Computational Biology
Homework Set 1
March 21, 2005
http://staffweb.ncnu.edu.tw/shieng/

Due date: Mar. 28

Problem 1 (4.2) Consider partial digest

$$L = \{1, 1, 1, 2, 2, 3, 3, 3, 4, 4, 5, 5, 6, 6, 6, 9, 9, 10, 11, 12, 15\}.$$

Solve the Partial Digest problem for L (i.e., find X such that $\Delta X = L$).

Problem 2 (4.5) Prove that the sets $U \oplus V = \{u + v : u \in U, v \in V\}$ and $U \ominus V = \{u - v : u \in U, v \in V\}$ are homometric (which is defined on Page 87 in the text book) for any two sets U and V.

Problem 3 (4.11) The search trees in the text are *complete k-ary trees*: each vertex that is not a leaf has exactly k children. It is also *balanced*: the number of edges in the path from the root to any leaf is the same (this is sometimes referred to as the *height* of the tree). Find a closed-form expression for the total number of vertices in a complete and balanced k-ary tree of height L.