Common web application architecture

Advance Web Development (SCS3112 /IS 3015/CS3112)

Assignment -1

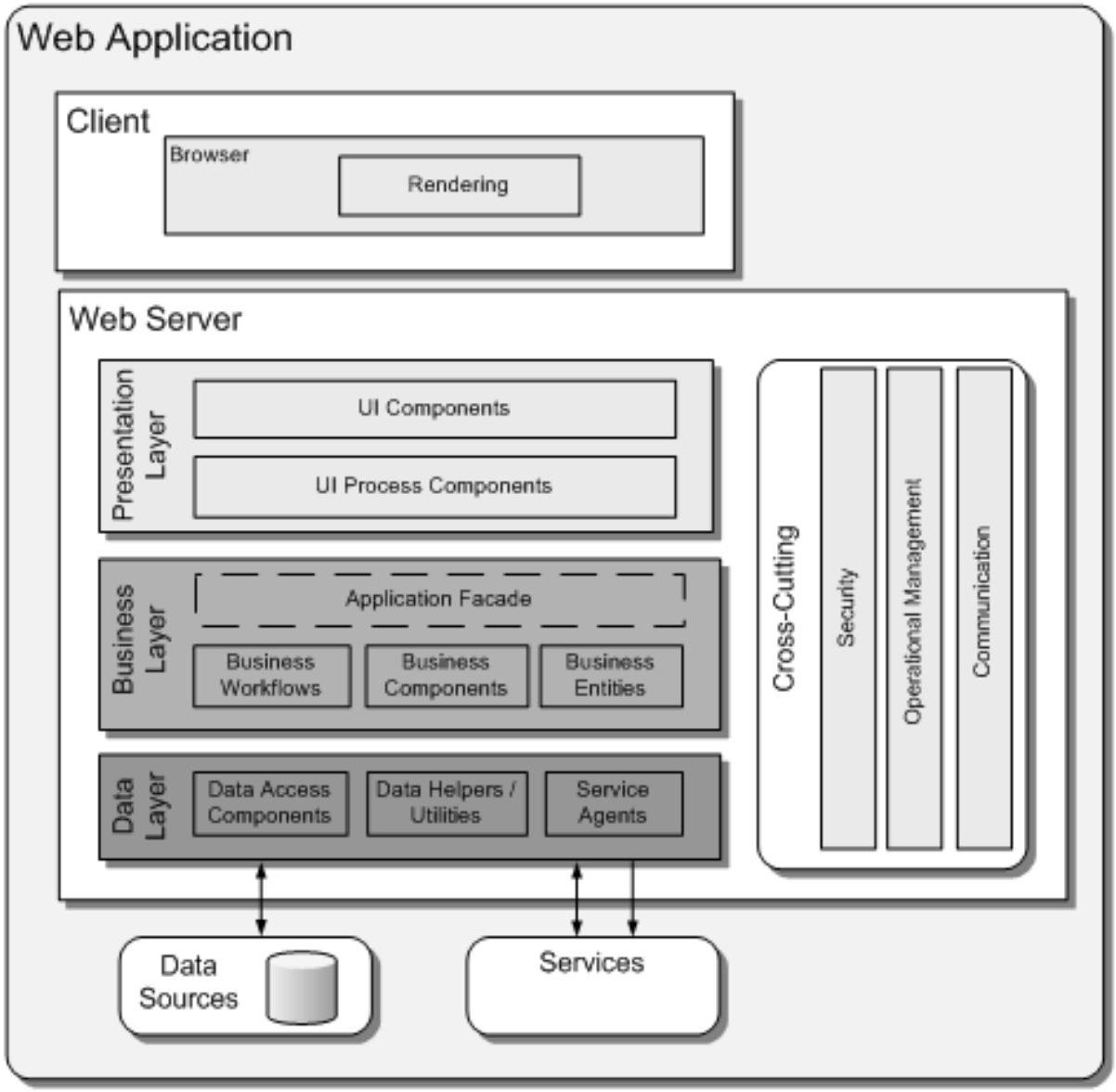
M.B.C.K.SILVA

2013/CS/113

13001132

Key Components of Common Web Application Architecture

The most important part of a web application is its server side logic .The most common architecture is three-layered architecture it consist of presentation, business, and data layers.



Selected tools, technologies, frameworks and libraries that are more suitable for design and development of key components in the common web application architecture.

Client Side

Client is a computer application, Most of the time a web browser, that runs on a user's local computer or workstation and connects to a server as necessary.

Typically developer or web administrator has no control on Client Side.So Users can use any web browser to access web application.So here i will compare most common web browse's key features which cause to it's popularity.

Google Chrome

Google Chrome is one of the most popular web browsers out there today.Here are some of key features of chrome.

- Chrome has one of the largest libraries of extensions, add-ons and built-in applications that enhance the browser's ability to do what you want it to do
- Clean, simple user interface
- Searching from the address bar
- Chrome's Task Manager
- V8 javaScript engine

V8 is Google's open source high-performance JavaScript engine, written in C++ .

Firefox

Firefox is another mots popular web browsers out there today.here are some key features.

- Firefox Has Better Extensions
- Firefox Offers Better Privacy
- Smart Bookmarks
- Mycroft Web Search
- Microsummaries

Safari

As a product of Apple, Safari is unsurprisingly replete with security features and functions designed to keep your information safe while you browse. here are some key features.

- It feels faster
- Apple's ecosystem pull is stronger than ever for iPhone users
- The new tab page is nearly perfect
- Native OS X notifications are elegant

Use Safari instead of Chrome get an extra hour of battery life.

Sever Side

Server is a computer program, such as a web server, that runs on a remote server, reachable from a user's local computer or workstation.

Most of the time we call Server side as back-end.while we call client side as front-end.

Here are common layers in web architecture

- Presentation Layer
- Business Layer
- Data Layer
- Cross cutting Layer

Presentation Layer

This is the topmost level of the application is the user interface.The main function of the interface is to translate tasks and results to something the user can understand.

Technologies, frameworks and libraries can be use with in this layer.

Bootstrap

The main strength of Bootstrap is its huge popularity. Technically, it's not necessarily better than the others in the list, but it offers many more resources than other frameworks.It is responsive and mobile first framework.Also provide automatic GUI customiser .

Foundation by ZURB

The most advanced responsive front-end framework in the world.Foundation is used on many big websites including Facebook, Mozilla, Ebay, Yahoo!, and National Geographic.But here No GUI customiser only manual customization.

AngularJS

HTML is great for declaring static documents, but it falters when we try to use it for declaring dynamic views in web-applications.It improve readability, and quick to develop.

Jquery

jQuery is JavaScript. It is a JavaScript library, so it operates on top of JavaScript. It cannot exist on its own.jQuery will significantly reduce your development time, and you can afford the extra overhead of downloading the library.and it provide more option for Complex element selection,Animation and Event handling.

Business Layer

This layer coordinates the application,processes commands,makes logical decisions and evaluations,and performs calculations.It also moves and processes data between the two surrounding layers.

Technologies, frameworks and libraries can be use with in this layer.

Larvel (PHP framework)

Pros:

- laravel is best framework for you with latest technologies
- It is a MVC framework. It avoids silly traditional architecture where developers used to write all html and php code in same file.
- Queue management - To abstract the unnecessary tasks and get them queued
- Blade template engine gives an easy experience in adding logic in html file

Cons :

- Development in laravel is not so fast in compare to ruby on rails
- Laravel is new framework and composer is not so strong in compare to npm (for node.js), ruby gems and pip (python).
- It is lightweight so it has less inbuilt support in compare to django and rails.

Ruby on Rails

Pros :

- Libraries - There's a gem (3rd party module) for just about anything you can think of.
- Code Quality - Generally, we find the quality of third party Ruby code to be significantly higher than their PHP or NodeJS equivalents
- Test Automation - The Ruby community is big in to testing and test automation

Cons:

- Documentation - It can be hard to find good documentation
- Multithreading - Rails supports multithreading, though some of the IO libraries do not, as they keep hold of the GIL
- ActiveRecord - AR is used heavily within the Ruby on Rails world and is a hard dependency for many of the RubyGems

Node

Node is not a framework, it's a server.

Pros:

- Uses JavaScript, which is easy to learn.
- Asynchronous event driven IO helps concurrent request handling.
- Share the same piece of code with both server and client side.
- Can stream big files.

Cons:

- Every time using a callback end up with tons of nested callbacks
- Node.js is not suited for CPU-intensive tasks. It is suited for I/O stuff only (like web servers)

Data Layer

Here information is stored and retrieved from a database or file system.The information is then passed back to the logic tier for processing ,and then eventually back to the user.

Technologies, frameworks and libraries can be use with in this layer.

MySQL

MySQL is very easy to install.setting up an implementation is simple.

pros:

- It's Incredibly Inexpensive and open source.
- It's An Industry Standar and Extremely Popular
- Support Is Readily Available Whenever Necessary

Cons:

- It has some Stability Issues.
- It Suffers From Relatively Poor Performance Scaling.
- Development Is Not Community Driven – and Hence Has Lagged

Hibernate

Pros:

- You can use Hibernate which generates the SQL on the fly and then automatically executes the necessary SQL statements.
- Hibernate maps domain object with the relational database. Now you can concentrate on your business logic rather than managing the data in database.
- Hibernate is layers architecture and can use the components as per your application need.
- Hibernate is database independent and can use any database of choice.

Cons:

- A lot of effort is required to learn Hibernate. So, not very easy to learn hibernate easily
- Sometimes debugging and performance tuning becomes difficult.
- Hibernate is slower than pure JDBC as it is generating lots of SQL statements in runtime.

RabbitMQ

RabbitMQ is a message queue system based on Erlang.a standard and heavily used message queue protocol

Pros:

- It's fast and built for telcos and SMS switching and all kinds of serious heavy-load craziness.
- RabbitMQ is open source
- It supports all kinds of message patterns.

- Easy to set up, easy to swap .

Cons:

- Making RabbitMQ highly available is up to developer.

Most Common Web Servers.

Nginx

Pros

- code base written largely by one person - likely more consistent / smaller than alternatives
- friendly configuration format that is more modern in design than alternative web servers (my opinion)
- event based, so you can handle more connections with less overhead due to context switching, etc.
- low memory footprint, modular design

Cons

- less community support and documentation than Apache, but probably more than enough depending on your expertise and use case
- Not as many modules / extensions as Apache
- Not used as often as alternatives so may not be as well vetted

Apache2

- A very long history of reliability and performance.
- It will run on pretty much any OS (Linux, Windows and MacOS)
- It is one of the most feature rich web servers available. There isn't much it can't do.
- It is free and commercial friendly - no licensing fees or costs.

references

http://blog.getbatterybox.com/which-browser-is-the-most-energy-efficient-chrome-vs-safari-vs-firefox/

https://gigaom.com/2014/11/02/four-reasons-i-switched-to-safari-after-years-of-using-chrome-and-why-ill-probably-switch-back/

http://www.guidanceshare.com/wiki/Application_Architecture_Guide_-_Chapter_15_-_Web_Applications

http://www.roseindia.net/hibernate/examples/hibernate-advantages-and-disadvantages.html

http://www.myhostsupport.com/index.php?/News/NewsItem/View/58