SI 413 Fall 2012: Homework 6

Your name:

Due: Friday, 5 October, before class

Instructions: Review the course honor policy for written homeworks.

This cover sheet must be the front page of what you hand in. Fill out the left column in the table to the right after we go over each problem in class, according to the rubric below.

This rubric is also on the website, in more detail, under "Other Stuff"→"Grading Rubrics".

Make sure all problems are submitted IN ORDER.

- **5**: Solution is completely correct, concisely presented, and neatly written.
- **4**: The solution is mostly correct, but one or two minor details were missed, or the presentation could be more concise.
- **3**: The main idea is correct, but there are some significant mistakes. The presentation is somewhat sloppy or confused.
- **2**: A complete effort was made, but the result is mostly incorrect. There may be some basic misunderstandings of the topic or the problem.
- **1**: The beginning of an attempt was made, but the work is clearly incomplete.
- **0**: Not submitted.

Comments or suggestions about this homework:

Comments or suggestions about the course so far:

Citations (other students, websites, . . .):

Problem	Self-assessment	Final assessment
1		

Use a separate sheet of paper for your answers! Everything should be submitted in one packet, all printed out for me to see.

1 CFSM Practice

The following grammar represents the language of all "even" records, where there are an equal number of wins and losses:

$S \rightarrow even$
$even \rightarrow even$ WIN $even$ LOSS
$even \rightarrow$ LOSS $even$ WIN $even$
$even \rightarrow \varepsilon$

I want you to draw out the CFSM for this grammar. Remember that this process really has 3 steps:

1) Write out all the LR items (the things with bullets)

2) Generate the Nondeterministic CFSM using the two kinds of transitions

3) Generate the actual (deterministic) CFSM by combining states

But I'll only require you to show the result at the last step, that is, the final CFSM. As a hint, this CFSM has exactly 9 states.

Once you have the CFSM, answer the following questions about it:

a) Give an example of a conflict in the CFSM. Identify the state and say whether it is a shift-reduce or reduce-reduce conflict.

b) Is this grammar SLR(1)? Why or why not?

c) (BONUS) Give an SLR(1) grammar for this language, or prove that none exists.