

Mathematical Structures in Formal Methods, *MSFM*

Handout for Lecture 9 (2018/6/28)

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1 Today's Lecture

[Vardi, Section 2.5, 2.6], on alternating automata and games. [Vardi, Section 3], on translation of LTL formulas into Büchi automata.

2 Report Assignment

2.1 Logistics

- Due: the beginning of the next lecture
- Hand in a hard copy, or submit electronically
 - To: `i.hasuo [at] acm.org` and `soichi [at] is.s.u-tokyo.ac.jp` (Soichiro Fujii, TA).
 - Title: “MSFM Report Assignment” (we filter messages)
- Put your name in your pdf (we print them)

2.2 Problems

1. Present a Büchi automaton \mathcal{A} such that $\mathcal{L}(\mathcal{A}) = \mathcal{L}((Fp) \cup q)$. Use the alphabet $\Sigma = 2^{\{p,q\}}$.
2. Present a Büchi automaton \mathcal{A} such that $\mathcal{L}(\mathcal{A}) = \mathcal{L}(\mathbf{G}(p \supset (Fq)))$. Use the alphabet $\Sigma = 2^{\{p,q\}}$. Here $\varphi \supset \psi$ is an abbreviation of $(\neg\varphi) \vee \psi$; and $\mathbf{G}\varphi$ is an abbreviation of $\neg(\top \cup (\neg\varphi))$.

Note: you must answer a Büchi automaton—not a generalized Büchi automaton or an alternating Büchi automaton.

3 Schedule

No lectures on 5th and 12th of July. Next lecture is on 19 July.