Computers and Computer Science

**Problems to be turned in**:

1. ***(10 points)*** **Moore's Law**: Assuming that the capacity of a modern computer chip is equivalent to 1 million bits of information (however we define "bits") and that the information capacity of a human brain is the equivalent of 10 trillion bits, how many years will it take for chips to exceed brains in capacity, assuming Moore's Law continues to hold? (Show your work; that is, set up a mathematical equation and solve it!
   * Y is the objective number of bits
   * T is the number of years
   * X is the current number of bits in a computer
   * Y = 2T/(1 to 1.5 years) \* X
   * 1012 = 2T/(1 to 1.5 years) \* 106
   * 106 = 2T/(1 to 1.5 years)
   * T/(1 to 1.5) = log2(106)
   * T = (1 to 1.5)log2(106)
   * T = 19.93 to 29.9 years
2. ***(10 points)*** **The Continuing Saga of Moore's Law**: Gordon Moore has predicted an end to Moore's Law. Explain the reasons for this prediction. How accurate have his other predictions been? Do you think he is correct this time? Explain why or why not.
   * Moore predicts that his law will not maintain its course forever because of the physical limitations that we encounter. Things such as the speed of light and the nature of matter limit the ability of computers to move, and as we reach those limits, the growth in computers will also come to a limit.
3. ***(10 points)*** **Blown to Bits**: Read Chapter 1. Consider *Koan 6: Nothing Goes Away*. US society has already reached a point where candidates for public office are often removed from candidacy because evidence exists revealing something undesirable in their past. In this age of social media, the candidates of the next generation may have a public digital history containing decades' worth of easily discovered photographs, remarks, opinions, etc. which can be searched for such evidence. How do you think this will change the way the public views its public representatives? Will it become easier or harder to be elected with scandals in your past? Will someone about whom very little social media exists be more or less likely to be elected?
   * It’s an interesting thought for sure. I think that it will alter our view in that negative material will come to the surface, while positive may not. The truth being that every person has negative information in their past. It will almost certainly be harder to be elected with previous scandals, and in fact that has already been somewhat seen in recent elections. The people who have no social media will have less of a record, or at least less of a public record, which is certainly a better defense. Usually, people prefer to think the best of people, so if they don’t *know* for certain, they’re more likely to give them a bye.