

# CPSC 629 Homework 6

April 9, 2008

Homework 6 is due Wednesday, April 23 in class.

Read chapter 26, sections 1-3, chapter 34, and chapter 35 sections 1-2. Turn in the following exercises and problems

1. Exercise 26.3-4, page 669
2. Show how to model an extension of the network flow problem if, in addition to capacities on the edges, there are also positive capacities on the vertices: the sum of the flows into a vertex,  $v$ , (other than  $s,t$ ) must be  $\leq \text{capacity}(v)$ . That is, given such a problem, find an equivalent network flow problem as specified in the text.
3. Exercise 34.4-4, page 994
4. Show that the following problem is NP-complete. Given a list of positive integers,  $L$ , can the list be partitioned into three lists,  $L = L_1 \cup L_2 \cup L_3$ ,  $L_i \cap L_j = \emptyset$  for  $i \neq j$ , such that the sums of the integers in each list are equal. You may assume that the subset sum problem is NP-complete.
5. Show that the following problem is NP-complete. Given a directed graph,  $G = (V, E)$  does  $G$  have two different Hamiltonian circuits?
6. Exercise 34.5-1, page 1017