Lecture 3: Materials, April 25th

Approximation Algorithms: Knapsack Problem

1. **Announcement**

   We are going to have a quiz on May 30th and an examination on July 11th. We will have no class on May 16th, and we will stay at Sci. 7 #214 until further announced.

   The quiz and examination will be in the same style as my course on last semester (http://www.vorapong-sup.net/NetOpt2016.html). There will be 3 problems and you have to solve them in 90 minutes.

   The course website is http://www.vorapong-sup.net/AO2017.html. I decided to put my note there in this semester, and I hope that the note will help you understanding the course better. I also put a list of students that have bonus on each week. Please inform me, if you are supposed to have the bonus but your ID is not there.

2. **Approximation Algorithm**

   Our main textbook for the first half of this course is the following book.
   Williamson and Shmoys, "*The Design of Approximation Algorithms*", Cambridge University Press, 2010.

   The book can be downloaded for free from the following URL.
   http://www.designofapproxalgs.com/book.pdf

   We have covered Chapter 1.1, 1.2, and 1.6 today.

3. **Knapsack Problem**

   We use the definition of Knapsack problem, together with the greedy algorithm, in the Section 10.2.1 of the following lecture note.
   Kedia and Gupta, "*15-854 Approximation Algorithms: Lecture 10 - Dynamic Programming*", Carnegie Mellon University, 2005.
   https://www.cs.cmu.edu/afs/cs/academic/class/15854-f05/www/scribe/lec10.pdf

4. **Bloom Filter**

   The definition of Bloom filter and the problem definition are from the following paper.
   Zhong, Lu, Shen, and Seiferas, "*Optimizing Data Popularity Conscious Bloom Filters*", Proceedings of the 27th ACM Symposium on Principles of Distributed Computing (PODC'08), pages 355-364, 2008.