

Exam 2

13 December 2006

Directions.

- Do not turn this page over until told to do so.
- This exam is closed-book. You may not use anything other than a pen or pencil to complete it.
- You have exactly 60 minutes to complete the exam.
- If you have a question during the exam, raise your hand or quietly come down to the front of the lecture hall to speak with a member of the teaching staff.
- If you finish the exam within 55 minutes, you may come down quietly to the front of the lecture hall to turn in your exam. If you finish the exam within the last 5 minutes of the exam period, however, please remain in your seat until the period's end, so as not to disturb other students during the final moments of the exam.
- Close your eyes, take a deep breath, and think to yourself: "I bet it'll be the one on the far right."



Please complete the following. (Print clearly.)

Name: _____

"I understand that some students may not be taking this exam at the same time as I am. I affirm that I will neither reveal the contents or difficulty of this exam to any such student nor discuss it with any such student."

Signature, in agreement with the above: _____

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final score out of 100

Multiple Choice. (1 point each.)

For each of the following questions or statements, circle the letter (a, b, c, or d) of the one response that best answers the question or completes the statement.

1. So which one's the soprano?



2. 2^{32} equals
a. 256.
b. 65,536.
c. 16,777,216.
d. 4,294,967,296.
3. Which of the following is *not* a file format for graphics?
a. MPEG
b. TIFF
c. BMP
d. JPEG
4. Which of the following is *not* a file format for video?
a. AVI
b. DivX
c. MPEG-2
d. MP3
5. Web servers tend to operate on TCP port
a. 21.
b. 22.
c. 25.
d. 80.

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6. SMTP servers tend to operate on TCP port
 - a. 21.
 - b. 22.
 - c. 25.
 - d. 80.

7. Which of the following is not a common resolution for a monitor?
 - a. 400×300
 - b. 640×480
 - c. 800×600
 - d. 1024×768

8. `www.bankofthevest.com` was part of a
 - a. virus's payload.
 - b. worm's payload.
 - c. phishing attack.
 - d. spyware attack.

9. JPEG is
 - a. a lossless file format for graphics.
 - b. a streaming format for video.
 - c. the only file format for graphics that supports transparency.
 - d. a popular format for digital photos.

10. Which of the following is *not* a programming language?
 - a. CSS
 - b. Perl
 - c. Python
 - d. C#

11. Looking up a number in an alphabetized phone book with 256 pages requires that you look at no more than
 - a. 256 pages.
 - b. 16 pages.
 - c. 8 pages.
 - d. 255 pages.

12. A DNS server
 - a. allows you to purchase a domain name.
 - b. is often called a "nameserver."
 - c. usually operates on port 3389.
 - d. translates fully qualified domain names to Ethernet addresses.

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True or False. (1 point each.)

For each of the following statements, circle either T if the statement is true or F if the statement is false.

13. T F The answer to #2 is d.
14. T F The answer to #13 is false.
15. T F I enjoy mind games.
16. T F Cookies enable websites to remember information about past visitors.
17. T F WEP is more secure than WPA.
18. T F A VPN allows users to establish encrypted connections to remote networks.
19. T F Podcasts can include MP3s and QuickTime movies.
20. T F David got pwned by a couple of sprites in Lecture 11.
21. T F An email's header often includes the IP address of the computer from which the email was sent.
22. T F Viruses are self-propagating, whereas worms require actions by users to spread.
23. T F Legally downloaded music is often protected by DRM these days.
24. T F A 5-megapixel camera can take digital photos with roughly 5 million pixels.
25. T F When you empty a PC's Recycle Bin, Windows not only deletes the files therein, it overwrites them with 0s.
26. T F Threads allow programs to create the illusion of working on multiple tasks at once.
27. T F When clicked, `PayPal` leads to PayPal's website.
28. T F V jvyv fheivir R-1.
29. T F D4n 1\$ c00l.
30. T F I was never very good at ROT13 or 13375p34k.

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EU-3. (3 points each.)

From left to right, below are the flags of Austria, Ireland, and the United Kingdom, respectively. Whether printed here in color or in black and white, assume that these flags have been stored on disk in color as GIFs.



31. Which of the three GIFs most likely takes up the fewest bytes on disk? Why?

32. Which of the three GIFs most likely takes up the most bytes on disk? Why?

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Just the other day... (4 points each.)

For each of the quotes below, state whether the person knows or doesn't know what he or she is talking about. If the person doesn't know what he or she is talking about, explain why in one to three sentences.

33. Just the other day, Lord Dark Helmet said "So the combination is one, two, three, four, five. That's the stupidest combination I've ever heard in my life! That's the kinda thing an idiot would have on his luggage!"
34. Just the other day, Dan said "The combination to David's luggage is one, two, three, four, five." Okay, just kidding. Just the other day, Dan said "I just wrote a program in XHTML!"
35. Just the other day, Rei said "Bitmaps scale way better than vector graphics."
36. Just the other day, Eugenia said "Any Caesar cipher is more secure than RSA."

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ABCDE-1. (6 points.)

37. Consider the following “program,” used by David’s computer to award final grades.

```
1.  for each student
2.      if student's average > 60 then
3.          award student a D
4.      else if student's average > 70 then
5.          award student a C
6.      else if student's average > 80 then
7.          award student a B
8.      else if student's average > 90 then
9.          award student an A
10.     else
11.         award student an E
```

Sadly, David can’t figure out why none of his students ever earns an A, B, or C in his class. Granted, he could try teaching better. But still.

Moreover, David doesn’t understand why his computer considers a 60 to be a failing grade, as opposed to a D.

(David also doesn’t understand why Harvard doesn’t call a failing grade an F, as opposed to an E, but that’s not the point of this problem.)

In a short paragraph, explain why David’s computer never awards an A, B, or C and why the computer considers a 60 to be a failing grade. Then explain how to fix the “program” above so that E-1’s students start earning the grades they deserve. (Feel free to refer to line numbers in the program above and to write changes on the program itself.)

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Debugging XHTML. (6 points.)

38. The markup below is neither well-formed nor valid XHTML. Point out and, if possible, correct any and all errors. (There's nothing wrong with the DOCTYPE element.)

```
<!DOCTYPE html
  PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html>
  <title>
    <head>
      It's the Muppet show!
    </head>
  </title>
  <body bgcolor="rouge">

    <h1>Here's your host...</h1>

    <br><br>

    <CENTER>
      Kermit the <font color=green>Frog</font>!
    </CENTER>

</html>
```

Teasing apart tags. (3 points each.)

Answer each of the questions below on the lines provided.

39. Consider the following XHTML tag.

```
<a href="http://www.paypal.com/">
```

What is the name of this tag? _____

What is the attribute of this tag? _____

What is the value of that attribute? _____

40. What color of text is produced by each of the following XHTML tags?

```
<font color="#ff0000"> _____
```








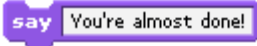
```
<font color="#00ff00"> _____
```

```
<font color="#0000ff"> _____
```

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Puzzled? (8 points.)

41. Below are a whole bunch of Scratch blocks representing Boolean expressions, conditions, loops, and statements. Decide which is which, writing “Boolean,” “condition,” “loop,” or “statement” on the line next to each block.

_____	
_____	
_____	
_____	
_____	
_____	
_____	
_____	

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Rapid Fire. (2 points each.)

The following questions are intended to solicit (nearly) instantaneous responses from you. We expect (and will accept) no more than three sentences for each of your answers.

42. How does a firewall block some traffic while letting other traffic through?

43. How does anti-virus software work?

44. What does it mean if a file format for audio or video supports streaming?

45. What is a variable, with respect to a computer program?

46. What does it mean to compile source code?

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Extra Credit. (5 points.)

Only attempt to answer the following three questions if you have completed the rest of the exam and have double-checked your answers! Collectively, these questions are only worth 5 points. The rest of the exam, mind you, is worth 100 points!

53. Which one's the PC and which one's the Mac?



54. Stump us with a question about computers and the Internet that none of us can answer.

55. The end?

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extra points for this page
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