CS180 Fall 2013

Homework 1

The following homework is due Wednesday, October 9th 2013 before the beginning of lecture **10am SHARP**!!

When submitting your homework, please include your **NAME** at the top of **EVERY** page. If you submit multiple pages, please **STAPLE** them together, and indicate page number on the top right. We also ask that you do something to indicate which name is your last name on the first page, such as underlining it. Please indicate to which discussion section you are enrolled, and which discussion section you attend.

Example Heading:
FirstName LastName Discussion Enrolled: 1A Discussion Attend: 1B Page 1 of 5

Please provide complete arguments and time complexity analysis for solutions (when specified by the problem).

Problems labeled [KT] are taken from the required textbook: "Algorithm Design" by Kleinberg – Tardos [KT].

Problems

1. Exercise 1 on Page 22 [KT]
2. Exercise 2 on Page 22 [KT]
3. Exercise 3 on Page 22 [KT]
4. Exercise 6 on Page 25 [KT]
5. Some dietary fluid-packs have the following properties:

Fluid pack id:	f1	f2	f3	f4	f5	f6
Wt. (ounces):	20	30	40	50	60	70
Calories:	40	30	60	50	30	210

   Write an algorithm that would create a diet out of these fluids for Weight = 160 ounces so that the total calorie value is the **MAXIMUM**. One may not take only a portion from a pack. Your algorithm should work for any Weight. Explain why your algorithm works, and the time complexity of your algorithm.