

CS3157: Advanced Programming

Midterm Study Plan

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Important stuff

- Midterm : 3/1
- In class, Open book
- Study labs, and class notes, and homework

Perl

- Basic programming
 - Scalars
 - Arrays
 - Hashes
 - Subroutines
 - Should know how to write, and how things are passed in, and how to call them
 - Perl debugger
 - Basic commands, how to call, why we use it
 - File handles
 - Open, close, processing

Sample Definition List

- \$ENV
- foreach
- for
- while
- next
- last
- unless
- until
- use strict
- \$/
- \$_
- \$\$
- \$'
- my
- local
- die
- \$!
- \$0
- @_
- print
- =~
- ~
- <=>
- &&=
- chop
- exists
- eof
- split
- chomp
- our
- fork/exec
- open
- strcmp
- strlen

Regular Expressions

- What they are
- How to use them in perl
 - Matching
 - Substitution
 - Flags and modifiers
- See the lab on this

CGI

- What is CGI?
- How and why we use cgi
- Typical errors
- Getting and processing user input
- Html formatting basics
 - Tags, webpages, etc
- Security related to CGI

C

- What is gcc, how do we use it
- Language basics
 - Basic data types
 - Basic loops
 - printf/scanf formatting and usages
 - Casting
 - Pointers
 - String and string functions
- Makefiles and linking
 - Object files

Exam format

- ~6 definitions
- 4 theory/understanding questions
- 2 code related questions

- Will be expected to take about 1+ hour

Sample programming question

- What is wrong with this script?

```
#!/usr/local/bin/perl
# print the longest line in a file, excluding
  newline character.
while (<>) {
  chomp;
  if (length ($_) > length ($maxlength))
  {
    $longest = $_;
  }
}
print "The longest line is $longest.\n";
```

Sample code

1. Write a perl code segment that replaces all strings consisting of one or more vowel-characters (either upper or lower case) in scalar `$line` with double copies of those strings separated by a dash, e.g., "aelzo U eekmk" => "ael-aelzo-o U-U ee-eekmk".
2. write a program in perl to open a file and print each line out backwards

C

```
#include

void main()
{
    int z = 2;

    z = 7;
    for (i = 1 i < 5; i++) {
        printf("%d\n" i*z);
        z += 2
    }
    printf("\n");
}
```

This program contains 5 errors. Circle each of these 5 errors in the code above and by each circle, write a short sentence describing the error.

Theory

- How do you set the file permissions so that everyone can read some file tempsig.dat but not write to it?
- During running gcc, you notice .o files being created, what are they and how are they used?
- Can you think of a reason why strings in perl needs the equals function and not the == ?
- The CGI specifies an interface whereby a CGI script called with method POST should expect to receive the data from the server in which variable ? How is the GET method different?
- Explain what BINMODE does?
- How do you concatenate two strings in perl?

Good Luck!