You may take this test with you afterwards, but you must turn in your bubble form answer sheet.

This test has the following sections:
I. True/False ......................... 80 points; (40 questions, 2 points each)
II. Multiple Choice ............... 20 points; (10 questions, 2 points each)
---------------
100 points total

This test is worth 10% of your final grade. You must put your answers on the bubble form. This test is closed book and closed notes, unlike previous years’ exams. For the multiple choice problems, select the best answer for each one and select the appropriate letter on your answer sheet. Be careful - more than one answer may seem to be correct. Some questions are tricky.

True/False: (2 points each) On your bubble form fill out A for true and B for false.

1. The “Humans are Dead” song by Flight of the Conchords that was played in class includes a binary solo.
2. In the “What is a Computer” exercise, as a class we agreed upon a single definition that a computer always has input, processing and output.
3. The development in class of a method to communicate two “states” between two people suggested that it is sometimes necessary to have communication of an acknowledgement.
4. A binary transmission protocol is an agreed upon set of rules that allow information to be transmitted and received.
5. The notion of timing is essential to a protocol, knowing when to read the transmission.
6. A Kilobyte is larger than a Megabyte
7. A Megabyte is larger than a Gigabyte
8. A compression technique that keeps all original information is called lossless.
9. The .jpg image compression format is lossy.
10. AppInventor requires significant programming ability in order to get an App to work.
11. When considering digital music, sampling rate and bit rate are two names for the same thing.
12. Consider image compression using alternating numbers representing how many white and black pixels there are in each row. If this were used to represent a number, we would be able to tell what the number is even if we didn’t know if the first number represented white or black.
13. Web 2.0 sites are those where common users can generate content.
14. In the class activity where we analyzed a picture of a room and all the objects in the room, we had enough evidence to figure out the gender of the person pictured.

15. Think back to the picture drawing activity, where we all drew pictures of a house, the sun, a stick-figure family and a mustang next to the house. The point of this activity was to show that people are creative in different ways.

16. The 0/1 guessing game done in class where a student tried to “out-guess” the computer’s forecast showed that the "computer" could beat most human players most of the time.

17. Surprisingly the class results showed that human opponents were able to beat the computer at least half the time, since half of the guesses were 0.

The following questions refer to the short story "Light of Other Days".

18. Mr. Garland and his wife Selina discovered that Hagan’s wife Rose was blind, which is why she was unable to come out of the house to greet them.

19. The slow glass Hagan was selling was 10 years thick.

20. Hagan’s wife and child did not live at his home any more.

The following questions refer to the short story "And Mimsey were the Borogoves".

21. Unthahorsten put children’s toys in the time machine.

22. Paradine felt that younger people had an advantage in learning.

23. The technological artifacts used by Scotty and Emma changed as they used them and became better at solving the puzzles they offered.

Questions from Chapter 8 of the book "Blown to Bits, " pp. 278-285


25. Channel capacity is proportional to bandwidth.

Questions from Chapter 3 of the book "Blown to Bits, " pp. 73-88

26. When “Track Changes” has been enabled in a Microsoft word document, the modification history can be used to show portions that have been deleted.

27. Document metadata can include who the author was, the date it was created and the file name.

28. The same bit stream can represent an ASCII character or a number.

29. A pixel is a single point used to represent an image using a grid of picture elements.

Questions from Appendix of the book "Blown to Bits"

30. Internet packets are labeled with an IP address.

31. A protocol is a standard way to communicate messages.
Questions from Chapter 4 of the book "Blown to Bits," pp. 120-138

32. According to one estimate, only about 3% of the Internet has been indexed by Google.  
33. Web pages visited by search engines get cached, which means results of web searches can still be available even when the original underlying page has been removed.  
34. A web search ranks results by relevance, similar to a web popularity contest.

Questions from Chapter 2 of the book "Blown to Bits," pp. 36-49; 58-60

35. Toll transponders have been used in child custody cases.  
36. MIT students were able to re-identify Chicago homicide victims from publicly available data.  
37. AOL search data was used to identify individuals based on their web searches.

Questions from Videos listed on the Schedule

38. Photosynth allows creating 3D images using pictures taken from different angles. [From “Photosynth”]  
39. A video supposedly showing Muslim Brotherhood members throwing bodies off a bridge was analyzed to prove that the video was false. [From Markham Nolan: “Fact or Fiction”]  
40. A study to analyze passwords was done. To collect password data researches paid subjects candy bars to report [actual passwords] that they used on other sites. [From Lorrie Faith Cranor: “What’s wrong with your pa$$w0rd?”]

Multiple Choice (2 points each)

41. In order to do the “mind-reader” trick using number boxes, it is necessary to know:  
   a) Binary numbers  
   b) Addition of numbers that are powers of two between 2 and 32  
   c) The numbers in the upper-left of each box is what we pay attention to or ignore  
   d) Exactly two of the above items a..c  
   e) All three of the items a..c above

42. Which of the following is the best example of an algorithm?  
   a) A guide to flower arranging  
   b) Directions on how to have a successful date  
   c) A recipe to make a chocolate cake  
   d) A list of how to be a successful college student  
   e) A rhythm played by one-time U.S. Vice President Al Gore

43. Which of the following best describes how to always find the best compression using the online text compression tool we used?  
   a) At each step substitute for the pair of most common repeated adjacent letters  
   b) At each step substitute for the 2 longest repeated strings  
   c) At each step substitute for the most common repeated string of any length  
   d) It is not possible to make a hard-and-fast rule that will always give the best text compression.
44. Consider the Martin Luther King Jr. web site we looked at as a class. The point of us looking at that web site was:
   a) Illustrating how .org sites can be considered more trustworthy than .com sites
   b) To show that the appearance of a web site is a good indicator of reliability of information.
   c) To show how technology is used as a filter of historical events
   d) To evaluate web site design choices
   e) To show that web sites may not be what they seem at first look

45. The point of the sandwich-making activity was that
   a) English is ambiguous
   b) Our instructions often include assumptions about context
   c) Precise sandwich-making instructions are an example of an algorithm
   d) Computer programming involves giving precise instructions, just like in giving instructions to make a sandwich.
   e) All of the above

46. The problem-solving steps discussed in class were:
   a) Deconstruct, Partition, Evaluate, Execute
   b) Plan, Execute, Evaluate, Refine
   c) Outline, Expand, Create, Evaluate
   d) Understand, Plan, Implement, Revise
   e) Implement, Evaluate, Revise, Recreate

47. The video clip of Watson shown in class and discussed illustrates that:
   a) A computer can beat a human at a particular task, even if it wouldn’t necessarily pass the Turing Test.
   b) Computers are faster than humans at identifying mathematical patterns
   c) People are still smarter than computers
   d) Computers are smarter than people
   e) Even though computers are good at some tasks, people are still much better at many others.

48. What is the biggest number that can be represented in binary using 4 fingers, where each finger represents a single binary digit 0 or 1?
   a) 7
   b) 15
   c) 31
   d) 63
   e) None of the above

49. Binary Number $1110$ in decimal is:
   a) 7
   b) 9
   c) 13
   d) 24
   e) None of the above

50. Adding a zero to the right of a binary number (e.g. changing 110 to 1100) has the following effect:
   a) It doubles the original number
   b) It halves the original number
   c) It doesn't change the original number
   d) None of the above