MS205 Automata Theory Dec 25th, 2013

Handout 7: Problem Set 7

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Due by Wednesday, Dec 27th, 4pm.

1 Define a valid computation of a turing machine so that it can be expressed as the intersection of two context-free language. Then using $L = \{w_i \vdash w_{i+1} | w_i \text{ and } w_{i+1} \text{ are ID where } w_i \vdash w_{i+1} \text{ in one step of the turing machine}\}$. Construct L_1 and L_2 so that $L_1 \cap L_2$ is the set of valid computation.

2 Construct a cfg for $\{w_i \vdash w_{i+1}^R\}$.

3 Construct turing machine that multiplies, that is $q_0|0^n|0^m \overset{*}{\vdash} q|0^n|0^m|0^{nm}$.