

CMPSCI 105 Midterm Exam Solution

Spring 2005

March 24, 2005

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GENERAL KNOWLEDGE

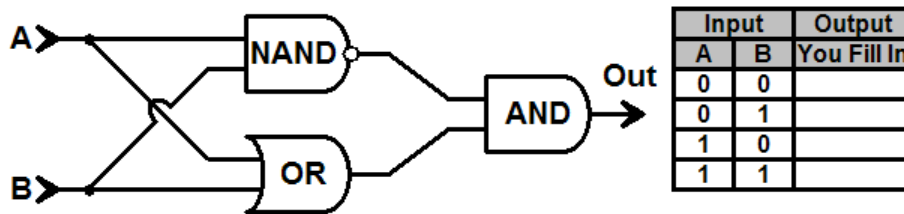
<1> 8 Points – Fill in your answer into the box at the left side of each question. Show your work on the back of a page if you want us to consider partial credit.

FALSE	True or False: A 3½-inch diskette is a “hard disk”.
$2^4 = 16$	How many rows would be in the corresponding truth table for an AND-gate with four inputs?
39_{10}	Convert 124_5 to decimal (base 10). $1 \times 5^2 + 2 \times 5^1 + 4 \times 5^0 = 1 \times 25 + 2 \times 5 + 4 \times 1 = 25 + 10 + 4 = 39_{10}$
212_3	Convert 23_{10} to trinary (base 3). $23_{10} = 2 \times 3^2 + 1 \times 3^1 + 2 \times 3^0$
$1D5A_{16}$	Convert 1110101011010_2 to hexadecimal (base 16) using the bit partitioning method. $1110101011010 = 0001\ 1101\ 0101\ 1010$ (leading zeroes on 1 ST item) $0001_2 = 1$ $1101_2 = 13_{10} = D_{16}$ $0101_2 = 5_{10}$ $1010_2 = 10_{10} = A_{16}$
1101010	Add the binary numbers 101101_2 and 111101_2 and show the result in binary. $\begin{array}{r} 101101 \\ 111101 \\ \hline 1101010 \end{array}$
45_{10}	From the previous problem, what is the decimal (base 10) value of the first of the two given numbers? $101101_2 = 1 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 =$ $1 \times 32 + 0 \times 16 + 1 \times 8 + 1 \times 4 + 0 \times 2 + 1 \times 1 =$ $32 + 0 + 8 + 4 + 0 + 1 = 45_{10}$
rw----r-x	What are the UNIX permissions that correspond to the octal (base 8) number 605? $6 = 110_2 = rw-$, $0 = 000_2 = ---$, $5 = 101_2 = r-x$

<2> 4 Points – In a web page I use a color defined as "#F9DCE5".

249	What is the decimal value of the RED component? $F9 = F \times 16^1 + 9 \times 16^0 = 15 \times 16 + 9 \times 1 = 240 + 9 = 249$
220	What is the decimal value of the GREEN component? $DC = D \times 16^1 + C \times 16^0 = 13 \times 16 + 12 \times 1 = 208 + 12 = 220$
229	What is the decimal value of the BLUE component? $E5 = E \times 16^1 + 5 \times 16^0 = 14 \times 16 + 5 \times 1 = 224 + 5 = 229$
WHITE	What is the approximate true color being specified here? All high values = white (or very bright gray)

<3> 4 Points – Trace the following gate circuit and show its output for all combinations of input values.



Case_0_0 → 0, case_0_1 → 1, case_1_0 → 1, case_1_1 → 0.

UNIX & THE INTERNET

<4> 10 Points – In the space below create a complete, correct web page that meets the following requirements:

1. The title bar of the window must read **My Frog Page**.
2. The background color must be green.
3. The body must contain a centered reference to in-line image Froggy.gif
4. The body must use the in-line image as a link to <http://www.froggy.org>

```
<HTML>
  <HEAD>
    <TITLE>My Frog Page</TITLE>
  </HEAD>

  <BODY BGCOLOR="GREEN">           (or BGCOLOR="#00FF00")
    <CENTER>
      <A HREF="http://www.froggy.org">
        <IMG SRC="Froggy.gif">
      </A>
    </CENTER>
  </BODY>
</HTML>
```

<5> 4 Points – In UNIX want to change the permissions on the ordinary file `Froggy.gif` from `-----` to `rw-r--r--` by using both the symbolic form and the absolute form of the `chmod` command. Fill in the blanks below with the appropriate coding for each form.

(Symbolic) `chmod a+r,u+w Froggy.gif` (or `ugo+r,u+w`)

(Absolute) `chmod 644 Froggy.gif`

<6> 2 Points – Is it possible for `Froggy.gif` to appear on the web page as an in-line 24-bit color movie of a frog catching a fly? Why or why not?

NO. While .GIF images do support animations, the .GIF format cannot support 24-bit color.

<7> 4 Points – Short Answer – What are the differences between “standard” telnet programs such as `telnet` and “modern” telnet programs such as PuTTY or SecureCRT? Why would you use one type over the other?

Standard telnet is not encrypted, and sends text in the clear (including passwords), while PuTTY/SecureCRT encrypt their communications. These days you should always use an encrypted program to avoid having sensitive data be captured by packet sniffers.

<8> 5 Points – I use FTP to move a group of files from one computer to another. For each of the following file types indicate whether I should move the corresponding file in ASCII mode or in Binary mode.

1. `.TXT` files **ASCII**
2. `.GIF` files **Binary**
3. `.HTML` files **ASCII (it is a text file editable in Notepad)**
4. `.ZIP` files **Binary**
5. `.BMP` files **Binary**

MICROSOFT WINDOWS & ACCESSORIES

<9> 4 Points – In class I showed how to install a link to Windows Notepad into the SendTo menu. How do I load a `.TXT` file into Notepad using this approach?

Right-click on the icon for the .TXT file, select Send To from the popup menu, then pick Notepad from the send-to list.

<10> 5 Points – Short Answer – I have two folders open on screen. What are the differences between left-click-dragging and right-click-dragging a file from one to the other? Does the behavior change depending on whether the two folders are from the same disk drive or from different disk drives?

Left-click drag moves the file if the two folders are on the same drive, and copies the file if the two folders are on different drives.

Right-click drag always pops up a menu asking if the file should be moved or copied.

<11> 5 Points – Examine the Notepad image below.

1. Where is the insertion point?

It is the vertical bar after the word “Notepad.”

2. What does it mean when the Paste menu entry is black instead of gray?

There is text in the clipboard which can be pasted into Notepad.

3. What does it mean when the Cut and Copy entries are gray instead of black?

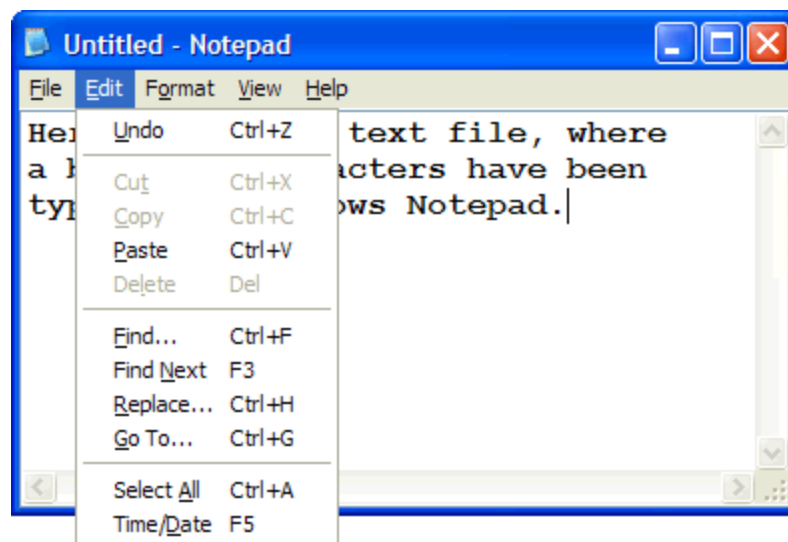
Nothing has been selected. (Has nothing to do with the clipboard.)

4. In the Edit menu, what do the underlined characters indicate?

Keyboard keys to activate each menu entry when menu is visible.

5. In the Edit menu, what does the code to the right of each entry indicate?

Shortcut keys to activate each menu entry when menu is not visible.

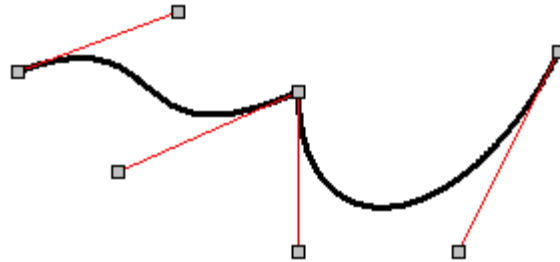


<12> 5 Points – Short Answer – What are the major differences between any painting package (such as Windows Paint) and any drawing package (such as my own Bézier Madness)?

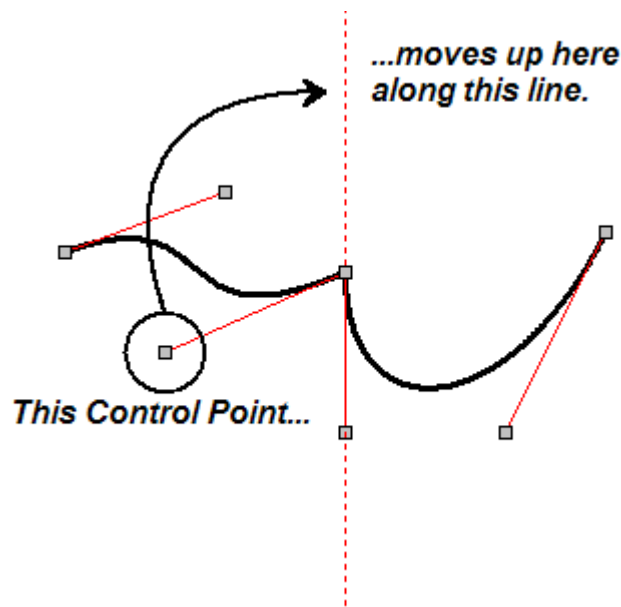
Painting packages deal with pixels – when one object is painted over by another, the first object is gone. Objects have not separate existence from the image.

Drawing packages keep objects defined separately from the image on screen so objects may be edited after creation, even if hidden by other objects.

<13> 5 Points – In the image there are two Bézier curves joined end-to-end that I wish to blend smoothly at the common endpoints. Circle the appropriate control point for the **left-hand** Bézier curve and indicate with an arrow where it should be placed to insure that the two curves blend smoothly.



As long as the correct control point of the first curve is moved to any position along the first control line of the second curve, the two curves will blend smoothly, as seen in the answer below:



WORD PROCESSING

<14> 5 Points – Short Answer – What is a style in Word, and how are they used?

A style is a named format, kept in a style sheet or template (NORMAL.DOT) so that formatting of large chunks of a document can be changed by altering the definition of the style.

This one a lot of people got wrong because they used the wrong definition of the word *style*. If you answered something similar to “A style is a set of design attributes of a font, such as boldface or italics”, then you are using the wrong definition. This would have been the correct answer if the question had been “What is a style in a font?”

<15> 5 Points – I wish to put a document on my web site for my students to use, but I don’t want to risk someone modifying that document and claiming it as their own. How do I make that document public and allow people to print it, but still protect my intellectual property against plagiarism?

Save the document as an Adobe Acrobat .PDF file, then set the security on the .PDF file to allow printing but no changes (no content extraction).

<16> 4 Points – Answer the following questions about this image of a short text phrase.



1. What is the point size of the font?

1/2 inch at 72 points per inch = 36 points.

2. What typeface is used here, Arial, Times New Roman, or Courier New?

Times New Roman

3. Is this typeface proportional or monospaced?

Proportional (the “G” and “A” are much wider than the “o” or “a”)

4. Show a case where kerning has occurred.

The only place where kerning occurs in this example is between the “A” and the “w” characters, which clearly overlap.

<17> 3 Points – Short Answer – What is word wrap?

Word wrap in a word processor keeps words from being broken across lines. As new words are typed in, they are moved from the end of the current line to the beginning of the following line when they become too long to fit.

SPREADSHEETS

<18> 4 Points – Cell **w12** contains the following formula which is then copied to cell **U10**. What is the resulting formula in cell **U10** after the copy has been completed?

=Z14*\$Q\$5/SQRT (AB15) +X\$1-9

=X12*\$Q\$5/SQRT (Z13) +V\$1-9

The formula is being moved to cell U10, which is left two columns and up two rows from cell w12. All relative cell components will change by the same amount, as indicated by the underlined items in the answer given above. In cell AB15, the column is two to the right of column Z (... X Y Z AA AB AC ...), and in cell V\$1 only the column changes because the row is absolute.

<19> 4 Points – I type the formula **=3+4*6-2** into a cell of my spreadsheet.

1. What is the value shown on screen?

25. This unparenthesized expression is the same as $((3+(4*6))-2)$, or $(3+24-2)$ due to the standard arithmetic precedence rules.

2. How do I parenthesize the formula so that it computes the value 28?

= (3+4) * (6-2)

<20> 8 Points – The spreadsheet model below contains a bunch of numbers in a rectangular range.

	A	B	C	D	E	F	G
1							
2		4	9	1	2	2	
3		5	0	2	3	7	
4		8	2	8	9	3	
5		2	6	4	1	5	
6							

1. Write a formula using the **SUM** function to add up all cells containing numbers.

`=SUM(B2:F5)` or `=SUM(B5:F2)` or `=SUM(F2:B5)` or `=SUM(F5:B2)`

2. Write a formula without using the **SUM** function to add up cells **B2**, **D3**, and **F5**.

`=B2+D3+F5`

3. What is the result of the formula `=MAX(D2:E3)` ?

3 (the cells in the range have values 1, 2, 2, 3, so 3 is the largest value)

4. Write a formula to average all cells except **E2**, **E3**, **F2**, and **F3**.

`=AVERAGE(B2:D5,E4:F5)` or `=AVERAGE(B2:D3,B4:F5)`

<21> 2 Points – If the formula `=NOW()` returns the value 38435 for March 24, 2005, what would the value be for tax day, April 15, 2005?

There are 22 days between March 24 and April 15 (since March is a 31-day month), so the final number is $38435 + 22 = 38457$.