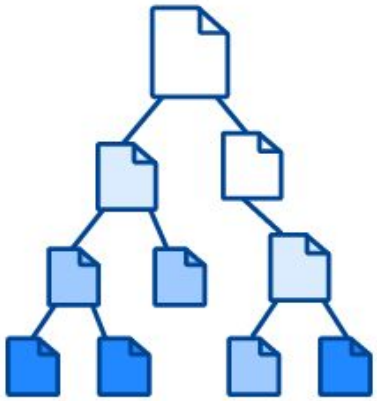


Non-Relational Databases

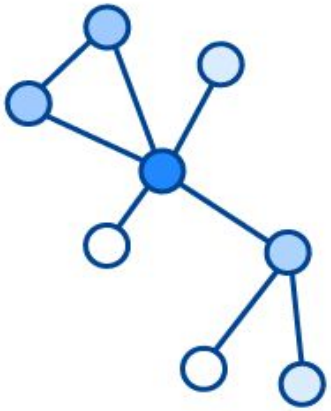
- A on SQL or non relational database provides a mechanism for storage and retrieval of data that is modeled in means other than the tabular relations used in relational databases
- Such databases have existed since the late 1960s, but the name "NoSQL" was only coined in the early 21st century, triggered by the needs of Web 2.0 companies
- NoSQL databases are increasingly used in big data and real-time web applications
- NoSQL systems are also sometimes called "Not only SQL" to emphasize that they may support SQL-like query languages, or sit alongside SQL databases in polyglot persistent architectures

Non-Relational Databases

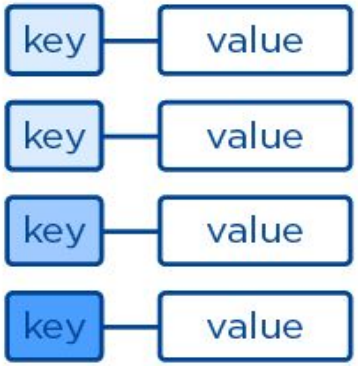
Document



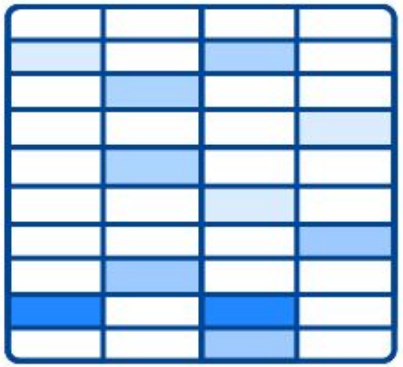
Graph



Key-Value

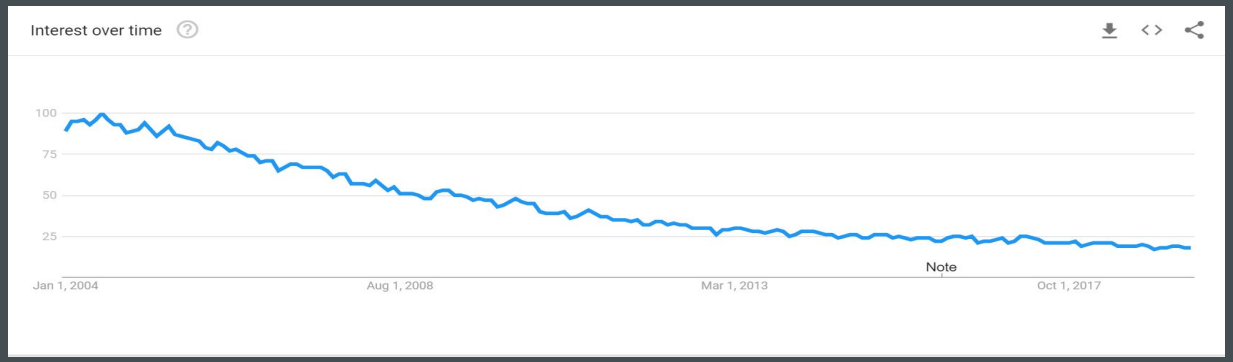


Wide-column

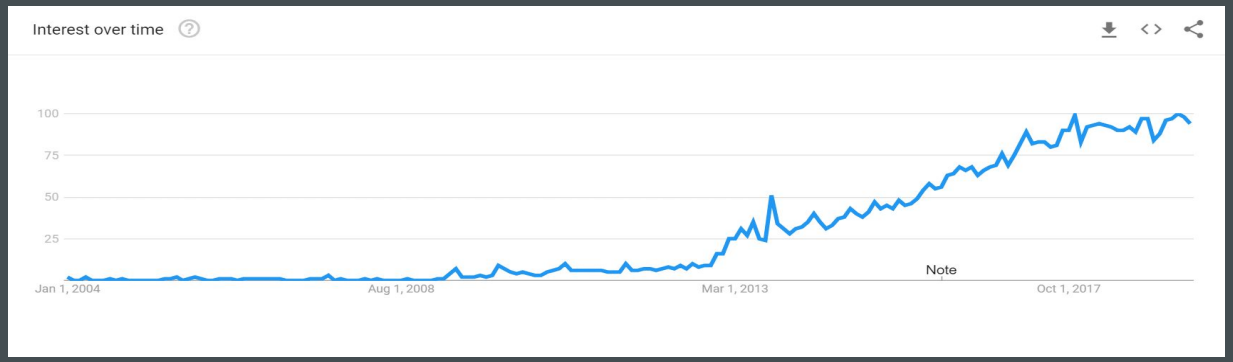


MariaDB vs MySQL Trends

MySQL



MariaDB



MariaDB Commands

- Show all databases:
- MariaDB [(none)]> show databases;
- Create a database:
- MariaDB [(none)]> create database database_name;
- Use a specific database:
- MariaDB [(none)]> use database_name;
- Show all tables within a previously selected database:
- MariaDB [(none)]> show tables;
- Show data within a specific table in a previously selected database:
- MariaDB [(none)]> select * from my_table;
- Show all users in the mysql database:
- MariaDB [(none)]> select * from mysql.user;
- Create a new DBA:
- MariaDB [(none)]> grant all privileges on *.* TO 'username'@'localhost' identified by 'strong_password' with grant option;
- MariaDB [(none)]> **FLUSH PRIVILEGES**;

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Multiple Site Hosting VirtualHosts

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VirtualHosts

- The term VirtualHost refers to the practice of running more than one web site (such as company1.example.com and company2.example.com) on a single machine
- Virtual hosts can be "IP-based", meaning that you have a different IP address for every web site, or "name-based", meaning that you have multiple names running on each IP address
- The fact that they are running on the same physical server is not apparent to the end user
- Apache was one of the first servers to support IP-based virtual hosts right out of the box. Versions 1.1 and later of Apache support both IP-based and name-based virtual hosts (vhosts)
- The latter variant of virtual hosts is sometimes also called host-based or non-IP virtual hosts

VirtualHost Directive

- Always edit the VirtualHost file in /etc/apache2/sites-available

```
<VirtualHost 172.20.30.50>
    DocumentRoot "/www/example1"
    ServerName www.example.com

    # Other directives here ...
</VirtualHost>

<VirtualHost 172.20.30.50>
    DocumentRoot "/www/example2"
    ServerName www.example.org

    # Other directives here ...
</VirtualHost>
```

```
<VirtualHost *:80>
ServerName domain.com
ServerAlias www.domain.com
DocumentRoot /var/www/domain.com
ErrorLog /etc/httpd/logs/error_log
CustomLog /etc/httpd/logs/access_log combined
</VirtualHost>
```

```
<VirtualHost *:80>

        ServerAdmin webmaster@example1.com
        ServerName example1.com
        ServerAlias www.example1.com
        DocumentRoot /var/www/example1.com/public_html
        ErrorLog ${APACHE_LOG_DIR}/error.log
        CustomLog ${APACHE_LOG_DIR}/access.log combined

</VirtualHost>
```

Multiple Site Hosting Step 1

- The steps to create a site called mysite.com
- Then host this with apache, it is important to understand the purpose of the default config files, and sites-available / sites-enabled:

```
mkdir-p /var/www/mysite.com/public_html
chown-R ec:ec/var/www/mysite.com/public_html
chmod-R 755 /var/www
vi /var/www/mysite.com/public_html/index.html
   <html>
      <body>
         <h1>welcome to mysite.com</h1>
      </body>
   </html>
```

Multiple Site Hosting Step 2

- Make Virtual Host File, copy one of the default files and give it a new name, in this case mysite.com.conf. Then host this with apache, it is important to understand the purpose of the default config files, and sites-available / sites-enabled:

```
cd /etc/apache2/sites-available
cp 000-default.conf mysite.com.conf
vi mysite.com.conf
   <VirtualHost *:80>
   ServerName mysite.com
   DocumentRoot /var/www/html/mysite.com/public_html
   </VirtualHost>
a2ensite mysite.com.conf
Systemctl restart apache2
```

Sites-Available or Sites-Enabled

- The difference is that virtual sites listed in the sites-enabled directory are served by apache
- In the sites-available directory are the sites that exist on your server - people can't access these until enabled
- VirtualHost directives allow Apache2 to be configured for multiple sites that have separate configurations
- Stay out of sites-enabled, always make edits in sites-available
- Then enable the site with the a2ensite command, followed by a service restart
- VirtualHosts Suggested reading

Thanks for listening
Any questions?