Social Web Design
社群網站設計
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CGI

Common Gateway Interface

通用閘道介面
啊!!
我不明白

就是這樣!!
CGI

- It is an interface, which allows browsers (and thus users) communicate with web servers
  - In brief, an interface is a bulk of rules. If you program according to these rules, you can communicate with browsers. A program that fits these rules is called a CGI program.
  - CGI is over HTTP

- A CGI program is just a program where the only thing need to know is how its IO related to the browsers’ IO
CGI program

- CGI is not a language. If you follow the rules, you can use any programming language to implement a CGI program. But please don’t try any…
  - [通用網關介面 - 維基百科，自由的百科全書](https://zh.wikipedia.org/wiki/通用網關介面)
  - Perl is a widely used language in CGI programming
  - in addition to Perl, shell script, Python, Ruby, PHP, Tcl, C/C++ and Visual Basic can be used for CGI programming
HTML form

- Passing data to the server side
- `<form action="do">
  <input name="nick" type="text" /><br />
  <select name="color">
    <option value="blue">Boy</option>
    <option value="red">Girl</option>
  </select><br />
  <button>Submit</button>
</form>`

- HTML Forms and Input
CGI IO in Perl

- # input
  use CGI;
  my $cgi = new CGI;
  my $nick = $cgi->param('nick');
  my $color = $cgi->param('color');

- # output
  print "Content-type: text/html\n\n"; # HTTP header
  print "Hello World!<br />"; # any valid HTML
  print "$nick likes $color!"; # any valid HTML
Test (debug) CGI programs

- Pass input data via the URL
CGI IO in PHP

- Hello World!<br/> <!-- any valid HTML -->

```php
<?php
# input
$nick = $_GET['nick'];
$color = $_GET['color'];
# output
echo "$nick likes $color!";
?>
```
CGI IO in JSP

- Hello World!<br />

<!-- any valid HTML -->
<%

// input
String nick = request.getParameter("nick");
String color = request.getParameter("color");

// output
out.println("%s likes %s!", nick, color);
%>
CGI IO in C

- #include <stdio.h>
- #include <stdlib.h>

int main(void)
{
    // input
    char * query;
    char nick[256], color[256]; // dangerous
data = getenv('QUERY_STRING');
    sscanf(query, "nick=%s&color=%s", &nick, &color);
    // output
    printf("Content-type: text/html\n\n"); // HTTP header
    printf("Hello World!\n\n"); // any valid HTML
    printf("%s likes %s!", nick, color); // any valid HTML

    return 0;
}

- 永遠的UNIX > CGI之C語言篇
- So just don’t use it
Perl

- Script language
- The most advantages are string manipulation and hash
- The first line must be
  - `#!/usr/bin/perl -w`
- `use strict;`
  - be sure to include this line
  - Perl is an untyped (無型態) language where variables can be used without declaration, but the harm is larger (bugs) than the convenience
- You can use any language such as PHP, but try to prevent using C/C++ for CGI programming
  - native support, string manipulation, protection…
  - Perl can call C/C++ programs
File IO in Perl

- open FH, 'res/member' or die; # open a file
  while (<FH>) { # each line
    chomp; # truncate the last "\n" character
    my ( $_name, $_nick ) = split "\t"; # split by tab
    $_nick eq $nick and $name = $_name and last; # compare
  }
  close FH; # close the file
$_ = `~/bin/cat _hello.html`; # use Linux command
s/{name}/$name/g; # replace
print "Content-type: text/html\n\n$_"; # output

- The magic $ _ variable
  – using it well will largely reduce the code (but less readable for rookies)

- Sometime Perl looks like English

- Call outer programs/commands

- The concept of template (模板)
Some tips

- Set CGI programs to executable
  - $ chmod 755 do

- You may debug as a Perl program
  - $ ./do # remember to fix the input

- There is a module to help output error messages to browser
  - use CGI::Carp "fatalstoBrowser";

- Writable file
  - $ chmod 666 filename # make it writable to web server
  - open FH, ">filename" or die;
  - open FH, ">>filename" or die;
Script/interpreted languages

- Interpreted Languages: PHP, Perl, Python, Ruby (Sheet One)

- Interpreted Languages: PHP, Perl, Python, Ruby (Sheet Two)
Any Questions?
Today’s assignment
今天的任務
Make you web site memorable

- Strive for preferred designs (actions) and implement at least one cross-computer (namely you cannot implement with only Javascript) interaction with CGI

- Reference
  - Perl 學習手札
  - Perl - 維基百科，自由的百科全書

- Your web site (http://merry.ee.ncku.edu.tw/~xxx/ex3/) will be checked not before 23:59 4/9 (Mon). You may send a report (such as some important modifications) to me in case I did not notice your features.

- Watch the new web site structure
Appendix
附錄
If we have time…

- I’m sure that we won’t have spare time today :p

- We won’t have enough time to finish Perl in the whole semester so that I can only teach specific functions

- But I’m not sure what functions you need, so please think about it and feel free to discuss with me via any media