Facebook

Section A: Facebook's Client Side.

Facebook is primarily built on the three cornerstones of the World-Wide Web which every Programmer should know, which are:

1. **HTML**: HyperText Markup Language. Used for developing rich client side webpages using semantic markup elements that is interpreted by the browser. References: HTML.
2. **CSS**: The Cascading Style Sheets. Used for defining HTML semantic elements and markup by implementing rules called cascades, which is a determinant factor in the visual effects of a webpage. References: CSS.
3. **JavaScript**: is a dynamic programming language, formerly implemented as ECMAScript, is used to implement certain functionalities unavailable in HTML, such as geographical features and cookie sessions. Facebook uses JSON (JavaScript Object Notation) and AJAX (Asynchronous JavaScript and XML) too, References: JavaScript Language (http://en.wikipedia.org/wiki/javascript).

In Summary Facebook's visuals is determined by the above client-side technologies.

Section B: Facebook's Server Side

Alright Facebook, was originally built on the LAMP Server stack. Download the LAMP Stack by Apache Friends here. It's actually an abbreviation which is composed of four cornerstones required in server-side development, that is back-end. They are:

1. **Linux**: A free and open-source operating system, developed by the Linux Foundation. Get a reference article: Linux OS.
2. **Apache**: A free an open-source HTTP Server, known fully as the Apache HTTP Server, is used for the deployment and management of webpages written in server-side scripts, such as PHP or Perl. A reference: Apache Server.
3. **MySQL**: An open-source RDBMS (relational-database management system) used for managing databases and queries. Reference: MySQL Database.
4. **PHP**: A general-purpose programming language developed originally by Rasmus Lerdorf in 1994, primarily for web development particularly

server-side scripting and command-line scripting. Reference: PHP Language.

Section C: Facebook's Stability

Fact is, PHP isn't really engineered for powering a website with over a billion accounts. Yes, that's a fact. At that moment, I think a hammer would have hit Mark on the head. Yes, use a more compact language to achieve the goal. Yes, it would have seemed elusive for Facebook engineers to take down Facebook for about a month for an unprecedented code restructuring from a language such as PHP to C++ or perhaps C. So, Facebook engineers devised a means of upgrading their site with no harm being done to it's users. "Build an engine that perhaps syntactically compiles PHP and Hack a syntactically similar language we will invent but more compact to PHP code to intermediate bytecode, or into C++ Code, and call it Hip-Hop Virtual Machine for PHP (HHVM)." Yes, that is what they did. So, Apart from the LAMP stack, Facebook's is built on these technologies:

1. **HHVM**: Hip-Hop Virtual Machine. An engine built by Facebook Inc. that transforms PHP to C++ Code. More references on HHVM.
2. **C++**: A middle-level programming language developed by Bjarne Stroustrup. Facebook uses an Already compiled PHP code to executable bytecode in C++. More references on C++
3. **Hack**: A relative to PHP, created and developed by Facebook to enable quick runtime and more functionalities like PHP. More references on Hack Programming Language.

In Summary, Facebook uses the following technologies to stabilize and increase the speed and processing of billions of requests that occurs every single time a user just simply "comments", excluding uploading, and more tedious stuff.

Section D: Facebook's Messenger Application

Facebook *probably* implements these technologies for it's messenger application:

1. **Haskell**: A statically typed language. It's paradigm is conceptualized on functional programming. More references on Haskell.
2. **Erlang**: A general-purpose, concurrent functional programming language, with a garbage-collected runtime system (automatic memory management) More references on Erlang.
3. **C++**: Native C++ code, enabling Facebook Messenger, to run on cross-platform devices.

As stated above, Facebook, *probably* implements these technologies on it's messenger platform.

Section E: Facebook's Database Implementation

Facebook uses the following database technologies, for proper sorting of users data, results feed, and indexing or searching.

1. **Cassandra**: A distributed wide-column store, noSQL database system developed by Apache for handling huge data, and is used by Facebook, for it's indexing and handling of user's data. More references: Apache Cassandra.
2. **HBase**: is an open-source, non-relational, distributed database modeled after Google's Bigtable and written in Java, and created by Apache. It runs on Apache's Hadoop. More references: Apache HBase.
3. **MariaDB**: is an open-source distributed, relational database system developed by the MariaDB Foundation. More references: MariaDB
4. **MySQL**: An open-source RDBMS (relational-database management system) used for managing databases and queries. Reference: MySQL Database.
5. **Hadoop**: is a collection of open-source software utilities that facilitate using a network of many computers to solve problems involving massive amounts of data and computation. Facebook implements this in analysing user's data alongside **Hive**, which is believed to be created by Facebook. More references: Apache Hadoop.

The above database technologies are all centered on NoSQL, except the MySQL Database.

Section F: The Facebook Main Application

The Facebook application runs on mutiple operating system platforms, which include: **Android, iOS, MacOS,** and **Windows**. Facebook is basically an Asynchronous Web Application. It implements these technologies that are integrated alongside Native C++:

1. **Java**: A general-purpose programming language that supports class-based and object oriented programming developed by Oracle Corporation. It is widely used for building Android Applications Reference: Java.
2. **Swift**: A general-purpose, compiled programming language developed by Apple Inc, for iOS, WatchOS, MacOS, and tvOS devices, as a rebuild and enhanced version of Objective-C. Reference: Apple Swift.
3. **C# and Xamarin.forms**: Guess Facebook integrates these technologies for building Facebook Applications for Windows devices.

Section G: Other Technologies

These are other technologies Facebook make use of:

1. **BigPipe**: that enables seamless rendering of pages through pipe-lining.
2. **Machine Learning**: a branch of artificial intelligence that aims on giving computers the ability to learn and analyse. Facebook probably uses this to analyse hate speech, fake news, and illegal accounts. More about Machine Learning.
3. **ReactJS and React Native**: a JavaScript framework developed by Facebook for building User-Interfaces, and for building native JavaScript applications. More about ReactJS and React Native.

Section H: Wrapping It Up

So in these answer session, I listed technologies used by Facebook. This are all the technologies in summary:

- HTML
- CSS
- JavaScript.
    - AJAX (Asynchronous JavaScript and XML)
    - JSON (JavaScript Object Notation)
- LAMP
    - Linux
    - Apache
    - MySQL
    - PHP
- HHVM
- C++
- Hack
- Haskell
- Erlang
- C++
- Apache Cassandra
- Apache HBase
- MySQL
- MariaDB
- Apache Hadoop
- Java
- Swift
- C# and Xamarin.forms

- BigPipe
- Machine Learning
- React JS/React Native

Netflix

Programming Languages

- Java
- JavaScript
- Python
- Kotlin
- Swift

Libraries & Frameworks

- React
- WinJS
- Node.JS

Databases & Cloud Services

- MySQL
- Cassandra
- Oracle
- Amazon EC2
- Amazon S3
- Atlas-DB

DevOps

- GitHub
- Git
- Jenkins
- Gradle
- Apache Mesos
- Vector
- Hub Commander
- AWS Cloud Trail
- Crittercism
- Boundary

- Sumo Logic
- Logic Monitor

Utilities

- Amazon SES
- Falcor
- Urban Airship

Uber

- Apache Kafka, for data streaming.
- **MySQL, Cassandra, MongoDB,** for storing **data**
- **Python,** for api development
- **NodeJS**, for event based Message Delivery.
- **ReactJS,** for UI