

IT350 Web and Internet Programming

Fall 2008

SlideSet #11: CGI and Perl

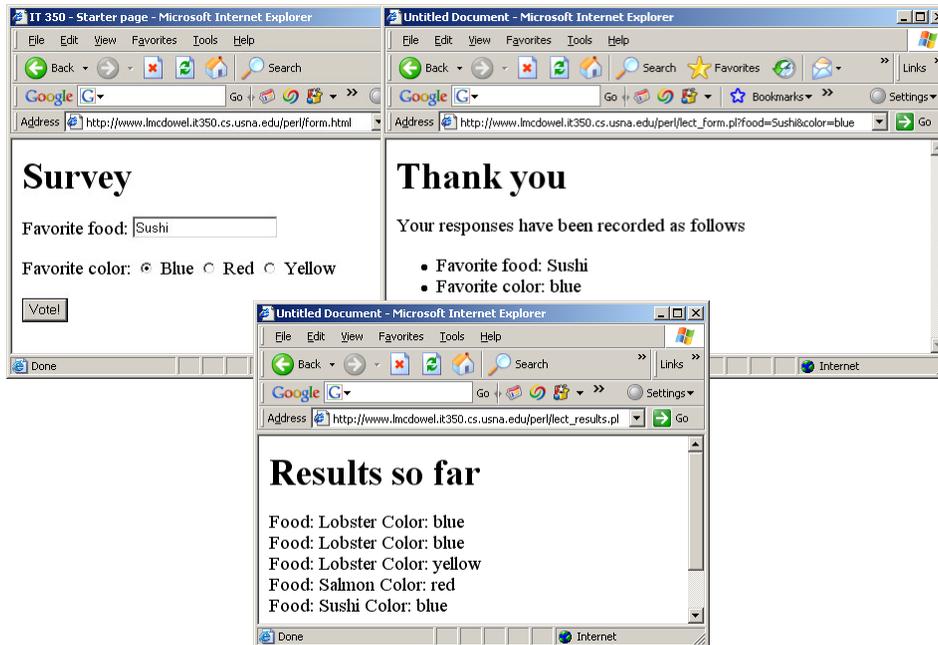
(some from online chapter:
www.deitel.com/books/iw3htp4/)

FLASHBACK

Things we'll learn and do

- XHTML – basics, tables, forms, frames
- Cascading Style Sheets
- JavaScript
- Dynamic HTML
- CGI

CGI – What does it all look like?



CGI Script Basics

- Common Gateway Interface (CGI)
 - “Common”: Not specific to any operating system or language
- Output file generated at runtime:
 1. When a program executed as a CGI script, “standard output” is redirected to client Web server
 2. Web server then redirects output to client's browser

How can CGI get data from user?

Technique #1: Forms

- User enters data via a form, submits
- Form directs results to a CGI program

- Script receives data in one of two ways:
 1. Method = "GET"
 2. Method = "POST"Use language-specific method to get these inside CGI program

Technique #2: URL with parameters

```
<a href=http://www.cs.usna.edu/calendar/view.pl?events=seminars>  
Seminars </a>
```

form.html

The Big Example Part 1 (the form)

```
(standard header stuff...)  
<body>  
  <h1> Survey </h1>  
  
  <form method="GET" action="lect_form.pl">  
  
    <p> Favorite food: <input type="text" name="food" /> </p>  
    <p> Favorite color:  
      <input type="radio" name="color" value="blue" /> Blue  
      <input type="radio" name="color" value="red " /> Red  
      <input type="radio" name="color" value="yellow" /> Yellow  
    </p>  
    <input type="submit" value="Vote!" />  
  
  </form>  
</body>  
</html>
```

lect_form.pl

The Big Example Part 2 (CGI to receive)

```
use CGI qw( :standard );
use strict;
print( header() );
print( start_html() );

# Get inputs from browser user
my $favFood   = param("food");
my $favColor  = param("color");

# Save result in file. Use colon as separator
open ( OUTFILE, ">>perl/favorites.txt" );
print OUTFILE "$favFood : $favColor" . "\n";
close ( OUTFILE );

# Thank user and display what was received.
print "<h1> Thank you </h1> \n";
print "<p> Your responses have been recorded as follows</p> \n";

print "<ul> \n";
print li("Favorite food: $favFood");
print li("Favorite color: $favColor");
print "</ul>\n";
print ( end_html() );
```

The Big Example Part 3 (CGI to process)

```
use CGI qw( :standard );
print( header() );
print( start_html() );
print h1("Results so far");
my $redCount = 0;

open ( INFILE, "perl/favorites.txt" );
while (my $aLine= <INFILE>) {
    chomp ($aLine);

    # Split lines wherever we see a colon
    my @myArray = split (/:/, $aLine);

    # Print out the various parts
    print "Food: $myArray[0] Color: $myArray[1] <br/>";

    if ($myArray[1] =~ /red/i) {
        $redCount++;
    }
}
close ( INFILE );

print h2("Found $redCount matches for 'red'.");
print ( end_html() );
```

Perl Basics

```
use CGI qw( :standard );
use strict;
print( header() );

my $x = 2 + 3;
my $y = $x * 4;

if ($x == 5.0) {
    print ("x is five");
}

for (my $i = 0; $i < 3; $i++) {
    my $squared = $i * $i;
    print ("<br> \ $i = $i, squared is $squared");
}

my $pet1 = "dog";
my $pet2 = "ll" . "ama";

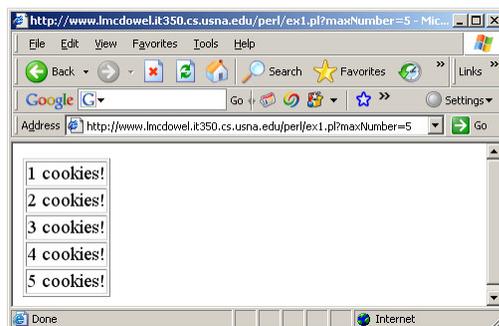
# Single quotes vs. double quotes
print ("<br>I have a $pet1 and a $pet2.");
print ('<br>I have a $pet1 and a $pet2.');
```

```
my $comp1 = ($pet1 eq "dog");
print ("<br> comp1: $comp1");
```

Exercise #1

- Write Perl code that will, given the URL provided below, generate HTML that looks like the screenshot

<http://www.lmcdowel.it350.cs.usna.edu/perl/ex1.pl?maxNumber=5>



(extra space)

lect_io_array.pl

Exercise #2: What does this code do?

```
use CGI qw( :standard );
use strict;

print( header() );
print( start_html() );

my $index = 0;
my $sum = 0;
my @myArray = ();

open ( MYFILE, "perl/numbers.txt" );
while (my $aNum = <MYFILE>) {
    chomp $aNum;
    if ($aNum > 0) {
        $myArray[$index] = $aNum;
        $sum += $aNum;
        $index++;
    }
}
close ( MYFILE );

$myArray[$index] = $sum;
$index++;

my $size = @myArray;
open ( MYFILE, ">perl/numbers.txt");
for (my $i = 0; $i < $size; $i++) {
    print br() . $myArray[$i];
    print MYFILE $myArray[$i] . "\n";
}
close (MYFILE);
print ( end_html() );
```

Exercise #3: Write Perl code that accepts two numbers from browser user, prints error if num2 is zero, otherwise outputs num1/num2.

Perl Stuff

“Scalar” variables:

```
$x = 3;  
$y = "Hello";
```

“Array” variables:

```
@list = (3, 7, "dog", "cat");  
@list2 = @list1;      # copies  
whole array!
```

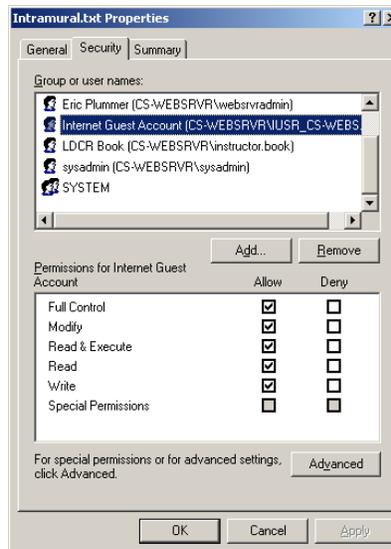
A single element of an array is a “scalar:

```
print "Second item is:  
$list[1]";  # Don't use @
```

**Get array length by treating whole array as
scalar:**

File Access

- Ownership: Input/Output files usually **NOT** owned by “Web Server”.
 - Operating system may enforce read, write, and/or modify restrictions on I/O files
 - For file output/append, may need to create file prior to first use
 - File permissions need set for access by the “web server” account (Right-click on file, pick Properties, then set permissions like example on right)



File Access

- File Path/Naming
 - CGI Script may **NOT** run within script’s location
 - May need to provide full or relative path information
 - All CGI processes on *cs-websrvr* are run from the top directory of the account and require path information to Input/Output file’s location
 - E.g. “Lab10/LOG.txt” or “perl/results.txt”