Web Technologies

Using the Internet to publish data and applications

The Web Development Infrastructure

Creating Content For The WWW

http://www.htmlprimer.com

Maxim 15.1

Take the time to learn HTML

A Simple HTML Page

```
<HTML>
<HEAD>
<TITLE>A Simple HTML Page</TITLE>
</HEAD>
<BODY>
This is as simple a web page as there is.
</BODY>
</HTML>
```

Producing HTML

```perl
#! /usr/bin/perl -w

# produce_simple - produces the "simple.html" web page using
# a HERE document.

use strict;

print <<WEBPAGE;
<HTML>
<HEAD>
<TITLE>A Simple HTML Page</TITLE>
</HEAD>
<BODY>
This is as simple a web page as there is.
</BODY>
</HTML>
WEBPAGE
```

Producing HTML, cont.

```perl
#! /usr/bin/perl -w

# produce_simpleCGI - produces the "simple.html" web page using
# Perl's standard CGI module.

use strict;

use CGI qw( :standard );

print start_html( 'A Simple HTML Page' ),
    "This is as simple a web page as there is.",
        end_html;
```

Results from produce_simpleCGI

```
<?xml version="1.0" encoding="iso-8859-1"?>
<!DOCTYPE html
PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en-US"
   xml:lang="en-US">
<head><title>A Simple HTML Page</title>
</head><body>This is as simple a web page as there
   is.</body></html>
```

Maxim 15.2

Create static web pages either manually or visually

The dynamic creation of WWW content

```perl
#! /usr/bin/perl -wT

# whattimeisit - create a dynamic web page that includes the
# current date/time.

use strict;

use CGI qw( :standard );

print start_html( 'What Date and Time Is It?' ),
    "The current date/time is: ", scalar localtime,
        end_html;
```

Results from whattimeisit ...

```
<?xml version="1.0" encoding="iso-8859-1"?>
<!DOCTYPE html
PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en-US"
   xml:lang="en-US">
<head><title>What Date and Time Is It?</title></head>
<body>The current date/time is: Mon Aug 25 23:21:55
   2003</body></html>
```

And some time later ...

```
<?xml version="1.0" encoding="iso-8859-1"?>
<!DOCTYPE html
PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en-US"
   xml:lang="en-US">
<head><title>What Date and Time Is It?</title></head>
<body>The current date/time is: Tue Aug 26 08:04:23
   2003</body></html>
```

Maxim 15.3

Always enable ``taint mode'' for server-side programs

Preparing Apache For Perl

```
$ chkconfig --add httpd

$ chkconfig httpd on

$ locate httpd.conf
```

Configuring Apache

```
/etc/httpd/conf/httpd.conf


ServerAdmin root@localhost

DocumentRoot "/var/www/html"

/var/www/html/index.html

ScriptAlias /cgi-bin/ "/var/www/cgi-bin/"
```

Running Apache

```
/etc/init.d/httpd start
```

```
http://localhost/
```

Maxim 15.4

Test your web-site on localhost prior to deployment on the Internet

Testing the execution of server-side programs

```
$ su

$ cp whattimeisit /var/www/cgi-bin

$ chmod +x /var/www/cgi-bin/whattimeisit

$ <Ctrl-D>
```

The ``Server Error'' web page.

The ``What Date and Time Is it?'' web page.
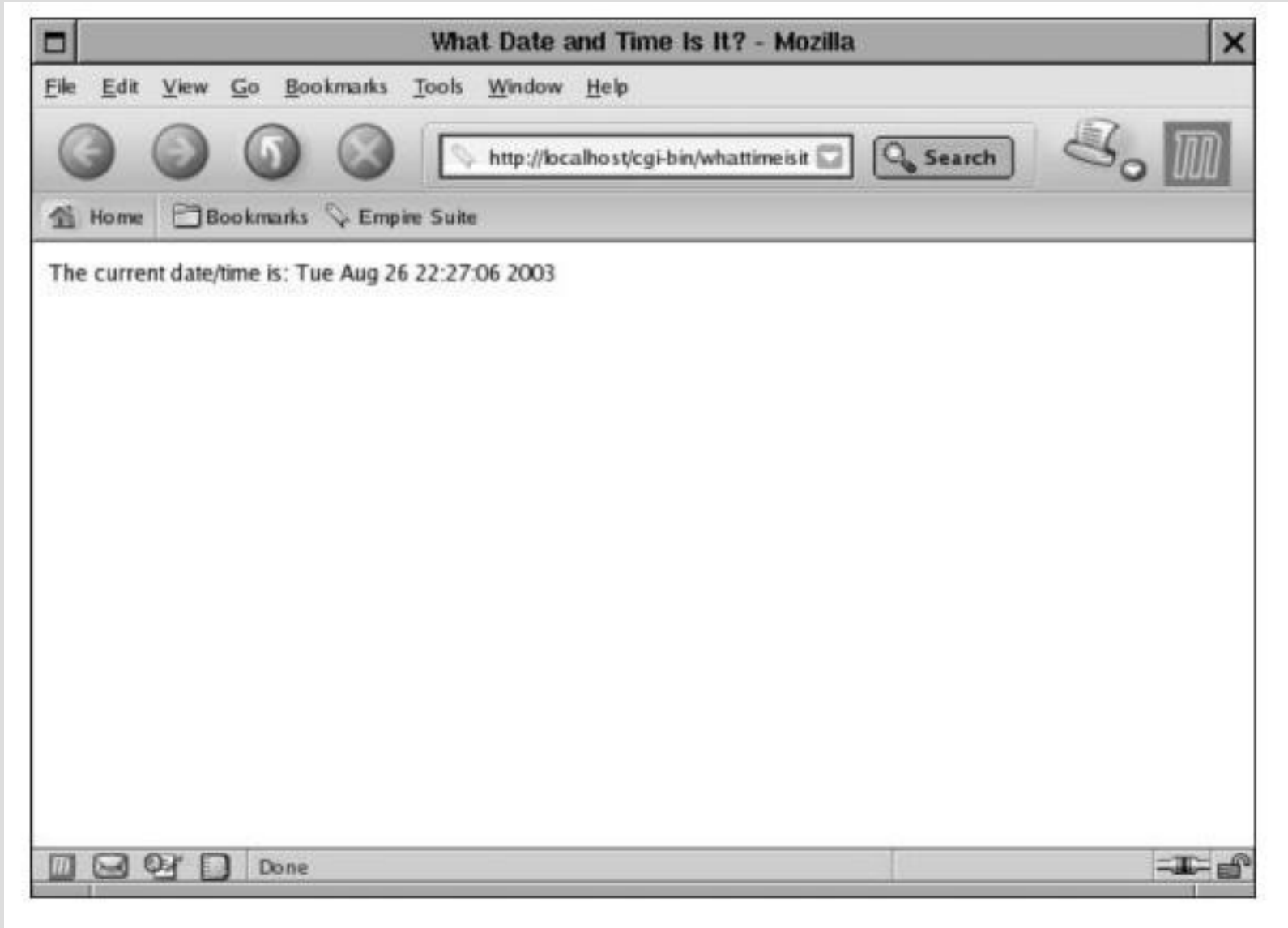
Sending Data To A Web Server

```perl
#! /usr/bin/perl -wT

# The 'match_emblCGI' program - check a sequence against the EMBL
#                                database entry stored in the
#                                embl.data.out data-file on the
#                                web server.

use strict;

use CGI qw/:standard/;

print header;

open EMBLENTRY, "embl.data.out"
    or die "No data-file: have you executed prepare_embl?\n";

my $sequence = <EMBLENTRY>;

close EMBLENTRY;
```

match_emblCGI, cont.

```perl
print start_html( "The results of your search are in!" );
print "Length of sequence is: <b>", length $sequence,
                    "</b> characters.<p>";
print h3( "Here is the result of your search:" );

my $to_check = param( "shortsequence" );

$to_check = lc $to_check;

if ( $sequence =~ /$to_check/ )
{
    print "Found. The EMBL data extract contains: <b>$to_check</b>.";
}
else
{
    print "Sorry. No match found for: <b>$to_check</b>.";
}

print p, hr,p;
print "Press <b>Back</b> on your browser to try another search.";
print end_html;
```
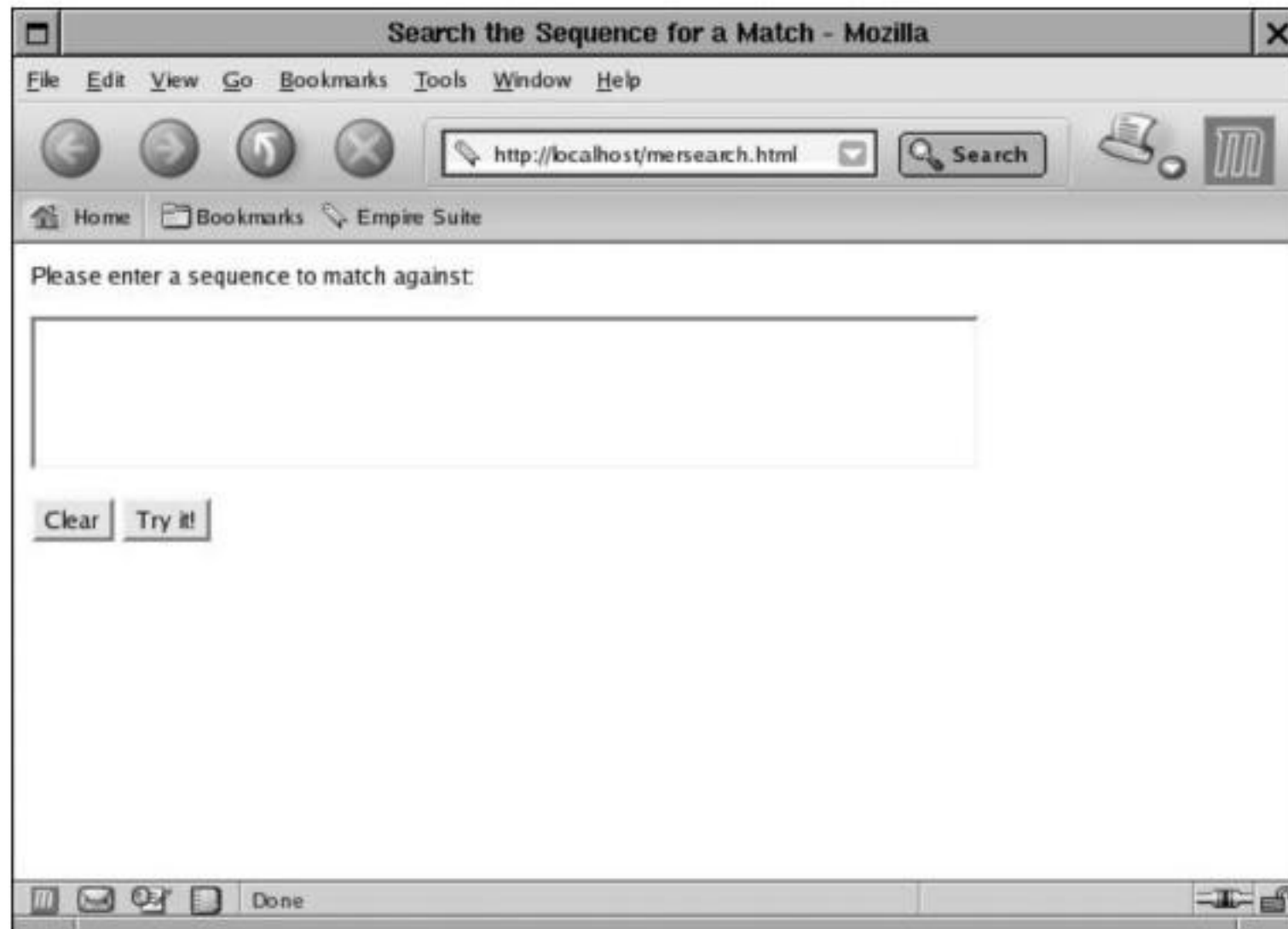
A Search HTML Page

```
<HTML>
<HEAD>
<TITLE>Search the Sequence for a Match</TITLE>
</HEAD>
<BODY>

Please enter a sequence to match against:<p>
<FORM ACTION="/cgi-bin/match_emblCGI">
<p>
<textarea name="shortsequence" rows="4" cols="60"></textarea>
</p>
<p>
<input type="reset" value="Clear">
<input type="submit" value="Try it!">
</p>
</FORM>
</BODY>
</HTML>
```
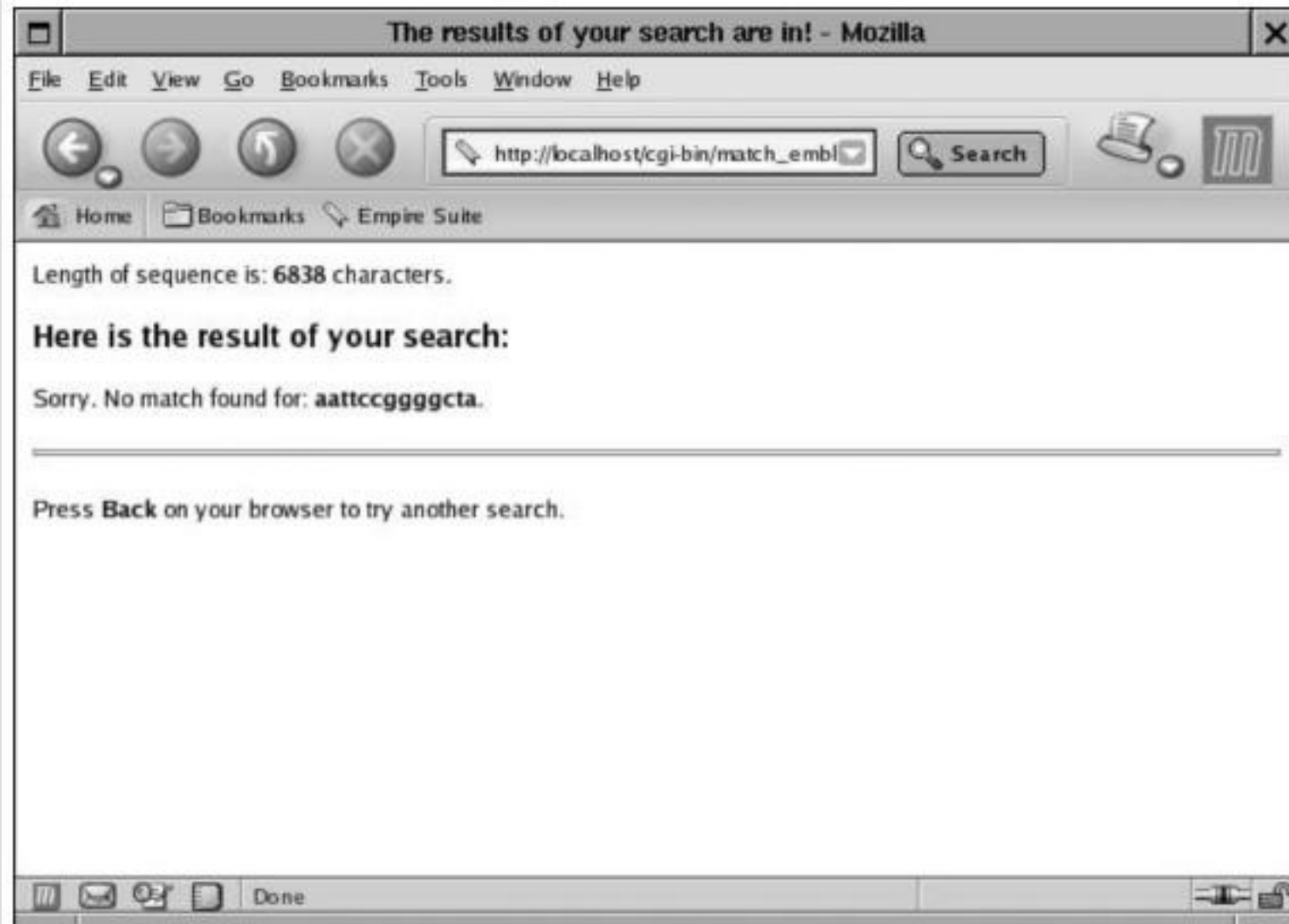
The ``Search the Sequence for a Match'' web page

Installing CGIs on a Web Server

```
$ su

$ cp mersearch.html /var/www/html

$ cp match_emblCGI /var/www/cgi-bin

$ chmod +x /var/www/cgi-bin/match_emblCGI

$ cp embl.data.out /var/www/cgi-bin

$ <Ctrl-D>
```

The ``Results of your search are in!"
web page

The ``Sorry! Not Found'' web page

Using a HERE document

```
print <<MERFORM;

Please enter another sequence to match against:<p>
<FORM ACTION="/cgi-bin/match_emblCGIbetter">
<p>
<textarea name="shortsequence" rows="4" cols="60"></textarea>
</p>
<p>
<input type="reset" value="Clear">
<input type="submit" value="Try it!">
</p>
</FORM>
MERFORM
```
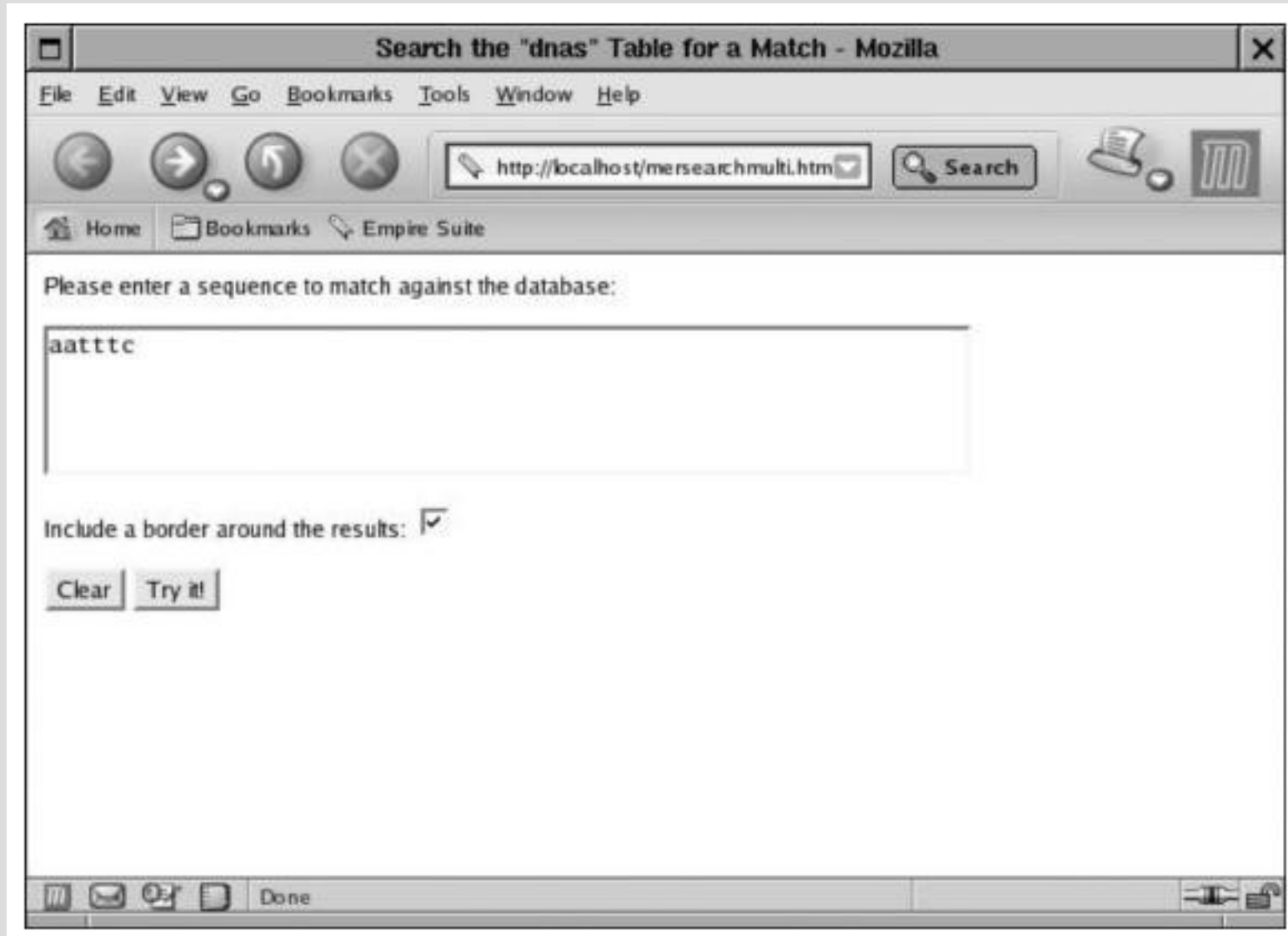
Better version: ``Results of your search are in!'' web page

Web Databases

Searching all the entries in the dnas table

The ``results'' of the multiple search on the dnas table

Installing DB Multi-Search

```
$ su

$ cp mersearchmulti.html /var/www/html

$ cp db_match_emblCGI /var/www/cgi-bin

$ chmod +x /var/www/cgi-bin/db_match_emblCGI

$ cp DbUtilsMER.pm /var/www/cgi-bin

$ <Ctrl-D>
```

Where To From Here