

Javascript and tools

Agenda

- Some famous libraries
 - Some Best practices
 - Debugging techniques
 - Ajax techniques & JSON
- Effectively handling of server side message and settings
 - Deployment and YUI-Compressor
 - Use of Fiddler
 - Some useful sites

Some Famous Libraries

Why we use libraries

Types of libraries

- DOM(Document Object Model) manipulations, Ajax, String processing
- Animation

Benefits of Using libraries

- Reduce code
document.getElementById('abc') \$('abc')
- Provide same apis across all browser and hide all different syntaxes related with event handling, ajax, xml handling etc.
- Provides lot of helping functions on top of default DOM manipulation, ajax, string objects & method e.g TimedObserver, Template, PeriodicalExecuter
- Provides lot of plugins/components for creating rich interactive applications
e.g calendar, menu, browser history manager, jscrollpane etc.

Prototype javascript framework <http://prototypejs.org/>

- Ships with Rails
- Mostly used for DOM traversing & manipulation,ajax,string processing.
- Good documentation.

Script.aculo.us animation library <http://script.aculo.us/>

- Built on top of prototype javascript framework and cant work with anyother library
- Provides ajax-based autocompletion, in-place editing, sliders, dragdrop functionality etc

Here you can some demos of this library.

<http://wiki.github.com/madrobby/scriptaculous/demos>

<http://wiki.github.com/madrobby/scriptaculous/puzzle-demo>

<http://wiki.github.com/madrobby/scriptaculous/effect-morph>

<http://wiki.github.com/madrobby/scriptaculous/combination-effects-demo>

Jquery

- Its very famous library, used for DOM Traversing & manipulation, ajax and string processing.It also provides hundreds of plugins for creating rich interfaces and for other things like ajax-queue etc.

-Good documentation.

-Sometime we face problem of plugins compatibility due to different versions. So always be careful in upgrading library and finding plugins.

Yahoo! User Interface Library

- Its very famous library and being used for creating rich interfaces.
- Yahoo mail interface also using it.
- Provides lot of components from one shop means you should not be worried about compatibility and testing of components with different version of this library. YUI has also very good documentation with proper changelog.
- Some interesting components that we will discuss briefly in this talk
 - a) browser history manager
 - b) cookie manager
 - c)on demand loading of js and css files
 - d)logger
- Its being developed very actively.

Along with YUI library, yahoo also providing some good tools that we can use to improve coding Standards of javascript and for deployment.

- Javascript code documentation generator
- YUI compressor (Demo included in this talk).

Few best practices of Javascript and CSS

-Don't write javascript code into pages as it would not be cached in browser/public proxy-server etc.

-Don't write inline css code into pages. How we can deal more effectively different browser css differences.

-Demo of home-page of urfilez.

-solution to handle different browser differences.

-Always try to use css Sprites.

-Demo of urfilez page where we have multiple request to fetching design images of the website, to reduce response time of page loading you can merge images into one image and handle position in css.

Some more examples on urfilez that can be merged into one file.

<http://www.urfilez.com/images/country/112.jpg>

<http://www.urfilez.com/images/country/123.jpg>

How tinymce handle this.

D:\Allvoices\ui\public\javascripts\tiny_mce_3_2\themes\advanced\img\icons.gif

http://tinymce.moxiecode.com/js/tinymce/jscripts/tiny_mce/themes/advanced/img/icons.gif

http://tinymce.moxiecode.com/js/tinymce/jscripts/tiny_mce/themes/advanced/skins/default/ui.css

Some Ideas that we can use in multiple projects.

Optimize image loading

- idea of 4 domains and CDN.
- Cloudfront service in case of urfilez for s3.

Optimize loading of design image of site and other js & css files

- again 4 domains

Related to http-cache.

- Configure must-invalidate,public/private,max-age, Last-modified, Etag
- Effectively utilization of browser/proxy server/reverse proxy server cache.
- Color quantization, removal of author and other information from jpeg for reducing image sizes.
- Some brief overview of urfilez landing page images related to albums if we discuss optimization related to s3 files and caching.
- Reduce cookie usage as browser have limit of 20 cookies per domain.
- Make cookies add/removal central on servers side.
- Make session add/remove central on server for better keep track of upper size limit.

Debugging Techniques

-Exception block in every method & global variable to switch off
Demo of code and explanation.

-Debugging in Firefox using firebug
-demo of js file debug, breakpoints and watch

-Best use of Javascript console in firefox and IE browsers
Demo

1- get element by id

2- dump its handled or unhandled events like onclick etc or some method of library like
YAHOO.log.

3- inspect properties and method

4- use of Reflection

5- again and again changing in methods and refreshing pages in browser in cases of css
issues or any other problems.

-Yahoo logger

Good component of yui for displaying debug and info messages in all browsers
Demo.

-Idea of exception handling in each method and custom info message in jquery plugins for debugging purpose.

-Debugging in IE using debugbar and good use of Console.

-Idea of exception logging at client side.

-Idea benchmarking timing in every methods.

Ajax techniques & JSON

- merge ajax request into one where its possible.
 - Discuss scenario of allvoice when we had map.
 - Discuss some design decision of allvoice widget and demo at code level.

- Use HTTP Get for sending ajax requests where we needed caching.
- Ajax Shortcoming
 - Bookmark functionality.
 - Browser back and forward button
 - Some introduction of Browser history manager of yui.

- Demo of office mail account and show bookmark and ajax history manager examples.

- Ajax Request Queue , a jquery plugin
- Benefits
 - Restrict the no of request
 - Provide logging of ajax requests
 - Resend Failed request in case we got failure
 - Measure the user net-speed and do decision on the base in fetching more page on pagination so that when user click on next page we will just show results from cache. We can also log net-speed information in db for different architecture decisions. CDN for dynamic content,less interactive pages like google provide in mail box etc.

JSON (JavaScript Object Notation) is a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate.

- Easy to parse at client side in all browsers with same api as compared to xml.
- Lightwieght than xml as no repeating tags.
- Being used widely in many famouse sites like google,yahoo and facebook.
- supports Unicode.

To convert json text into object.

```
var myObject = eval('({“name”:”junaid”})');
```

Demo from online json web editor

<http://braincast.nl/samples/jsoneditor/>

Demo from prototype site of using template in console.

Idea : Use template and json to build html at client end for reduce data-transfer between client and server.

Effective handling of server side
messages and settings

--Server side validation messages(demo)

First show the www.pakwheels.com validation on landing page.

Demo : how we handled in allvoices.

--Server side settings.(demo)

Idea :: can also be maintained in db.

Demo : at code level how we handled in widget related to captcha image.

Idea :: enable logging for particular user and for particular country. Just need to check the ip of user and enable the logging property.

Deployment and YUI-Compressor

Minification

Minification is process in which we remove all the comments and space from the code to reduce the size of the javascript/css files.

Obfuscation

Obfuscation is a process in which we make code difficult to reverse engineer by changing names of the variables, methods etc. Yui-compressor obfuscate javascript code at function level to avoid errors.

Demo of using yui-compressor.

Some switches of yui-compressor

- type <js | css>
- O output file
- nomunge remove comments and code,dont obfuscate.

Shortcoming of yui-compressor

Only convert one file at a time and you can't merge multiple files into single file.Allvoices changes support merge of multiple files as it only append files.

```
java -jar yui-compressor-2.4.2.jar prototype-1.6.0.3.js -o min_prototype-1.6.0.3.js --nomunge
```

You can create group js files with page_names for making deployment and including js/css files in pages. If you are managing this way then you can do many changes easily like if you want to include js file at bottom of the page so that page could load faster then you just to call a single method, you don't need to handle multiple js files scripts there. Same case is true for css files. This way you can also get benefit of the single js/css file for reducing request to server and this will also reduce page load time.

Demo of css & jss files of urfilez landing page.

```
js_files_list=[ ["new_prototype_1_6","history_manager","exception_logger","utils_form_validation  
s","animation_1_8/effects","animation_1_8/controls","animation_1_8/dragdrop","static_page_func  
tions","masala","list_observer","requesthandler","new_application","AC_RunActiveContent","serv  
er_error_list", "red_lightbox","swfobject",  
"autocomplete","encode_decode","facebook_implmentation"]],
```

```
["new_prototype_1_6","history_manager","exception_logger","utils_form_validations","animation_  
1_8/effects","animation_1_8/controls","animation_1_8/dragdrop","static_page_functions","masala  
","list_observer","requesthandler","new_application","AC_RunActiveContent","server_error_list","r  
ed_lightbox","masala_flash","modestmaps_copyright","swfobject","autocomplete","encode_decod  
e","facebook_implmentation"]  
]
```

Give a demo of Allvoices Code.

Use of Fiddler

Fiddler is a Web Debugging Proxy which logs all HTTP(S) traffic between your computer and the Internet.

Software Requirement ::

Windows & .Net Framework v2.0

setting in firefox

-Tools-> Network-> Under 'connection' heading click on 'Settings' -> under 'Configure proxies to Access the Internet'

click on 'Manual proxy configuration' and give value as

HTTP Proxy : localhost Port : 8888

No settings required for IE,chrome and safari browsers.

Some benefits :

-Cookie override problems. Brief dicuss of widgets paging problem of allvoices.

-Verifying gzip compression, checking other content-types.

-Content size

-Helps in implementing caching features

-404,500 status codes.

-Encode/decode values

-finding video upload statuses/video player problem mostly when url is invalid.

-Inspect the http protocol and browser implementation

-Evaluate how high rank sites works.

Some useful sites

<http://www.w3schools.com/> Lot of example related to DOM(Document Object Model) manipulation with different html elements.

Add site of microsoft where we can see all the properties and method of html element that we can use.They also list standard information about w3c. [http://msdn.microsoft.com/en-us/library/ms533029\(VS.85\).aspx](http://msdn.microsoft.com/en-us/library/ms533029(VS.85).aspx)