

**CMPSCI 105 Midterm Exam
Solution Key
Spring 2018
March 21, 2018
Professor William T. Verts**

<1> 15 Points – (1 point each) – 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. **Pick any 15 problems.** For extra credit, you may do more than 15. Correct answers will score as +1 point, blank answers as 0 points, but incorrect answers will be scored as -½ point (it is better to leave an answer blank than it is to guess incorrectly).

FALSE	1. True or False: A 3½-inch diskette is a “hard disk”.
FALSE	2. True or False: A USB flash drive is a “hard disk”.
$2^9 = 512$	3. How many distinct binary patterns are possible with 9 bits? <i>Accept either form</i>
$2^9-1 = 511$	4. What is the maximum unsigned number that will fit into 9 bits? <i>Accept either form</i>
$2^8-1 = 255$	5. What is the maximum signed number that will fit into 9 bits? <i>Accept either form</i>
2462536	6. What is the Julian Day number for February 3, 2030? <i>1/1/2030=2462503, so 2/1/2030=2462534, thus 2/3/2030=2462536</i>
49,152	7. How many bits are in 6 kilobytes? <i>6{kilobytes} × 1024{bytes/kilobyte} × 8{bits/byte} = 49152</i>
NO	8. Can the number π be stored in a float in a fixed number of bits?
$9-2i$	9. What is the sum of the complex numbers $4+2i$ and $5-4i$?
$28-6i$	10. What is the product of complex numbers $4+2i$ and $5-4i$? <i>$4 \times 5 + 4 \times -4i + 2i \times 5 + 2i \times -4i = 20 -16i + 10i + 8 = 28-6i$</i>
113	11. Convert the decimal number 33 into base 5. <i>$33 \div 5 = 6R3$, $6 \div 5 = 1R1$, $1 \div 5 = 0R1$, thus 113</i>
183	12. What is the decimal value of the hexadecimal number B7 ?
0.0037	13. What is the math (non-computer) way of writing the number 3.7E-3 ?
$\frac{34}{z^3}$	14. How would I typeset the expression $\frac{34}{z^3}$ in HTML?
$\&times;$	15. What is the <u>named</u> entity code for $\&\#215;$?
ftp	16. Would I use a telnet (PuTTY, ssh) program or an ftp (WinSCP, Fugu) program to move files to and from a server?
YES	17. Can I have both a Web browser and an FTP connection open to the same account on the same server at the same time?
MediumAquaMarine	18. What is the closest named color to $\#60CFA9$? <i>$\#66CDA A$</i>
A .css file	19. Normal.dotm is to Word as <u>what</u> is to HTML?
.GIF, .PNG	20. What graphics file format(s) would I use to put an image on the Web that contains transparency?

- <2> 7 Points – I want to add the binary number **01010110** to the red, to the green, and to the blue values of the HTML color **DarkGray**. What is the resulting hexadecimal HTML color code? Is that resulting color browser safe? If the resulting color has a name, what is it?

DarkGray is #A9A9A9 (see Companion),

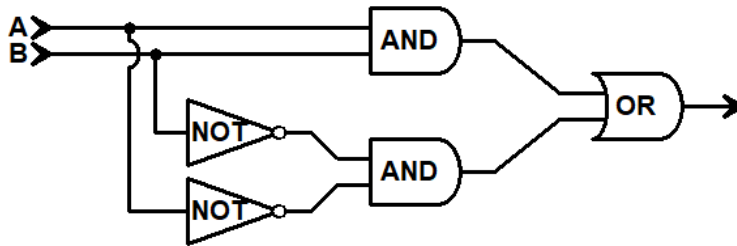
A9 is 10101001 in binary (bit partitioning method),

01010110 + 10101001 = 11111111 in binary,

11111111 in binary is FF in hexadecimal,

The color code is thus **#FFFFFF** (5 points), which **is browser safe** (1 point), and has the name **White** (1 point).

- <3> 8 Points – Trace the following gate circuit and show its output for all combinations of input values. (2 points each box)



A	B	OUT
0	0	1
0	1	0
1	0	0
1	1	1

- <4> 10 Points – In the current folder on my UNIX account on the `elsrv3` server, I have five image files all with a `.jpg` file extension.


A: Using the *symbolic* form of `chmod`, add read permission to but take away write and execute permission from user, group, and others for all five of those image files. (4 points for the permissions, 1 for the filename)

Symbolic: `chmod a+r,a-wx *.jpg`
 or: `chmod ugo+r,ugo-wx *.jpg`

B: Using the *absolute* form of `chmod`, set the permissions on all five of those image files to `r--r--r--`, regardless of what they were before. (4 points for the permissions, 1 for the filename)

Absolute: `chmod 444 *.jpg`

- <5> 15 Points – Write an HTML fragment (NOT a complete Web page) that constructs the table shown here. Notice that the table has three rows and two columns, where the two cells on the second row and the two cells on the third row are merged. The link in the last row is to www.doggo.com, and the image in the middle row is `Doggo.jpg` (in the same folder as the referring document), with the mouse fly-over text set to `Silly Doggo` and the alternate text set to `Doggo pic goes here`. Part of the code is given.

Doggos	Puppers
	
Woof	

```

<TABLE BORDER="1">                                     (= "1" optional)

  <TR>
    <TD>Doggos</TD>
    <TD>Puppers</TD>
  </TR>

  <TR>
    <TD COLSPAN="2">
      <IMG SRC="Doggo.jpg"
        TITLE="Silly Doggo"
        ALT="Doggo pic goes here">
    </TD>
  </TR>

  <TR>
    <TD COLSPAN="2">
      <A HREF="http://www.doggo.com/"> (final slash optional)
        Woof
      </A>
    </TD>
  </TR>

</TABLE>

```

Score as 5 points per `<TR>...</TR>` section. Remove ½ points for minor errors such as omitting the quotes on attributes, misspellings of tags or attributes, or getting **TITLE** and **ALT** backwards; remove 1 point for each major error involving the table structure, the image tag, or the anchor tag, but do not go below zero per section. Basically, they should get *some* credit if they answered something halfway reasonable in each section. Remove 1 more point for an error in the **BORDER** attribute, but do not go below zero overall.

- <6> 20 Points – The following HTML Web page contains some errors, as well as blanks that need to be filled in and code that needs to be written.
- A. Correct all syntax and structural errors in the code. (8 points, -½ point per error)
 - B. Fill in the <STYLE> block as follows: (6 points, 3 points each)
 - 1. The background color of the **BODY** of the page should be **DarkSalmon**,
 - 2. All **H1** headings should be **#EE82EE** and centered.
 - C. Fill in the blanks as follows: (6 points, 1 point each)
 - 1. The link should be to **www.pupper.org**,
 - 2. The image must be to local image file **Doggo.jpg**,
 - 3. The height of the image must be 200 pixels,
 - 4. The width of the image must be double its height,
 - 5. The second **H2** heading must be centered,
 - 6. The copyright symbol must appear in the correct place.

```
<!DOCTYPE html> (missing !)  
<HTML>  
  <HEAD>  
    <TITLE>My Spiffy Web Page</TITLE>  
    <STYLE HREFTYPE="text/css"> (HREF → TYPE)  
      BODY {background-color:DarkSalmon}  
      H1 {color:#EE82EE}  
    </STYELLE> (STYEL → /STYLE)  
  </HEAD> (missing /)  
  <BODY>  
    </H1>Welcome!</H1> (missing <H1>,  
    <H1> → </H1>)  
    <H2> Section 1 </H2> (missing >,</>  
    <A HERFHREF="http://www.pupper.org/"> (HERF → HREF)  
    <IMAGEIMG SRC="Doggo.jpg" (IMAGE → IMG)  
      WIDewidth="400" (WIDE → WIDTH)  
      HEIGHT="200"> (missing ", >)  
    </A>  
    <H2 STYLE="text-align:center">Section 2</H2>  
    <H6>Copyright &copy; 2018 William T. Verts</H76> (No H7)  
  </BODY> (missing /)  
</HTML>
```

<7> 5 Points – Examine the following text:

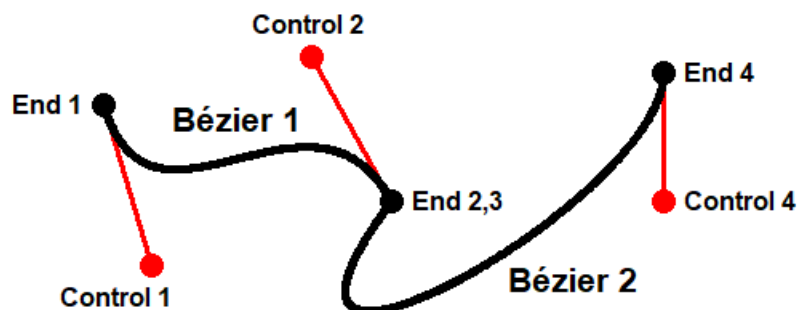
DRINK SELTZER AT VACATION DELTA

- A. (2 pts) In the text above, circle all places where kerning can be strongly applied.
LT in SELTZER, AT by itself, VA & AT in VACATION, LT & TA in DELTA.
- B. (1 pt) The letters are 36 points tall. Exactly how many inches is that? **½ inch**
- C. (1 pt) Does the typeface have serifs, or is it sans-serif? **sans-serif**
- D. (1 pt) Is the typeface proportionally spaced or monospaced? **proportional**

<8> 2 Points – I use a friend’s computer who does not have Microsoft Word installed, so I’m forced to use TextEdit (if he has a Mac) or WordPad (if he has Windows). **1 point each.**

- A. What format do I save my document in to make it be easily importable into Microsoft Word when I get home? **.RTF**
- B. Once I’m home and the document is imported into Word, what format do I save the document in so I can give it to my friend without Word, in order that he can still print it on his printer (whatever model printer he owns)? **.PDF**

<9> 3 Points – What happens to the two Bézier curves below if I place Control 3 in a straight line with Control 2 and the common end points?



Bézier 1 will blend smoothly into Bézier 2.

<10> 5 Points – Cell **W100** contains the following formula, which is then copied to cell **AB113**. What is the resulting formula in cell **AB113** after the copy has been completed?

=V95+\$ME\$262*X15+100*AE35

= _____+\$ME\$262* _____+100* _____ (2 points for frame)

Formula is moving right 5, down 13.

V95 right 5, down 13 is **AA108** (1 point)

X15 right 5, down 13 is **AC28** (1 point)

AE35 right 5, down 13 is **AJ48** (1 point)

=AA108+\$ME\$262*AC28+100*AJ48

<11> 5 Points – At precisely 6:00pm on March 21, 2018 the formula **=NOW ()** returns serial date/time number 43180.75 exactly. (1 point each)

A. What serial date number would then be returned by **=NOW () +30**?

43210.75

B. What is the resulting date (month, day, year) of the result in part A?

April 20, 2018

C. What serial date number would be returned by **=NOW () +0 . 25**?

43181

D. What is the resulting date (month, day, year) of the result in part C?

March 22, 2018

E. What is the resulting time (hour, minute, second) of the result in part C?

12:00:00 (midnight)

<12> 5 Points – Here is a screenshot of a spreadsheet. (1 point each)

	A	B	C	D	E	F	G	H
1								
2								
3		21	54	37	15	17		
4		25	31	47	42	9		
5		18	25	23	31	14		
6		7	18	25	13	36		
7								

A. What is the result of the formula **=SUM(B3:B4)** ?

46

B. What is the result of the formula **=MAX(B4:D5)** ?

47

C. What is the result of the formula **=MIN(D5:F6)** ?

13

D. Write a formula to add up the numbers in the top row only.

=B3+C3+D3+E3+F3 or **=SUM(B3:F3)**

E. Write a formula to add up all the numbers shown in the grid above.

=SUM(B3:F6) (range can be **B3:F6**, **F6:B3**, **B6:F3**, or **F3:B6**)