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 .......................... 70 points; (35 questions, 2 points each)
II. Multiple Choice ................ 30 points; (15 questions, 2 points each)
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100 points total

This test is worth 10% of your final grade. You must put your answers on the bubble form. This test is open book and open notes, however you may not use any electronic resources or confer with anyone else. 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. A Google doc allows many people to edit it all at once.  
   - T  F
2. ASCII is a code used to represent numbers, letters and other symbols than can normally be found on a keyboard.  
   - T  F
3. An algorithm is a mathematical formula used to describe beats in music.  
   - T  F
4. There can be multiple correct algorithms that work for a particular scenario.  
   - T  F
5. 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.  
   - T  F
6. 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.  
   - T  F
7. The main point of the paper-airplane building activity in class was to show that there are many different valid ways to do the same thing.  
   - T  F
8. 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 the human player much of the time.  
   - T  F
9. In the “magic” age-guessing game done in class using the 6 tables of numbers, it is necessary to understand binary numbers in order to do the trick.  
   - T  F
10. If we are using odd parity, then we need to append a 1 to the bits 1101 since 1101 represents decimal 13, which is an odd number.  
    - T  F
11. Given a grid of numbers where all the rows and columns have an extra parity bit that represents even parity, a single bit change can be detected, but cannot be corrected.  
    - T  F
12. Parity can be chosen to be either even or odd.  
    - T  F
13. The .jpg image compression format is lossy.  
    - T  F
14. AppInventor is used to create Apps that can run on either Android phones or iPhones.  
T  F

15. AppInventor requires significant programming ability in order to get an App to work.  
T  F

The following questions refer to Chapter 1 of the book "Blown to Bits"

16. Tanya Rider died because of a technology malfunction.  
T  F

17. One of the Koans described is: "Technology grows at a double-exponential rate."  
T  F

18. Moore's Law dictates that the density of integrated circuits doubles every couple of years.  
T  F

The following questions refer to Chapter 2 of the book "Blown to Bits."

19. Cars now have event data recorders, similar to the “Black Box” that airplanes have.  
T  F

20. Many color printers encode GPS location information hidden in the printed pixels.  
T  F

21. Gender, zip code and date of birth are all it takes to uniquely identify 87% of the U.S. population.  
T  F

22. Many cell phones can be reprogrammed remotely so that the phone is always on and is transmitting, which can be used by law enforcement for wire-tapping.  
T  F

23. Gender, zip code and date of birth are all that is needed in the US to identify 87% of the population.  
T  F

24. When AOL released 20 million web queries, the search content was used to re-identify people.  
T  F

The following questions refer to Chapter 3 of the book "Blown to Bits."

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

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

27. The same bit stream can represent an ASCII character or a number.  
T  F

28. mp3 is a lossy compression format for audio recording.  
T  F

29. Steganography is the name of the technique where digital computers are used to make highly accurate copies of old images.  
T  F

30. Files deleted from old computer disks can still be recovered unless it is overwritten by new information.  
T  F

31. The commemorative digital version of the Domesday Book of 1086 was unreadable within 15 years of its creation because of changes to computer technology.  
T  F
The following questions refer to the short story "Light of Other Days".

T  F   32. “Slow Glass” was implemented by using video cameras and large hard drives to store the images.

T  F   33. In the story Hagan introduces his wife and child to the visitors.

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

T  F   34. In the story Scotty and Emma were able to learn so well partially because they are young.

T  F   35. The technological artifacts found by Scotty down by the creek are primitive and require modifications to be useful.

Multiple Choice (4 points each)

36. 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

37. 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

38. Think about the handshakes activity done in class. What problem-solving representations proved helpful in explaining the solution to others?
   a) Diagrams on paper of the process.
   b) The formula showing how to get the answer, given \( n \) people
   c) Acting out the solution using real people
   d) Modelling the solution using objects to stand for people
   e) All of the above

39. 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.
40. Consider an exercise in class where we count how many students were in the class. Everyone starts out as a number 1, then compares with another person standing. One person became the sum of the two numbers, and the other person sits down. If a set of such comparisons were all done one “stage” at a time, how many stages would be needed to count 1,000 people?

   a) 8
   b) 10
   c) 50
   d) 500
   e) None of the above

41. 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

42. Binary Number $\overline{1110}$ in decimal is:

   a) 7
   b) 9
   c) 13
   d) 24
   e) None of the above

43. The hexadecimal value $\text{A7}$ in binary is:

   a) $\overline{01101110}$
   b) $\overline{10100111}$
   c) $\overline{11010110}$
   d) $\overline{01100111}$
   e) None of the above

44. Depending on the context in which it is used, the following binary string could represent:

   $0100\ 0011 = 67_{10}$

   a) $67_{10}$
   b) $4_{10}\ 3_{10}$
   c) $43_{16}$
   d) The ASCII value for character ‘C’, where the ASCII value for ‘A’ is 65.
   e) All of the above

45. In class we’ve looked at the characteristics of decimal, binary and hexadecimal digits. Taking those same ideas and applying them to octal (base 8) numbers, what would be the valid digits used in an octal number?

   a) 0,1,8
   b) 7,8
   c) 0,1,2,3,4,5,6,7
   d) 0,1,2,3,4,5,6,7,8
   e) None of the above
46. Consider the shortcut shown in class for converting directly from hexadecimal number to binary numbers, where each hexadecimal digit corresponds to 4 binary digits. How many binary digits would correspond to each octal (base 8) digit?
   a) 1  
   b) 2  
   c) 3  
   d) 4  
   e) 8

47. 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

48. Adding a zero to the left of a binary number (e.g. changing 110 to 0110) 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

49. Adding a one to the right of a binary number (e.g. changing 101 to 1011, or 100 to 1001) has the following effect:
   a) It equals double the original number, plus 1  
   b) It halves the original number  
   c) It doesn't change the original number  
   d) None of the above

50. Adding a one to the left of a binary number of all ones (e.g. changing 101 to 1101, or 100 to 1100) has the following effect:
   a) It equals triple the original number, within a range of 2  
   b) It halves the original number  
   c) It doesn't change the original number  
   d) None of the above