COBOL and the WEB

An Exploration

by

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The Web ...

Client/Server with Standards

Browser is a universal Client
Web Server is a universal Server
Standards based message protocol: HTTP
No MPE sign-on or count against user-limit

Stateless

Knock-knock, get some info, goodbye...

Extensible by Design, with Standards

Standards based file types (MIME)
Exits to developer supplied code - cgi, servlets
Web Server specific extensions that become
standard
Extensible language additions to the browser,
like JavaScript, VBScript, Java Applets,
ActiveX

You need to understand...

HTML (particularly how forms work)

Read a book, understand the language, view source whenever possible
Get some HTML authoring software (Frontpage, HotMetal, etc.)

cgi

Common Gateway Interface - standard way for web server(s) to communicate with developer written code (scripts, programs, etc.)
Particular extensions provided by your web server of choice.

Security

Basic Authentication
Secure Servers (SSL)

Take a fresh look at how you deliver and gather information

Typical Evolution of Adopting Web Technology

Install Web Server and build static pages

Find cool graphics and upload to embed in static pages

Write a program to create a static HTML page that contains information that was dynamic at time of creation. Let end-users access your generated pages.
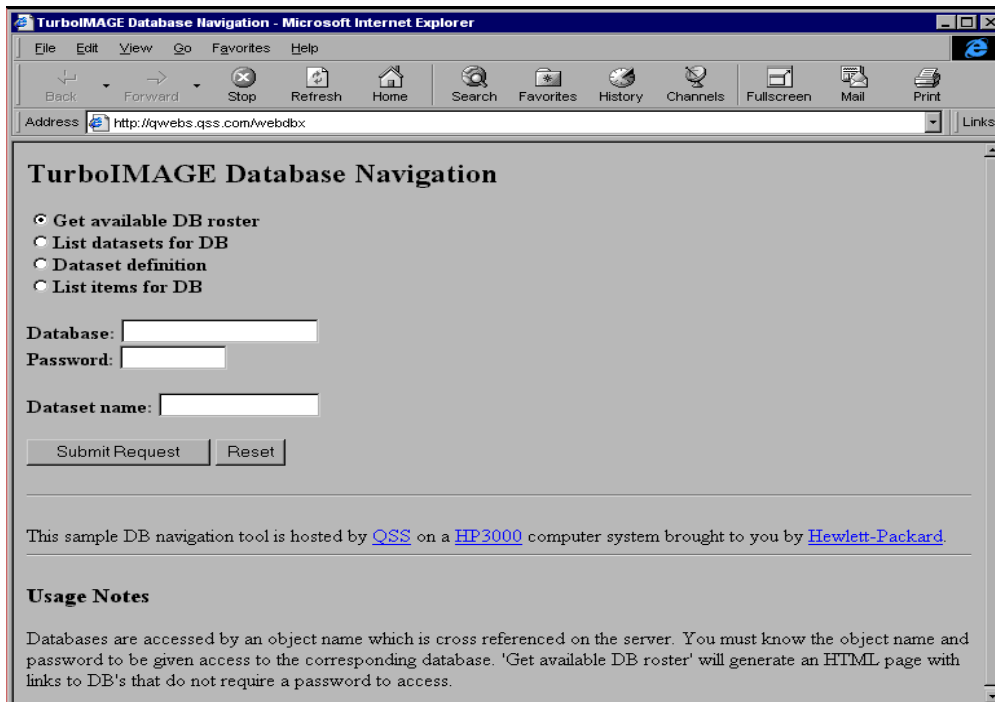
Take an existing program that accesses TurboImage data and hook it up using cgi to get data out of the database at run time.

Explore the features of client side scripting, like JavaScript.

Explore the features of client side objects like Java Applets and ActiveX.

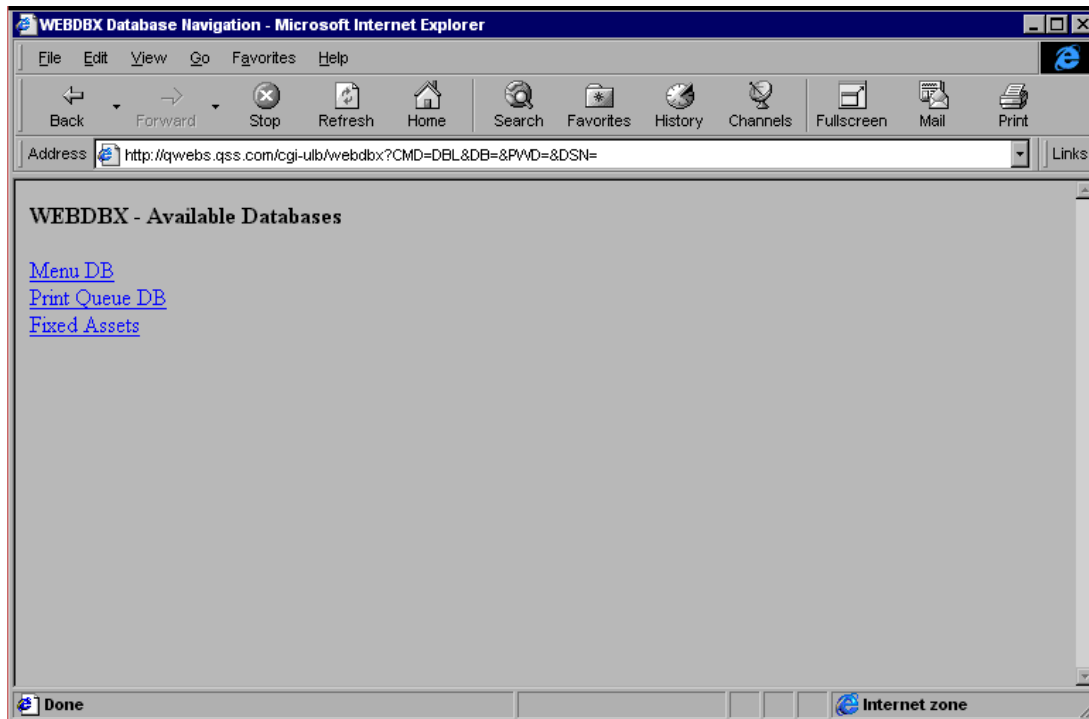Explore the features of server processing using servlets and jsp.

Start to build robust, web applications. Or just give up and hire your 12 yr old.

TurboIMAGE Database Navigation — Microsoft Internet Explorer

File Edit View Go Favorites Help

Back Forward Stop Refresh Home Search Favorites History Channels Fullscreen Mail Print

Address http://qwebs.qss.com/webdbx Links

TurboIMAGE Database Navigation

- ◉ **Get available DB roster**
- ○ **List datasets for DB**
- ○ **Dataset definition**
- ○ **List items for DB**

Database: [ ]
Password: [ ]

Dataset name: [ ]

[Submit Request] [Reset]

This sample DB navigation tool is hosted by QSS on a HP3000 computer system brought to you by Hewlett-Packard.

Usage Notes

Databases are accessed by an object name which is cross referenced on the server. You must know the object name and password to be given access to the corresponding database. 'Get available DB roster' will generate an HTML page with links to DB's that do not require a password to access.

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webdbx.html - Notepad

File Edit Search Help

```html
<html><head>
<title>
TurboIMAGE Database Navigation
</title>
</head><body bgcolor=c0c0c0>
<h2>
TurboIMAGE Database Navigation
</h2>
<form action="/cgi-ulb/webdbx" method="GET">
<h4>
<input type="radio" name="CMD" value="DBL" CHECKED>Get available DB roster
<br>
<input type="radio" name="CMD" value="DSL">List datasets for DB
<br>
<input type="radio" name="CMD" value="DSD">Dataset definition
<br>
<input type="radio" name="CMD" value="DIL">List items for DB
<!--
<br>
<input type="radio" name="CMD" value="DSS">Sample dataset entries
-->
<br><br>
Database:
<input name="DB" size=20 maxlength=20>
<br>
Password:
<input type=password name="PWD" size=10 maxlength=10>
<br><br>
Dataset name:
<input name="DSN" size=16 maxlength=16>
<br><br>
<input type=submit value="Submit Request">
```

WEBDBX Database Navigation - Microsoft Internet Explorer

Address http://qwebs.qss.com/cgi-ulb/webdbx?CMD=DBL&DB=&PWD=&DSN=

WEBDBX - Available Databases

Menu DB
Print Queue DB
Fixed Assets

webdbx(1).htm - Notepad

```
<HTML><HEAD><TITLE>WEBDBX Database Navigation</TITLE>
</HEAD><BODY BGCOLOR=c0c0c0>
<B>WEBDBX - Available Databases</B><BR><BR>
<A HREF="/cgi-ulb/webdbx?CMD=DSL&DB=MENU">Menu DB</A><BR>
<A HREF="/cgi-ulb/webdbx?CMD=DSL&DB=PQUE">Print Queue DB</A><BR>
<A HREF="/cgi-ulb/webdbx?CMD=DSL&DB=ASSET">Fixed Assets</A><BR>
</BODY></HTML>
```
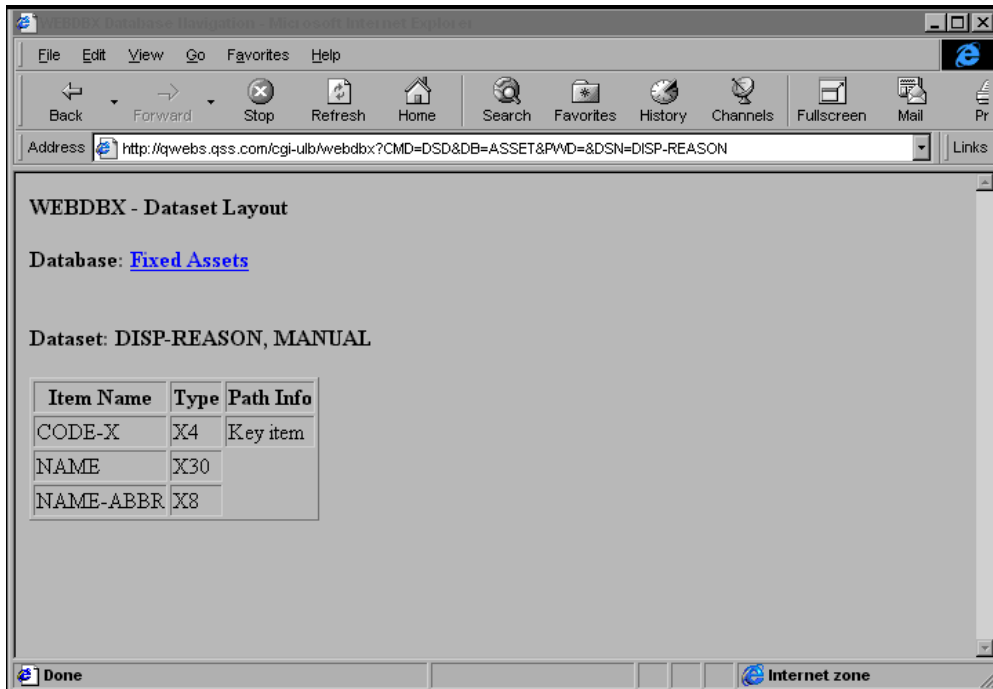
WEBDBX Database Navigation - Microsoft Internet Explorer

File   Edit   View   Go   Favorites   Help

Back   Forward   Stop   Refresh   Home   Search   Favorites   History   Channels   Fullscreen   Mail   Print

Address http://qwebs.qss.com/cgi-ulb/webdbx?CMD=DSL&DB=ASSET   Links

WEBDBX - Datasets for Database: Fixed Assets

Show the **Item list**

#	Dataset Name	Type	Capacity	Entries	% Used
1	VERSION	M	1	0	0.0
2	ODOMETER	M	5	2	40.0
3	DISTRICT	M	31	30	96.8
4	CONDITION	M	59	56	94.9
5	ACQ-REASON	M	53	52	98.1
6	DISP-REASON	M	61	59	96.7
7	SITE	M	503	364	72.4
8	CATEGORY	M	127	116	91.3
9	TYPE	M	2,503	1,692	67.6
10	M-INV-SET	M	17	14	82.4
11	FA-MASTER	A	37,501	32,490	86.6
12	FIXED-ASSET	D	37,501	32,488	86.6
13	ASSET-DESC	D	22,173	21,060	95.0

Done   Internet zone

File   Edit   Search   Help

```
<HTML><HEAD><TITLE>WEBDBX Database Navigation</TITLE>
</HEAD><BODY BGCOLOR=c0c0c0>
<B>WEBDBX - Datasets for Database: Fixed Assets
<BR><BR>Show the <A HREF="/cgi-ulb/webdbx?CMD=DIL&DB=ASSET&PWD=">Item list</A>
</B><BR><BR>
<TABLE BORDER=1 CELLPADDING=1><TH>#</TH><TH>Dataset Name</TH><TH>Type</TH><TH>Capacity</TH><TH>Entries</TH>
<TR><TD ALIGN=RIGHT>  2</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=ODOMETER">ODO
<TR><TD ALIGN=RIGHT>  3</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=DISTRICT">DIS
<TR><TD ALIGN=RIGHT>  4</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=CONDITION">CO
<TR><TD ALIGN=RIGHT>  5</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=ACQ-REASON">A
<TR><TD ALIGN=RIGHT>  6</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=DISP-REASON">
<TR><TD ALIGN=RIGHT>  7</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=SITE">SITE</A
<TR><TD ALIGN=RIGHT>  8</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=CATEGORY">CAT
<TR><TD ALIGN=RIGHT>  9</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=TYPE">TYPE</A
<TR><TD ALIGN=RIGHT> 10</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=M-INV-SET">M-
<TR><TD ALIGN=RIGHT> 11</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=FA-MASTER">FA
<TR><TD ALIGN=RIGHT> 12</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=FIXED-ASSET">
<TR><TD ALIGN=RIGHT> 13</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=ASSET-DESC">A
<TR><TD ALIGN=RIGHT> 14</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=ASSET-UDF">AS
<TR><TD ALIGN=RIGHT> 15</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=VEH-MASTER">V
<TR><TD ALIGN=RIGHT> 16</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=M-SERV-CLASS"
<TR><TD ALIGN=RIGHT> 17</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=ASSET-UWO">AS
<TR><TD ALIGN=RIGHT> 18</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=BC-MASTER">BC
<TR><TD ALIGN=RIGHT> 19</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=BC-XREF">BC-X
<TR><TD ALIGN=RIGHT> 20</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=PO-MASTER">PO
<TR><TD ALIGN=RIGHT> 21</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=APY-X-REF">AP
<TR><TD ALIGN=RIGHT> 22</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=A-BC-LOCATION
<TR><TD ALIGN=RIGHT> 23</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=D-BC-LOCATION
<TR><TD ALIGN=RIGHT> 24</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=D-INVENTORY">
<TR><TD ALIGN=RIGHT> 25</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=D-FA-HISTORY"
</TABLE></BODY></HTML>
```

WEBDBX Database Navigation - Microsoft Internet Explorer

File Edit View Go Favorites Help

Back | Forward | Stop | Refresh | Home | Search | Favorites | History | Channels | Fullscreen | Mail | Print

Address http://qwebs.qss.com/cgi-ulb/webdbx?CMD=DIL&DB=ASSET&PWD= | Links

WEBDBX - Data Items for Database:Fixed Assets

#	Item Name	Type	# sets
1	ACCTCLASS	X24	2
2	ACQ-REASON	X2	2
3	ASS-DESCRIPTOR	X30	1
4	BC-LOCN	X8	5
5	BC-NUM	Z12	3
6	BLDG	X8	2
7	BUILDING	X8	2
8	CA-NO	Z2	3
9	CA-NUM	Z4	1
10	CLOSE-DATE	J2	1
11	CLOSE-TIME	J1	1
12	CLOSE-AUDIT	X4	1
13	CODE-X	X4	4
14	COLOR	X8	2

Internet zone

webdbx(1).htm - Notepad

File Edit Search Help

```
<HTML><HEAD><TITLE>WEBDBX Database Navigation</TITLE>
</HEAD><BODY BGCOLOR=c0c0c0>
<B>WEBDBX - Data Items for Database:Fixed Assets        </B><BR><BR>
<TABLE BORDER=1 CELLPADDING=1><TH>#</TH><TH>Item Name</TH><TH>Type</TH><TH># sets</TH><TR><TD ALIGN=R
<TR><TD ALIGN=RIGHT>  2</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=ACQ-REA
<TR><TD ALIGN=RIGHT>  3</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=ASS-DES
<TR><TD ALIGN=RIGHT>  4</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=BC-LOCN
<TR><TD ALIGN=RIGHT>  5</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=BC-NUM"
<TR><TD ALIGN=RIGHT>  6</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=BLDG">B
<TR><TD ALIGN=RIGHT>  7</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=BUILDIN
<TR><TD ALIGN=RIGHT>  8</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CA-NO">
<TR><TD ALIGN=RIGHT>  9</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CA-NUM"
<TR><TD ALIGN=RIGHT> 10</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CLOSE-D
<TR><TD ALIGN=RIGHT> 11</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CLOSE-T
<TR><TD ALIGN=RIGHT> 12</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CLOSE-A
<TR><TD ALIGN=RIGHT> 13</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CODE-X"
<TR><TD ALIGN=RIGHT> 14</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=COLOR">
<TR><TD ALIGN=RIGHT> 15</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CONDITI
<TR><TD ALIGN=RIGHT> 16</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CREATE-
<TR><TD ALIGN=RIGHT> 17</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CREATE-
<TR><TD ALIGN=RIGHT> 18</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CREATE-
<TR><TD ALIGN=RIGHT> 19</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=CREATE-
<TR><TD ALIGN=RIGHT> 20</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=DELETE-
```
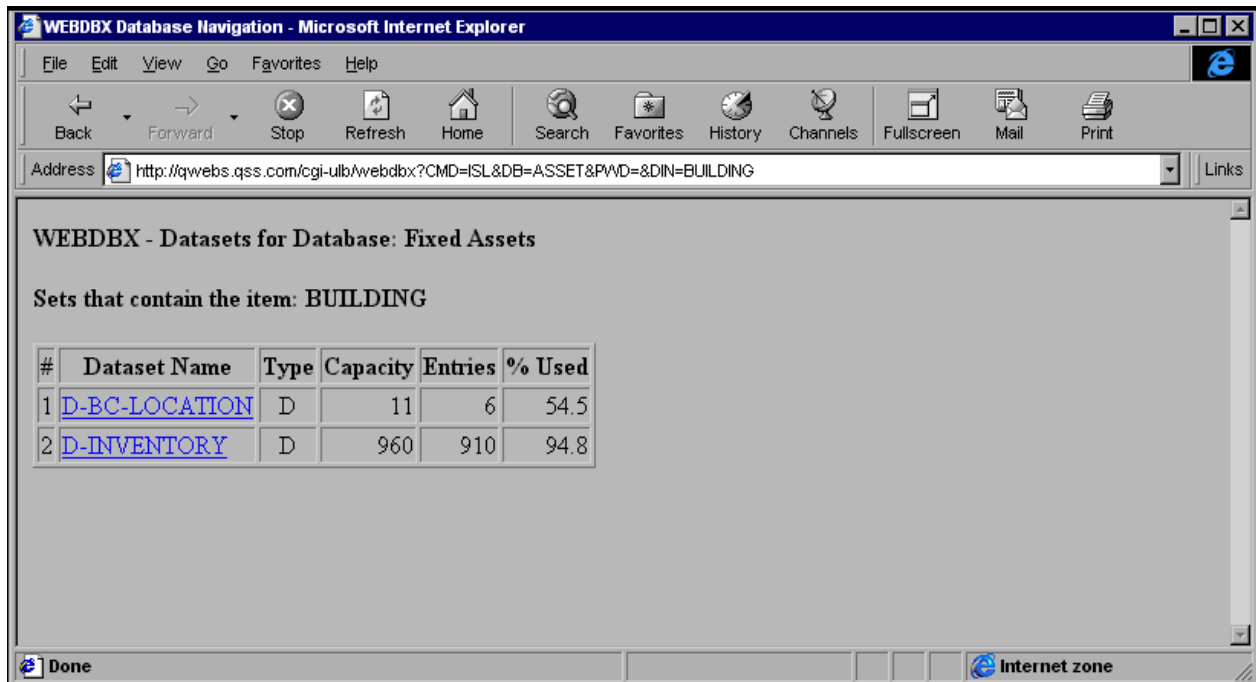
9

WEBDBX Database Navigation - Microsoft Internet Explorer

File   Edit   View   Go   Favorites   Help

Back   Forward   Stop   Refresh   Home   Search   Favorites   History   Channels   Fullscreen   Mail   Print

Address   http://qwebs.qss.com/cgi-ulb/webdbx?CMD=ISL&DB=ASSET&PWD=&DIN=BUILDING

WEBDBX - Datasets for Database: Fixed Assets

Sets that contain the item: BUILDING

#	Dataset Name	Type	Capacity	Entries	% Used
1	D-BC-LOCATION	D	11	6	54.5
2	D-INVENTORY	D	960	910	94.8

Done   Internet zone

---

webdbx2.htm - Notepad

File   Edit   Search   Help

```
<HTML><HEAD><TITLE>WEBDBX Database Navigation</TITLE>
</HEAD><BODY BGCOLOR=c0c0c0>
<B>WEBDBX - Datasets for Database: Fixed Assets
<BR><BR>Sets that contain the item: BUILDING
</B><BR><BR>
<TABLE BORDER=1 CELLPADDING=1><TH>#</TH><TH>Dataset Name</TH><TH>Type</TH><TH>Capacity</TH><TH>Entries</
<TR><TD ALIGN=RIGHT>  2</TD><TD ALIGN=LEFT><A HREF="/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=D-INVENTOR\
</TABLE></BODY></HTML>
```
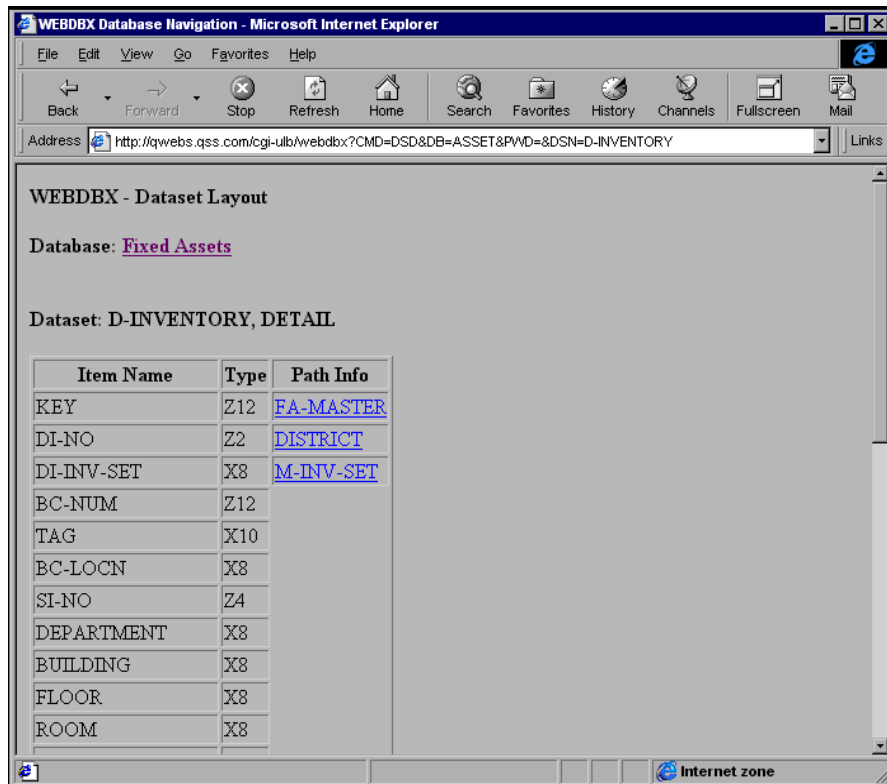
WEBDBX Database Navigation - Microsoft Internet Explorer

Address: http://qwebs.qss.com/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=D-INVENTORY

WEBDBX - Dataset Layout

Database: **Fixed Assets**

Dataset: D-INVENTORY, DETAIL

Item Name	Type	Path Info
KEY	Z12	FA-MASTER
DI-NO	Z2	DISTRICT
DI-INV-SET	X8	M-INV-SET
BC-NUM	Z12	
TAG	X10	
BC-LOCN	X8	
SI-NO	Z4	
DEPARTMENT	X8	
BUILDING	X8	
FLOOR	X8	
ROOM	X8	


```
<HTML><HEAD><TITLE>WEBDBX Database Navigation</TITLE>
</HEAD><BODY BGCOLOR=c0c0c0>
<B>WEBDBX - Dataset Layout<BR><BR>
Database: <A HREF="/cgi-ulb/webdbx?CMD=DSL&DB=ASSET&PWD=">Fixed Assets</A><BR>
<BR><BR>Dataset: D-INVENTORY, DETAIL
</B><BR><BR>
<TABLE BORDER=1 CELLPADDING=1><TH>Item Name</TH><TH>Type</TH><TH>Path Info</TH>
<TR><TD ALIGN=LEFT>KEY          </TD><TD ALIGN=LEFT>  Z12  </TD><TD ALIGN=LEFT><A HREF="/cgi-
<TR><TD ALIGN=LEFT>DI-NO        </TD><TD ALIGN=LEFT>  Z2   </TD><TD ALIGN=LEFT><A HREF="/cgi-
<TR><TD ALIGN=LEFT>DI-INV-SET   </TD><TD ALIGN=LEFT>  X8   </TD><TD ALIGN=LEFT><A HREF="/cgi-
<TR><TD ALIGN=LEFT>BC-NUM       </TD><TD ALIGN=LEFT>  Z12  </TD></TR>
<TR><TD ALIGN=LEFT>TAG          </TD><TD ALIGN=LEFT>  X10  </TD></TR>
<TR><TD ALIGN=LEFT>BC-LOCN      </TD><TD ALIGN=LEFT>  X8   </TD></TR>
<TR><TD ALIGN=LEFT>SI-NO        </TD><TD ALIGN=LEFT>  Z4   </TD></TR>
<TR><TD ALIGN=LEFT>DEPARTMENT   </TD><TD ALIGN=LEFT>  X8   </TD></TR>
<TR><TD ALIGN=LEFT>BUILDING     </TD><TD ALIGN=LEFT>  X8   </TD></TR>
<TR><TD ALIGN=LEFT>FLOOR        </TD><TD ALIGN=LEFT>  X8   </TD></TR>
<TR><TD ALIGN=LEFT>ROOM         </TD><TD ALIGN=LEFT>  X8   </TD></TR>
<TR><TD ALIGN=LEFT>LOC-DESCRIPTOR </TD><TD ALIGN=LEFT>  X30  </TD></TR>
<TR><TD ALIGN=LEFT>ASS-DESCRIPTOR </TD><TD ALIGN=LEFT>  X30  </TD></TR>
<TR><TD ALIGN=LEFT>DISP-REASON  </TD><TD ALIGN=LEFT>  X2   </TD></TR>
<TR><TD ALIGN=LEFT>DISP-DATE    </TD><TD ALIGN=LEFT>  J2   </TD></TR>
<TR><TD ALIGN=LEFT>XFR-SET      </TD><TD ALIGN=LEFT>  X8   </TD></TR>
<TR><TD ALIGN=LEFT>CREATE-DATE  </TD><TD ALIGN=LEFT>  J2   </TD></TR>
<TR><TD ALIGN=LEFT>CREATE-TIME  </TD><TD ALIGN=LEFT>  J1   </TD></TR>
<TR><TD ALIGN=LEFT>CREATE-AUDIT </TD><TD ALIGN=LEFT>  X4   </TD></TR>
<TR><TD ALIGN=LEFT>CREATE-MODE  </TD><TD ALIGN=LEFT>  X2   </TD></TR>
<TR><TD ALIGN=LEFT>LAST-CHG-DATE </TD><TD ALIGN=LEFT>  J2   </TD></TR>
```
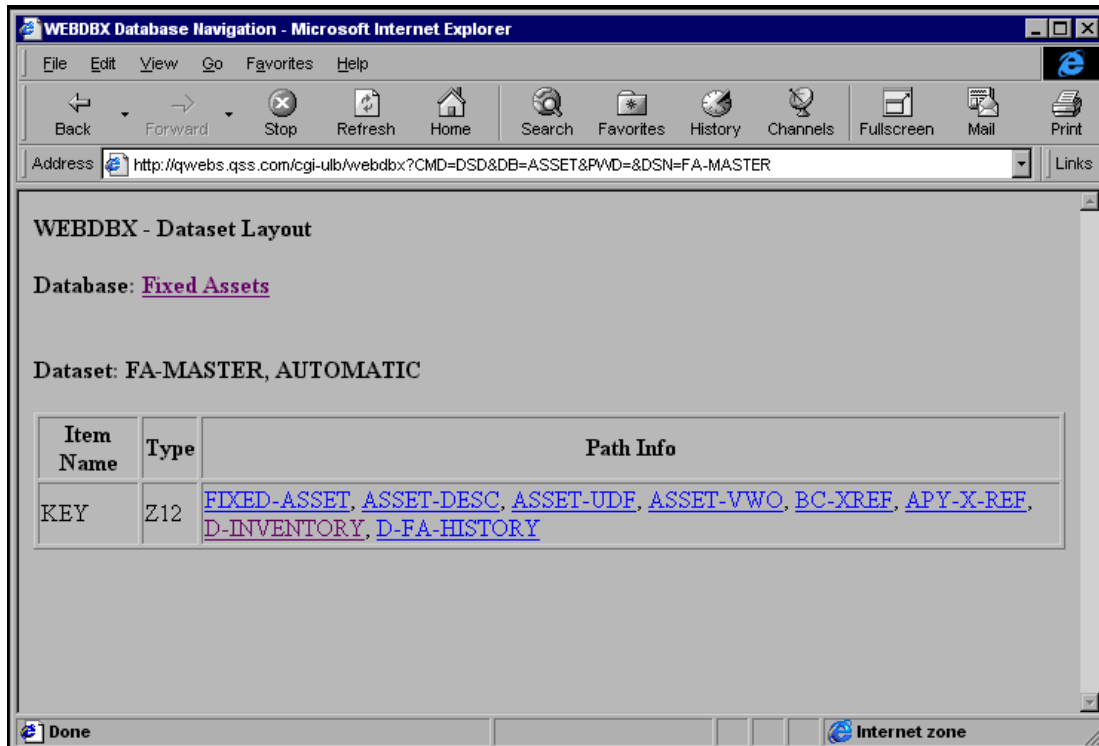
WEBDBX Database Navigation - Microsoft Internet Explorer

File   Edit   View   Go   Favorites   Help

Back   Forward   Stop   Refresh   Home   Search   Favorites   History   Channels   Fullscreen   Mail   Print

Address http://qwebs.qss.com/cgi-ulb/webdbx?CMD=DSD&DB=ASSET&PWD=&DSN=FA-MASTER

WEBDBX - Dataset Layout

Database: Fixed Assets

Dataset: FA-MASTER, AUTOMATIC

Item Name	Type	Path Info
KEY	Z12	FIXED-ASSET, ASSET-DESC, ASSET-UDF, ASSET-VWO, BC-XREF, APY-X-REF, D-INVENTORY, D-FA-HISTORY

Done   Internet zone

---

webdbx(4).htm - Notepad

File   Edit   Search   Help

```
<HTML><HEAD><TITLE>WEBDBX Database Navigation</TITLE>
</HEAD><BODY BGCOLOR=c0c0c0>
<B>WEBDBX - Dataset Layout<BR><BR>
Database: <A HREF="/cgi-ulb/webdbx?CMD=DSL&DB=ASSET&PWD=">Fixed Assets</A><BR>
<BR><BR>Dataset: FA-MASTER, AUTOMATIC
</B><BR><BR>
<TABLE BORDER=1 CELLPADDING=1><TH>Item Name</TH><TH>Type</TH><TH>Path Info</TH>
<TR><TD ALIGN=LEFT>KEY              </TD><TD ALIGN=LEFT>   Z12  </TD><TD ALIGN=LEFT><A HREF=".
</TABLE></BODY></HTML>
```

WEBDBX Database Navigation - Microsoft Internet Explorer

File   Edit   View   Go   Favorites   Help

Back   Forward   Stop   Refresh   Home   Search   Favorites   History   Channels   Fullscreen   Mail   Print

Address   http://qwebs.qss.com/cgi-ulb/webdbx   Links

Incorrect Parameters passed to WEBDBX

Done   Internet zone

---

webdbx(3).htm - Notepad

File   Edit   Search   Help

```
<HTML><HEAD><TITLE>WEBDBX Database Navigation</TITLE>
</HEAD><BODY BGCOLOR=c0c0c0>
<B>Incorrect Parameters passed to WEBDBX</B>
</BODY></HTML>
```

HTML for First Page of WEBDBX

```
<html><head>
<title>
TurboIMAGE Database Navigation
</title>
</head><body bgcolor=c0c0c0>
<h2>
TurboIMAGE Database Navigation
</h2>
<form action="/cgi-ulb/webdbx" method="GET">
<h4>
<input type="radio" name="CMD" value="DBL" CHECKED>Get available DB roster
<br>
<input type="radio" name="CMD" value="DSL">List datasets for DB
<br>
<input type="radio" name="CMD" value="DSD">Dataset definition
<br>
<input type="radio" name="CMD" value="DIL">List items for DB
<!--
<br>
<input type="radio" name="CMD" value="DSS">Sample dataset entries
-->
<br><br>
Database:
<input name="DB" size=20 maxlength=20>
<br>
Password:
<input type=password name="PWD" size=10 maxlength=10>
<br><br>
Dataset name:
<input name="DSN" size=16 maxlength=16>
<br><br>
<input type=submit value="Submit Request">
<input type=reset  value="Reset">
</form>
</H4>
<hr>
<p>
This sample DB navigation tool is hosted by <a href="/home.html">QSS</a>
on a <a href="http://www.dmo.hp.com/csy/main.html">HP3000</a>
computer system brought to you by
<a href="http://www.hp.com/">Hewlett-Packard</a>.
<hr>
<h3>Usage Notes</h3>
<p>
Databases are accessed by an object name which is cross referenced
on the server.  You must know the object name and password to be given
access to the corresponding database. 'Get available DB roster' will
generate an HTML page with links to DB's that do not require a password
to access.
</body></html>
```

Example Message Formats Sent by Browser (Client) to Web Server (Server)

```
********** Debug Header **********
Msg-len:      403

Message starts with  GET , ends at   ---------

GET /cgi-ulb/webdbx?CMD=DBL&DB=&PWD=&DSN= HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg, application/vnd.ms
-excel, application/msword, application/vnd.ms-powerpoint, */*
Referer: http://qwebs.qss.com/webdbx
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 4.01; Windows 95)
Host: qwebs.qss.com
Connection: Keep-Alive


-------



********** Debug Header **********
Msg-len:      474
Message starts with  POST , ends at   -------

POST /debug/cgi-ulb/webdbx HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg, application/vnd.ms
-excel, application/msword, application/vnd.ms-powerpoint, */*
Referer: http://qwebs.qss.com/webdbx
Accept-Language: en-us
Content-Type: application/x-www-form-urlencoded
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 4.01; Windows 95)
Host: qwebs.qss.com
Content-Length: 21
Connection: Keep-Alive

CMD=DBL&DB=&PWD=&DSN=
-------
```

Understanding basic cgi – reading form data ...

Your cgi program will be run as a child process to the web server
The web server has stashed the form variable names and values into a location that you can retrieve. Depending on your server of choice you will do the following:

Apache/iX   use getenv to get POSIX variables REQUEST_METHOD , QUERY_STRING (if method = GET), CONTENT_LENGTH (if method = post). Note that getenv is a c library function and you must link to a special library to access getenv .

If the method is GET then parse QUERY_STRING
If the method is POST then use READX intrinsic to read CONTENT_LENGTH bytes.

Your parsing logic must account for the fact that the HTTP specifications specify that imbedded spaces be represented by + and ambiguous/special characters be represented by %## .

Note: This is why there are standard Perl scripts that will parse the info for you and then execute your program. Search the web for details and see Jazz for a MPE/iX distribution of Perl.

QWEBS   Use ACCEPT verb to read data stashed in redirected $STDIN. Process data according to QWEBS cgi definitions.

Understanding basic cgi - reading form data (QWEBS) ...
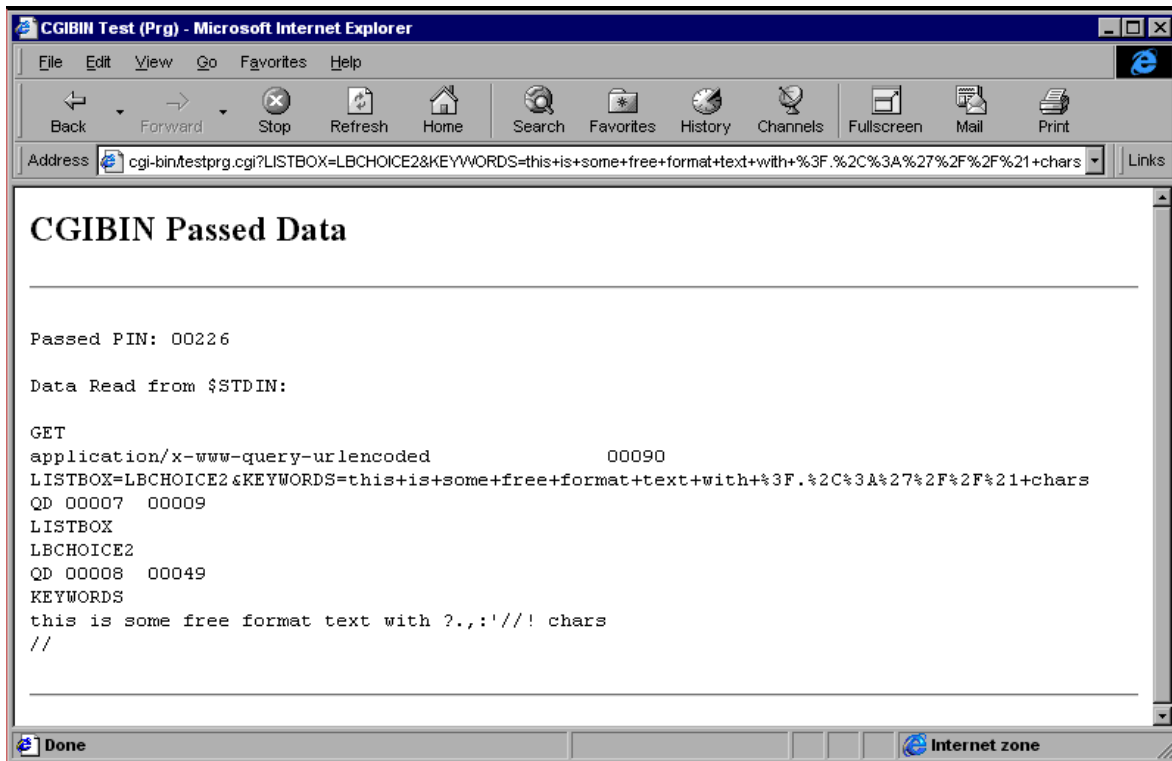
Understanding basic cgi - sending results back to browser ...

Any output you send to your standard output device will be magically sent back over the network to the browser.

The HTTP standards require that the data sent back to the browser contain specific header information which helps identify the type of information being sent from the server. You will need to preface any application specific output with this basic HTML header information:

Content_type = text/html <crlf><crlf>

The blank line caused by the second <crlf> pair is what separates the headers from the data you are sending back to the browser.

Depending on your server of choice you will do the following:

Apache/iX   Use the print intrinsic. If you decide to buffer up data as one large buffer make sure each line is separated by a LF (or CRLF).

QWEBS   You can use the DISPLAY verb or any other method that will write to $stdlist (like PRINT).
             You can t buffer up the output to QWEBS, you must display/print each line, and each line is limited to a configuration defined length (usually 512 bytes).

Towards Better cgi - its all in the Architecture ...

Standard cgi, with its process creation model can be very resource intensive

Your cgi program is created from scratch EACH time it is accessed. This means you are opening databases, files, etc. for each web transaction. The overhead/work ratio is very large.

Use a Web server that has the ability to call external procedures stored in shared libraries.

Consider these other ways of accessing COBOL from a web server:

use cgi to pass along the data via message files to a pool of pre-created/initialized server processes.

put your web server on a different system and use sockets to communicate with a pool of pre-created/initialized server processes.

Use LegacyJ COBOL to create Java servlets and use the Apache/iX Java Servlet extensions.

Don t create HTML from hard coded tags in your cgi programs. Consider using a template concept so your HTML can be edited, adjusted without having to change source code.

HP e3000 Web Server Issues ...

A number of web servers support the ability to call subroutines stored in shared libraries. Here is what I know about this at this time:

Apache/iX   This feature exists and is soon to be part of the standard distribution of WebWise.

QWEBS   Has a standard feature to call routines stored in XL libraries. See QWEBS documention for specifics.

The web servers for the HP e3000 are different in a number of ways that may impact your development strategies.

Apache/iX   A POSIX application. Requires you to get more familiar with HFS and POSIX utilities. Requires you to get some familiarity with POSIX routines like getenv .

Get WebWise for SSL support, which is what you need to do secure e-commerce with the web server runing on the HP e3000. This server has support for many good features, including Java Servlets.

QWEBS   An MPE application. Can use HFS, but not required. Designed to make MPE programmers more comfortable. Currently being enhanced to support Open SSL. Supports a reasonable set of features, but will not ever be as current as Apache/iX.