

Last Day - talked about 3-tier architecture Sep 10  
HTML forms.

Today - talk a little about client side  
form validation  
- sending data to server  
- CGI  
- JSP  
- How databases are built (Ch 8)

Before send data from HTML over ~~the~~  
network to server and get info back  
(slow), want on the client to  
verify the data in form non bogus.

Nowadays, this kind of validation done in  
Javascript. In future, will use XForms  
will send data automatically as  
XML document and also validate data against  
a schema.

⊙ How Javascript works.

Javascript has a document object model.

~~⊙~~  
The current whole web page is referred to  
as document. On this page are elements.

When as last day, we give a form a  
name we can refer to that form object  
on the page by that name.

EX) `<Form name="files" action="something"  
method="GET" onsubmit="return Check  
(files)"`

→ if true returned  
submission  
proceeds

called when form submitted  
values of elements like input tags are then available  
to javascript

## Function Check (files)

```
if (files.elements[0] != "")  
    return true;  
else return  
    alert ("A problem");  
return false;
```

See example ~~slide~~ overhead  
~~index~~ (Source of HW submission  
Page)

OK. Suppose method is GET and Form validated  
fine. How sent to ~~the~~ server?

As part of HTTP GET message

GET url? name1=value1 & name2=value2  
etc,

special characters like space  
get mapped before being put here

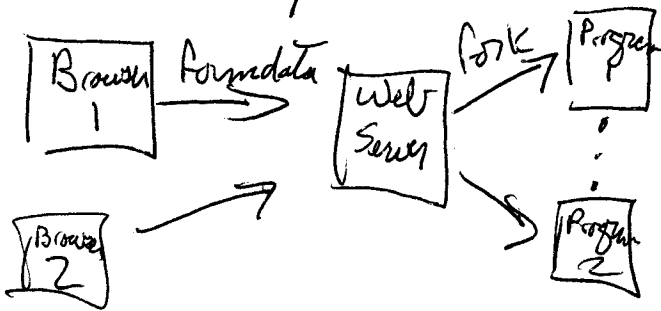
Now ~~the~~ server gets this message.

See the url is requesting a server-side ~~program~~  
rather than an HTML file.

In old days, Web server would create  
new process w/ fork then ~~the~~ run the program  
in this new process & return the result back to  
the client.

To pass variables the program would have access

To the web server's environment  
var's getenv('var') in C.  
as well as additional vars  
such as QUERY\_STRING  
set up by the server.



Could parse this to get individual variables  
Above idea called CGI (common gateway interface)  
Nowadays, modules directly added to process  
to run script langs like Perl, Java, PHP to  
avoid forking processes w/c is slow.

JSP - java scripting lang web server loads  
then converts to a set of Java classes  
(extending ~~Servlet~~ <sup>HttpServlet</sup>) and runs.

See overhead ~~for~~ for Fig 7.20 in book.

## Data Storage in DBMS's

Data typically stored on disk fetched into  
memory as needed. Typically data is  
read in chunks of 4K to 8K called pages.

Accessing disk memory much slower than  
using RAM.  $\sim 1000$  times at least

So to understand how to build an efficient  
database useful to know ~~techniques~~ how  
such storage works and techniques for compensating  
for this mismatch.

~~There are different ways~~

Data on disk is typically for a DBMS  
is typically stored in files consisting  
of a sequence of records