Homework 1

Due Monday, June 16, at 9 AM (GMT-7)

CSc 345 – Summer 2014

Instructor: Qiyam Tung

Instructions

1. This is an individual assignment. You must do your own work.
2. If you are having difficulty and need to ask a question you can:
   (a) Ask questions in class.
   (b) Stop by my office hours (or make an appointment).
   (c) Post a question on Piazza.
   (d) Post a private question on Piazza if the question is too specific.
3. Show all work. Incomplete solutions will **not** receive full credit
4. You may write your solutions by hand, or you may type them using any appropriate program such as Microsoft Word, OpenOffice Writer, LaTeX, etc...
   However, the final copy should be in PDF form and formatted so that it is legible.
5. If the listed problem is only a number, refer to the online book for the description of the problem (starting at page 46).

Problems (56 points)

1. (4 points) 2.14
2. (6 points) Prove that
$$log_b a = \frac{log_{10} a}{log_{10} b} \tag{1}$$
3. (24 points) 2.19, from a to d. Assume $n \in \mathbb{Z}$
4. (8 points) Prove that $\sqrt{3}$ is irrational.
5. (6 points) You are given the set S, containing n objects (i.e. $|S| = n$). The power set of S, written as $\mathcal{P}(S)$, is defined as the set of all subsets of S. Prove that $|\mathcal{P}(S)| = 2^n$.
6. (8 points) Write a method in pseudocode to reverse a linked list. Assume the input to your method is the head of the list.