Creative Techniques for Loading Web Pages Faster

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low hanging fruit vs. micro-optimization
People

Roan

Trevor

robot

human
Software

MediaWiki
platform

Wikipedia
project
Welcome to Wikipedia, the free encyclopedia that anyone can edit.

Today's featured article

Jack Warner (1892–1978) was a Canadian-born American film executive who was the president and driving force behind the Warner Bros. Studios in Hollywood, Los Angeles, California. Warner's 45-year career was longer than that of any other traditional Hollywood studio mogul. He worked with his brother, Sam Warner, to procure the technology for the film industry's first talking picture. Although Warner was feared by many of his employees and inspired ridicule with his uneven attempts at humor, he earned respect for his shrewd instincts and toughness. He recruited many of Warner Bros.' top stars and promoted the hard-edged social dramas for which the studio became known. Although he was a

In the news

- Asteroid 2010 TK7 is confirmed as the first Earth trojan asteroid discovered.
- Truong Tan Sang becomes the new President of Vietnam and nominates Nguyen Tan Dung to another term as Prime Minister.
- In cycling, Cadel Evans (pictured) wins the 2011 Tour de France, becoming the first Australian Tour de France winner.
- Protests against rising house prices in Israel continue, with thousands gathering in Tel Aviv and Jerusalem.
- Thousands of protesters encounter
Resources

Scripts
javascript

Styles
css

Translations
json
Optimizations

Minification
whitespace removal

Combination
file concatenation

Sprites
multi-graphic images
Caching

Versioning
one version for everything

Query String
versions in the html

Purging
wait for cache expiry
Being a developer sucked

Creating
  good luck!

Maintaining
  messy and boring

Using
  clunky and slow
Traffic

Unique Visitors per Month

- 2008
- 2009
- 2010
- 2011
Cache Invalidation

- **Users**: user-specific resources
- **Admins**: site-wide resources
- **Translators**: site-wide messages
Approach

- **Easy Gains**: no micro-optimization
- **Client Focus**: it’s where the magic is
- **Ease of Use**: developers use this stuff
Modules

Scripts, styles & messages
Modules

a, b & c
Scripts

- Wrapping: delayed execution
- Minification: whitespace removal
- Conditions: debug, skin or language
Styles

Bundling
one request

Minification
whitespace removal

Conditions
skin specific styles
Startup Module

Sanity check
if (IE5) { giveUp(); }

Dependencies
module manifest

Configuration
site-wide settings
Client-side Loader

Resolution
- calculate dependencies

Batching
- give it to me all at once

Execution
- run in correct order
Caching

Versioning
per-module

Startup Module
5 minutes

Resources
30 days
So, it turns out...
Embedding is sweet

Test: embedding images in the Vector skin, 27.3% reduction in total size after compression, 97.2% reduction in requests

CSSMin: [http://tinyurl.com/CSSMin-php](http://tinyurl.com/CSSMin-php)
JSMin.php is slow

Test: minifying jQuery development distribution, 160KB of uncompressed code; 0.5% larger size than JSMin output after compression

JavaScriptMinifier: [http://tinyurl.com/JavaScriptMinifier](http://tinyurl.com/JavaScriptMinifier)
CSS Janus is Awesome

Ported from python

$humans--;
seriously, go robots!

CSSJanus: http://tinyurl.com/CSSJanus
Balance is important

Batching
duplicate data may be sent

Groups
controlled fragmentation
It Works!

- HTML: 1
- JavaScript: 7
- CSS: 2
- Images: 4
It’s Efficient!

Servers
~400 servers
For resources: 4 app, 9 cache

Requests
90k req/s peak load
of which 40k are for resources
and 73 are cache misses
cache hit rate: 98.2%
ResourceLoader

Easy Gains
no micro-optimization

Client Focus
it's where the magic is

Ease of Use
developers use this stuff
ResourceLoader

- Easy to Make
  happy developers

- Lightweight
  happy servers

- Snappy Pages
  happy people
Thanks!

http://wikitech.wikimedia.org/view/Presentations

http://www.mediawiki.org/wiki/ResourceLoader

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