Formal Learning Theory
Homework 2

(due on Friday, February 22nd at 1pm)

February 15th, 2013

Ex. 1 Take E to be the set of all even natural numbers. Let $\mathcal{L} = \{E \cup D_n \mid D_n \subseteq \mathbb{N}, D_n \text{ is finite}\}$. Show that $\mathcal{L}$ is identifiable.

Ex. 2
(a) Given the class of all co-singletons $\mathcal{L}$, and learner M discussed in class 1 and 2, that identifies the class, provide:

1. locking sequence for M and $\mathbb{N} - \{i\}$, and
2. tell-tale subset for $\mathbb{N} - \{i\}$.

(b) Modify M, to obtain M', such that M' answers $\mathbb{N} - \{9\}$ as long as 9 hasn't appeared, and otherwise proceeds as M, provide:

1. locking sequence for M and $\mathbb{N} - \{i\}$, and
2. tell-tale subset for $\mathbb{N} - \{i\}$.

Ex. 3 [*] Show that the class of all co-singletons $\mathcal{L}$ cannot be identified incrementally. Hint: Consider a locking sequence for $\mathbb{N} - \{0\}$. A further hint is available on request.

Ex. 4 Give a full proof of the following theorem discussed in class: *Any $\mathcal{L}$ is identifiable on informant, i.e. text thats give complete negative as well as positive information.*