UNIX SYSTEM PROGRAMMING MIDTERM
Spring 2013

The following assumptions can be made throughout the exam:

No variables have been declared other than those shown to be declared in the specific problem.

The shell is always tcsh.

Any scripts shown are always executable.

Unless otherwise specified, the directory where these commands are run is empty.

In answering the questions, if you believer that a specific problem produces an error message, say "ERROR". If you believe it produces no output, say "EMPTY." If an answer is on several lines, then put your answer on several lines.

Some reminders:

When regular expression has a * as the first symbol, then it is interpreted as an actual * symbol.

The grep –o flag prints only the matching pattern, not the rest of the line.

1. For the following, assume that this is the directory contents:

% ls

*... *.???. *?...? ?.?.?. x... x?.?.? x???

What then, will each of the following produce ?

a. ls *?

b. ls *.

c. ls ...

d. ls *...

e. ls *...*

f. ls *???

g. ls a*

2. Assume that the following commands are executed.

% ls

*... *.???. *?...? ?.?.?. x... x?.?.? x???

% ls > ../words

% cp ../words .

What then, will each of the following produce?

a. cat words | fgrep '*?'

b. cat words | fgrep '*.'

c. cat words | fgrep '...'

d. cat words | fgrep '*...'

e. cat words | fgrep '*...*'

f. cat words | fgrep '*???'

g. cat words | fgrep 'a*'

h. cat words | grep '*?'

i. cat words | grep '*.'

j. cat words | grep '...'

k. cat words | grep '*...'

l. cat words | grep '*...*'

m. cat words | grep '*???'

n. cat words | grep 'a*'

3. What will each of the following produce?
a. echo abcdefghijklmno | cut -c 2-4,9
b. echo abcdefghijklmno | cut --complement -c 4,5,10
c. echo "apple banana cherry durian" | cut -d " " -f3
d. echo "apple banana cherry durian" | cut -d " " -c3
e. echo "He said \"hi"."
f. echo "He said \"hi\"."
g. echo "A"\"B\"""C"
h. echo `expr 1 + 1`
i. `expr 1 + 1` | xargs echo
j. expr 5 * 5
k. expr 1/1

4. Assume that the following command is executed.
. % echo $T
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What then, will each of the following produce?
a. set X = T ; echo $X
b. set X = $T ; echo $X
c. set X = 1 ; echo $X
d. set X = 1 + $# ; echo $X
e. @ X = T ; echo $X
f. @ X = $T ; echo $X
g. @ X = 1 ; echo $X

5a. Assume that the following command is executed.
% cat testscript
#!/usr/bin/tcsh
echo "The word of the day is $10."

What, then will the following do?
./testscript art bat cat dot eat fee get hit ice joy kit law mit

5b. Assume that the following command is executed.
% ls dgvhdvgv ;
dgvhdvgv : No such file or directory
What, then will the following do?
% echo $?

5c. What will the following do?
% echo "hello" ; echo $?

5d. What will the following do?
% echo "hello" || echo $?

5e. What will the following do?
% echo "hello" && echo $?

6. Assume that the following command is executed.
% cat script
#!/usr/bin/tcsh
exit $1

What then, will each of the following produce?
a. ./script 1
b. ./script 2 ; echo $?
c. ./script 3 || echo $?
d. ./script 4 && echo $?
e. ./script 0 ; echo $?
f. ./script 0 || echo $?
g. ./script 0 && echo $?
h. echo "$?a"
i. set x = 0 ; echo "$?x"
k. echo $y
l. set x = 0 ; unset x ; echo '$?x'

7a. Assume that the following command is executed.
% cat prog
#!/bin/tcsh
@ i = 0
while (`expr $i < 3`)
**   echo -n $i**
**   @ i++**
end

What then, will the following produce?
% ./prog

7b. Assume that the following command is executed.
% cat hi
#!/bin/tcsh
for person = (Bob Susan Joe)
**   echo Hello $person**
end

What then, will the following produce?
% ./hi

8. Assume that the following commands are executed.
% ls
echo file1 file2 file3
% set A = *

What then, will each of the following produce?
a. echo $A
b. echo '$A'
c. echo `$A`
d. echo $A:q

9. Assume that the following commands are executed.
% set var1 = (Apple Banana Cherry Durian)
% set var2 = (Apple Banana Cherry Durian)

What then, will each of the following produce?
a. echo $var1[3-]
b. shift var1; echo $var1[3-]
c shift var2; echo $#var2

10. What will each of the following produce?
a. echo 'yo*y' | fgrep -o 'o*'
b. echo 'yo*y' | grep -o 'o*'
c. echo "o o o o" | grep -o 'o o'
d. echo "xxx" | grep "y*"

11. Describe what each of the following does, by completing, in English, the following sentence:
"Prints all lines from files that contain _____ "
   a. grep '^mug' files
   b. grep 'mug$' files
   c. grep '^mug$' files
   d. grep '\^s' files
   e. grep 'B[oO][bB]' files
   f. grep '^$' files
   g. grep '[0-9][0-9]' files

12. Write the tr command to perform ROT-13 encoding (like we did in class).

13. write the egrep expression for the following. (a "digit" is a single number (0-9)/)