

CMPSCI 105 Midterm Exam Solution

Spring 2006

March 31, 2006

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GENERAL KNOWLEDGE

<1> 6 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”.
466	The permissions are r--rw-rw- on a UNIX file. What is the corresponding octal (base 8) value of this permissions mask? r-- = 100₂ = 4, rw- = 110₂ = 6, rw- = 110₂ = 6
237	Convert the binary (base 2) number 11101101 ₂ into decimal (base 10). 1×2⁷ + 1×2⁶ + 1×2⁵ + 0×2⁴ + 1×2³ + 1×2² + 0×2¹ + 1×2⁰ = 128 + 64 + 32 + 0 + 8 + 4 + 0 + 1 = 237₁₀
ED	Convert the binary (base 2) number 11101101 ₂ into hexadecimal (base 16) using the bit-partitioning method. 1×2³ + 1×2² + 1×2¹ + 0×2⁰ = 1×8+1×4+1×2+0×1 = 8+4+2+0 = 14₁₀ = E₁₆ 1×2³ + 1×2² + 0×2¹ + 1×2⁰ = 1×8+1×4+0×2+1×1 = 8+4+0+1 = 13₁₀ = D₁₆
100100111	What is the sum in binary (base 2) of the two binary numbers 11101101 ₂ and 00111010 ₂ ? <div style="text-align: center; color: red;"> ← Carries 11101101 +00111010 ----- 100100111 </div>
457	Convert the base 20 number 12H ₂₀ into decimal (base 10). 1×20² + 2×20¹ + H×20⁰ = 1×400 + 2×20 + 17×1 = 400+40+17 = 457₁₀

<2> 2 Points – Short Answer – What are the advantages of keeping files on a *flash drive* as opposed to a *floppy disk*?

Capacity (flash drives are much larger), Speed (flash drives are much faster).

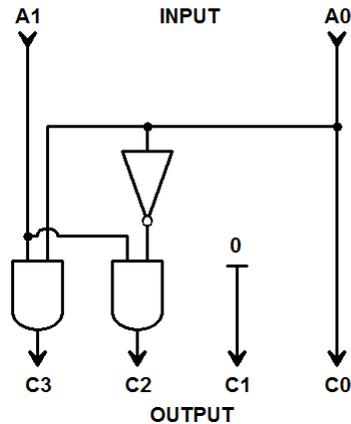
<3> 4 Points – In a web page I wish to define a color with the red value equal to 200, the green value equal to 7, and the blue value equal to 128. What is the HTML color code (in hexadecimal) that I enter? Approximately what color will be shown on screen?

Red 200₁₀ = C8₁₆ Lots
Green 7₁₀ = 07₁₆ Nearly None
Blue 128₁₀ = 80₁₆ Midrange

HTML = "#C80780" = Dark Purple



- <4> 8 Points – Trace the following gate circuit and show its output for all combinations of input values. Two points extra credit if you can tell me the correct function of the circuit.



Input		Output			
A1	A0	C3	C2	C1	C0
0	0	0	0	0	0
0	1	0	0	0	1
1	0	0	1	0	0
1	1	1	0	0	1

Extra Credit: This circuit squares its input.

UNIX & THE INTERNET

- <5> 8 Points – Write a fragment of HTML (not a complete Web page) that creates a *table* with two rows. The first row is to contain two cells, but in the second row the first cell spans two columns, thus creating a table with only three cells. Those three cells are to contain the letters A, B, and C, as shown:

A	B
C	

```
<TABLE BORDER=1>
<TR>
<TD>A</TD>
<TD>B</TD>
</TR>
<TR>
<TD COLSPAN=2>C</TD>
</TR>
</TABLE>
```

- <6> 5 Points – Here is a fragment of a Web page which is supposed to allow a user to jump to the address <http://www.xyz.com> whenever they click on a graphic image called **toad.gif**, stored in a folder of the current site called **animals**. The fragment contains a number of errors. Fix them (indicate where in the listing the error occurs, and how it should be repaired).

```
<A SITE="http://www.xyz.com/"><IMG SCR=animals/toad.jpg><A>
<A HREF="http://www.xyz.com/"><IMG SRC="animals/toad.gif"></A>
```

<7> 4 Points – I type in the following UNIX command: `chmod 664 newt.jpg`

A. What will the permissions mask (`rw-rw-rwx`) on `newt.jpg` be after the command is executed?

`rw-rw-r--`

B. Which permissions are changed if the mask was `r---w--w-` before the command was executed?

`r---w--w-`

Before

`rw-rw-r--`

After

`u+w,g+r,o+r,o-w`

Changes

<8> 2 Points – Yes or No: Can I run a Web browser, one or more telnet clients, and an FTP client at the same time over the same Internet connection?

Yes!

<9> 3 Points – I get an error message when I attempt to view my Web page. The following file listing shows a portion of the files on my UNIX account. What could be the cause(s) of my problem?

<code>-rw-r--r--</code>	1	verts	nonstud	1014	Feb	7	2003	hog_joke.txt
<code>-rw-----</code>	1	verts	nonstud	104446	Feb	27	14:06	garbo01.gif
<code>-rw-----</code>	1	verts	nonstud	216957	Feb	28	12:27	garbo18.gif
<code>-rw-r--r--</code>	1	verts	nonstud	3350	Sep	12	2004	kilroy was here.txt
<code>drw-r--r--</code>	17	verts	nonstud	8192	Mar	2	12:38	public-html
<code>-rwx--x--x</code>	1	verts	nonstud	376832	Sep	20	2004	putty.exe
<code>-rw-----</code>	1	verts	nonstud	13868	Oct	28	2003	quizzes.html
<code>-rwxr-xr-x</code>	1	verts	nonstud	1570	Dec	18	2003	realplayer.ste

The folder `public_html` is misnamed as `public-html` (replace the dash with an underscore), and the permissions on that folder are missing the `x` permission (once the folder has been renamed, type in the command `chmod a+x public_html`).

<10> 2 Points – When logged in to my UNIX account, I type `emacs index.html` at the prompt, but a get a blank screen when `emacs` runs. What could be the cause(s) of my problem here?

There could be any of a number of problems: the `index.html` file might not exist, `index.html` could be in the wrong directory, or `emacs` was itself launched from the wrong directory.

- <11> 5 Points – Short Answer – I have UNIX accounts on two separate remote computers, and need to copy a file from one to the other. There are a couple of ways I could do this. For any valid method, describe the steps I must perform to copy the file. Be as complete as possible, but don't get bogged down in unnecessary detail (for example, to connect to one of the remote computers say something like “use a secure telnet to log in to computer #1” instead of describing how to run PuTTY, open a connection, enter a username, etc.).

Method #1

Use a secure telnet to log in to computer #1
Use ftp (or a secure ftp) to connect to computer #2
Use get or put to move the file appropriately
Close ftp
Log out of computer #1

Method #2

Use a graphical ftp to connect to computer #1
Get the file from computer #1 to the PC
Close ftp
Use the graphical ftp to connect to computer #2
Put the file from the PC to computer #2
Close ftp

MICROSOFT WINDOWS & ACCESSORIES

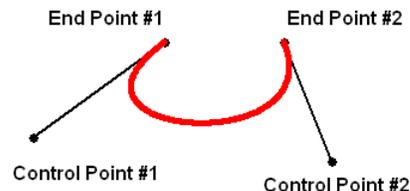
- <12> 3 Points – In Notepad, what does it mean when the Edit-Paste menu entry is gray?

Either (a) nothing is in the clipboard, or (b) nothing is in the clipboard that Notepad can use (such as a bitmap). It has nothing to do with whether or not anything is currently selected in Notepad.

- <13> 5 Points – I have two folders open on screen. I left-click-drag a file from one to the other, and the file is copied into the destination folder *without* being removed from the source folder. Are the two folders on the same disk drive or different disk drives?

They are on different drives. If the folders were located on the same drive, the file would be moved, not copied.

- <14> 5 Points – The following diagram shows the endpoints, control points, and control lines for a Bézier curve. Draw the curve.



WORD PROCESSING

<15> 3 Points – In the picture shown here:

- A. Point out all places where *kerning* can be used to reduce unnatural-looking white space.

The AV, TA, LY, and AT pairs.

- B. Does the typeface in the sign have *serifs*, or is it *sans-serif*?

Sans-serif.

- C. In the sign the word **ONLY** is physically about two inches high. What, then, is the height in *points* of that text?

2 inches \times 72 points-per-inch = 144 points.



<16> 5 Points – Short Answer – What is the difference between a *typeface* and a *font*?

A typeface is the set of common shapes that define an alphabet,

A font is a typeface at a particular style, weight, and point size.

<17> 6 Points – I need to turn a four page term paper into a five page term paper without writing new text. List three methods for doing this. For each of your methods, describe how far we can push it without the teacher noticing (i.e., give approximate numerical limits where appropriate).

1. Increase font point size (no more than about 12-14 points)
2. Increase line spacing (no more than 1½ or 2 (double) spacing)
3. Increase document margins (no more than 1 or 1½ inches all around)
4. Use wider typeface (e.g., Arial instead of Arial Narrow)

<18> 5 Points – Short Answer – I use Microsoft Word on all my research papers, but my co-author in California uses WordPerfect. How do I save my document in a way that guarantees she can read my file and that all my formatting will be preserved?

Save the file in rich text format, then email the .rtf file back and forth. Essentially all major word processors read and write .rtf files correctly.

SPREADSHEETS

- <19> 5 Points – Cell **Z100** contains the following formula which is then copied to cell **X110**. What is the resulting formula in cell **X110** after the copy has been completed?

=T105+AF90*95-SUM(AA100:AC102)+\$B\$100

=R115+AD100*95-SUM(Y110:AA112)+\$B\$100

The formula is being shifted left two columns, and down ten rows.

- <20> 4 Points – What is the result of the following formula if cell **A1** contains the number -5?

=IF(A1>0,A1-10,A1+10)

The question is false (cell A1 is not greater than zero), so the false-return is evaluated. The value returned by the IF statement is thus $-5+10 = 5$.

- <21> 10 Points – The spreadsheet model below contains a bunch of numbers in a rectangular range, plus a few additional items in other cells.

	A	B	C	D	E	F	G
1	0.01	Rate					
2							
3		Test1	Test2	Test3	Test4	Test5	Result
4	Fred	4	2	9	4	7	
5	Sam	6	6	2	7	3	
6	Mary	3	9	2	1	6	
7							
8	Total						
9	Tax						

- Write a formula without using any predefined functions for cell B8 to add up all cells in column B that contain numbers. I expect to drag-copy the formula to cells C8 through F8 and have the resulting formulae add up the numbers in the corresponding columns.

=B4+B5+B6

2. Write a formula that uses a predefined function for cell G4 to add up all of Fred's numbers. I expect to drag-copy the formula to cells G5 and G6 and have the resulting formulae compute the correct totals for each person.

=SUM(B4:F4)

or

=SUM(B4,C4,D4,E4,F4)

stupid and inefficient, but legal

3. Write a formula for cell B9 that multiplies the result in B8 times the tax rate in A1. I expect to drag-copy the formula to cells C9 through G9 and have the resulting formulae compute the correct tax for the corresponding columns.

=B8*\$A\$1

4. What is the result of the formula =MAX(B4:F5) ?

9

5. Write a formula to sum all cells in the range shown that contain numbers. (That is, don't include A1 or the Total or Tax rows.)

=SUM(B4:F6)

or

=SUM(B6:F4)

or

=SUM(F6:B4)

or

=SUM(F4:B6)