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CptS 224

Final Exam

Tuesday, December 11, 2018 3:10-5:00pm

There are 27 questions on 9 pages (please check NOW to see that you have all pages). Each question is worth 3 points unless otherwise noted. 163 points (a prime number) total (not just a prime, but a strong prime, a lucky prime, and a fortunate number).

If you need extra space, write on the back side of a page. But make a note on the space below the question (i.e., where you ran out of room) "pointing" the grader to the other page.

This test is CLOSED book, CLOSED neighbor, CLOSED laptop/cell/etc

130 / 163

Note: don't freak out, this class's grades WILL be curved...

1. What does \$0 represent in Bourne Shell?

NAME of the current running script

2. What does \$0 represent in awk?

Represent the entire line

3. What does \$1 represent in awk?

First Field

4. What does \$1 represent in Bourne Shell?

First argument

5. How do you spell "else if" in Bourne Shell?

elif

6. What does \$3 represent in Perl?

discards data result of how many elements the array has

7. What does \$2 represent in awk?

Second Field

8. How do you spell "else if" in Gaelic? [0 points, but impressive nevertheless]

9. How do you spell "good luck" in Persian? [0 points, but impressive nevertheless]

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Given the following file the_ant (the "<>" is not really part of the file contents, it is just to denote a blank line):

```
<>
The Ant
by Ogden Nash
<>
<>
The ant has made himself illustrious
Through constant industry industrious.
So what?
Would you be calm and placid
If you were full of formic acid?
<>
```

10. [9 points] What would be the output of the following command?

```
$ awk '
BEGIN {
    count=0;
    total=0;
}
{ total++; }
/[aeiou][aeiou][aeiou]/ {
    print "Found a match! ->", $0;
    count++;
}
END {
    print "I counted", count, " lines of", total, " that match."
}' the_ant
```

Found a match!-> 

I counted 2 lines of 7, that match.

11. [6 points] What would be the output of the following command?

```
gatl % tail -4 the_ant | sed -e 's/acid/kool-aid/g'
```

so what?
 Would you be calm and plkool-aid
 IF you were full of formic kool-aid?

12. [12 points] Give 4 ways in Perl the following key/value pairs representing test scores into an associative array (you may give it any name). (You don't need anywhere near a full page, room is given nevertheless.)

Key	Value
JoeVandal	50
ButchTheCoug	100
WhitepawTheMalmute	0

`%score = ("JoeVandal", 50, "ButchTheCoug", 100, "WhitepawTheMalmute", 0);`

`%score { JoeVandal, ButchTheCoug, WhitepawTheMalmute } = (50, 100, 0);`

`%score = (JoeVandal => 50, ButchTheCoug => 100, WhitepawTheMalmute => 0);`

`%score = ("JoeVandal", 50);`

`%score = ("ButchTheCoug", 100);`

`%score = ("WhitepawTheMalmute", 0);`

13. [10 points] Which do you believe is more powerful: a GUI interface (Windows, Mac, Linux GUI) or a command-line interface such as with Linux?

A command-line interface

4 14. [12 points] You have learned the Bourne shell script language, awk, sed, grep. Many tasks can be done by most or all of these, though some have features others don't, and some are more suitable or terse or somehow preferable over the others in some cases.

In 4-6 concise, well-considered sentences, outline a particular task that you would definitely prefer to use one of these languages to do instead of the others, and tell why. There is of course more than one answer that can receive full credit.

I think I found very interesting the fact of being able of edit text. I would like to use it to review any text I wrote. That way I could check for misspelling or see if I am repeating words too much (uniq)
I like the idea of being able to play with different commands and be able to see the results by how the text would look edited (or changed by the commands)

Vague

✓ 15. What is a list in perl, and what is it used for?

A list is a group of ordered scalar data (single item)

✓ 16. What character must the names of the following perl "types" begin with?

Scalar: \$

Array: @

Associative Array: %

✓

Given the following shell script (stored in file answer):

```
#!/bin/sh

case $1 in
[Yy]es|[Ss]i|[Jj]a)
    answer="Yes"
    ;;
*)
    answer="No"
    ;;
esac

if [ "$answer" == "Yes" ]
then
    echo "Thank you for agreeing with me!"
else
    echo "Are you sure I can't change your mind?"
fi
```

17. What would be the output of the following command?

✓ ./answer Si

Thank you for agreeing with me!

18. What would be the output of the following command?

./answer yes never

✓ Are you sure I can't change your mind?

19. What would be the output of the following command?

./answer Y

✓ Are you sure I can't change your mind?

20. What would be the output of the following command?

./answer sure

✓ Are you sure I can't change your mind?

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21. [15 points] Write an awk script that will print out the word, line number, and filename for any duplicate words which exist next to each other. It does not have to deal with punctuation (note "very" is not in the sample output below): you can use the standard awk whitespace field delimiters

For example:

input.txt file:

...

line 13: The sea was was very, very blue blue today.

...

\$2

your output:

was 13 input.txt

blue 13 input.txt

3

\$ awk -F ' ' {

NF = 0

for (i=0; i < NF; i++) {

for (j=0; j < NF; j++) {

if (\$[i] == \$[j]) {

Associate
array
strings

print \$[i], \$2, NR

name of the
running input file

word

Field two for the number line

did not handle a match
split across lines

3

22. [30 points] For the following English patterns:

(0-9)

1. Start of line/filename, then any number of lower case letters, one decimal digit, then end of line/filename.
2. The letter 'c', followed by one of any single legal character, followed by a decimal digit, followed by zero or more of any legal character, then a 'Z'.
3. A blank line (regex) or a zero-length filename (shell pattern).
4. Start of line/filename, then 'H', then any number of legal characters, then 'd', then end of line/filename.
5. 'T' must be somewhere, but not at the start of the line/filename.

Give both a regular expression and a shell file pattern (e.g., to use with `ls` or `wc`) that matches it. If it is not possible to specify the pattern in that "language", then draw a line through that box. Also, if Unix does not allow a filename to be what is described above, write "ILLEGAL" in the box.

Note: *legal character* means any symbol that is legal to be in a filename or in a file; you should not have to enumerate them and will get a point off if you do – there is one symbol you can denote this with). Also, for that matter, you should not have to "brute force" enumerate anything.

Hints:

- There are 2 of these that can't be expressed with a shell file pattern and 1 that are an illegal file name. (You're welcome for the gift here: Merry Christmas, Kool Kwanza, Ramadan Mubarak, Happy Hannukah, or "have a great day", whatever applies.) ★
- You don't need to do anything to specify the end of a filename in a shell pattern, the last part of your pattern matches the end of the filename --- that's how shell file patterns work!

	Regular Expression [4 pts]	Shell File Pattern [2 pts]
#1	✓ $^ [a-z]^ [0-9] \$$	✓ $^ [a-z] [0-9] \$$
#2	✓ $c. [0-9]. * Z$	$c. [0-9]. * Z -$
#3	_____	illegal
#4	✓ $^ H [.]^ d \$$	$^ H [.]^ d \\$
#5	$grep -v [^T] && grep T$	_____

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23. [6 pts] Describe in a sentence or two each three capabilities that Source Code Management (SCM) software can provide for large software projects that manual file copy cannot.

-3 SCM can save copies and has registered times and changes made.

Given the following Perl script, named 'perlexample.pl':

```
#!/usr/bin/perl

$a = 0;
$b = 1;

print "0 1";

for ($cnt=2; $cnt <= $ARGV[0]; $cnt++) {
    $next = $a + $b;
    print " $next";
    $a = $b;
    $b = $next;
}

print "\n"
```

24. [6 points] What will be the output of the following command? [4 points]
./perlexample.pl 5

-3 0 1
1 1

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Given a file called `the_ant`, with the following contents:

The Ant
by Ogden Nash

The ant has made himself illustrious
Through constant industry industrious.
So what?
Would you be calm and placid
If you were full of formic acid?

25. [6 pts] What would be the output of the following command?
`grep '^Th' the_ant`

✓ The Ant
The ant has made himself illustrious
Through constant industry industrious.

26. [6 pts] What would be the output of the following command?
`grep '^Th[^r]' the_ant`

✓ The Ant
The ant has made himself illustrious

27. [6 pts] What would be the output of the following command?
`tr '[M-Z]' '[m-z]' <the_ant`

✓ the Ant
by ogden nash
the ant has made himself illustrious
through constant industry industrious.
so what?
would you be calm and placid
If you were full of formic acid?

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